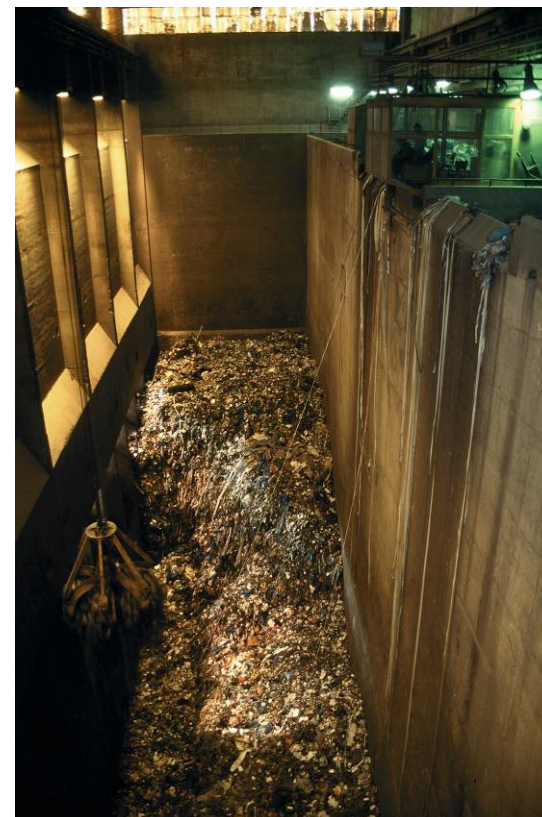


Electricity and heat from waste



Expansion of district heat 2009-2012:

More networked schools

Networked police buildings and universities

Newly networked plants

5,000 MWh/a

6,000 MWh/a

5,000 MWh/a

Additional CO₂ reduction of 4000 t

16,000 MWh/a

Currently: installed electricity generator, cooperation neighbouring cities?

Climate protection programme

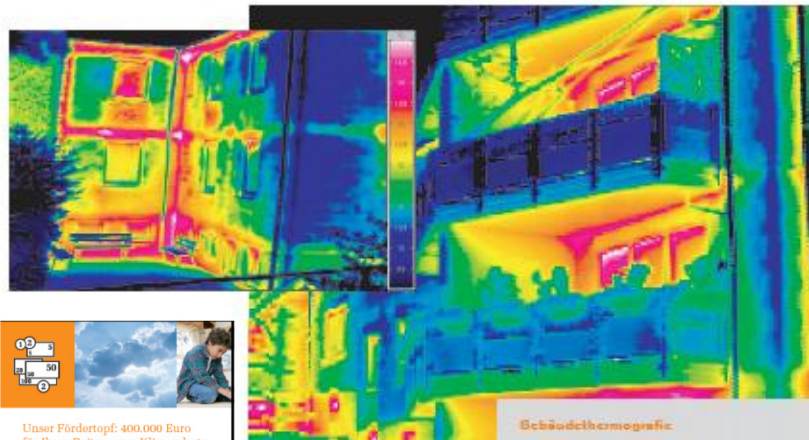
Cooperation with regional energy providers (Hagen / Lüdenscheid)



Wir machen Wärme sichtbar.

Mark-E Thermografie

More than 10,000 t CO₂ have been saved so far!



400,000,- € / a



Promotion of private buildings

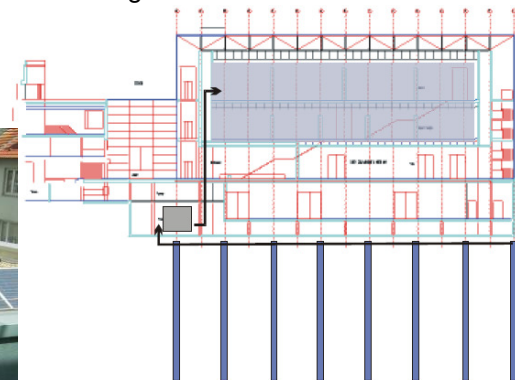
Hightech Museum - Hagen



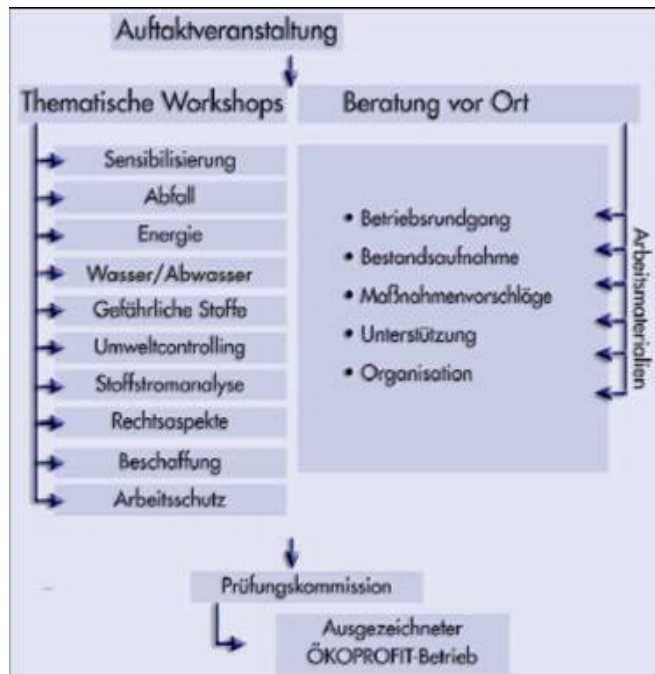
Art Quarter Hagen - Museum Emil Schumacher

Pilot project low energy buildings:

- Concrete core activation
- Geothermal power with 81 99-metre long ground spikes



Energy and resource efficiency in private enterprises



2004/2005 and 2006/2007 ECO-PROFIT

Consultancy programme for efficient management in 26 private enterprises

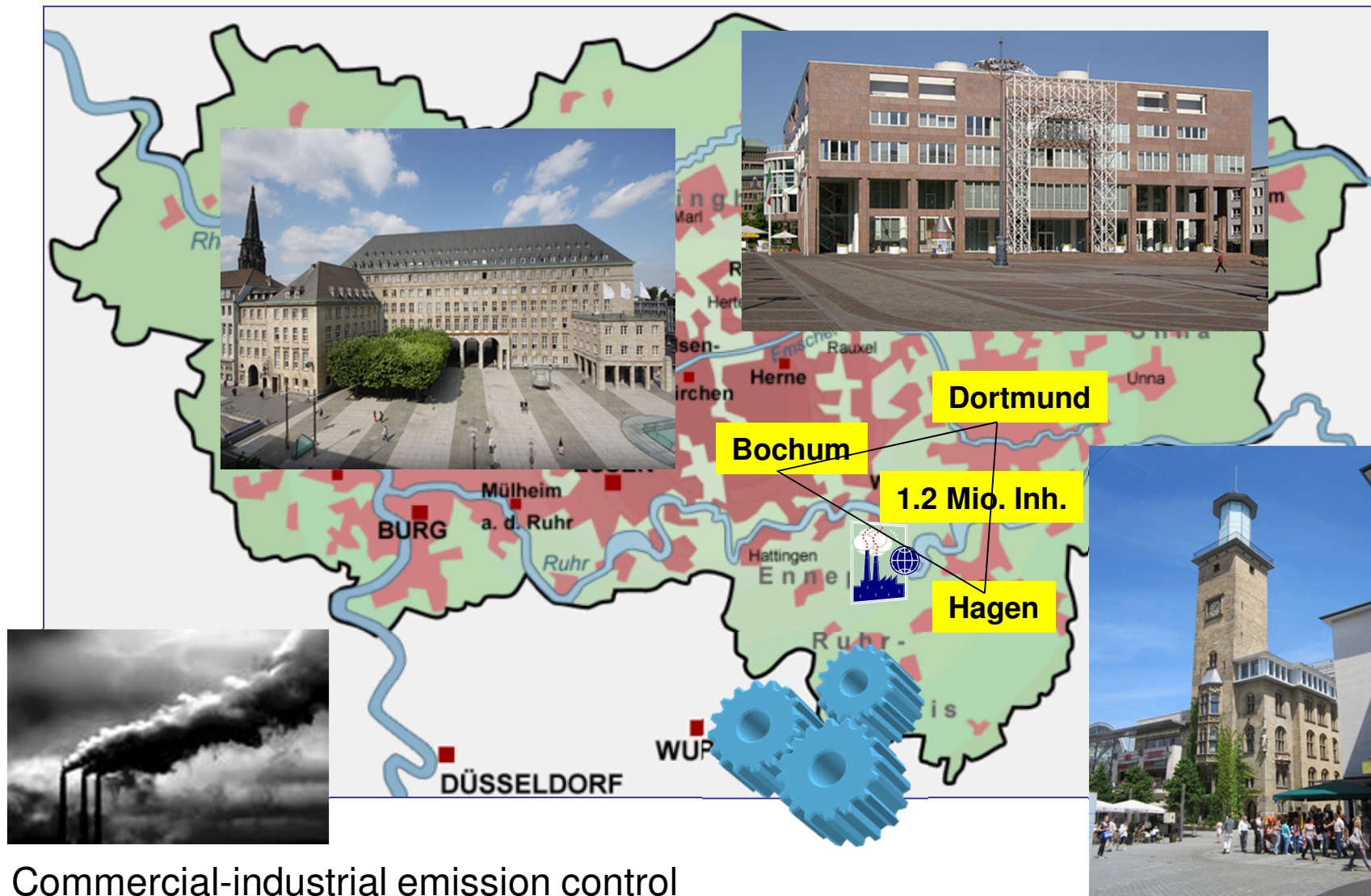
- Saving: **2800 t CO₂**
- Cost savings: 800,000 €/a
- Investment: 1.7 million €

Umweltprogramm

For example: Hagener Feinblech Service GmbH

Maßnahme	Investition	Jährliche Einsparung bzw. Nutzen	Termin
Hallenbeleuchtung über Sensor gesteuert	8.000 €	3.900 €, Einsparung von 39.000 kWh Strom	erledigt
Wirbelstrombremse für eine Haspelanlage	50.000 €	6.800 €, Einsparung von 68.000 kWh Strom	erledigt
Stapelanlage mit Permanentmagnet	2.000 €	7.400 €, Einsparung von 92.000 kWh Strom	erledigt
Schnelllaufotore für die Produktionshallen	6.000 €	4.200 €, Einsparung von 8.000 m ³ Gas	erledigt
Anschaffung einer Photovoltaikanlage	625.000 €	65.000 €, Erzeugung von 118.000 kWh Strom	2009

Bochum - Dortmund – Hagen Cooperation



Commercial-industrial emission control

Inter-municipal cooperation of the cities of Bochum, Dortmund and Hagen (Germany)

Number of newly authorized municipal plants (as of 20/12/2007):

<i>City</i>	<i>Core plants</i>	<i>Associated plants</i>	<i>Sum</i>
• Bochum	49	10	59
• Dortmund	103	47	150
• Hagen	64	4	68

- *Total*
277



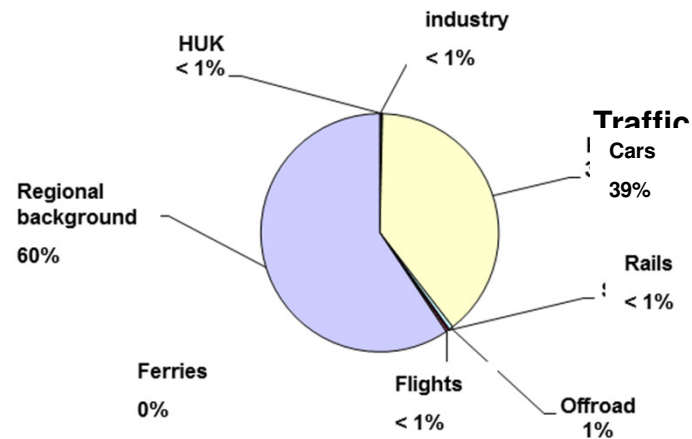
Inter-municipal cooperation of the cities of Bochum, Dortmund and Hagen (Germany)

Supervision BImSchG § 22 Plants ("small emission control")	
Dortmund	4.659
Bochum	3.874
Hagen	1.534
Total	10.067



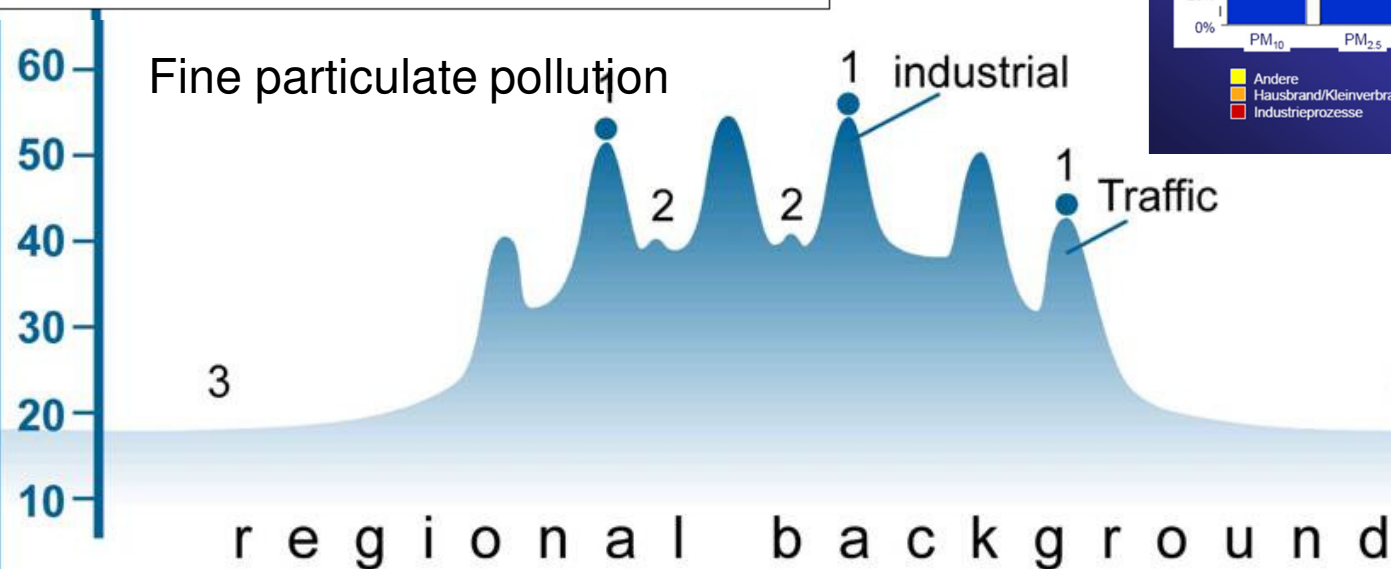
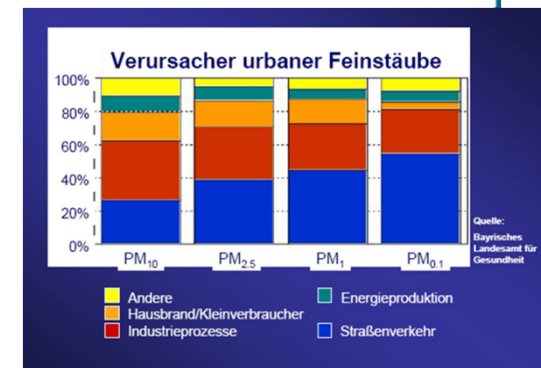
"Complaint Management"

Chart of Galenring PM10



Problem of emissions and traffic

- 1 hot-spots (traffic, industrial)
- 2 urban background
- 3 regional background

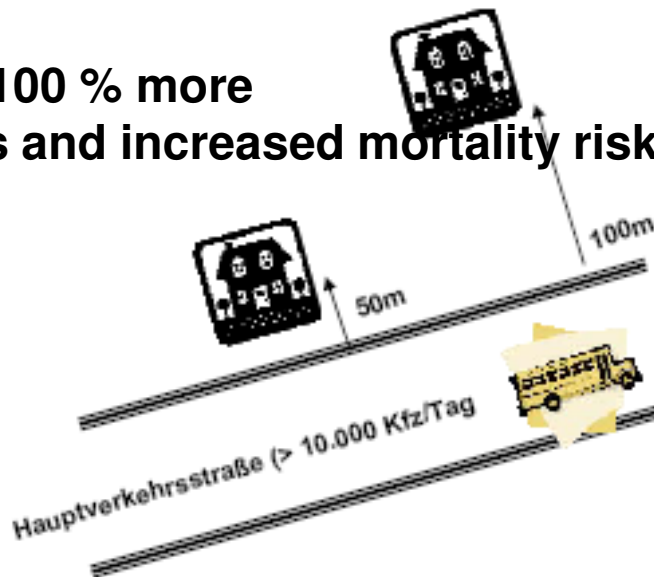


Health dangers of “street canyons”



Persons living near a “street canyon”

66 % to 100 % more diseases and increased mortality risk



Results of the case cohort study NRW (1985-1994), as well as comparison studies:

Living in 50 sq. m houses rising over a street causes the risk to die of respiratory disorders and heart and vascular diseases, against 100 sq. m houses where the proportion reaches appr. 66% (NRW study) up to 100%.

Every 7 $\mu\text{g}/\text{m}^3$ fine particulate concentration increases the likelihood to die of respiratory disorders and heart and vascular diseases by 33%.

Every 15 $\mu\text{g}/\text{m}^3$ nitrogen dioxide concentration increases the likelihood to die of respiratory disorders and heart and vascular diseases by 50%.

Source: LANUV NRW

Dynamic truck route concept

Computer-based

Software Input:

- Weather conditions
- Emissions
- Heavy traffic

Automatically connected signs



- Self-learning and
- –improving system





Green area and regulation on disc application for polluting cars

Obligation
in
2012

in
2013/
2014

since
1/7/
2014

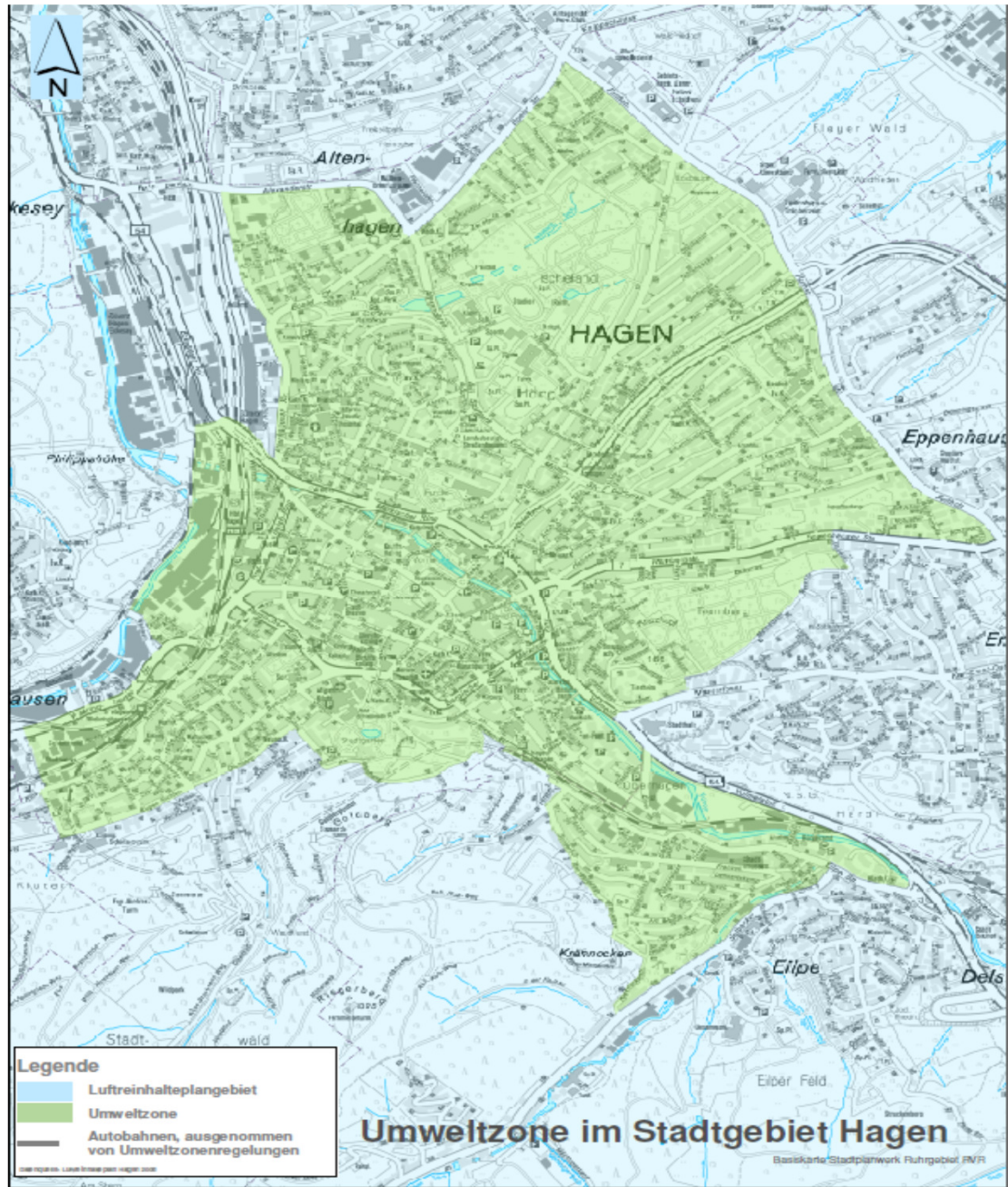
Schadstoff- gruppe / Plakette	Zugeordnete Emissionsschlüssel-Nr.			
	für Pkw		für Nutzfahrzeuge	
	Benzin	Diesel	Benzin	Diesel
 Schadstoff- gruppe 2		25 bis 29, 35,		20, 21, 22, 33, 3,
 Schadstoff- gruppe 3		72		4,
 Schadstoff- gruppe 4	14, 16, 18 bis 70, 71 bis 74, 75	32, 33, 38, 39, 43, 53 bis 70, 72 bis	30 bis 55, 60, 61	



Kennzeichnungsverordnung des Bundes

Schadstoff- gruppe	1	2	3	4
Plakette:	keine Plakette	 S-UM43	 S-UM43	 S-UM43
Anforderung für Diesel	Euro 1 oder schlechter	Euro 2 od. Euro 1+ Partikelfilter	Euro 3 od. Euro 2+ Partikelfilter	Euro 4 od. Euro 3+ Partikelfilter
Anforderung für Benziner	ohne geregeltem Kat			Euro 1 mit geregeltem Kat oder besser



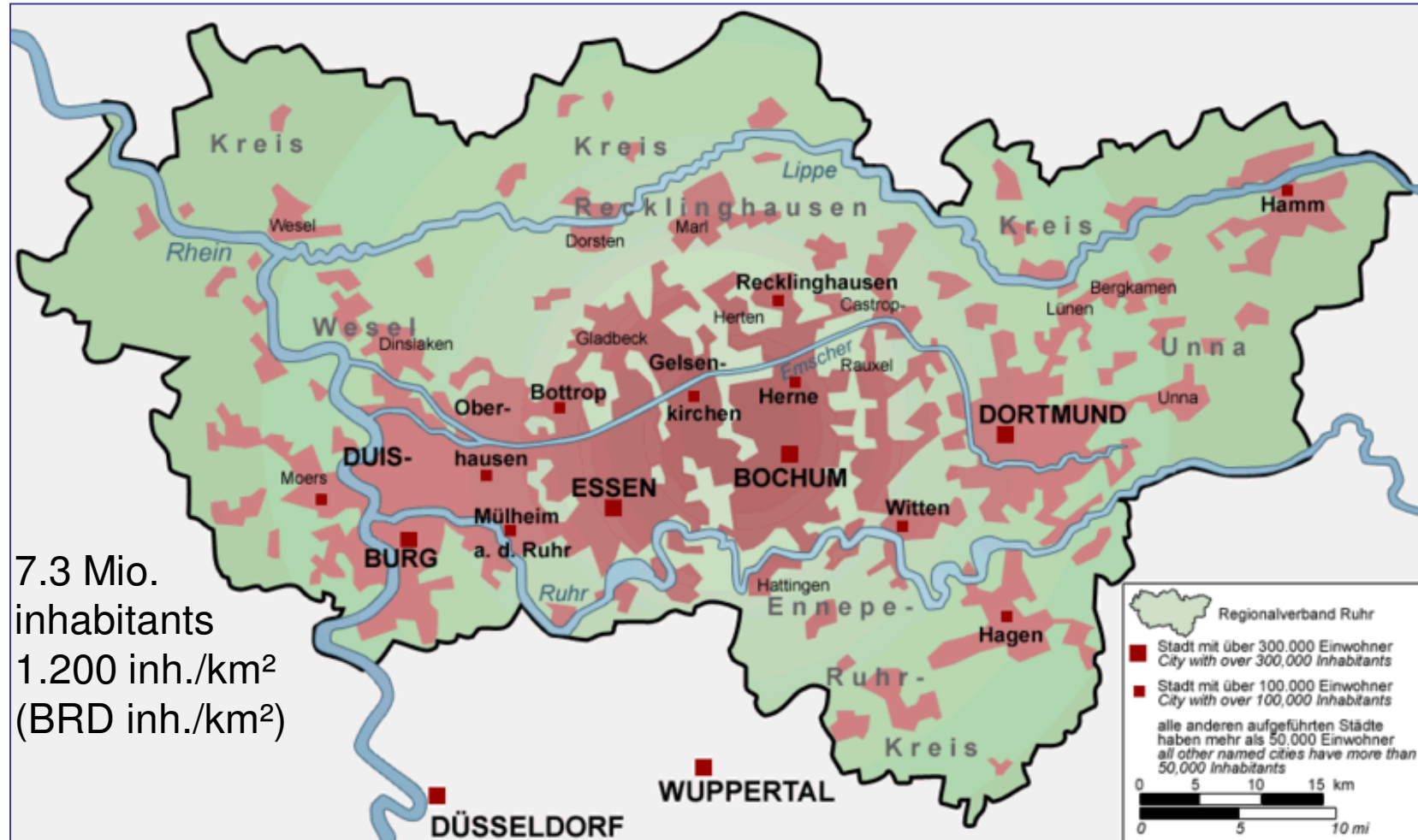


Since 1/7/2014, only cars carrying a green disc are admitted in the town centre

Ruhr Metropolis



Regionalverband Ruhr

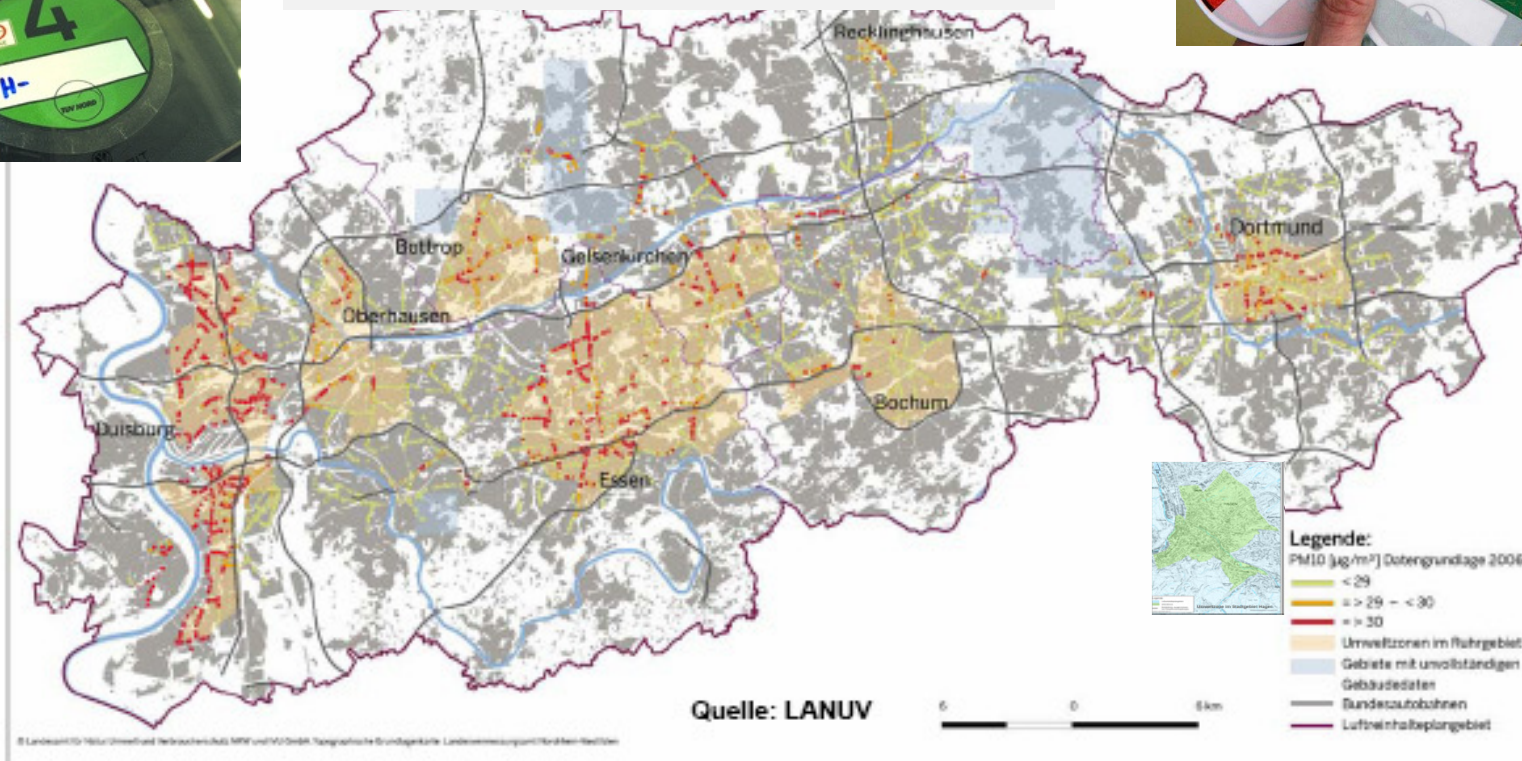


Comparisons: Bogota 41 Hagen 1,161 Rome 2,053 inhabitants/km²

“Green areas” in the Ruhr Metropolis

Cooperation in clean air planning

- similar assessment criteria
- specific procedures
- no economic distortions



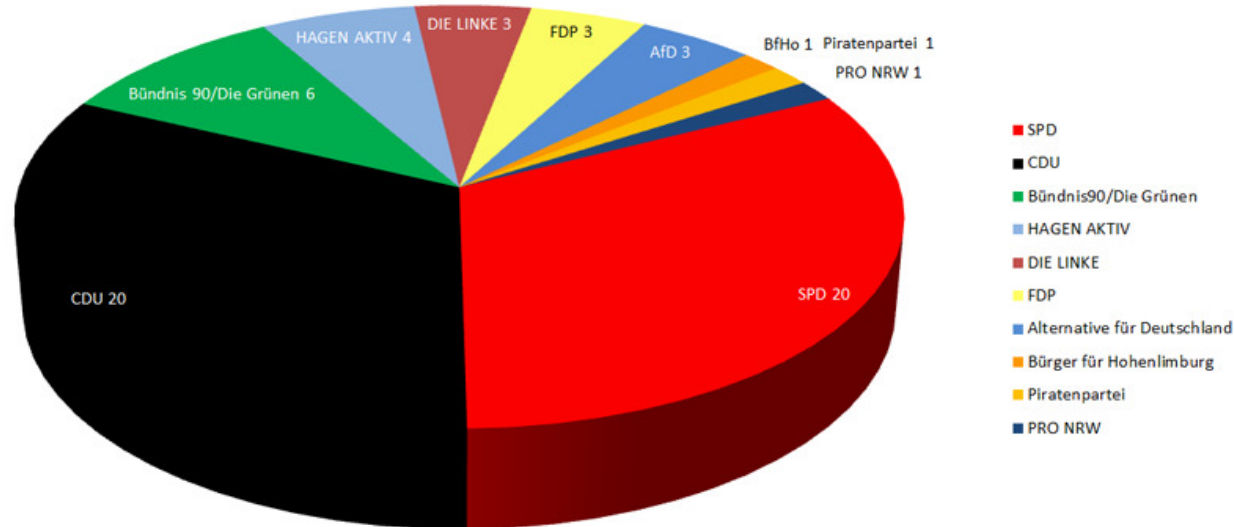
For private transport!

Politics in Hagen:

- 10 Parties / groups
- 62 Seats
- Plenty of sub-boards



Town Council of Hagen



Aktuelle Sitzverteilung im Rat der Stadt Hagen - Stand: 9. Juli 2014 (Grafik: Michael Kaub)



Committee on the Environment

Political collaboration in the Ruhr Metropolis

Figures concerning the composition of the 13th general meeting of Ruhr's regional association (RVR)

Beforehand 71 seats
Now 138 seats
No threshold
Additional costs 800,000,-€ per year
Capacities?

