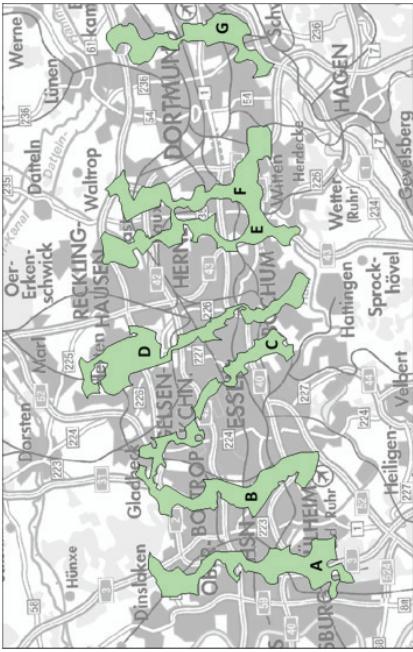


## Regional Green Belts in the Ruhr.

### A Planning Concept Revisited in View of Ecosystem Services



Harald Zepp, Dep. of Geography, RUB, Germany

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Harald Zepp • Regional Urban Green Belts in the Ruhr

Panacea Green Infrastructure? ESSEN 2016

RUB

### Objectives and Leading Questions

- How did motivations and expectations towards the significance and functions of the green belts change?
- Portray the changing extent and qualities of the green belts during the past 100 years.
- Interpret the functions in the light of the ES concept.
- Evaluate the potential ES of the present formal and anticipated future regional green belts.
- Are regional green belts a panacea to the region's pathway towards a resilient metropolis? Lessons learned and consequences.

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2

## UN-Habitat - United Nations Human Settlements Programme German Contribution (WBGU 2016) with Statements on the Ruhr

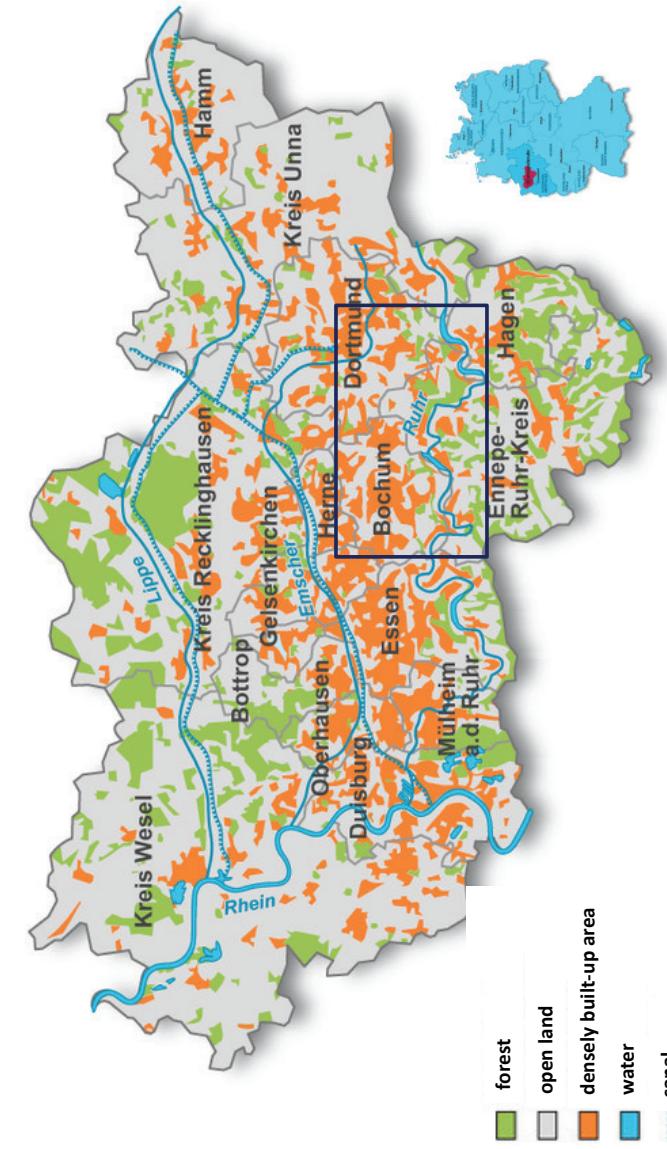
“The opportunities of polycentrism are the green areas close to residential areas [...] Green belts must be protected, open space consumption must be limited.” (p. 286)

„In recent years, a trend was visible [...] towards limiting open space consumption” (WI 2013, 85 in WBGU 2016, p. 287/288)

“Concerning ecology polycentrism creates green areas, climatic cooling zones and opportunities for small scale agricultural production.” (p. 297)

[WBGU (2016) “Der Umzug der Menschheit: Die transformative Kraft der Städte”; translation: HZ]

## The Ruhr Metropolis



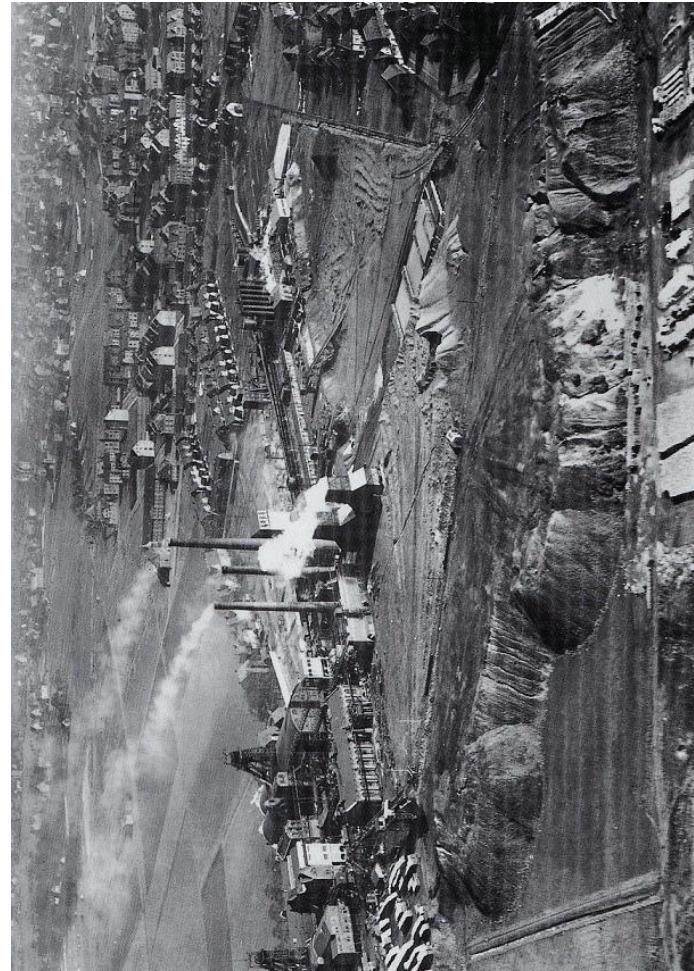
source: RVR

## The Ruhr 1840-1970



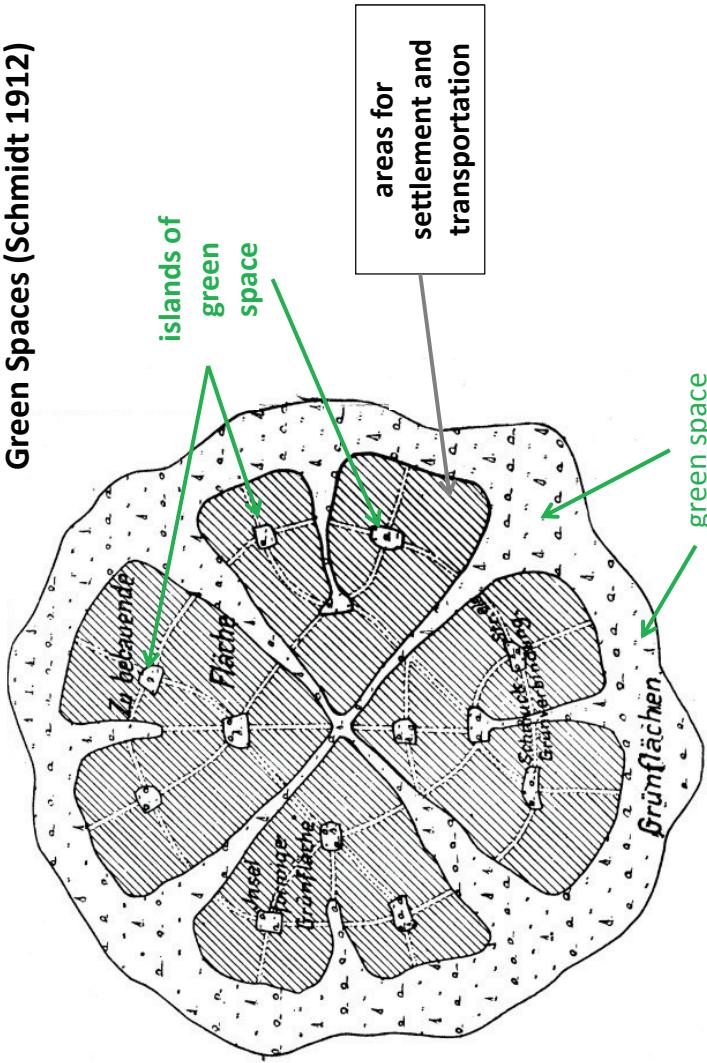
Spoerhase, unpublished, in Wehling (2009, 67)

## Prussia's Wild West: Uncoordinated Industrial-Urban Sprawl

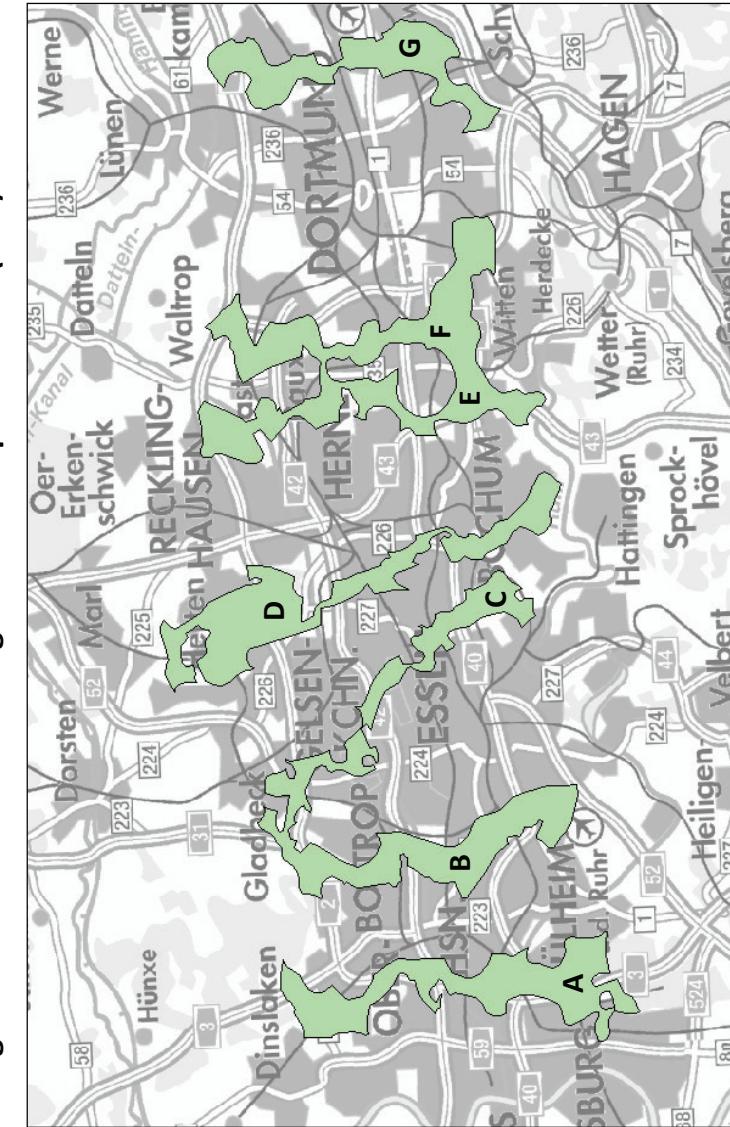


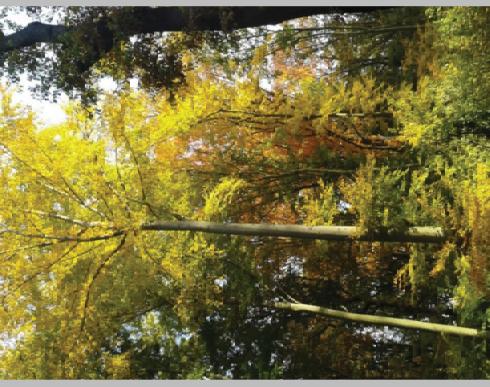
[http://www.gelsenkirchener-geschichten.de/userpix/18/18\\_Hugo\\_alt\\_1.jpg](http://www.gelsenkirchener-geschichten.de/userpix/18/18_Hugo_alt_1.jpg)

## Schematic Layout of a City with Green Spaces (Schmidt 1912)



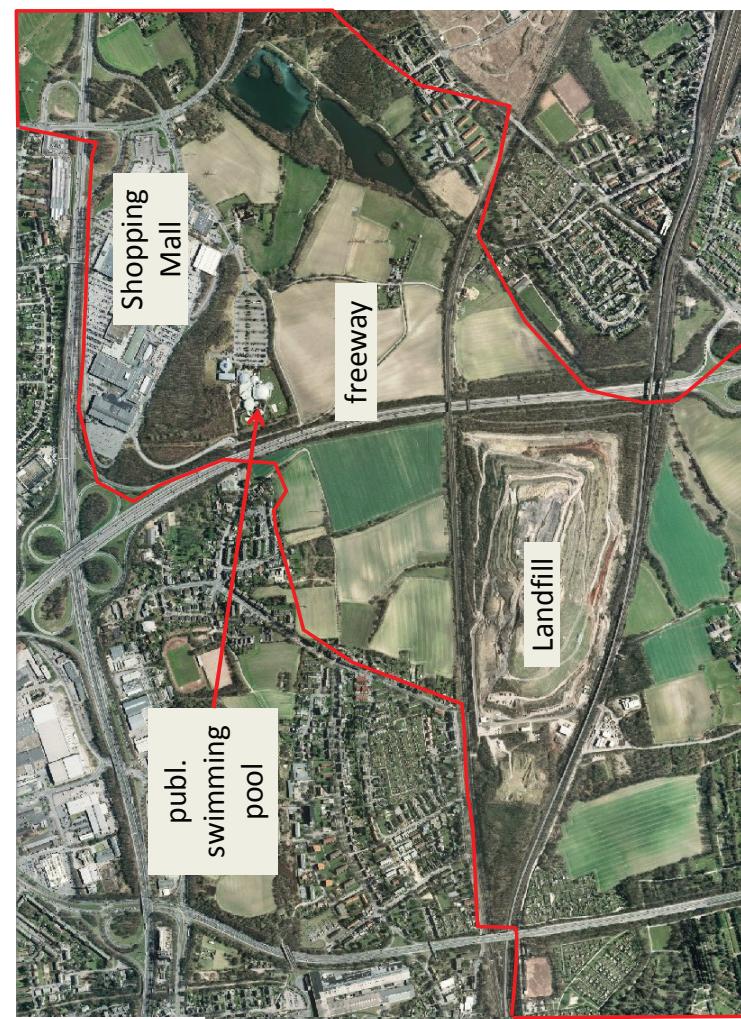
## Regional Green Belts in the Regional Development Plan (GEP) 1966





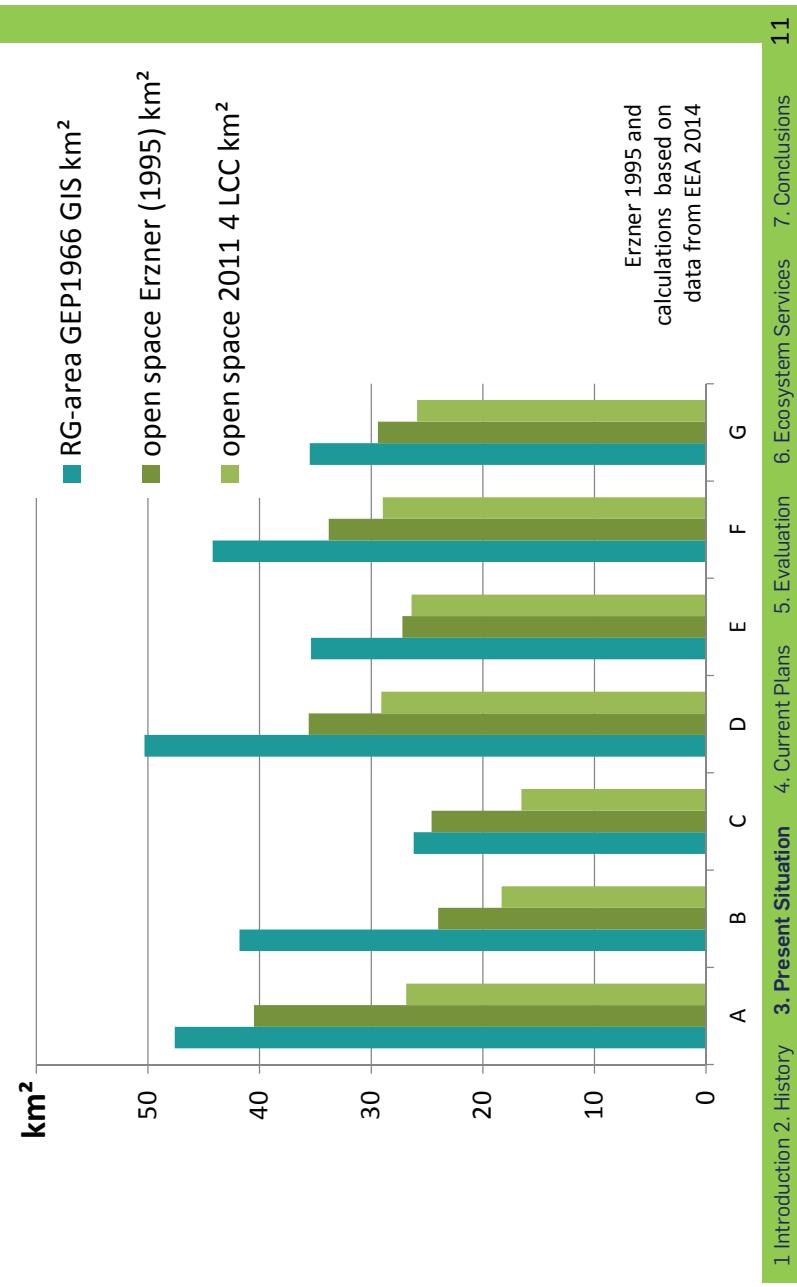
## The 'Nature' of the Green Belts

## Green Belt E between Bochum and Langendreer 1952 and 2009

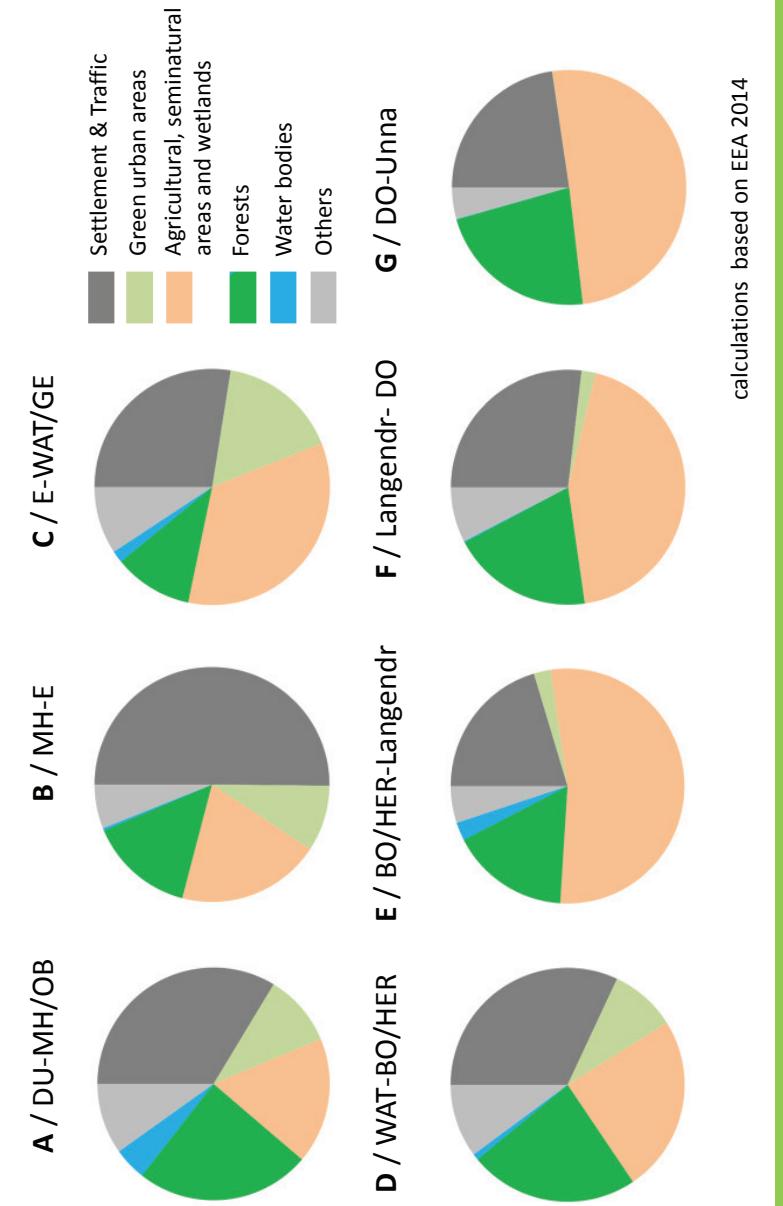


base map: google maps

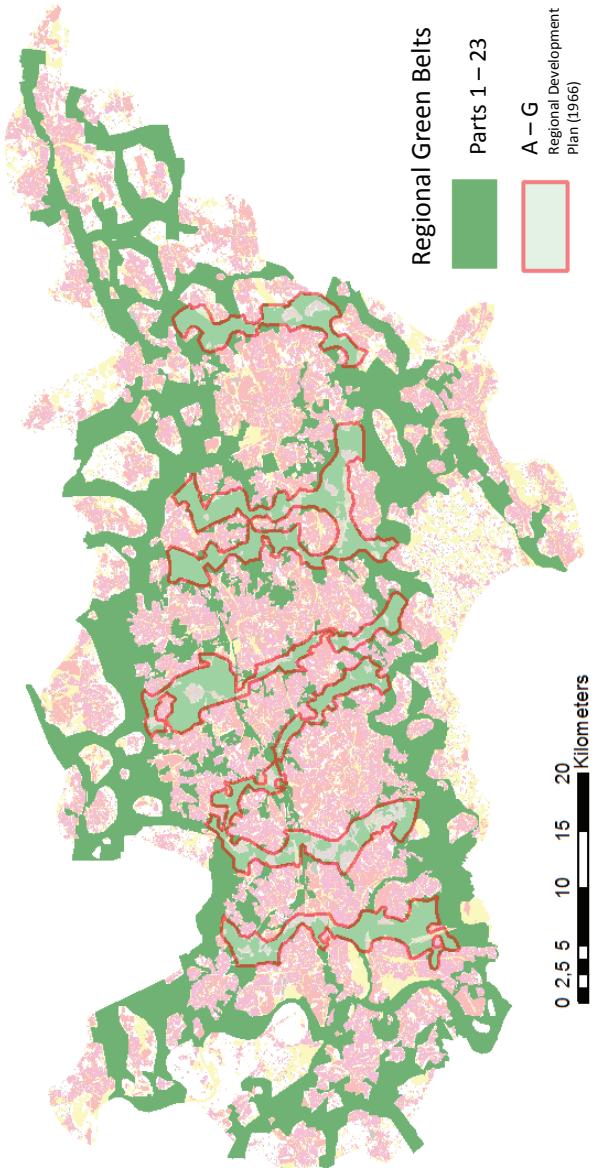
## Decline of Open Space in the Regional Green Belts between 1966 and 2011



## Present Land Use (2011) in the RG A – G within the Borders of 1966



## Regional Green Belts in 1966 (GEP) and in 2016 according to the Technical Contribution to the Regional Plan (RVR 2016)



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### Extent of the (former) Green Belts A – G:

{ Suggested Area in 2016 (Technical Contribution) \_\_\_\_\_ \* 100 }  
 \_\_\_\_\_ Area in 1966 (GEP) }

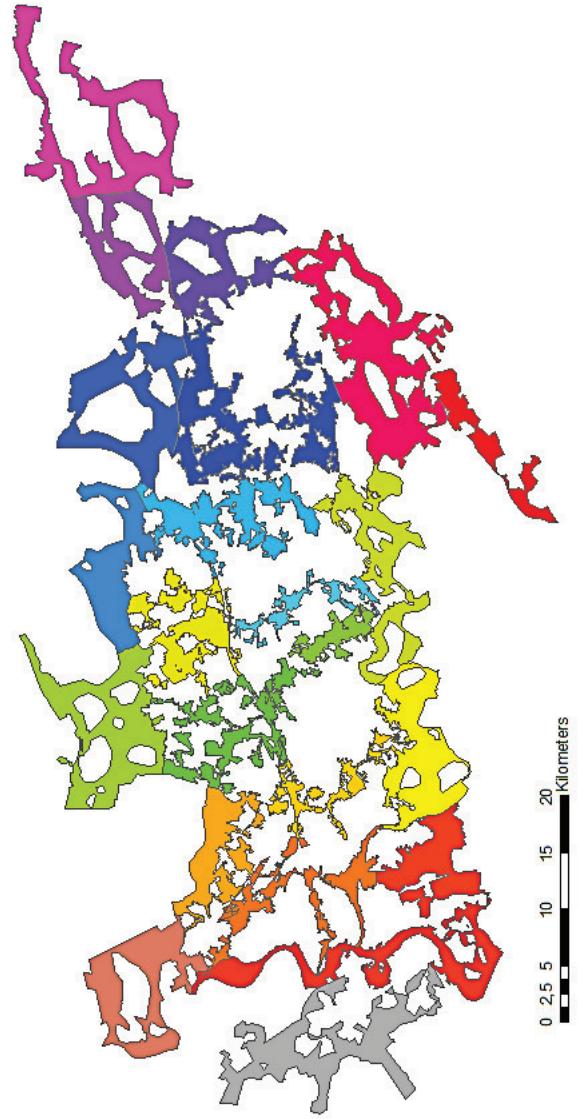
	A	B	C	D	E	F	G
Percentage of cut-off area	23,4	42,7	18,6	25,5	12,8	22,3	21,3
Percentage of land cover class other than open space	83,3	91,0	83,3	87,2	78,3	82,2	69,0

calculations based on delineations from RVR 2016 and data from EEA 2014

- 69 – 91 % of the cut-off area has been rededicated from open space to other land use.
- Reshaping of the Green Belts is/was long overdue.

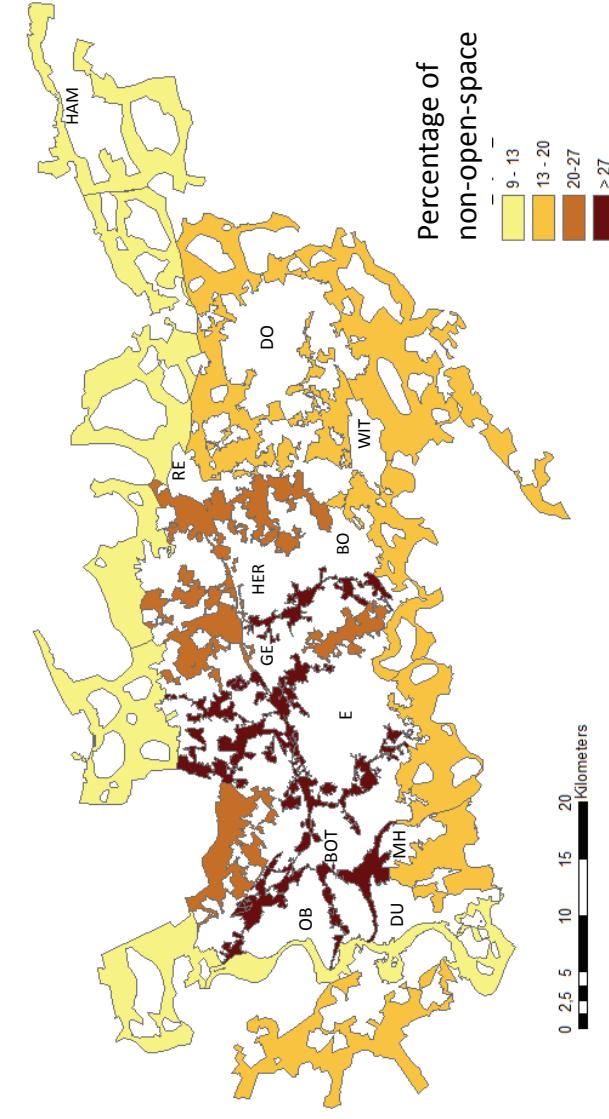
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## Green belt parts 1-23 according to the Technical Contribution to Regional Plan (2016)



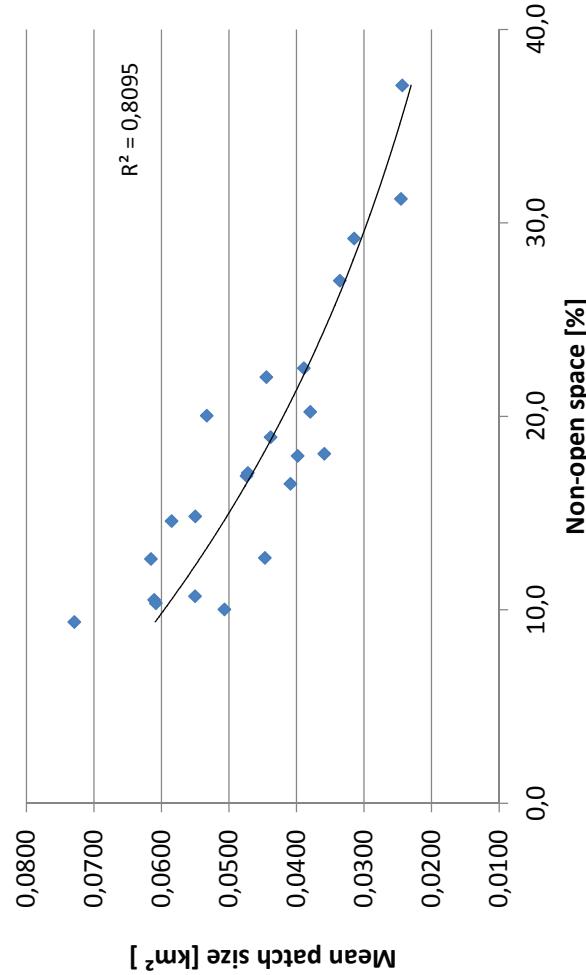
delineation of green belts according to the Technical Contribution to the Regional Plan under current discussion, RVR

## Non-Open Space within Regional Green Belts

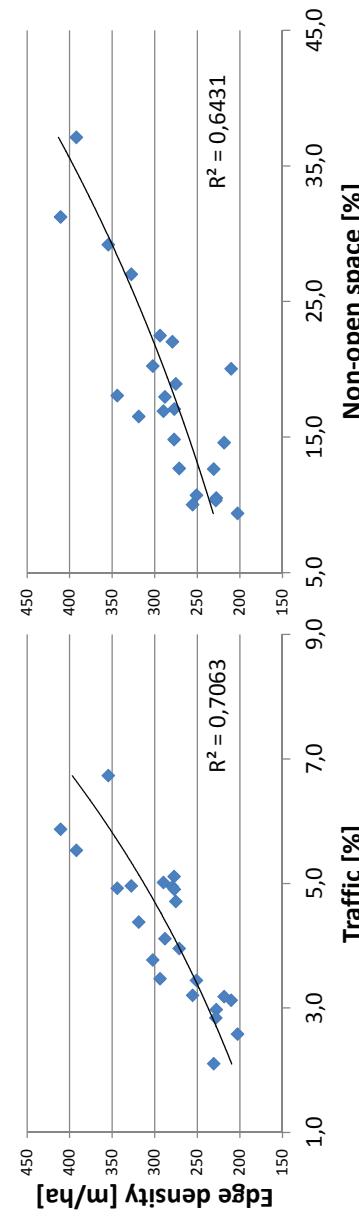


delineation of green belts according to the Technical Contribution to the Regional Plan under current discussion, RVR;  
calculations based on data from EEA 2014

## Mean Patch Size as a Function of the Green Belts' Proportion of Non-Open Space (All Green Belts)



## Edge Density as a Function of the Green Belts' Proportion of ... Traffic Areas (All Green Belts) ... Non-Open Space (All Green Belts)



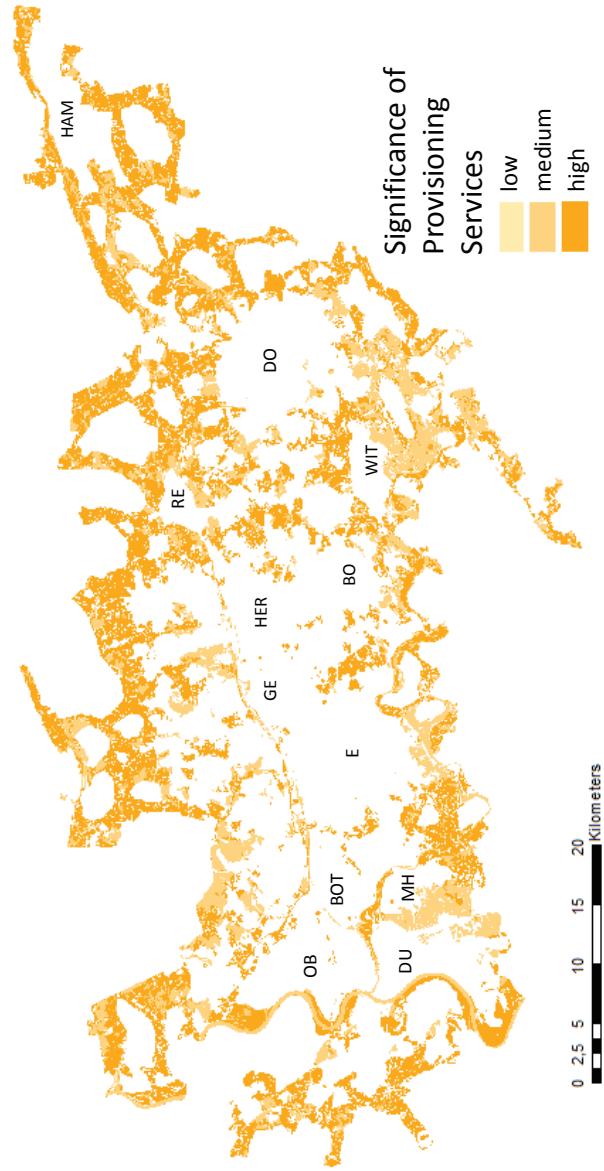
## Common Functions, Explicitly Attributed to the Regional Green Belts

Functions	Schmidt (1912)	Regional development Plan GEP (1966)	Technical contribution to Regional Plan (2016)
<i>General functions in terms of spatial organization: structuring, separating, connecting</i>			
Structuring			
Separating conflicting land uses (for example industrial and residential areas)			
Connecting			
<i>Specific functions in terms of land use and ecology</i>			
Oxygen production ("urban green lungs")			
Amelioration of air quality			
Climatic balance ( <i>klimäökologischer Ausgleich</i> )			
Social hygiene			
Public health			
Recreation			
Water production			
Forestry			
Agriculture			
Habitat			

## Provisioning and Regulating Ecosystem Services according to CICES v. 4.3

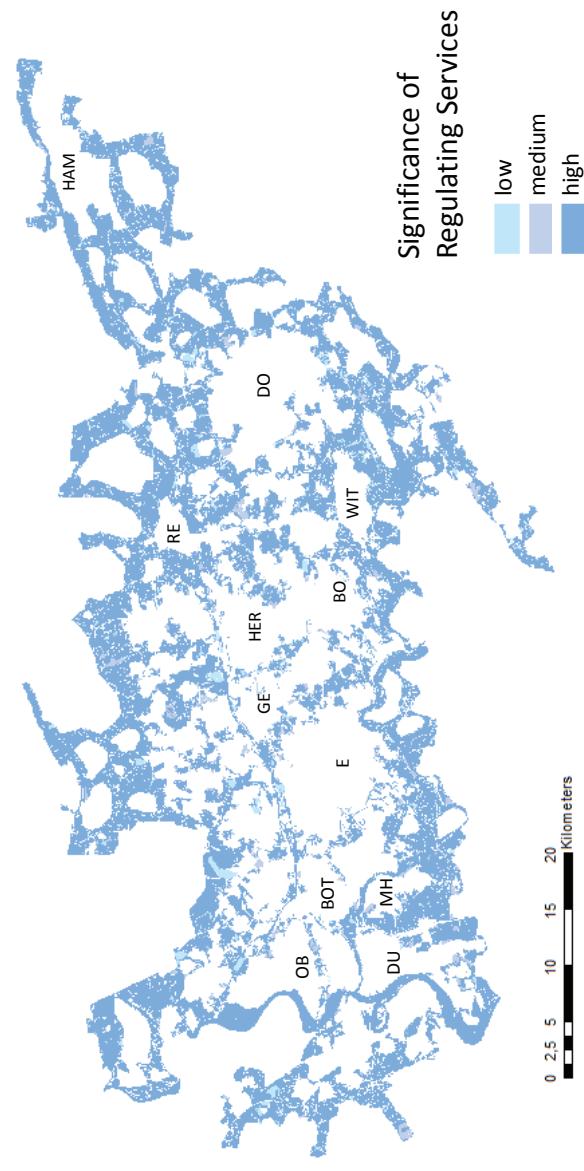
<b>Provisioning</b>	Cultivated crops, Reared animals and their outputs Wild plants, algae and their outputs Wild animals and their outputs Surface water for drinking Fibres and other materials from plants, algae and animals for direct use or processing Materials from plants, algae and animals for agricultural use Surface water for non-drinking purposes Plant-based resources
<b>Regulating</b>	Hydrological cycle and water flow maintenance Pollination and seed dispersal Ventilation and transpiration Global climate regulation by reduction of greenhouse gas concentrations Micro and regional climate regulation

## Provisioning Services. Assessment



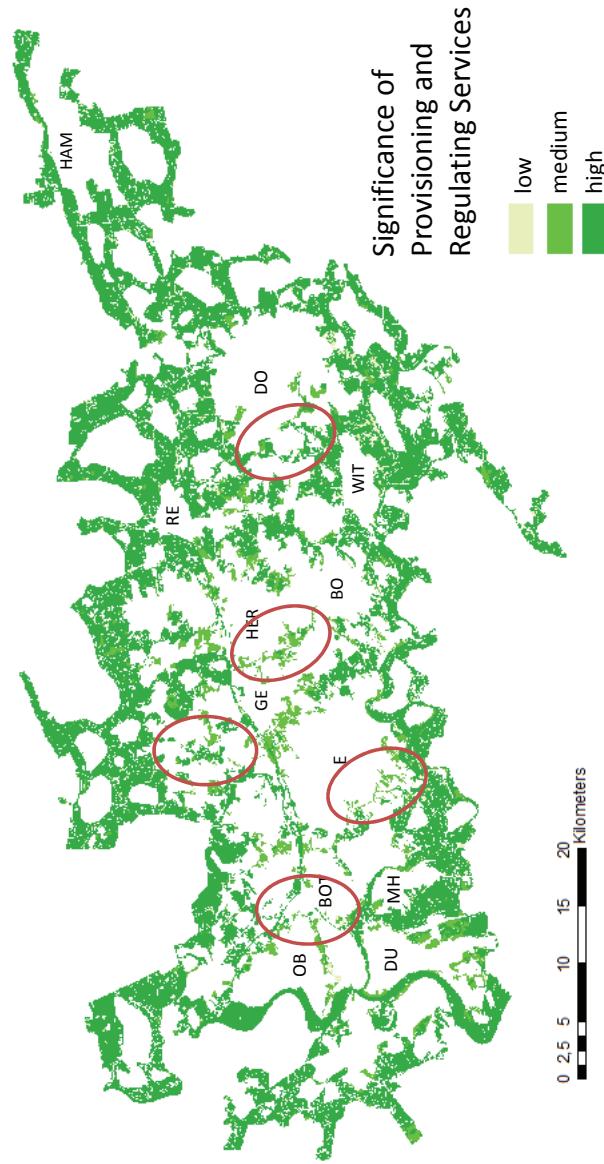
**assessment scheme Zepp et al. (2016, in press)**  
delineation of green belts according to the Technical Contribution to the Regional Plan under current discussion, RVR  
calculations based on data from EEA 2014

## Regulating Services. Assessment



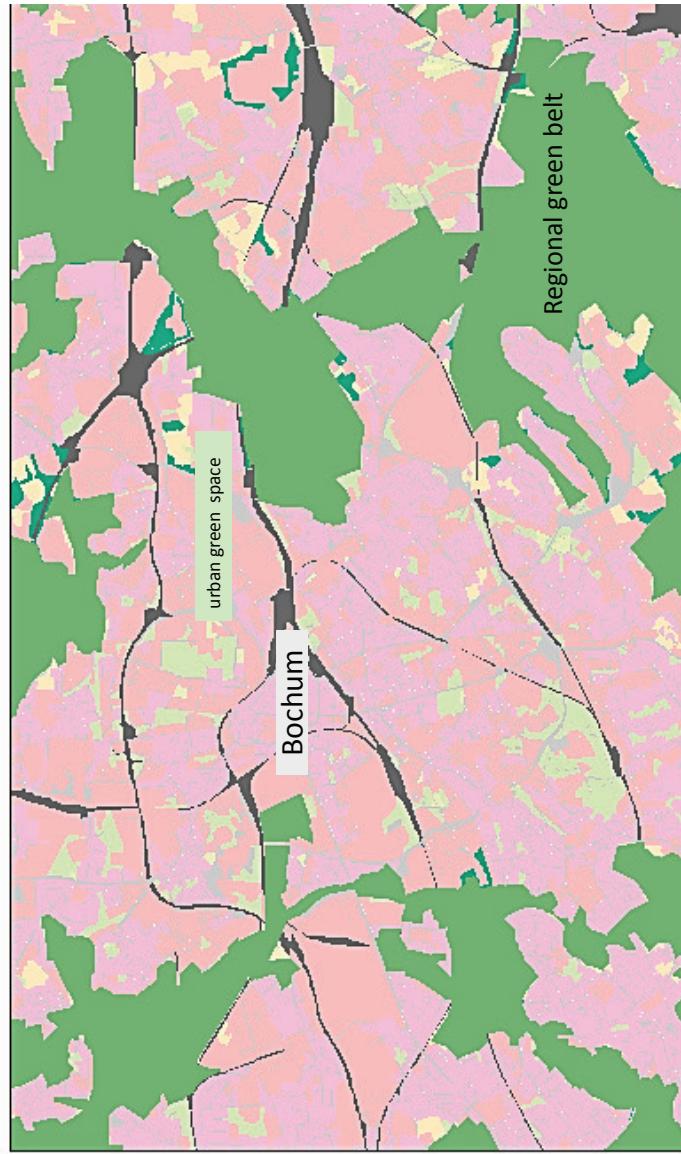
**assessment scheme Zepp et al. (2016, in press)**  
delineation of green belts according to the Technical Contribution to the Regional Plan under current discussion, RVR  
calculations based on data from EEA 2014

## Provisioning and Regulating Services. Assessment



**assessment scheme Zepp et al. (2016, in press)**  
delineation of green belts according to the Technical Contribution to the Regional Plan under current discussion, RVR  
calculations based on data from EEA 2014

## Beyond the Green Belts: Who is Responsible? „Claims“



## Conclusions

- After 50 years of formal existence, the original regional green belts are still detectable. This is a success, despite deplorable developments.
- But: They lost substantial areas to settlement and traffic.
- The loss is spatially unevenly distributed. Contiguity is threatened or lost in many places.
- Polycentrism has been a threat to the existence of the green belts. There has been a lack of coherence between the planning levels.
- Reshaping the green belts is overdue in the context of the Regional Plan under preparation and should be done on sound analyses considering their ecosystem services.
- Regional green belts have recently become even more contested environments in quest for economic development.
- In order to take into account the total green infrastructure, the ecosystem services should be analyzed in depth, covering the total conurbation and communicated extensively.
- „Nature based solutions“ may be an option to calm down conflicts .

## Literature

- EEA (European Environmental Agency) [2014]: Urban Atlas. Data and maps. URL: <http://www.eea.europa.eu/data-and-maps/data/urban-atlas> (last access:: 2 Nov. 2016).
- Erzner, F. (1995): Die regionalen Grünzüge im Ruhrgebiet. Entstehung, Nutzungen, Sicherungsmöglichkeiten. Diss. Ruhr-Univ. Bochum.
- Haines-Young, R. & Potschin, M. (2010): Proposal for a Common International Classification of Ecosystem Goods and Services (CICES) for Integrated Environmental and Economic Accounting (V1). URL: <http://www.nottingham.ac.uk/cem/pdf/UNCEEA-5-7-Bk1.pdf> (last access: 7 Nov. 2016).
- Regionalverband Ruhr (2012): Fachdialog Regionale Grünzüge. Werksatztbericht 29. Juni 2012. [http://www.metropoleruhr.de/fileadmin/user\\_upload/metropoleruhr.de/01\\_PDFs/Regionalverband/Regionaler\\_Diskurs/FD\\_Gruenzuege/Gruenzuege\\_Druckfassung\\_5\\_11-12.pdf](http://www.metropoleruhr.de/fileadmin/user_upload/metropoleruhr.de/01_PDFs/Regionalverband/Regionaler_Diskurs/FD_Gruenzuege/Gruenzuege_Druckfassung_5_11-12.pdf).
- WBGU – Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen (2016): Der Umzug der Menschheit: Die transformative Kraft der Städte. Berlin: WBGU.
- Wehling, H.-W. (2009): Kohle, Eisen und Stahl. In: Atlas der Metropole Ruhr. Vielfalt und Wandel des Ruhrgebietes im Kartenbild (edited by Prossek, A.; Schneider, H.; Wessel, H.; Wetterau, B.; Viktorin, D.) Köln, S. 24-25.
- Zepp, H., Mizgajski, A., Meß, C., Zwierzchowska, I. (2016): A Preliminary Assessment of Urban Ecosystem Services in Central European Urban areas. A Methodological Outline with Examples from Bochum (Germany) and Poznań (Poland). Berichte. Geographie und Landeskunde: 90, 67-84 .