At 5.1 million inhabitants (06/2017), the Ruhr is Germany's largest metropolitan area, comprising 6.2% of the national population.

- **Polycentric structure** with 53 municipalities
- Former **manufacturing heartland** with legacy of coal mining and steel industry
1) Universities in the Ruhr

2) Bochum: Ruhr University and Health Campus

3) Metropolitan Research in the Ruhr

4) Knowledge Metropolises as a Research Field

27 Universities in 38 Locations

- 2,792 professors
- 42,685 staff
- 274,714 students

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Universities and Metropolitan Research in the Ruhr
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27 Universities in 38 Locations

- University of Applied Science
- University of the Arts
- University
- University of Public Administration

Professors & staff: 01 Dec, 2016; students: winter term of 2016/2017; includes distance learning univ. in Hagen

RVR 2017, p. 2

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2
More than 50 Years of Universities in the Ruhr

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Years refer to establishment by the NRW state government
 *) merger of universities Duisburg and Essen

RVR 2017, p. 3

Metropole Ruhr

Universities and Public Research Organisations

• Other metropolitan regions have less population, but more universities and esp. PROs

Type of Organisation
- Universities
- Universities of Applied Science
- Theological, Pedagogic, Music & Arts Universities
- Fraunhofer Society
- Helmholtz Association
- Leibniz Association
- Max Planck Society
- Federal & International Research Organisations

DFG 2018, p. 44
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 Urban and Regional Economics

University Students: Metropolitan Regions

- The Ruhr is the metropolitan region with the highest number of university students in Germany.
- Measured against population size, Mitteldeutschland has more university students.
- Without distance learning at the Fern-Uni Hagen, the Ruhr would fall back to 6th rank (No. 4 on per capita basis).
- The number of university students in the Ruhr increased faster than in any other metropolitan region.

Data: Kriegesmann et al. 2015, p. 11

Student Population Rises Rapidly...

Data: RVR 2017, p. 4
• The Ruhr increasingly attracts students from other German states.

Data: RVR 2017, p. 5

...But Staff Growth Does Not Keep Pace!

- Total:
  - Scientific and artistic staff: +54.1%
  - Administrative, technical and other staff: +34.9%

Data: RVR 2017, p. 9
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Student-Professor Ratio Increasing

U = University; UAS = University of Applied Science
Ruhr = Universities of Bochum, Dortmund, Duisburg-Essen; UAS Dortmund, Ruhr-West, Westfälische
Data: Binkhoff et al. 2018, p. 13

Expenditure on Tertiary Education: OECD Countries

OECD 2017, p. 183

- Germany trails most advanced economies in terms of higher education expenditure.
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Student-Professor Ratio: German States (2015/2016)

- NRW trails all other German Länder.

Data: LRK NRW 2018

Brain-Flow Balance of University Graduates*

<table>
<thead>
<tr>
<th>Group</th>
<th>Origin</th>
<th>Retention</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retained</td>
<td>Ruhr</td>
<td>Yes</td>
<td>35%</td>
</tr>
<tr>
<td>Lost</td>
<td>Ruhr</td>
<td>No</td>
<td>25%</td>
</tr>
<tr>
<td>Acquired</td>
<td>Other</td>
<td>Yes</td>
<td>13%</td>
</tr>
<tr>
<td>Transit</td>
<td>Other</td>
<td>No</td>
<td>27%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

Brain-flow balance
13% gained – 25% lost = -12%

*) Graduation cohort of 2011; without follow-up programmes, further education etc. (n=1,088)
Data: Kriegesmann et al. 2015, p. 18
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Share of Employees with University Degrees, 2015

- Highly uneven distribution
- Urban-rural divide
- Reflects distribution of universities

<table>
<thead>
<tr>
<th>County/City</th>
<th>Share (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erlangen (City)</td>
<td>31.8</td>
</tr>
<tr>
<td>Munich (City)</td>
<td>30.0</td>
</tr>
<tr>
<td>Dusseldorf</td>
<td>22.2</td>
</tr>
<tr>
<td>Cologne</td>
<td>21.3</td>
</tr>
<tr>
<td>Essen</td>
<td>16.5</td>
</tr>
<tr>
<td>Dortmund</td>
<td>15.1</td>
</tr>
<tr>
<td>Bochum</td>
<td>14.7</td>
</tr>
<tr>
<td>Germany Ø</td>
<td>14.4</td>
</tr>
<tr>
<td>Duisburg</td>
<td>11.8</td>
</tr>
</tbody>
</table>

Data and map: BBSR 2018

The Ruhr – A Science-based Metropolis?

Relevance
- 275,000 university students
- 2,800 university professors
- Direct & indirect employment effect of 50,000 (2.3% of regional employment)
- Demand effect of € 2.3 bn. p.a. through universities incl. their employees and students (1.5% of regional GDP)

Weaknesses
- Only 12 non-university research institutes (Berlin-Brandenburg: 39; Munich: 22), esp. too few Max Planck & Fraunhofer
- Highest student-professor ratio in the country - 400 more professors needed to reach average
- Low levels of third-party funding per professor (cf. Berthold et al. 2016, p. 76)
- Gap in science-based entrepreneurship (spin-offs)

Cf. Kriegesmann et al. 2015
1) Universities in the Ruhr

2) Bochum: Ruhr University and Health Campus

3) Metropolitan Research in the Ruhr

4) Knowledge Metropolises as a Research Field

Outline

Structural Change in Bochum: A Stylised View

Steam engine triggered start of industrial coal mining
Integrated complex of coal mining and steel industry
Attraction of exogenous manufacturing investments (e.g. Opel 1962-2014, Nokia 1993-2008)
Universities Networked knowledge-based economy (vision)

Agricultural and early mining city
City of coal & steel
Manufacturing city
Knowledge city

19th century
until 1960s
1960s-2000s
21st century
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50 Years of Universities in the Ruhr

http://www.ruhr-guide.de/artikel_pix/RUB_68.0071.jpg

RUB Campus, Aerial View (facing South)


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RUB Campus: Construction in the 1960s

- 1962 decision by NRW government to establish **first university in the Ruhr** in Bochum, which out-competed Dortmund in the site-selection process (cf. Stallmann 2004).
- Officially opened in 1965, the American-style campus is located **ca. 5 km south of the city centre**.

1961 → 1969


Universities in Bochum

<table>
<thead>
<tr>
<th>University</th>
<th>established</th>
<th>Staff</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ruhr-Universität Bochum</td>
<td>1962</td>
<td>5,650</td>
<td>43,051</td>
</tr>
<tr>
<td>Bochum Univ. of Applied Sciences</td>
<td>1971</td>
<td>475</td>
<td>7,008</td>
</tr>
<tr>
<td>Technische Hochschule Georg Agricola</td>
<td>1816</td>
<td>136</td>
<td>2,355</td>
</tr>
<tr>
<td>Protestant University of Applied Sciences</td>
<td>1971</td>
<td>111</td>
<td>2,329</td>
</tr>
<tr>
<td>EBZ Business School (Real Estate)</td>
<td>2008</td>
<td>30</td>
<td>982</td>
</tr>
<tr>
<td>Hochschule für Gesundheit (Health Care)</td>
<td>2009</td>
<td>116</td>
<td>932</td>
</tr>
<tr>
<td>FOM University of Applied Sciences for Economics and Management</td>
<td>n.a.</td>
<td>n.a.</td>
<td>251</td>
</tr>
<tr>
<td>Federal University for Public Administration (Part of social insurance faculty in Bochum)</td>
<td>1979</td>
<td>9</td>
<td>144</td>
</tr>
<tr>
<td>Folkwang Univ. of the Arts</td>
<td>1939&lt;sup&gt;C&lt;/sup&gt;</td>
<td>20</td>
<td>97</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6,547</strong></td>
<td></td>
<td><strong>57,149</strong></td>
</tr>
</tbody>
</table>

A) Without external lecturers, last available figures; B) Winter Semester 2015/2016; Data: UniCity Bochum 2017; Stahl 2015 and universities’ websites

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RUB: Figures and Economic Impact

- 43,015 students (2017/2018)
- Staff ca. 5,700
- Budget 539 m € (2016)
- Direct & induced demand effects: 921 m € (2010, all universities in BO)

Largest employer in Bochum
Attraction of firms and highly-skilled labour
Potential for knowledge-based entrepreneurship
Graduates = supply of human capital
Knowledge-based business environment & image effects
Demand effects

RUB: Assessment of Regional Impacts

<table>
<thead>
<tr>
<th>Impact</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Building a regional knowledge base</td>
<td>• Absorption, production and dissemination of knowledge</td>
</tr>
<tr>
<td>2) Building regional pool of human capital</td>
<td>• Large graduate output, but exceeding regional demand ⇒ brain drain</td>
</tr>
<tr>
<td>3) Stimulating knowledge-based entrepreneurship</td>
<td>• Low entrepreneurial activity and poor climate in region &amp; universities</td>
</tr>
<tr>
<td></td>
<td>• Strong promotional efforts &amp; emerging start-up scene</td>
</tr>
<tr>
<td>4) Stimulating innovation in the regional economy</td>
<td>• Regional knowledge and technology transfer still limited (e.g., low absorptive capacity)</td>
</tr>
<tr>
<td>5) Improving regional identity &amp; image</td>
<td>• Bochum/the Ruhr still rarely associated with knowledge production</td>
</tr>
<tr>
<td>6) Improving demographic profile</td>
<td>• Bochum attracts students, but is less successful in retaining them after graduation</td>
</tr>
<tr>
<td>7) Stimulating creative milieus</td>
<td>• Still lagging behind other metropolitan areas</td>
</tr>
<tr>
<td>8) Providing cultural activities</td>
<td>• Regional provider/venue of culture and arts</td>
</tr>
</tbody>
</table>

Cf. Hilkmann 2017; Hohn 2017; UniverCity Bochum 2016
Universities and Metropolitan Research in the Ruhr
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Internal Migration by Age, Bochum 2009-2012

In-Migration

Out-Migration

Balance

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In-Migration
Out-Migration
Balance

“Science Scorecard”: Quantitative Assessment

<table>
<thead>
<tr>
<th>Indicator</th>
<th>bottom</th>
<th>average</th>
<th>top</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Science</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Universities and research organisations per 100,000 inhabitants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share of non-university research organisations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student share of population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share of international students</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third party funding per professor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Third party funding from industry sources</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Economy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share of firms engaged in R&amp;D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creative economy start-up intensity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High tech startup intensity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share of employment in R&amp;D</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low unemployment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Share of employment in business services</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP per employee</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>R&amp;D expenditure per R&amp;D staff</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Compares Bochum to 12 other German university cities
- About average in science
- **Weak knowledge economy** limits regional knowledge and technology transfers

Cf. Staemmler/Tiefenbach 2015
Universities and Metropolitan Research in the Ruhr
U of Cincinnati Visit • RUB International Lounge, Bochum • October 9th, 2018 • 11-12 hrs
"Science Scorecard": Stakeholder Interviews

<table>
<thead>
<tr>
<th>Indicator</th>
<th>bottom</th>
<th>average</th>
<th>top</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategy</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supportive political environment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public participation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Networks</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science-business</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science-society</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entrepreneurial culture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creative class</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Science</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technology transfer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfer from other fields</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transfer infrastructure</td>
<td></td>
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</tr>
<tr>
<td><strong>Communication</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science communication, diverse media</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science communication, specific places</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place marketing, national</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place marketing, international</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Human capital</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Further education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diversity &amp; openness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family-friendliness</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

- Contrasting most hard evidence, local stakeholders are **upbeat** about Bochum as a science city!

*Cf. Staemmler/Tiefenbacher 2015*

Local Network: UniverCity (*2009*)

- 12 organisations: City, universities, chamber of commerce
- Objective: **Developing** and marketing/branding Bochum as a city of science and education
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Stadt Bochum 2014, p. 26
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Health Campus and RUB, Aerial View (04/2018)

https://img.waz.de/img/archiv-daten/crop213990307/0816626062-w940-cv3-q85/hugo-182499841.jpg [22 July, 2018]
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 October 9th, 2018  
 11-12 hrs

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TechnologieQuartier

- Small coal mine 1947-1959  
- 1995-2002 developed as 12 ha site for technology-based firms  
- Foci: ICT (esp. IT security), health & environmental services, engineering services

https://www.go-bw.de/de/laechen/technologie-quartier  
[25 July, 2018]

General Incubator: TechnologieZentrumRuhr

- Established 1989 on RUB campus  
- 58 firms with ~600 staff (2016), 18,000 m² office & lab space  
- Around 100 firms with 1,000 jobs “graduated” from TZR in 25 years

http://www.chip-tzr.de/fileadmin/images/slides/Start_TZR_slider 1-1.jpg  
[25 July, 2018]
Biomedical Incubator: BioMedizinZentrum

- Est. 2009 on RUB campus, opposite TZR
- ~5,200 m² office and lab spaces for young firms in life sciences and health services

Wirtschaftsförderung Bochum 2018; Photo: Kiese, 04 January, 2017

Bochum: Biomedical Incubator and Park

Biomedical Incubator for Start-ups:
Office and laboratory space for medical technologies, medicine, biochemical and biotechnology

BioMedizinPark: Computer simulation and status in 2011

Cf. Hermann 2009
http://www.welt.de/multimedia/archive/00765/repo_bochum02a_DW_S_765972z.jpg
http://www.welt.de/multimedia/archive/00765/repo_bochum02_DW_So_765966p.jpg [25.01.2017],
From Biomedical Park to Health Campus South

- 2006 – City of Bochum attracted ERDF funding to develop a 5.5 hectare biomedical park adjacent to the RUB campus.
- Concept: Attract external firms and “graduates” from the BioMedizinZentrum incubator focusing on biomedical R&D.
- **Failure to attract** this target group ⇒ still empty in 2011
- 2009 – state government decided to establish health campus NRW with a new university (HSG) in Bochum for ~200 m € (cf. Stadt Bochum 2008)
- 2012-2016 construction & opening of HSG
- Attraction of organisation providing training for health professions
- 2016 attraction of medical IT service provider Visus GmbH as first „graduate“ from the incubator (cf. Stahl 2016),

**Photos: Kiese, 30.05.2012**
Universities and Metropolitan Research in the Ruhr
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• Proximity of Dortmund
  – Backwash effects through first mover advantages and agglomeration effects (positive externalities)

• Strategic alternatives for Bochum
  – Regional Cooperation with complementary concepts (division of labour, functional specialisation)
  – Differentiation through novel/unique concepts, z.B. Worldfactory

Cooperative competition (Coopetition, Brandenburger/Nalebuff 2013)
Knowledge Infrastructures: Bochum vs. Dortmund

<table>
<thead>
<tr>
<th>Bochum</th>
<th>Dortmund</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Innovation Centres &amp; Technology Parks</strong></td>
<td><strong>Case Study: Biomedical R&amp;D</strong></td>
</tr>
<tr>
<td>• Technologiezentrum Ruhr (*1989, 16.500 m²)</td>
<td>• Max Planck Institut for Molecular Physiology (*2005)</td>
</tr>
<tr>
<td>• Technologiequartier (*1995, 12 ha)</td>
<td>• Clinical Genomics Center (*2005)</td>
</tr>
<tr>
<td>• BioMedizinZentrum Bochum (*2009, 5.200 m²)</td>
<td>• BioMedizinZentrumDortmund (BMZ I &amp; II: *2002/2005, 15.000 m²)</td>
</tr>
<tr>
<td>• BioMedizinPark (*2006, 5.5 ha – now Gesundheitscampus Süd)</td>
<td></td>
</tr>
</tbody>
</table>

TZDO: Gross floor space

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Outline

1) Universities in the Ruhr
2) Bochum: Ruhr University and Health Campus
3) Metropolitan Research in the Ruhr
4) Knowledge Metropolises as a Research Field
**Metropolitan Research: 8 Complementary Fields**

- Methodologies in Metropolitan Research
- Interpretation, Appropriation and Design
- Heterogeneity, Diversity and Cohesion
- Knowledge Metropoles
- Urban Ecosystems
- Urban Health
- Resilient Infrastructures
- Transformative Governance and Participation

**Development and Potential**

- Since 2007: established close cooperation between the three universities in the **University Alliance Ruhr** (Bochum, Duisburg-Essen, Dortmund)
- About 150 relevant groups across all disciplines in all three universities
- Largely **complementary research strengths**, including
  - Bochum: Urban Geography and Sociology
  - Dortmund: Spatial Planning
  - Duisburg-Essen: interdisciplinary Joint Center “Urban Systems” in Duisburg-Essen
- Numerous **completed and ongoing projects** in metropolitan research at all three universities, frequently already in close cooperation between two or more partners
- Since 2005: close cooperation in **SURF (network for urban and regional research in the Ruhr region)** with numerous corporations and regional governance bodies
- Since 6/2017: officially designated **competence field of the University Alliance Ruhr**
- Already significant success in the acquisition of funding: > € 50 m in third-party funding since 2010
UAR Competence Field Metropolitan Research

Objectives

1) Become an internationally recognized centre of interdisciplinary metropolitan research across all academic cultures and disciplines

2) Leverage complementarities and synergies between the three universities

3) Identify innovative research topics at interdisciplinary interfaces

4) Acquire research grants in a field of lasting (and growing) academic and societal relevance

5) Platform for the integration of research, teaching and transfer in all fields of metropolitan research across the University Alliance Ruhr

6) Central participation of the humanities and social sciences in a designated UAR competence field

7) Use the Ruhr region as an exemplary field of metropolitan research – in comparison with other regions worldwide (current focus areas: East Asia, North America, Europe)

UAR Metropolitan Research: Organization

Academics
In total, approx. 100 academics from the three Ruhr universities are involved in the trans- and interdisciplinary work of the 7 research fields in metropolitan research. The UA Ruhr universities are represented in the competence field by several teaching institutes. In addition, relevant academic institutes from each of the universities are also involved in the competence field “Metropolitan Research”.

Steering Committee
The strategic orientation of the competence field “Metropolitan Research” is defined by a steering committee, which consists of 5 members from each of the universities involved. The pertinent coordinators of each research field are also involved in the extended steering committee.

Coordinators
The three coordinators are academics from each of the three universities who initiated and conceptualized the competence field. They have assumed the central functions of strategically developing and publicly representing the competence field “Metropolitan Research”.

Coordination Office
The coordination of the competence field is supported by a coordination office. The staff of the office fulfill the role of contact partners at each of the three universities and assume the role of organizers of the research fields.

Cooperation and Funding
The competence field “Metropolitan Research” cooperates with a series of well-known academic and commercial institutions, who are situated in the Ruhr Valley as well as active all over the world. In the form of start-up support, the competence field “Metropolitan Research” received financial backing from the Mercator Research Centre Ruhr (MERCUR). As a consequence, the coordination office was established.
Universities and Metropolitan Research in the Ruhr

U of Cincinnati Visit • RUB International Lounge, Bochum • October 9th, 2018 • 11-12 hrs

Joint Teaching: Ruhr Lecture

ORGANISATION

This year the RUHR LECTURE is organized in cooperation with the RAG-Stiftung and is dedicated to the Future of the Ruhr Region.
The series showcases the broad range of disciplines involved in metropolitan research in the University Alliance Ruhr as well as experts from various disciplines give insights into their current work. While the team focuses on the Ruhr Region, experiences from other metropolitan regions are included in a comparative perspective.

Since 2013, the RUHR LECTURE has been organized by the Institute of Geography, Ruhr University Bochum and the Faculty of Spatial Planning at TU Dortmund University. In 2018, they were joined by the Faculty of Law and the Ruhr Graduate School of Economics and Management (RAG-Stiftung). Since the winter term 2016/17, the RUHR LECTURE has been organized by the Competence Field Metropolitan Research of the UAS.
The series is part of the activities of the RuhrNetwork Ruhr Universities and Regional Research Centers Ruhr.

Contact and further information: metropolestiftung@rub.de

The graphics were published in the "JAS-Stiftung-Zukunftsreden" by the RAG-Stiftung.

PARTNERS

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45141 Bochum
www.rag-stiftung.de

Contact for further information:
Coordination Office of Ruhr
E-mail: metropolestiftung@rub.de

The Ruhr Lecture is organized by the Competence Field Metropolitan Research and the RAG-Stiftung.

The Future of the Ruhr Region: Beyond 2018 and the End of Mining
Winter Term 2018/2019

Institute of Geography
Matthias Kiese
Urban and Regional Economics
Joint Teaching: Ruhr Lecture
Bochum International Seminar on the Transformation of Urban Spaces (BISTUS IV): Shrinking Cities and Ageing Societies

- Times & rooms: 08-10 Oct (16-19 hrs, NA 6/175); 12 Oct, 15-16 Nov (09-18 hrs), NA 6/130
- 6 ECTS
- Interdisciplinary seminar for Master and PhD students

Outline
- How do we prepare for ageing and depopulating society in near future? Urban and regional planning should deal with various tasks like improvement of welfare services, restructuring of urban facilities and infrastructures or transformation of urban land use. Theories and principles for planning shrinking cities and regions are greatly different from those which have been applied in the phase of urbanization and population increase.
- The seminar starts with preliminary lectures introducing basic situation and cases of shrinking cities and regions in several countries, whose characteristics are similar but definitely different each other. Discussion among participants follows them, in order to deepen the understanding of reality of shrinking cities and to formulate small individual survey plans of a shrinking town, city or region. Final presentations by students are held after around a month of survey period.

Lecturer
Prof. Dr. Fumihiko Seta
Department of Urban Engineering
The University of Tokyo, Japan

Outline
1) Universities in the Ruhr
2) Bochum: Ruhr University and Health Campus
3) Metropolitan Research in the Ruhr
4) Knowledge Metropolises as a Research Field
What is the Knowledge Metropolis?

- A knowledge metropolis is an urban agglomeration whose social and economic development is driven by its capacity to generate, absorb, apply (utilise) and/or disseminate knowledge.

Knowledge Metropolises: Research Topics

Knowledge economy
- Investments in knowledge assets, digitalization
- Agglomeration, growth and structural change
- Cultural and creative industries
- Regional economic impacts of universities
- Knowledge-based regionalization
- (De)Concentration
- Re-/Suburbanization
- Polycentrality
- Metropolitan functions

Knowledge society
- History of education in coal & steel regions
- Societal transformation, laypersons' thinking and the representation of knowledge
- Knowledge and social segregation, Educational monitoring, regional co-operation structures
- Cultures of knowledge, Knowledge of problematization, scientific and societal production of knowledge
- Narration of post-industrial landscapes

Universities
- History of science in the Ruhr

Organizations
- RUB
- TU DORH
- WSEB
- IAT
- ILS
- InWIS
**RF Knowledge Metropolises: Sub-Fields**

- **Knowledge-based economy**
  - University-industry relations
  - Knowledge and technology transfer, esp. entrepreneurship
  - Regional economic impact of universities and research organizations

- **Knowledge-based society**
  - Education and social mobility
  - Social capital
  - Regional identities

- **Knowledge-based urban and regional development**
  - Knowledge and innovation spaces
  - Integration into urban context
  - Urban/regional strategies

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**RF Knowledge Metropolises: Members**

<table>
<thead>
<tr>
<th>Organizations</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>RUB Geography: Urban and regional economics</td>
<td>Kiese, Schlich, Zucknik</td>
</tr>
<tr>
<td>History: Social movements/Foundation History of the Ruhr</td>
<td>Berger, Adamski, Kellershohn</td>
</tr>
<tr>
<td>Social science: Sociology, labor and economics</td>
<td>Heinze, Center for interdisciplinary regional research ZEFIR (Bogumil, Gehne)</td>
</tr>
<tr>
<td>Management &amp; economics: Macroeconomics</td>
<td>Roos, Bauermann, Bonakdar, Lewalden, Innovation economics and policy (Saatgi), Work, human resources &amp; leadership (Witsers, Rohde), Dean’s office (Wiebeck)</td>
</tr>
<tr>
<td>TU DO Cultural studies: English &amp; American studies</td>
<td>Sattler</td>
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<tr>
<td>Sociology: General sociology</td>
<td>Poferl</td>
</tr>
<tr>
<td>Spatial planning/economics: Urban, regional and international economic relations</td>
<td>Helmrich, Kommeritz, Kuld</td>
</tr>
<tr>
<td>UDE Social &amp; economic history</td>
<td>Schneider, Celebi</td>
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<tr>
<td>Urban Systems</td>
<td>Hochmuth</td>
</tr>
<tr>
<td>UAR Coordination / University landscape</td>
<td>Stallmann</td>
</tr>
<tr>
<td>TFH Agricola BD University development</td>
<td>Osterhoff, Third mission (Gräfingholt)</td>
</tr>
<tr>
<td>Westf. H GE IAT – Spatial capital</td>
<td>Gartner, Flögel</td>
</tr>
<tr>
<td>ifi – Innovation research &amp; management</td>
<td>Kriegesmann, Blötcher</td>
</tr>
<tr>
<td>ILS Siedentop</td>
<td>Research group metropolis and region (Münter, Volgmann)</td>
</tr>
<tr>
<td>InfWIS Research co-ordination</td>
<td>Ortiz, Schröder</td>
</tr>
<tr>
<td>Niederrhein U of Applied Sciences</td>
<td>Lower Rhine Institute for regional and structural research (Hamm)</td>
</tr>
</tbody>
</table>

- 9 Organizations, 16 units, 19 teams, 38 individuals

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1) Team heads underlined
RF Knowledge Metropolises: Practitioners

<table>
<thead>
<tr>
<th>Organization</th>
<th>Topics (members)</th>
</tr>
</thead>
<tbody>
<tr>
<td>bmr</td>
<td>Regional innovation (networks) (Höber)</td>
</tr>
<tr>
<td>NRW.Bank</td>
<td>Knowledge-based housing market monitoring, residential development &amp; policy; Knowledge-based urban and neighbourhood development (Heitkamp)</td>
</tr>
<tr>
<td>RVR</td>
<td>Education &amp; social affairs: Science system and regional development; regional innovation systems; skills potential; regional marketing (Horch, Dittrich)</td>
</tr>
<tr>
<td>City of Duisburg</td>
<td>Planning of schools (Terpoorten)</td>
</tr>
<tr>
<td>Stifterverband Wissenschaftsstatistik GmbH</td>
<td>Science and innovation data (Stenke)</td>
</tr>
</tbody>
</table>

- 5 organizations, 6 individuals

RF Knowledge Metropolises: Expectations & Objectives

- **Networking**: Platform for continuous exchange
  - Bilateral, focus groups
- **Interdisciplinary Cooperation** ⇒ project development / research proposals
- **Knowledge transfer** research ⇔ practice
- Interregional/international **comparative perspective**
- Identification of **futures** (foresight, scenarios, visions ⇒ realization): **policy relevance**
- Societal relevance (**transformative research**)
- **Synergies**, e.g. data pooling & exchange, joint use
- **Visibility**
RF Knowledge Metropolises: Joint Activities

- Semi-annual network meetings
  - Mutual updates
  - Focus group discussions
  - Planning further activities
- Journal special issue in 2019
- Workshop 2019
- Conference 2020

Summary

1) Universities in the Ruhr
2) Bochum: Ruhr University and Health Campus
3) Metropolitan Research in the Ruhr
4) Knowledge Metropolises as a Research Field
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RVR, 2018: Bevölkerungsentwicklung und -struktur im Ruhrgebiet. [https://www.metropoleruhr.de/regionalverband-ruhr/regionalstatistik/bevoelkerung/entwicklung-und-struktur] [05.07.2018].
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References (4/4)
