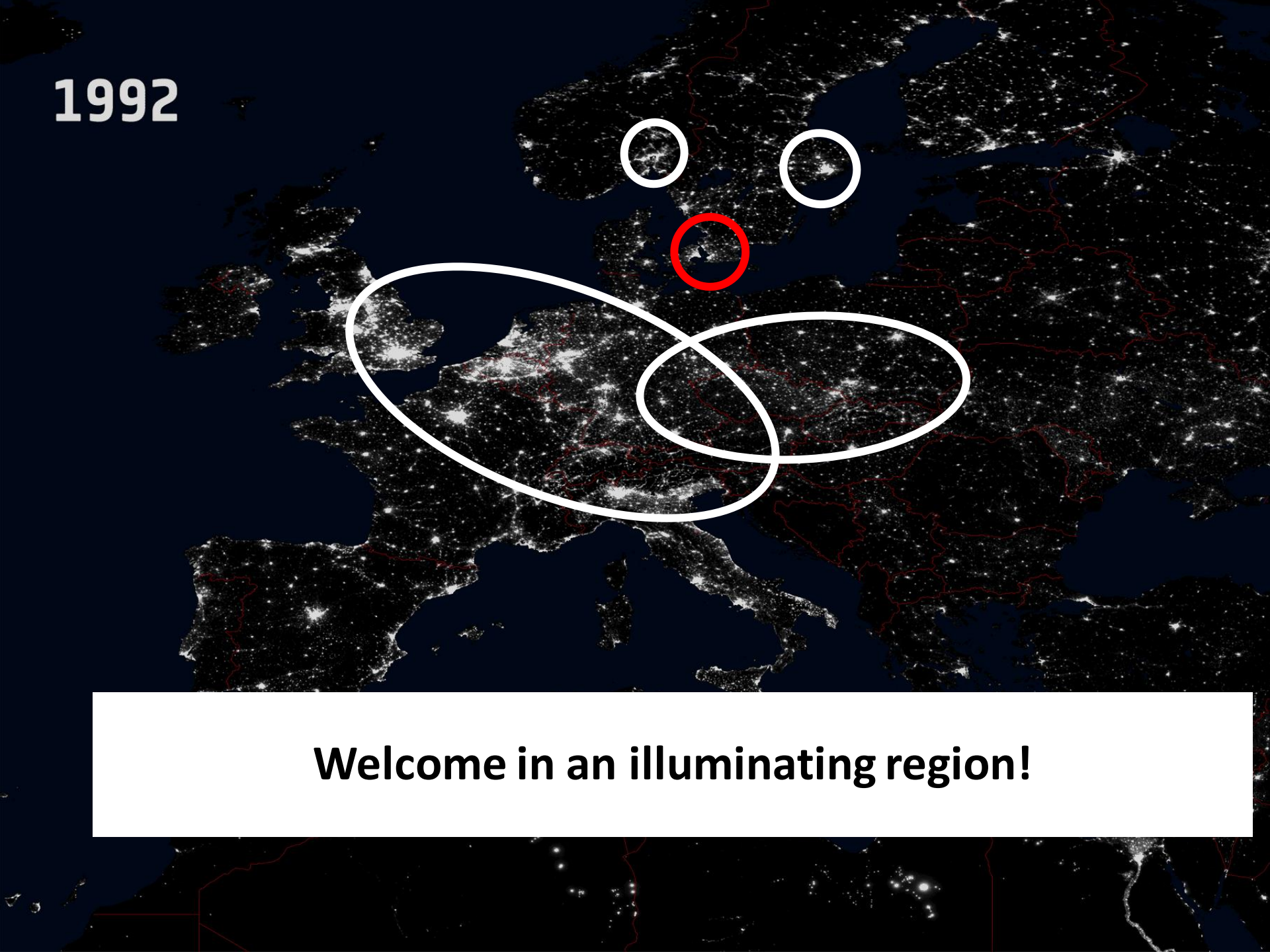
Growing Metropolitan Regions in Northern Europe: The needs for better transport infrastructure

Dr. Bernd Rohwer
Professor at Kiel University
5th of October, 2012, Helsingborg/Sweden



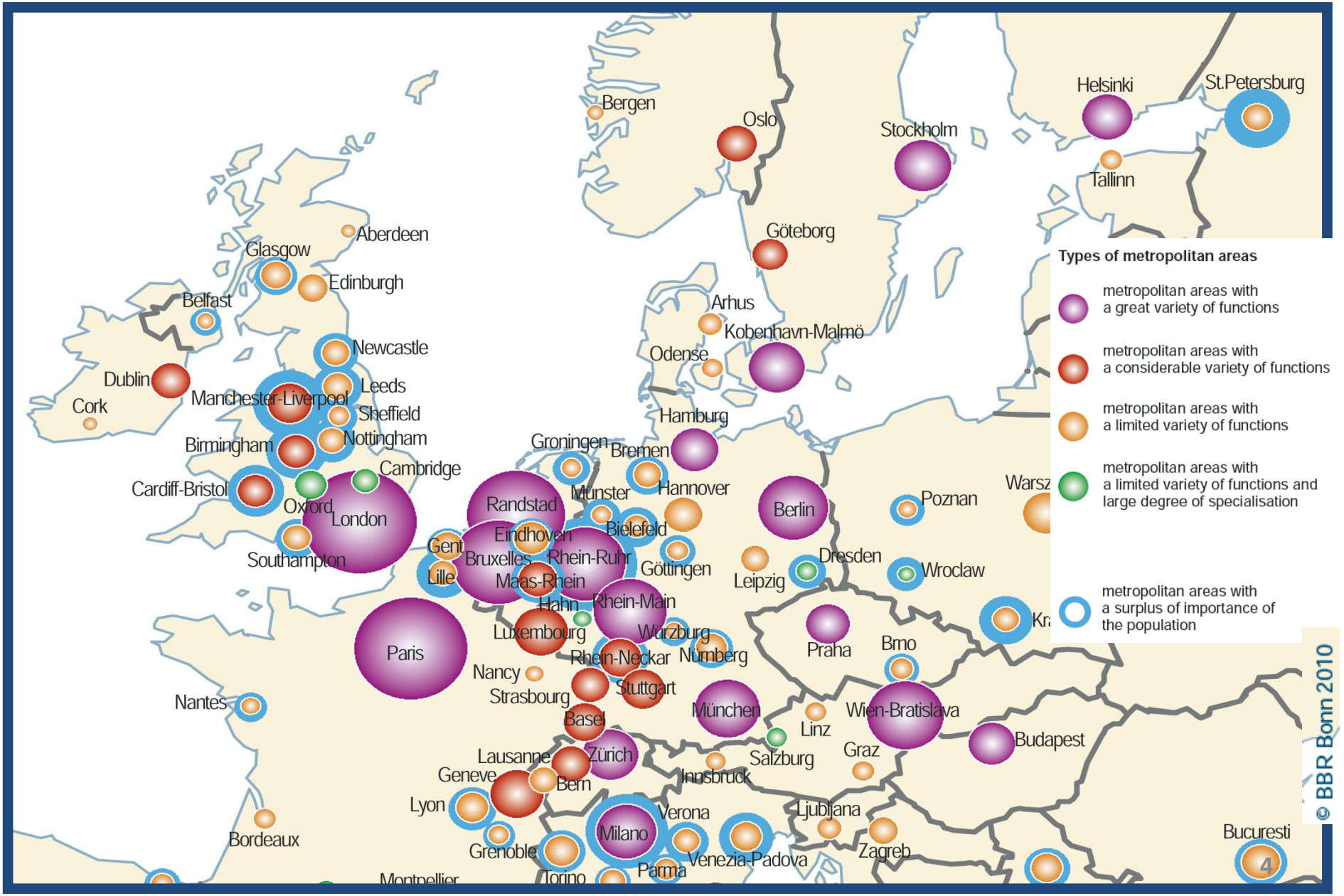
Welcome in an illuminating region!

Northern Europe high ranked for competitiveness …

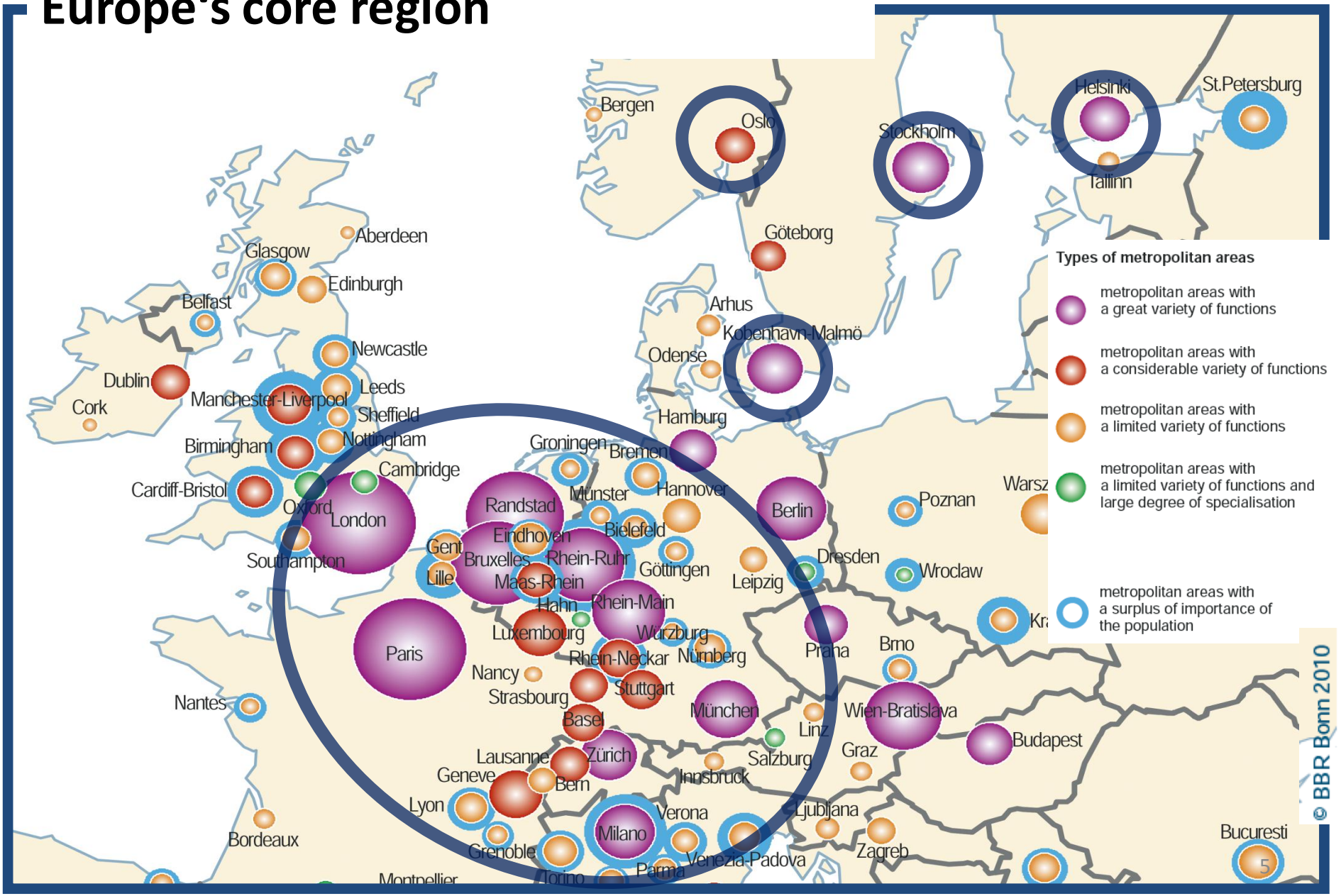
Global Competitiveness Index 2011-2012

Country/Economy	Rank/144	Score (1–7)	Rank among GCI 2011–2012 sample	GCI 2011–2012 rank
Switzerland	1	5.72	1	1
Singapore	2	5.67	2	2
Finland	3	5.55	3	4
Sweden	4	5.53	4	3
Netherlands	5	5.50	5	7
Germany	6	5.48	6	6
United States	7	5.47	7	5
United Kingdom	8	5.45	8	10
Hong Kong SAR	9	5.41	9	11
Japan	10	5.40	10	9
Qatar	11	5.38	11	14
Denmark	12	5.29	12	8
Taiwan, China	13	5.28	13	13
Canada	14	5.27	14	12
Norway	15	5.27	15	16

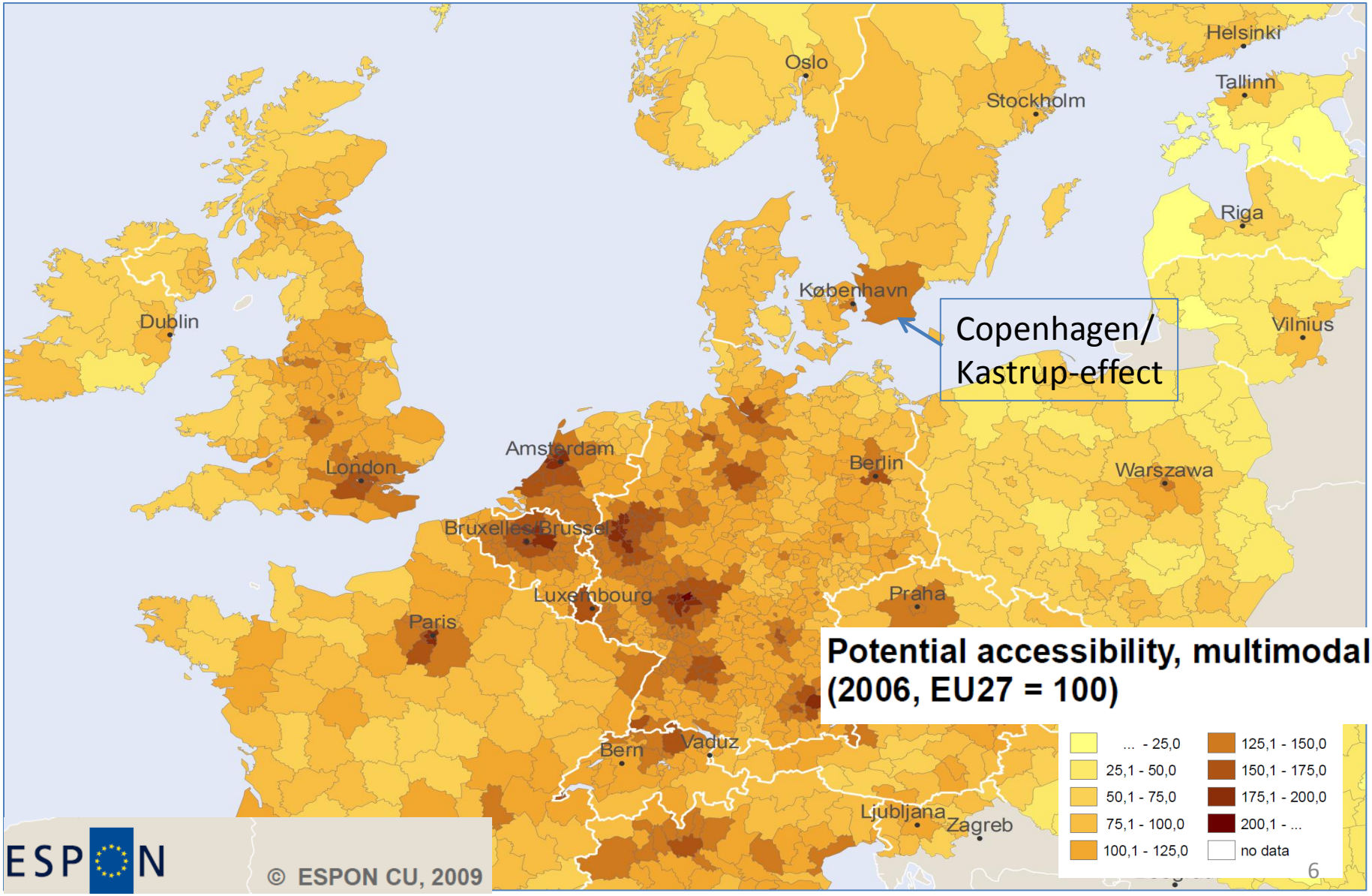
Northern Europe‘s metropolitan regions: strong …



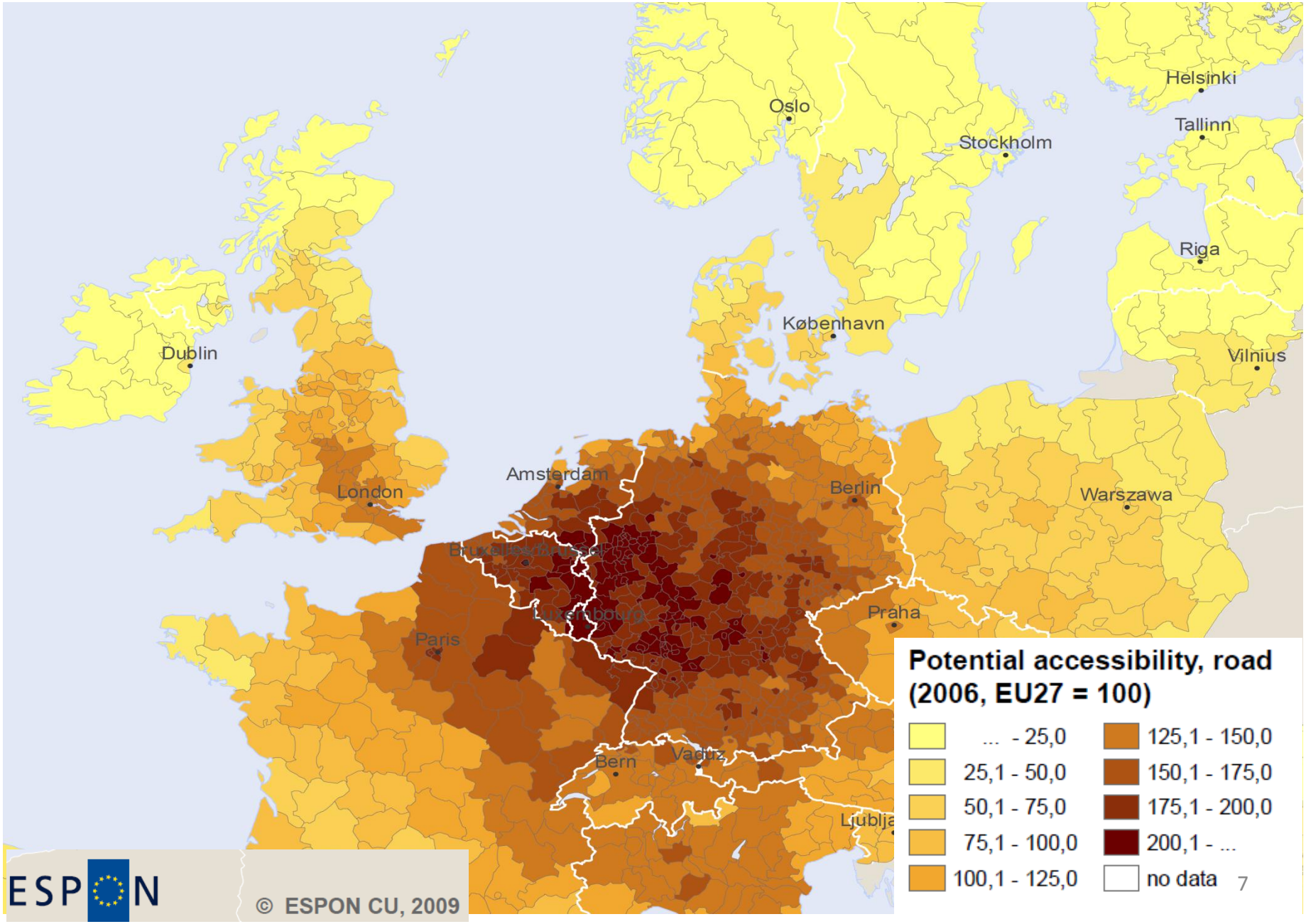
… but not optimally connected with Europe‘s core region



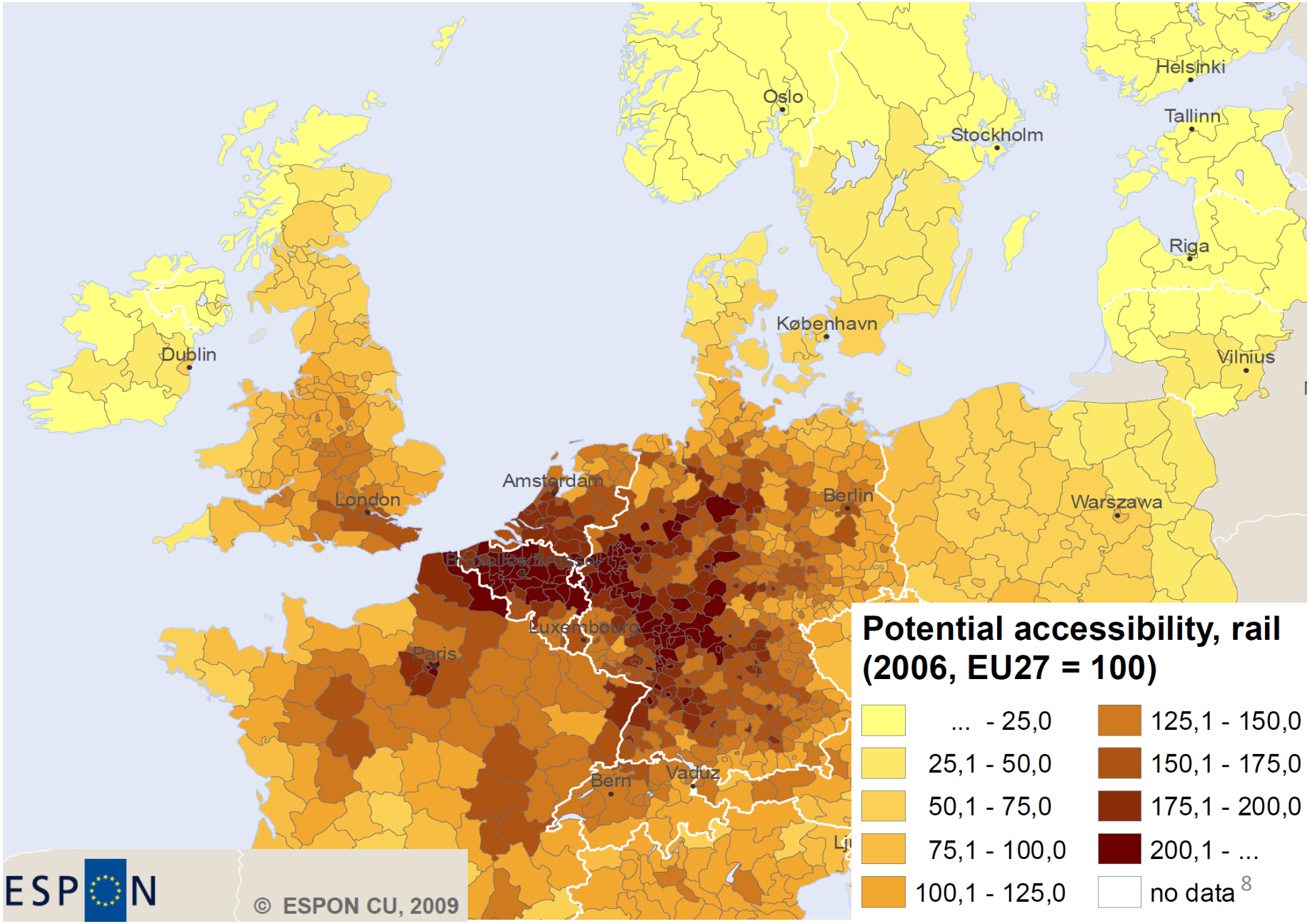
Today‘s main location handicap in Northern Europe: the inferior trans-regional accessibility



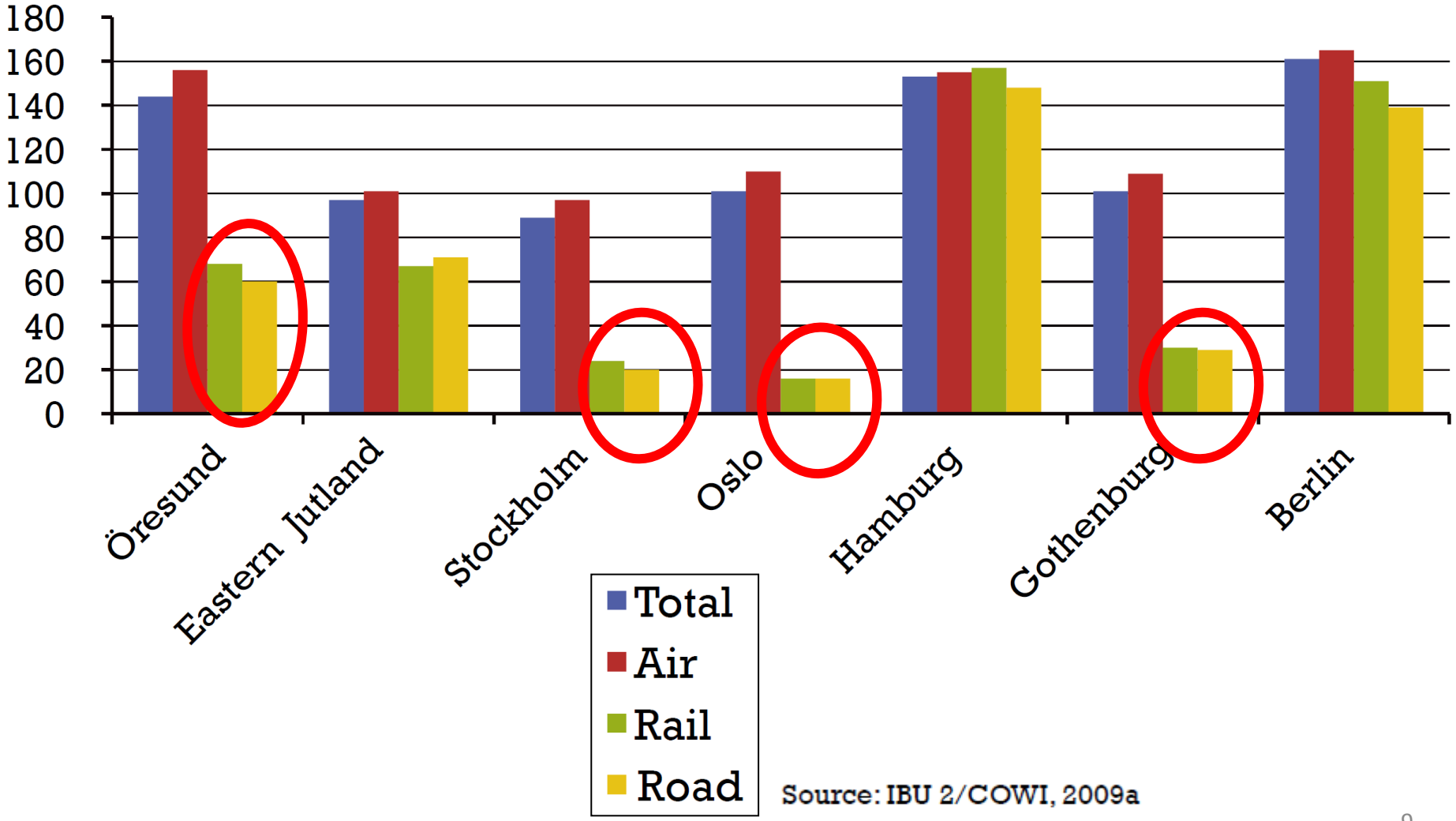
… especially by car



… and by train


Helsinki
Oslo
Tallinn
Stockholm
Riga
København
Dublin
Vilnius
Amsterdam
London
Berlin
Warszawa
Luxembourg
Paris
Bern
Vaduz
Potential accessibility, rail (2006, EU27 = 100)
... - 25,0
25,1 - 50,0
50,1 - 75,0
75,1 - 100,0
100,1 - 125,0
125,1 - 150,0
150,1 - 175,0
175,1 - 200,0
200,1 - ...
no data
© ESPON CU, 2009

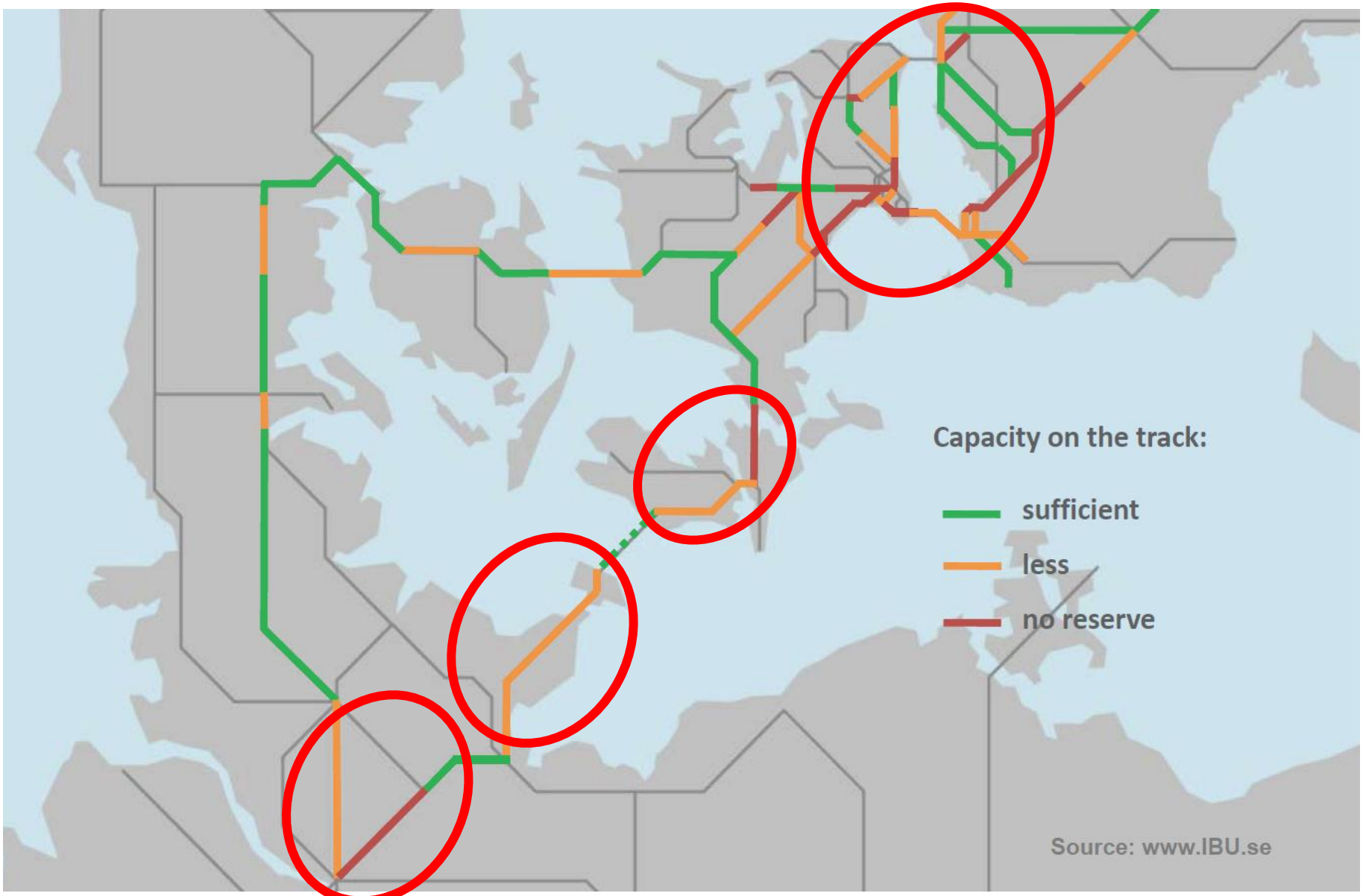
Accessibility index of selected European Regions 2001

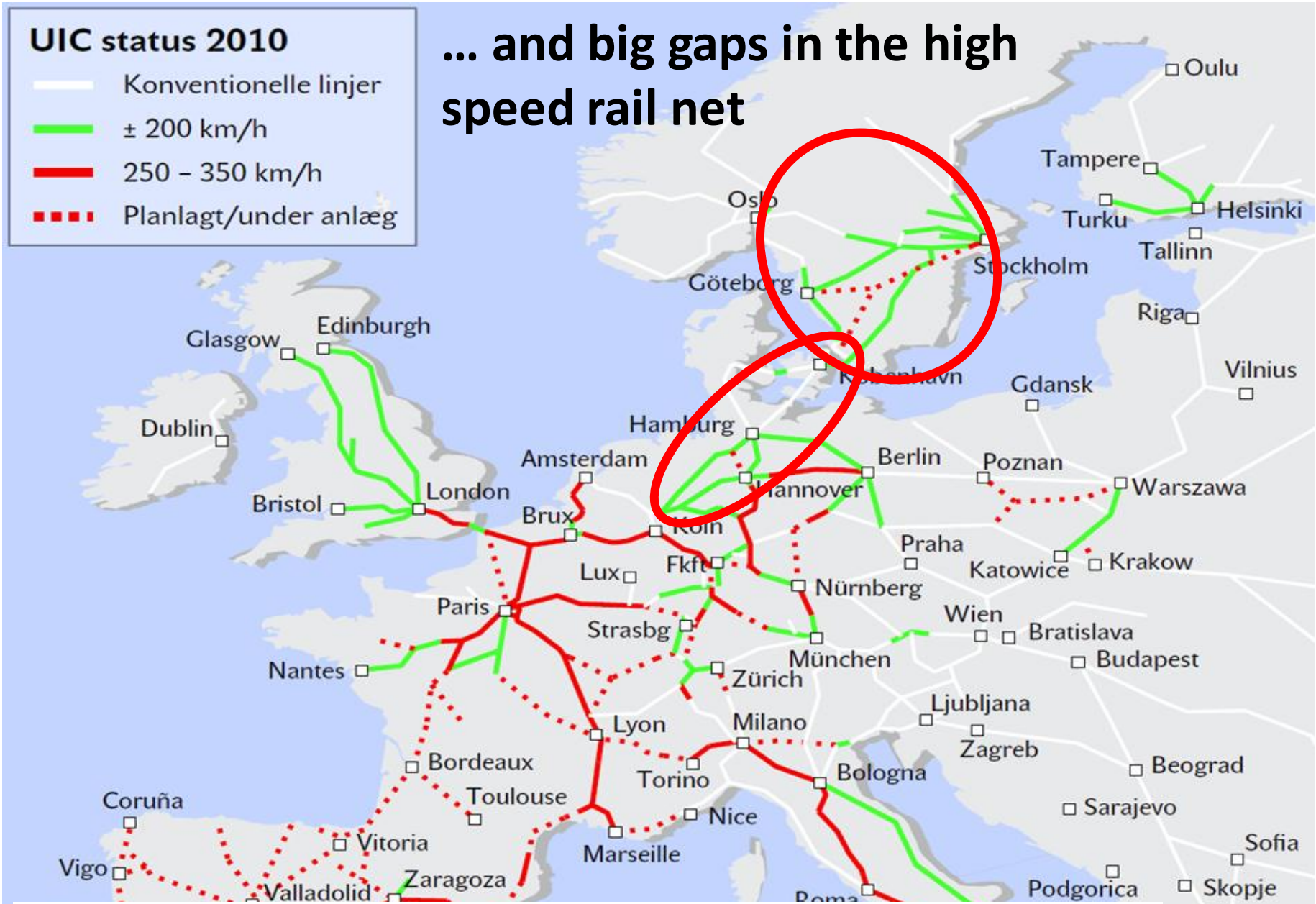


Source: IBU 2/COWI, 2009a

Bottlenecks between Central and Northern Europe on roads …

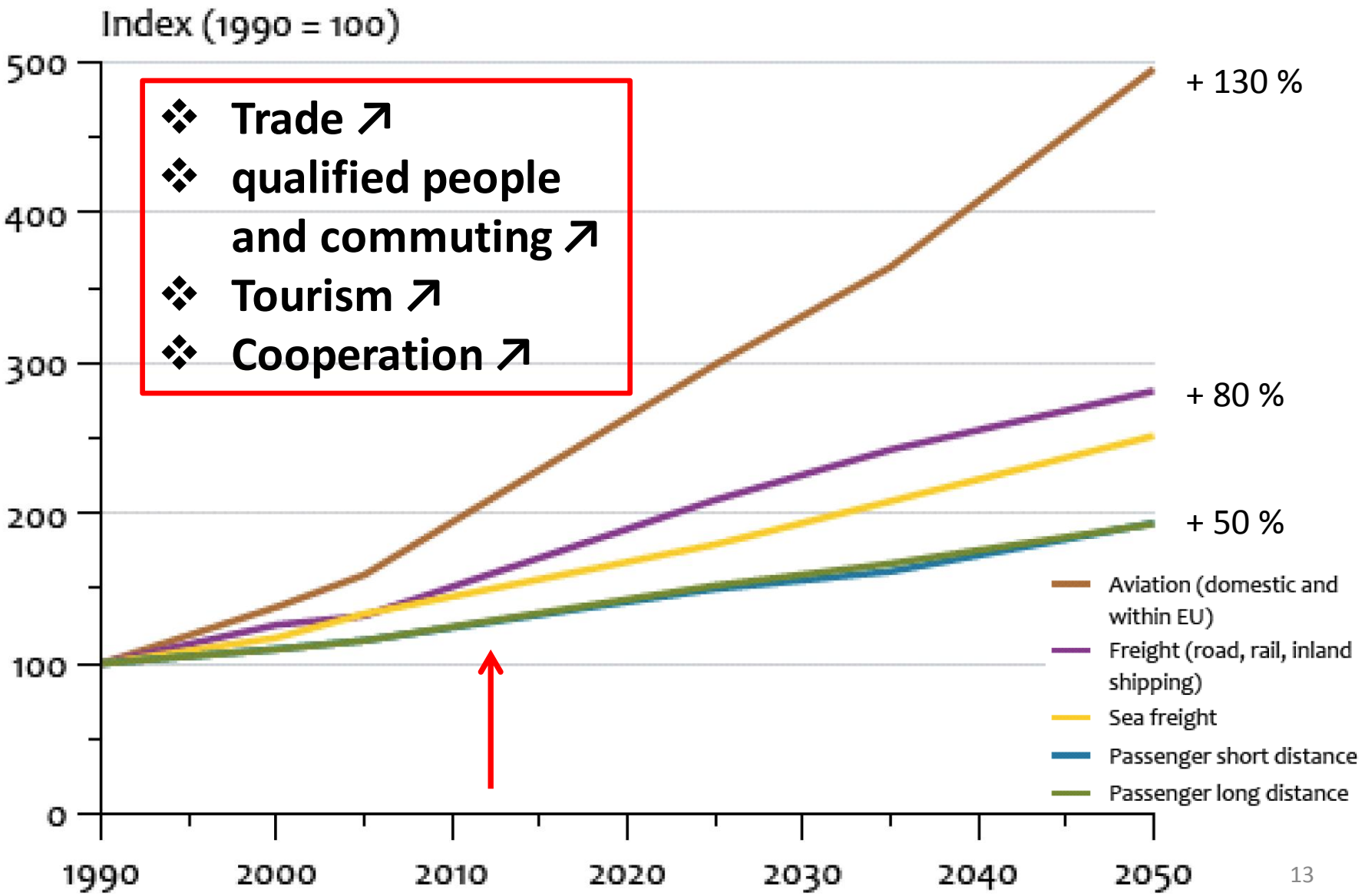
… and especially on the rails





Figur 57. EU's Trans-Europæiske Net med de 6 prioritetskorridorer (i rød) hvor navnlig anlæg af højhastigheds-baner dominerer. På kortet er indtegnet en mulig nordeuropæisk korridor (i blå). Grundkort: UIC 2010.

Bottleneck Problems will further increase:
EU „Business as usual“-Scenario until 2050

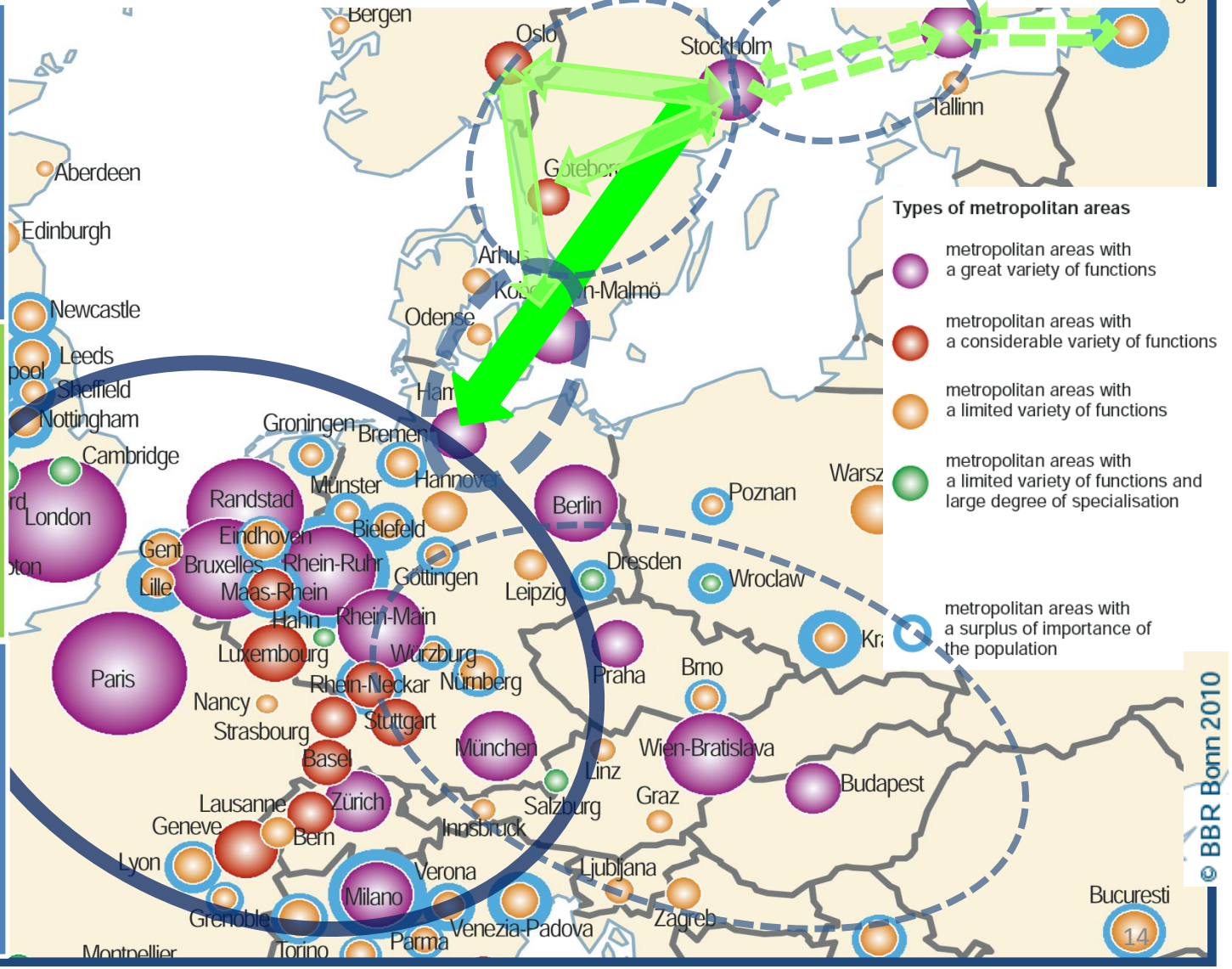


Solving the increasing bottleneck problems needs a strong und convincing Vision: A well connected North European Corridor for Growth, Innovation and Sustainability

Ongoing fast growing Passenger and Freight Traffic (increasing bottlenecks)

Sustainabilty requires low-energy and low-carbon transport systems (esp. Railway)

More favourable cost/benefit ratio for new and efficient transport networks (esp. Railway)

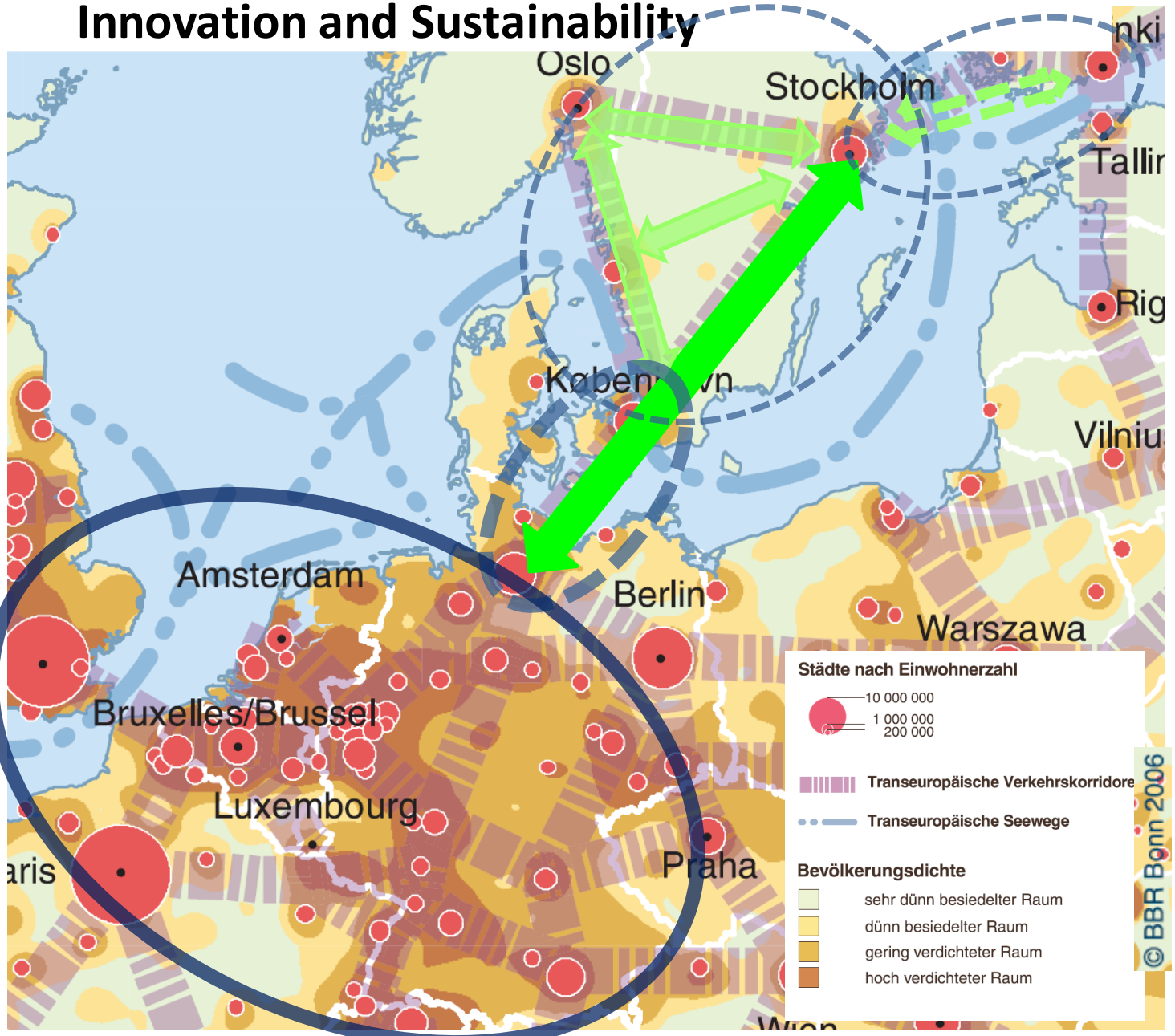


Regional-Economic Megatrends support our Vision for a well connected North European Corridor for Growth, Innovation and Sustainability

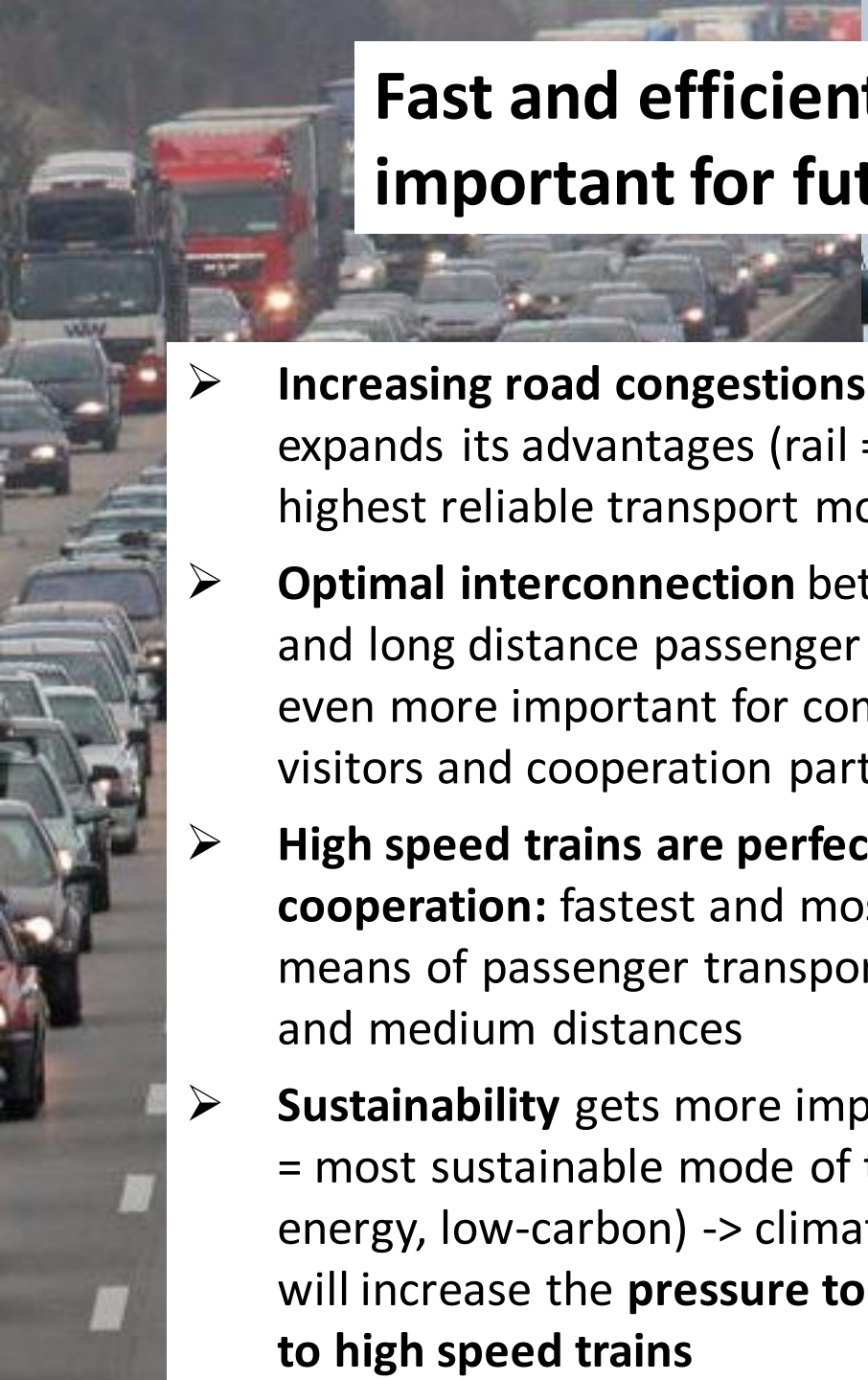
Metropolitan Regions = engines for growth and innovation

Metropoles grow towards the peripheries following the transport corridors

Cooperation between strong metropolitan regions supports growth and innovation



Fast and efficient railway connections get more important for future regional development



- **Increasing road congestions**: railway expands its advantages (rail = all in all the highest reliable transport mode)
- **Optimal interconnection** between regional and long distance passenger traffic: will get even more important for commuters, visitors and cooperation partners
- **High speed trains are perfect for regional cooperation:** fastest and most effective means of passenger transport for short and medium distances
- **Sustainability** gets more important: railway = most sustainable mode of transport (low-energy, low-carbon) -> climate protection will increase the **pressure to shift from air to high speed trains**

A high speed rail network connects the northern metropolitan regions of DK, S, NO and Hamburg to one well connected green growth and innovation corridor

- Fast passenger trains connect the metropolitan regions **promoting cooperation, commuting, tourismus, science and technology transfer, cultural exchange**
- Regional and trans-regional trains systems can be **optimally linked** for comfortable commuting
- New high speed routes and modernization of existing routes open **capacities for faster freight transports**

Look at profound strategy papers e.g. by

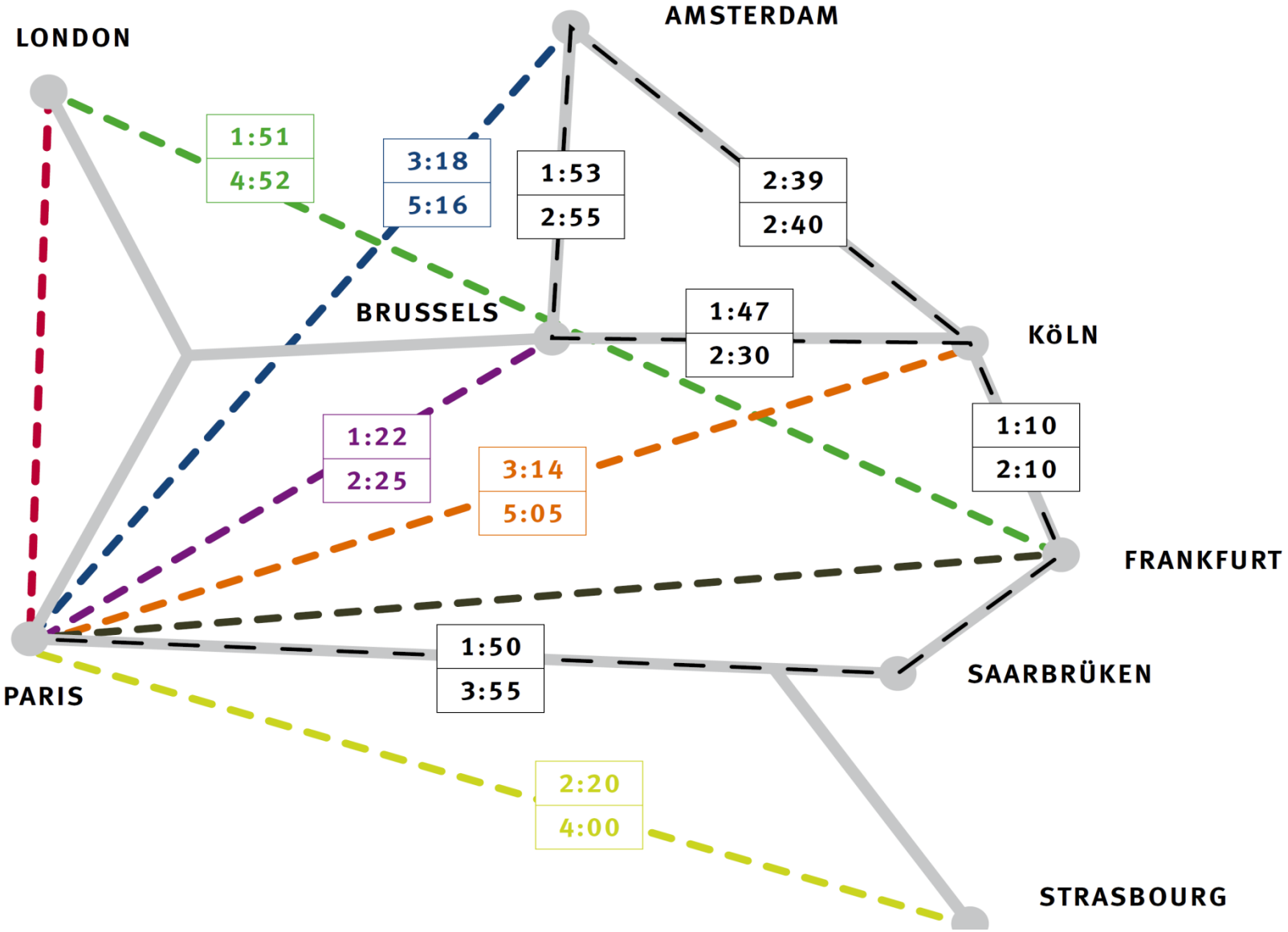
High Speed Trains can connect the Nordic Metropolitan Regions to one Green Growth and Innovation Corridor

	Today	Med Europa-/ Götalandsbanan	Change in %
Köpenhamn-Stockholm	5:00	2:35	-48%
Hamburg-Stockholm	9:30	4:15	-56%
Hamburg-Köpenhamn	4:31	1:40	-63%
Jönköping-Malmö	2:28	1:20	-46%
Göteborg-Jönköping	1:54	0:39	-67%
Linköping-Göteborg	3:54	1:19	-60%
Köpenhamn-Göteborg	3:52	1:55	-52%
Helsingborg-Stockholm	4:40	2:11	-53%

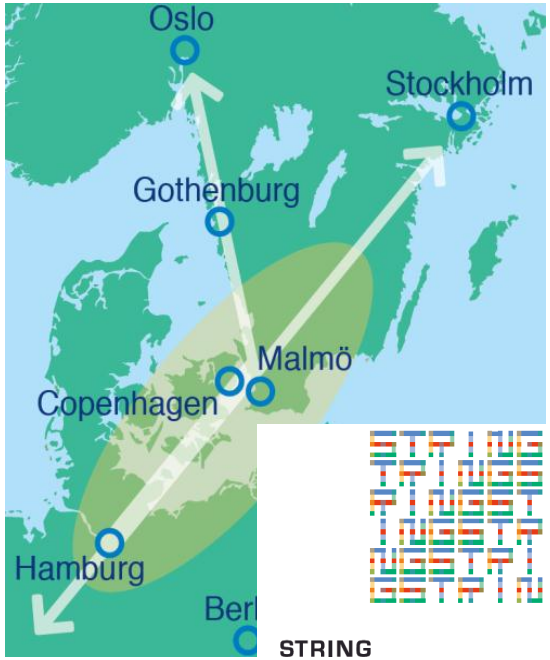
EUROPA

KORRIDOREN

Journey times between West European Cities: 1989 (figures below) and 2009 (figures above)



Initiatives and Partners for a Northern Growth and Innovation Corridor (incomplete)



STRING

REGION SKÅNE

REGION SJÆLLAND

EUROPA KORRIDOREN

REGION Region Hovedstaden

Den Skandinaviska Arenan

OSLO regionen
www.osloregionen.no

STOCKHOLM REGION EU·OFFICE

FBBC
FEHMARNBELT BUSINESS COUNCIL

Femern Bælt Fehmarnbelt REGION

norden

HanseBelt
Region mit Rückenwind

Fehmarnbelt Region
Sjælland · Plön · Ostholstein · Lübeck

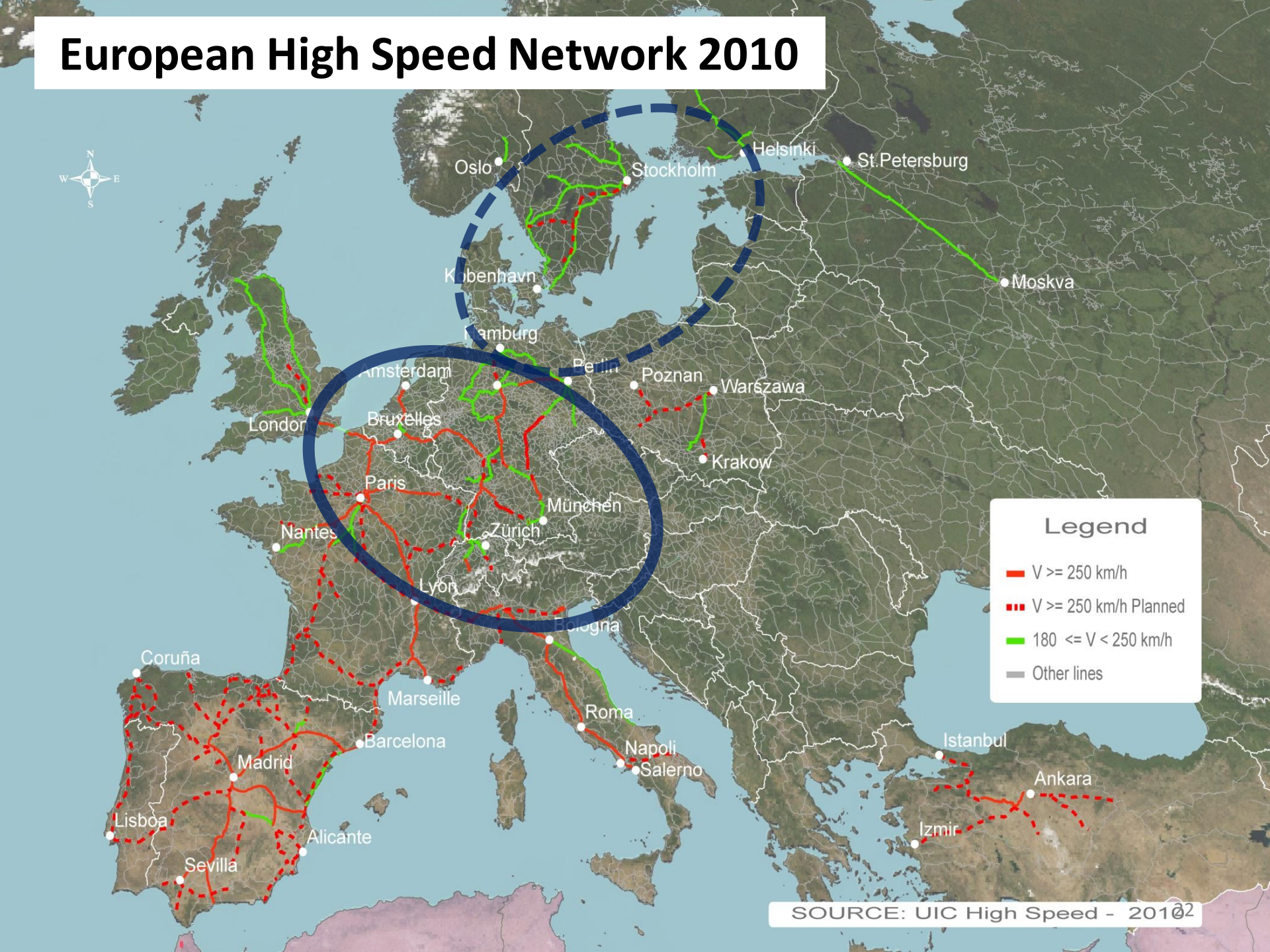
ÖRESUNDSKOMITEEN

IBU-Öresund

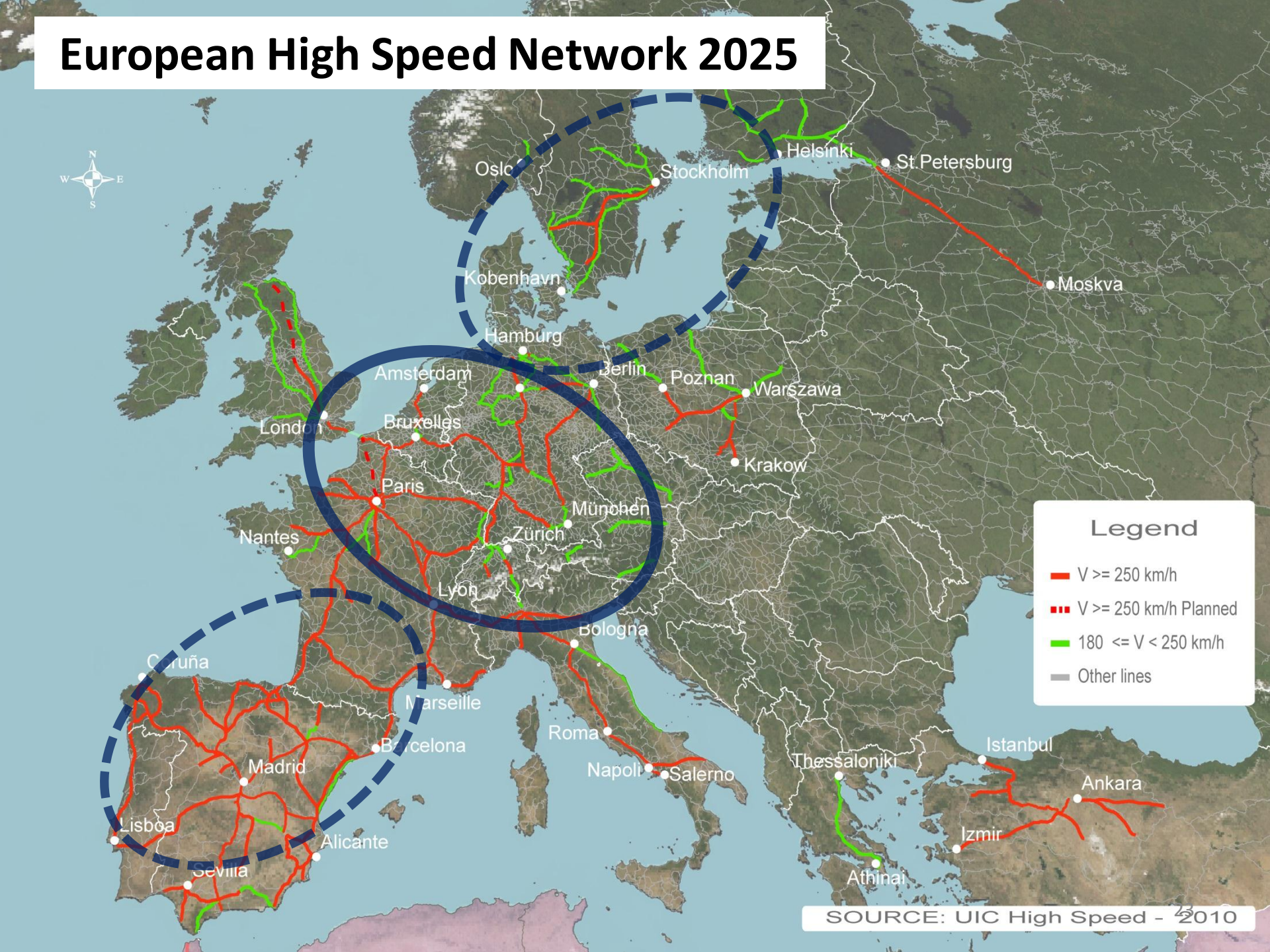
EU White Paper (March 2011) demands for a switch towards new rail systems

- Between cities **50% of the middle-distance passenger and freight transports** shall switch from road **to rail** and ship
- Until 2050 the **majority of passenger transports** on routes of >300 km distance shall take place on **rail**
- **Completion of an European high speed rail network by 2050. Tripling the length of the HSR network by 2030 and maintainance of a dense railway network in all Member States**
- Until 2050 **50% of freight transports** on routes of >300 km distance shall take place on rail and ship (2030: 30% share)
- Development of an efficient EU-wide core net of transport corridors allowing an intermodal change at the expense of the road sector until 2030
- Integration of all airports within the EU preferable in a high-speed rail network and sufficient integration of all seaports in the core rail freight networks and if possible integration in the inland waterways system

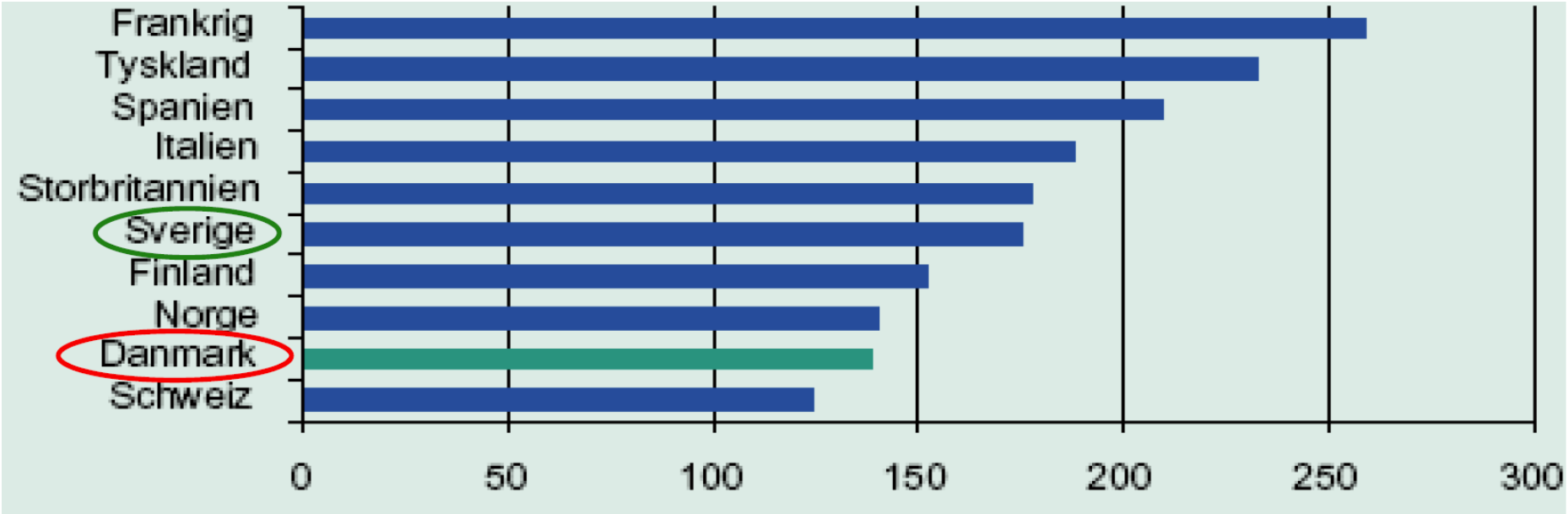
European High Speed Network 2010



European High Speed Network 2025



Maximum railway speed in European countries (km/h)



Institut for Transport DTU

Opportunity Cost of Inaction: High-Speed and High Performance Passenger Rail in the United States

APTA AMERICAN PUBLIC TRANSPORTATION ASSOCIATION

July 2012

The Benefits of Building HPPR

(Millions of USD—2012 Present Value)

	Highway Delay Savings	Road Costs to Achieve Same Delay Savings	Emissions Savings	Airport Delay Savings	FAA Spending Savings	HSR User Benefit	Transportation Benefits
California	$3,237	$12,950	$966	$9,908	$4,652	$20,900	$52,613
Chicago Hub	$927	$3,709	$154	$2,385	$1,120	$5,620	$13,915
Northeast Corridor	$3,857	$15,426	$667	$3,815	$1,791	$55,949	$81,505
Pacific Northwest	$655	$2,621	$63	$161	$75	$3,039	$6,615

The Cost of Not Building HPPR

(Millions of USD—2012 Present Value)

	Transportation Benefits	Economic Output Generated	Tax Revenue Generated	Estimated Project Costs	Net Benefit of HPPR
California	$52,613	$205,200	$23,940	$68,400	$8,153
Chicago Hub	$13,915	$10,200	$1,190	$3,400	$11,705
Northeast Corridor	$81,505	$351,000	$40,950	$117,000	$5,455
Pacific Northwest	$6,615	$25,500	$2,975	$8,500	$1,090
Total 40-year cost of not building HPPR:					$26,403

Checklist to get more momentum for the vision

- Start closer **cooperation** between important actors in the corridor region: STRING, FBBC, Europakorridoren, Öresund, Stockholm, Oslo, Gothenburg, Fehmarnbelt Regions etc.
- Try to form an **alliance** of these actors, check the idea of a common strategy brochure basing on excellent prelimary works
- Illustrate the **concrete benefits** for the people in the corridor
- Look for **more supporters** in politics, business, science and research, tourism, labour organizations, foundations, media (!) etc.
- Check the idea of a **high level initiative group** with top leaders
- Win the **EU commissioner** for transport Siim Kallas (from Estonia, so regard the extension of the corridor to Helsinki/Tallinn) for the idea ("White Book"!), check the idea of a conference in Brussels
- Win the **national goverments** of S, DK, N and DE supporting such an alliance, check the idea of a trans-regional conference especially for this vision
- Win strong **lobby organizations** for supporting the idea (e.g. UIC, in Germany BDI, DIHK, Allianz Pro Schiene, in northern Europa xxx)

… and start a facebook page to spin the idea to the people

Thank you!

BEFORE AND AFTER HIGH-SPEED MARKET SHARES

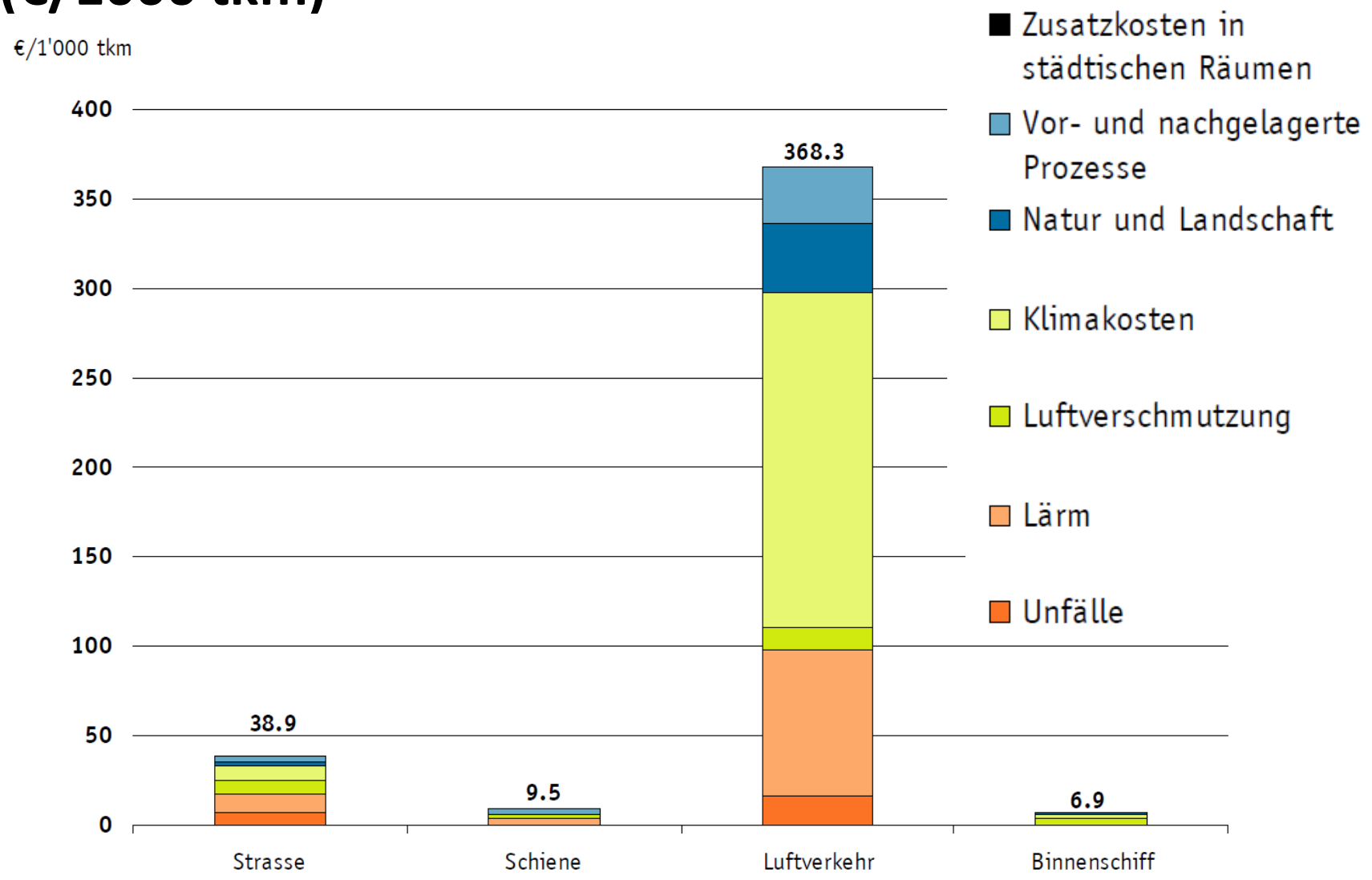
	TGV Sud-Est		AVE Madrid-Seville	
	Before	After	Before	After
Plane	31%	7%	40%	13%
Train	40%	72%	16%	51%
Car and Bus	29%	21%	44%	36%

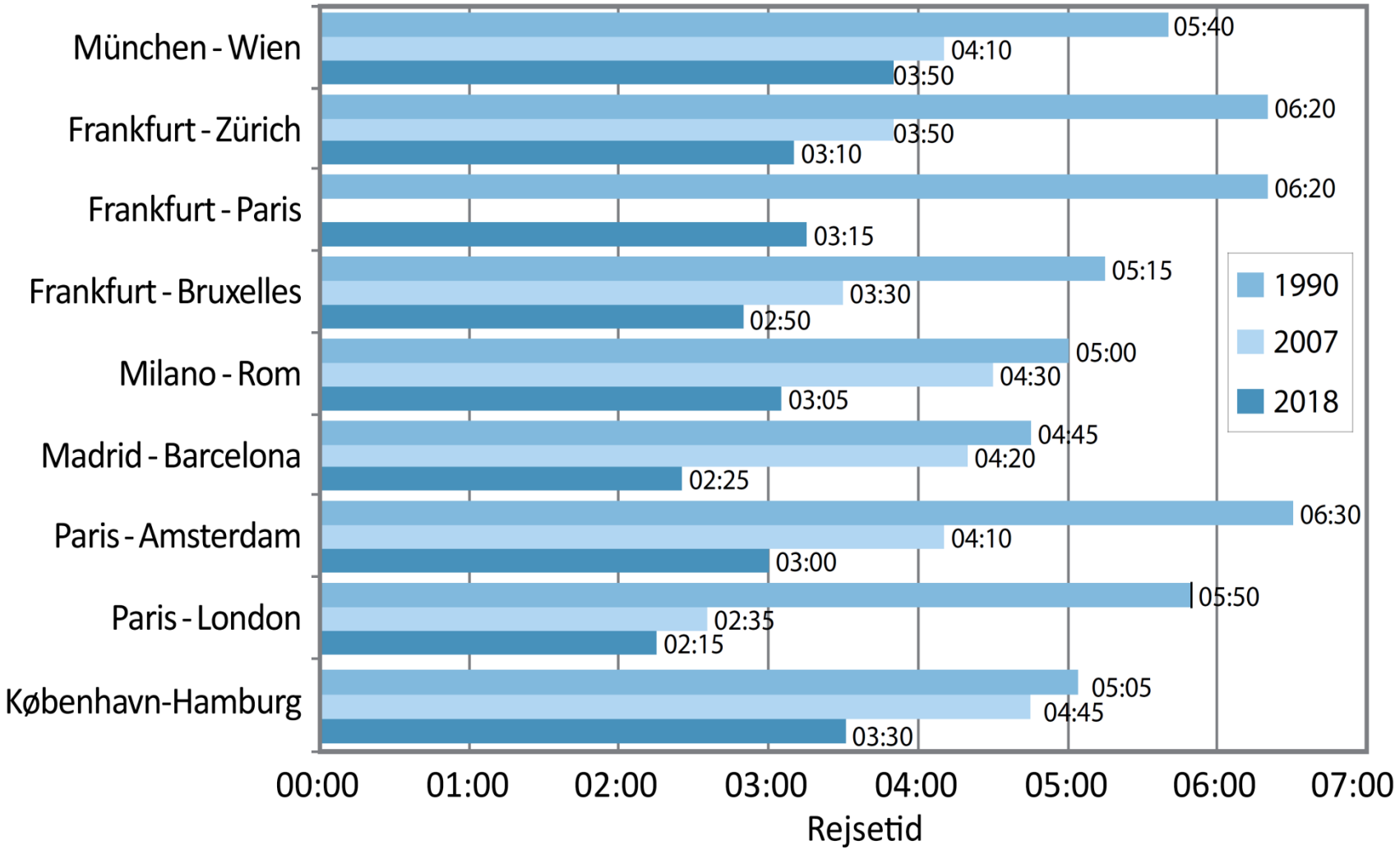
Source: COST318 (1996).

Miles of High-Speed Passenger Railway Lines									
	Operating			Under Construction		Planned		Total	
Country	Miles	Percent of Total	Highest Speed (mph) (a)	Miles	Percent of Total	Miles	Percent of Total	Miles	Percent of Total
China	2,609	28.4%	219	3,786	58.5%	1,813	16.5%	8,208	30.8%
France	1,185	12.9%	200	131	2.0%	1,635	14.9%	2,951	11.1%
Germany	803	8.7%	188	236	3.6%	419	3.8%	1,458	5.5%
Italy	577	6.3%	188	0	0.0%	247	2.2%	824	3.1%
Japan	1,584	17.2%	188	318	4.9%	364	3.3%	2,266	8.5%
Portugal	0	0.0%	---	0	0.0%	629	5.7%	629	2.4%
Russia	0	0.0%	---	406	6.3%	406	3.7%	812	3.0%
South Korea	258	2.8%	188	0	0.0%	0	0.0%	258	1.0%
Spain	1,285	14.0%	188	1,104	17.1%	1,064	9.7%	3,453	13.0%
Taiwan-China	216	2.4%	188	0	0.0%	0	0.0%	216	0.8%
Turkey	147	1.6%	156	319	4.9%	1,049	9.5%	1,515	5.7%
USA	226	2.5%	150	0	0.0%	563	5.1%	789	3.0%
World Total	9,188	100.0%	---	6,471	100.0%	10,996	100.0%	26,655	100.0%

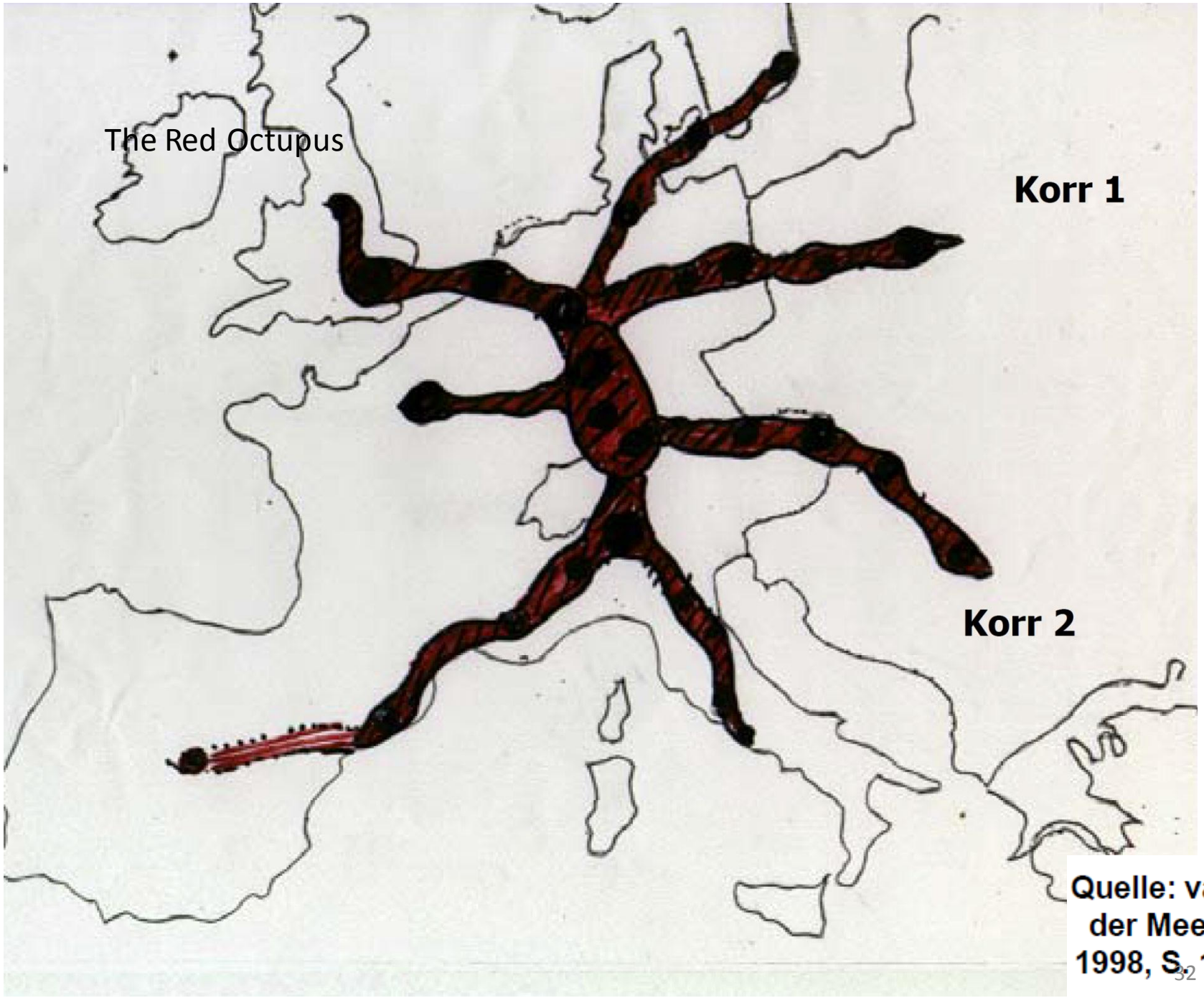
(a) Highest speed of any line currently in operation. Includes only selected countries. Source: International Union of Railways, 2011.

External costs of different freight transport modes (€/1000 tkm)

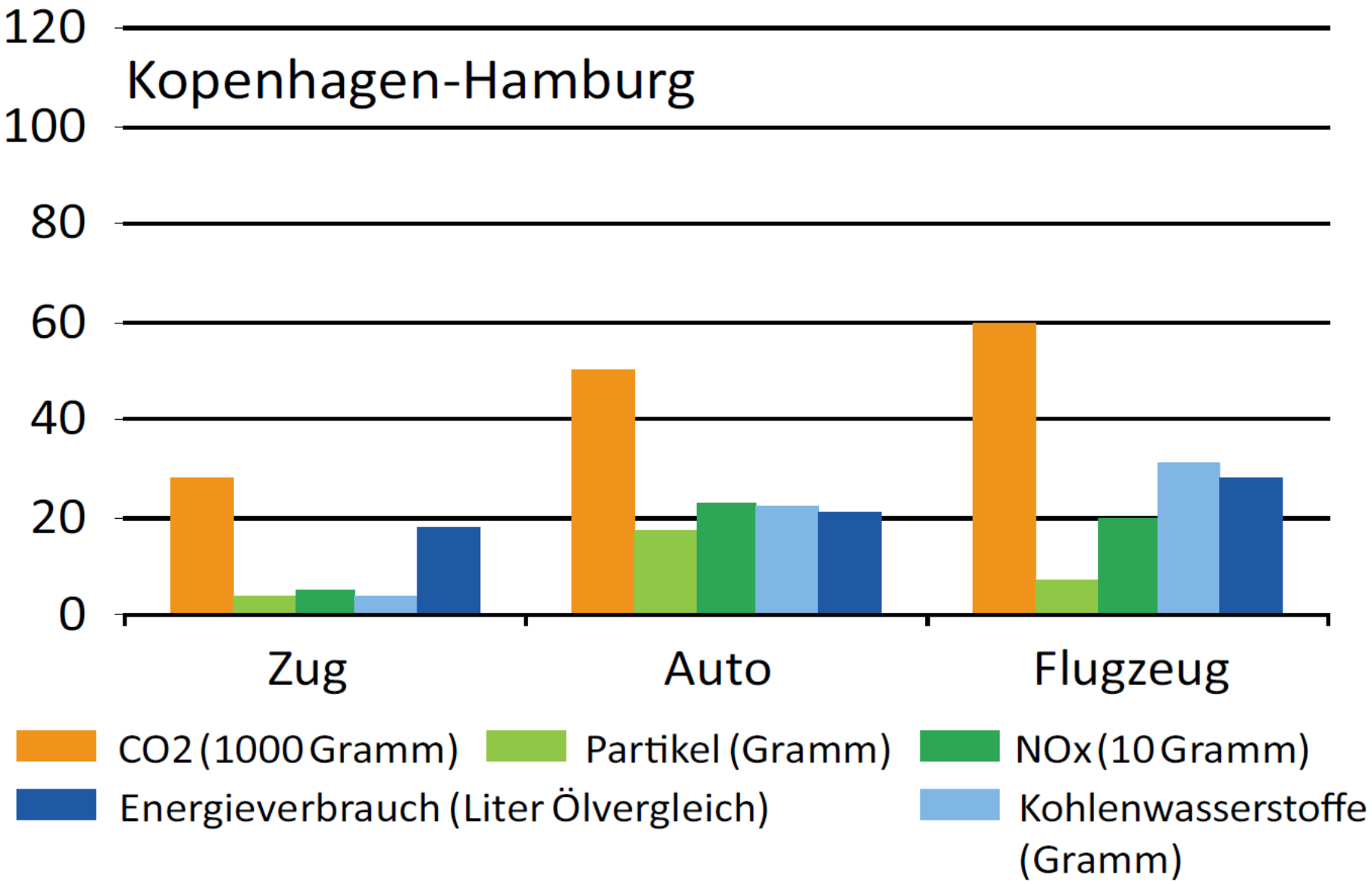




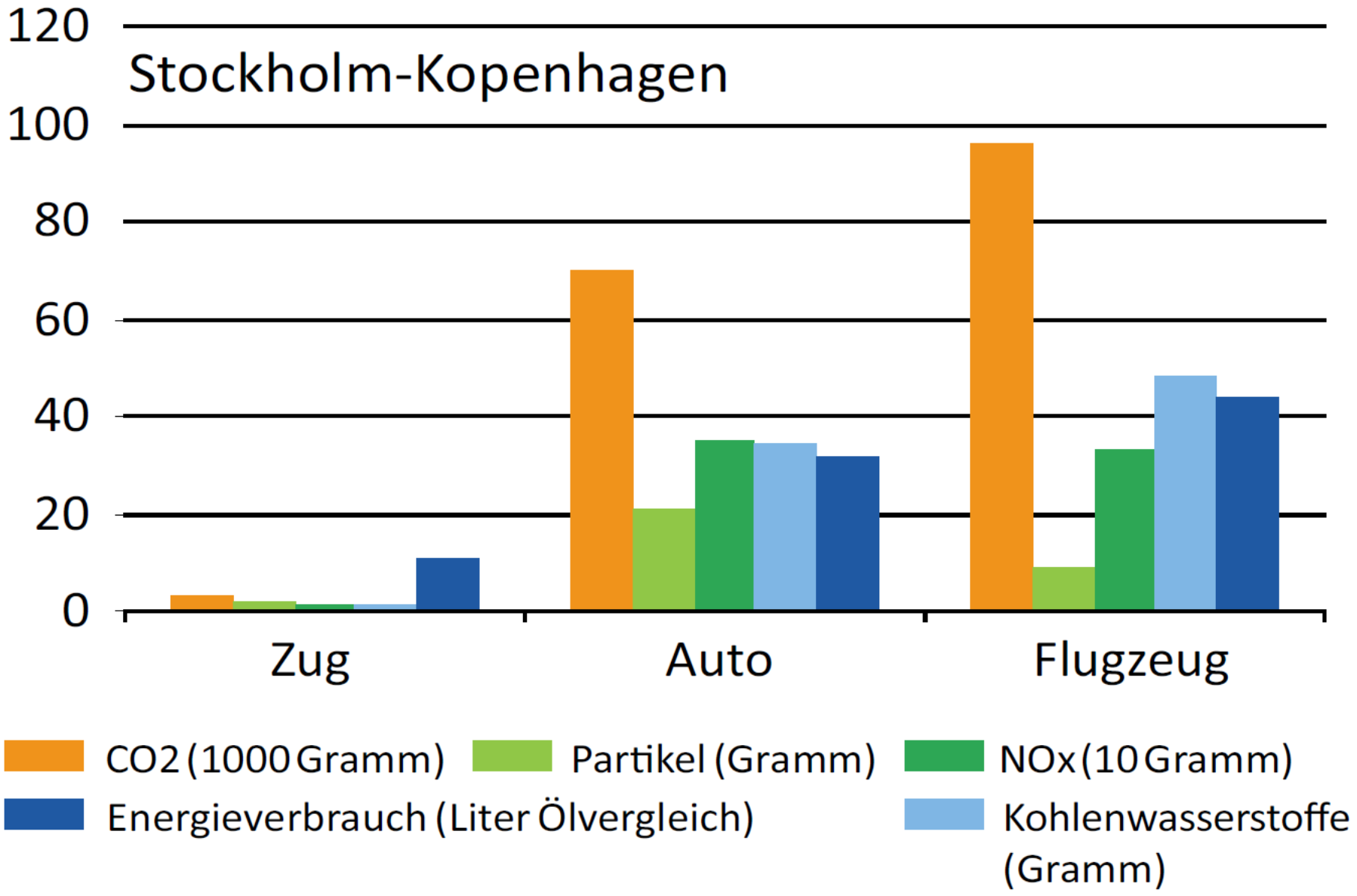
Quelle: IBU-Oeresund



Quelle: van der Meer 1998, S. 13



Quelle: IBU-Oeresund



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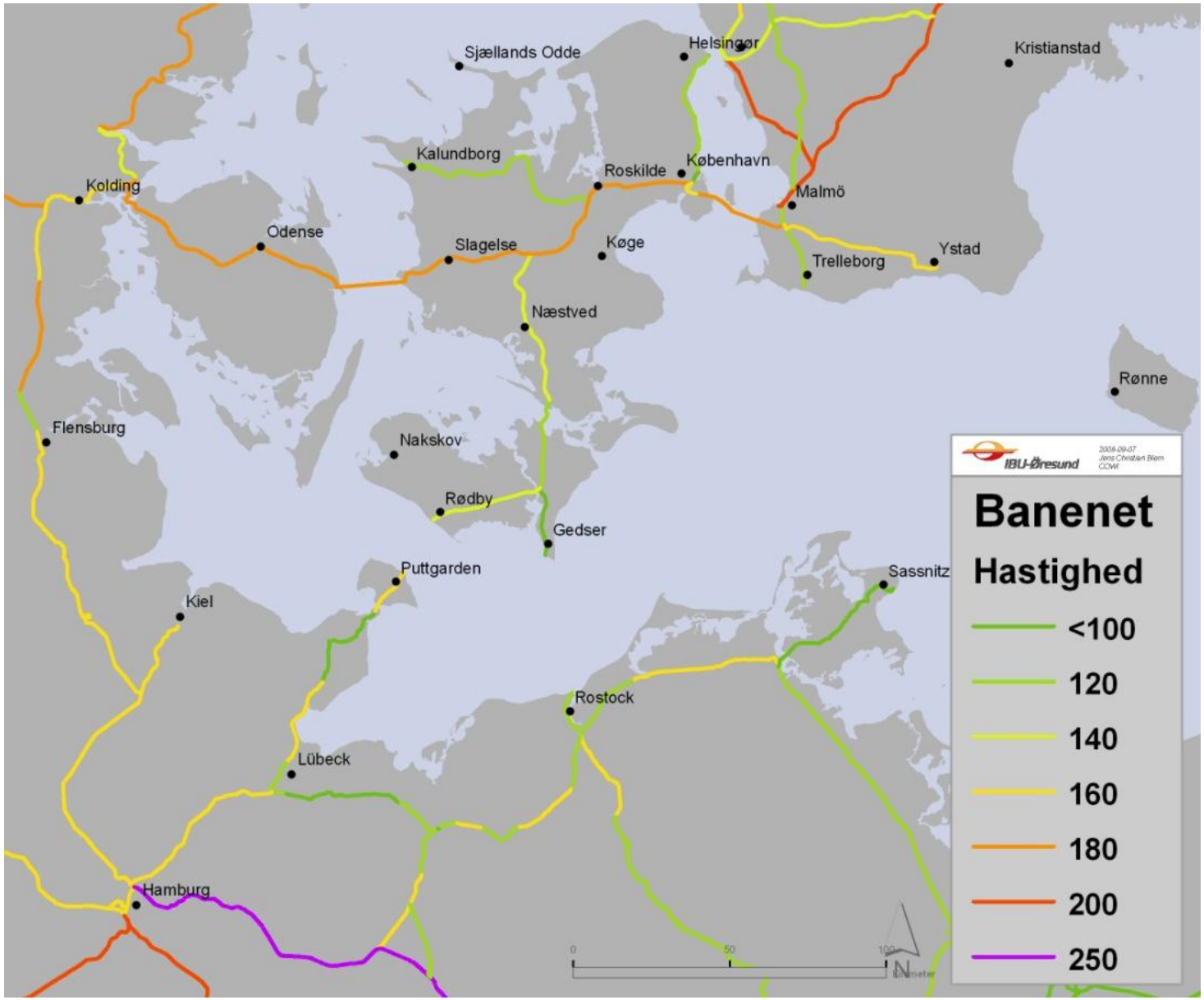

Sjællands Odde
Helsingør
Kristianstad
Kalundborg
Roskilde
København
Kolding
Malmö
Odense
Slagelse
Køge
Ystad
Trelleborg
Næstved
Rønne
Flensburg
Nakskov
Rødby
Gedser
Puttgarden
Sassnitz
Kiel
Rostock
Lübeck
Hamburg
IBU-Øresund
Banenet
Hastighed
<100
120
140
160
180
200
250

Ausbau der Bahn Kopenhagen-Hamburg	Investition Dänemark	Reisezeit Kopenhagen – Hamburg	Kapazität	Passagierzahl ICE Fernzüge über Fehmarn
Heute (ohne Fehmarnbeltquerung)	–	4:30	klein	<1.000
Fehmarnbeltquerung	32 Mia. DKK	3:30	klein	3.500
- mit Bahn nach Ringsted (NBS), dänischen und deutschen Landanlagen und Streckenausbau	51 Mia. DKK (DE: +1,5 Mia €)	2:40	klein	5.000
A. NBS Puttgarden-Bad Schwartau, ABS Lille Syd Bahn, NBS Køge N-Shunt	3,5 – 4,5 Mia. DKK	2:15	mittel	6.000
B. NBS Puttgarden-Bad Schwartau, ABS Lille Syd Bahn, NBS Køge N-Shunt + NBS Parallel-bahn bei Nykøbing Falster	10 Mia. DKK	1:50	mittel	7.000
C. NBS Puttgarden-Bad Schwartau, NBS Køge N-Storstrømmen inkl. Neue Brücke	17 Mia. DKK	1:30	groß	8.000

Quelle: IBU-Oeresund

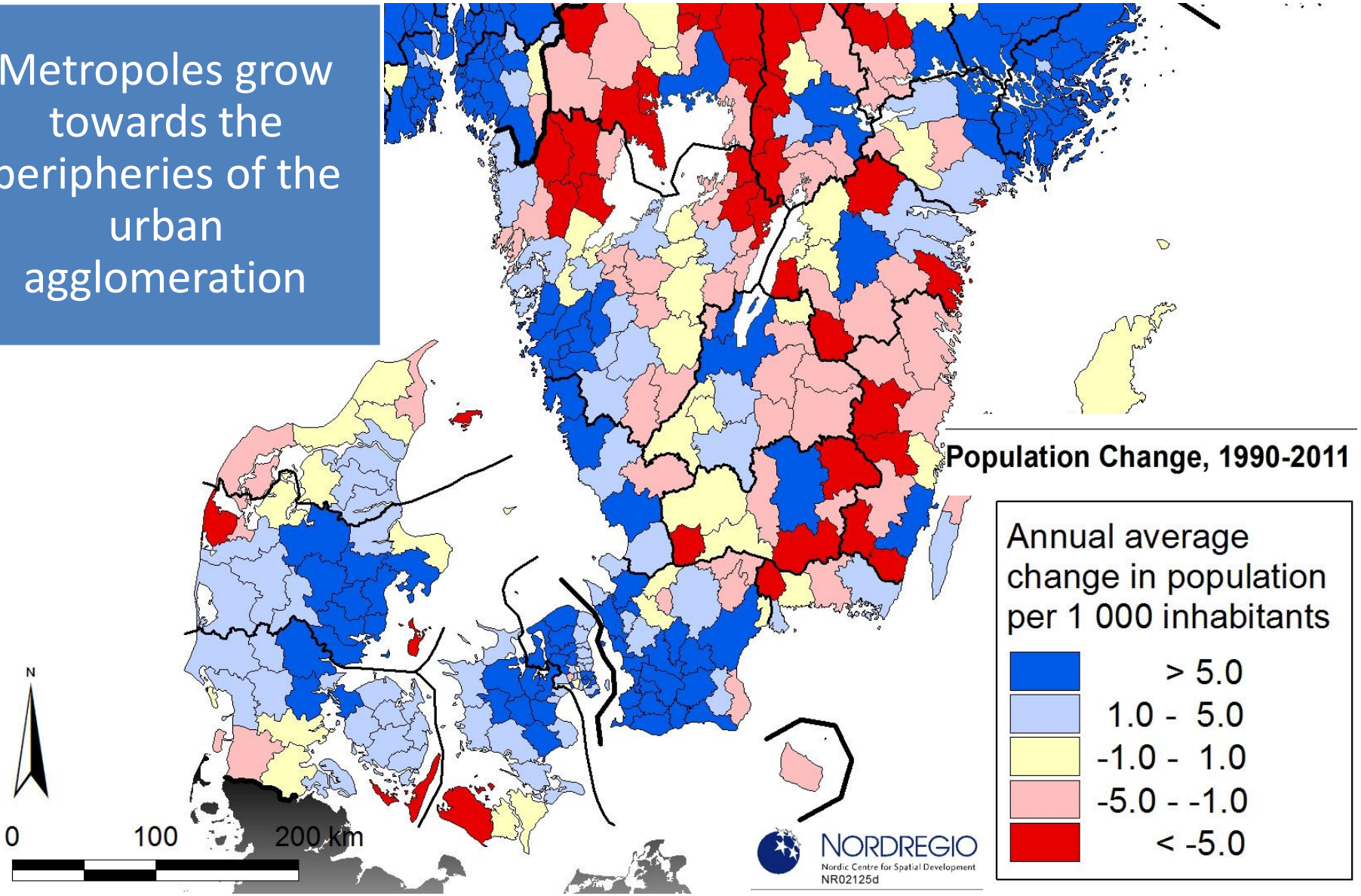
Metropolitan Regions = today and future engines for growth and innovation

Table 8: Urbanization trend in Europe (EU 25) to 2030

	2005	2010	2015	2020	2025	2030
EU-15	73,8%	74,8%	76,0%	77,3%	78,7%	80,2%
NMS	63,0%	63,6%	64,4%	65,5%	66,8%	68,1%
EU-25	72,1%	73,0%	74,1%	75,4%	76,9%	78,4%

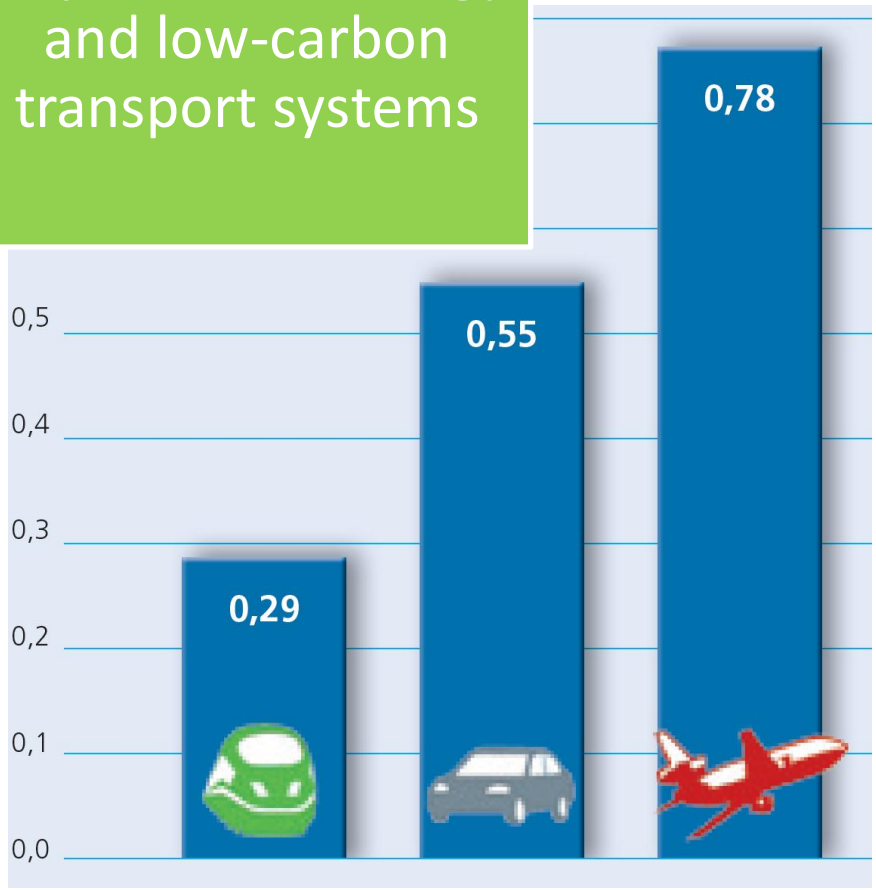
Source: World Urbanization Prospect, the 2005 Revision

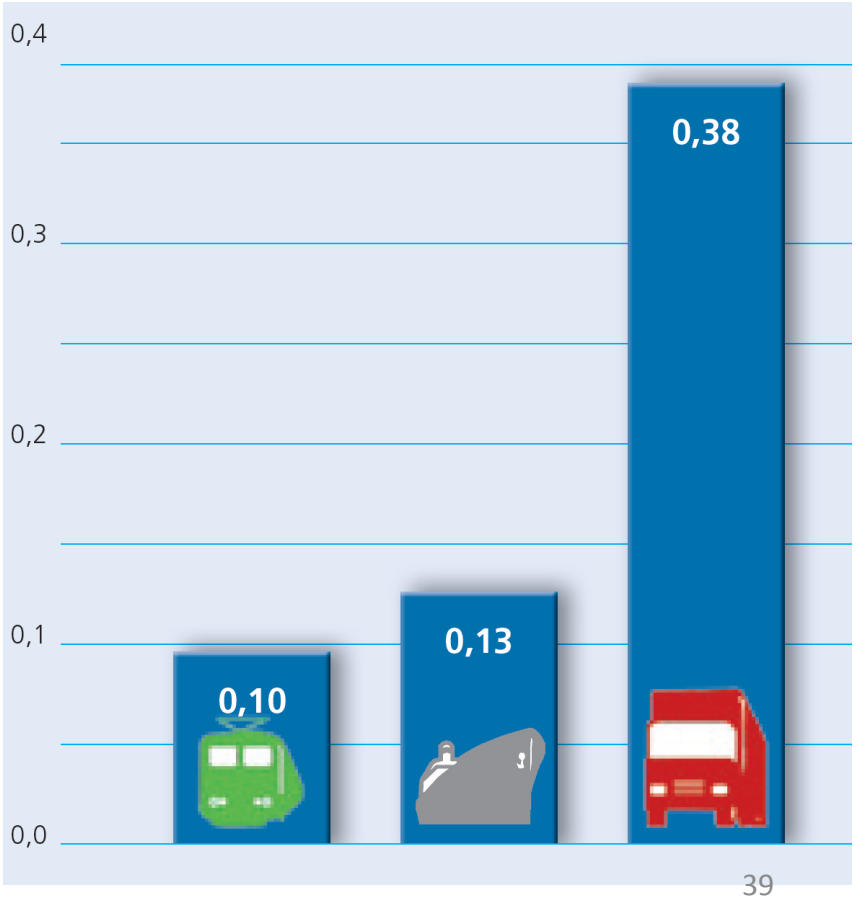
Metropoles grow towards the peripheries of the urban agglomeration

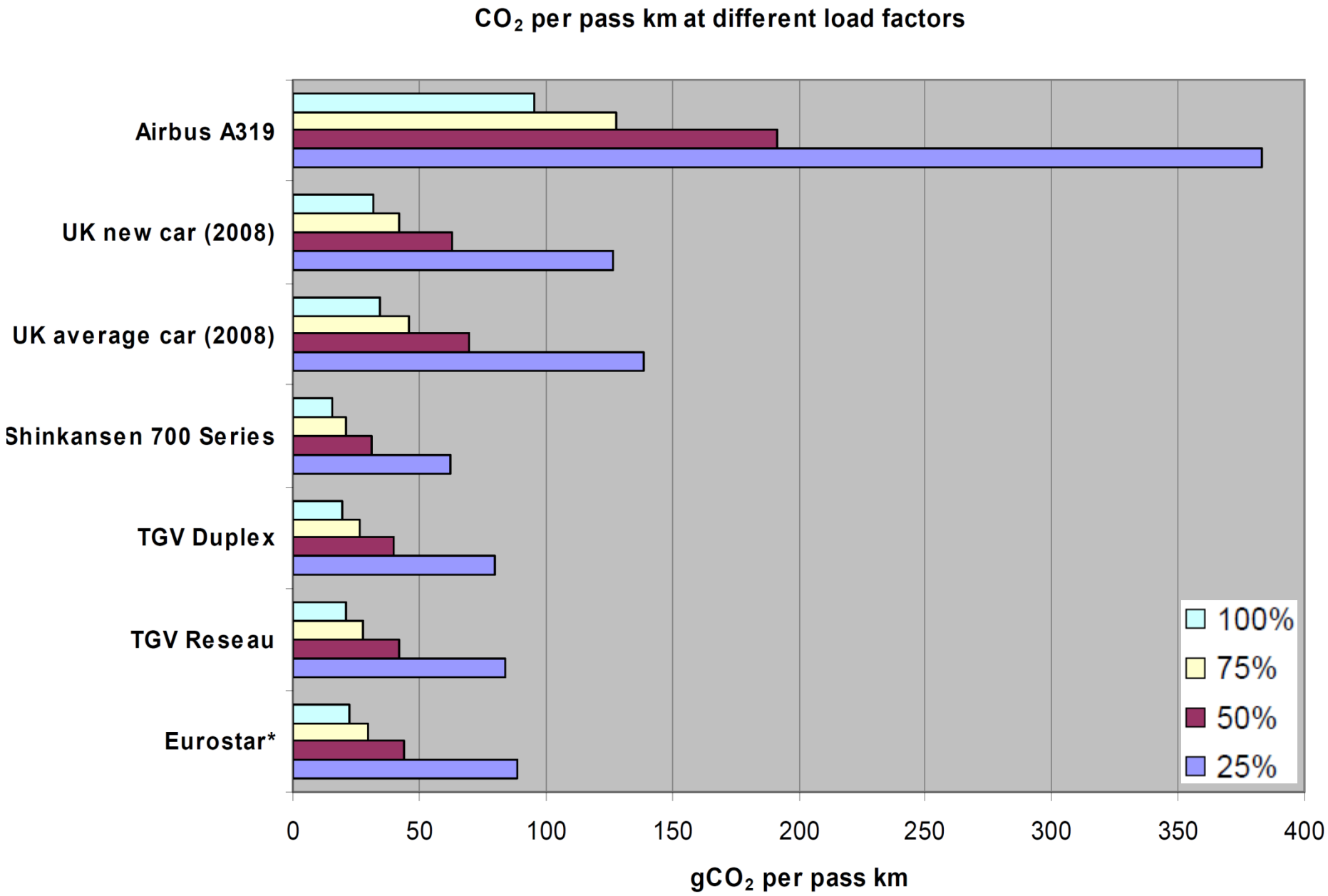


Energy Consumption (kw per hour) 2010 by passenger traffic (left) and freight traffic (right) – Source: IFEU 2011

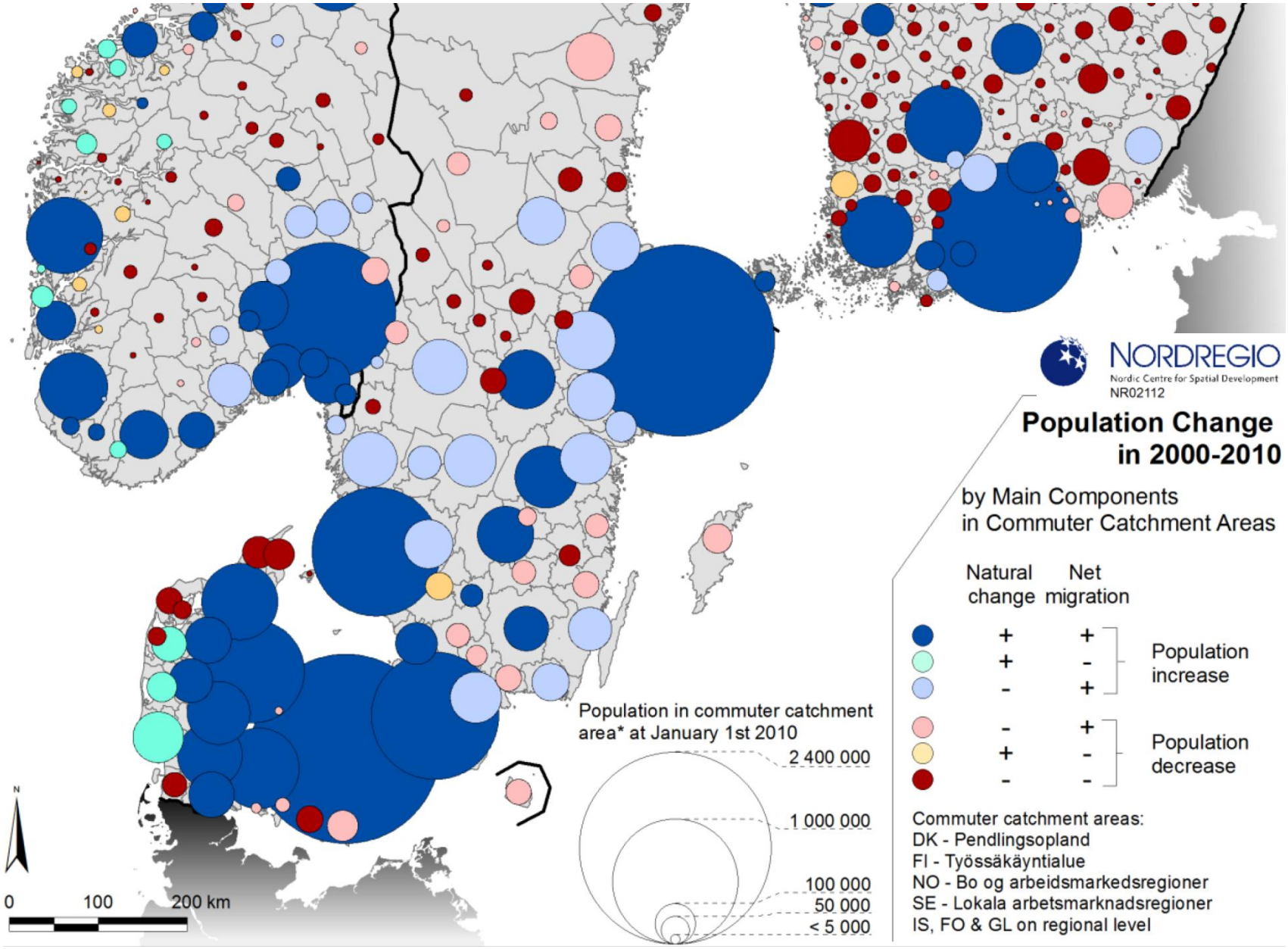
Sustainabilty requires low-energy and low-carbon transport systems

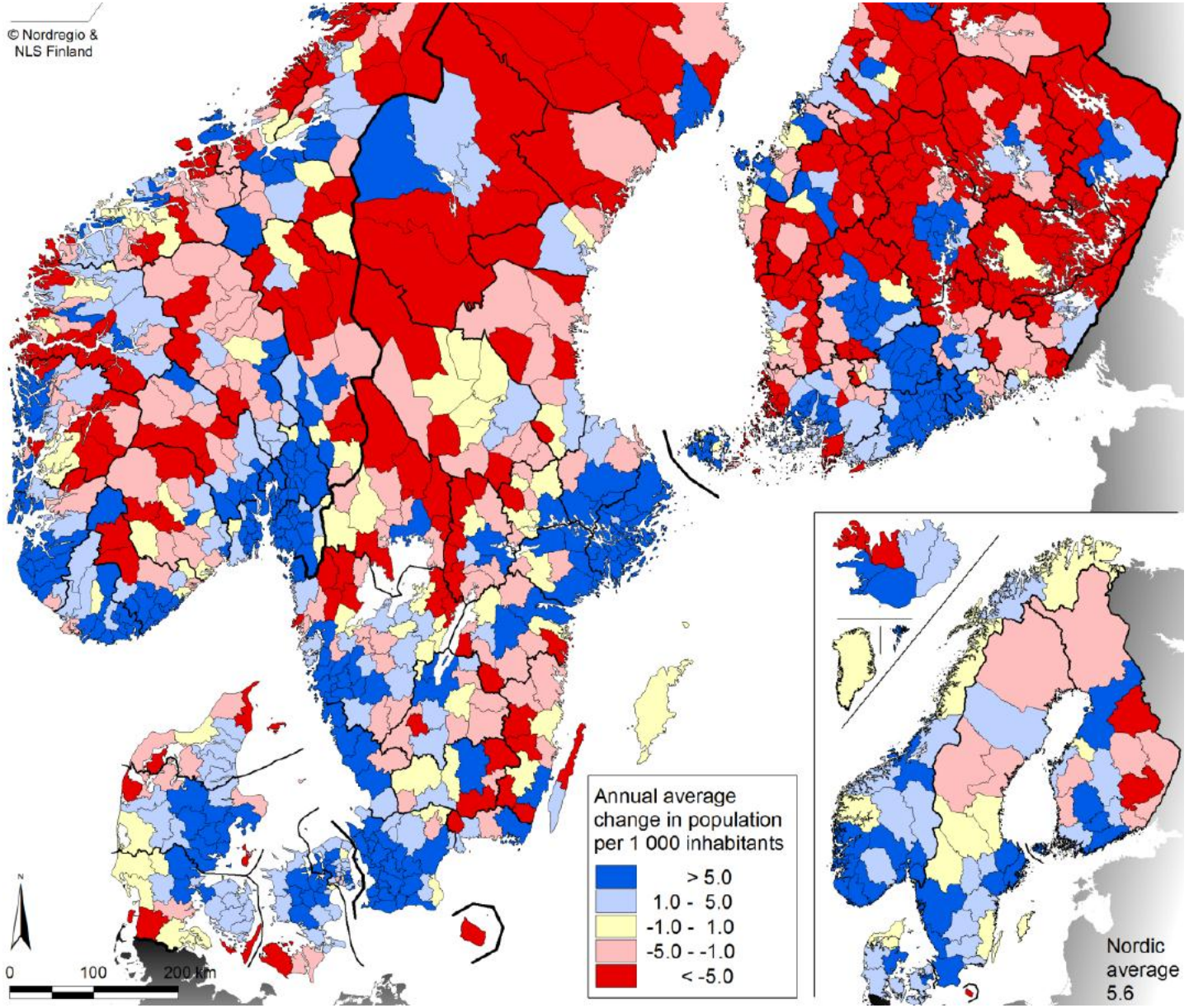






ATOC analysis for Greengauge 21


NORDREGIO
Nordic Centre for Spatial Development
NR02112
Population Change in 2000-2010
by Main Components in Commuter Catchment Areas
Natural change
Net migration
+ +
+ -
- +
Population increase
- +
+ -
- -
Population decrease
Population in commuter catchment area* at January 1st 2010
2 400 000
1 000 000
100 000
50 000
< 5 000
Commuter catchment areas:
DK - Pendlingsopland
FI - Työssäkäyntialue
NO - Bo og arbeidsmarkedsregioner
SE - Lokala arbetsmarknadsregioner
IS, FO & GL on regional level
N
0
100
200 km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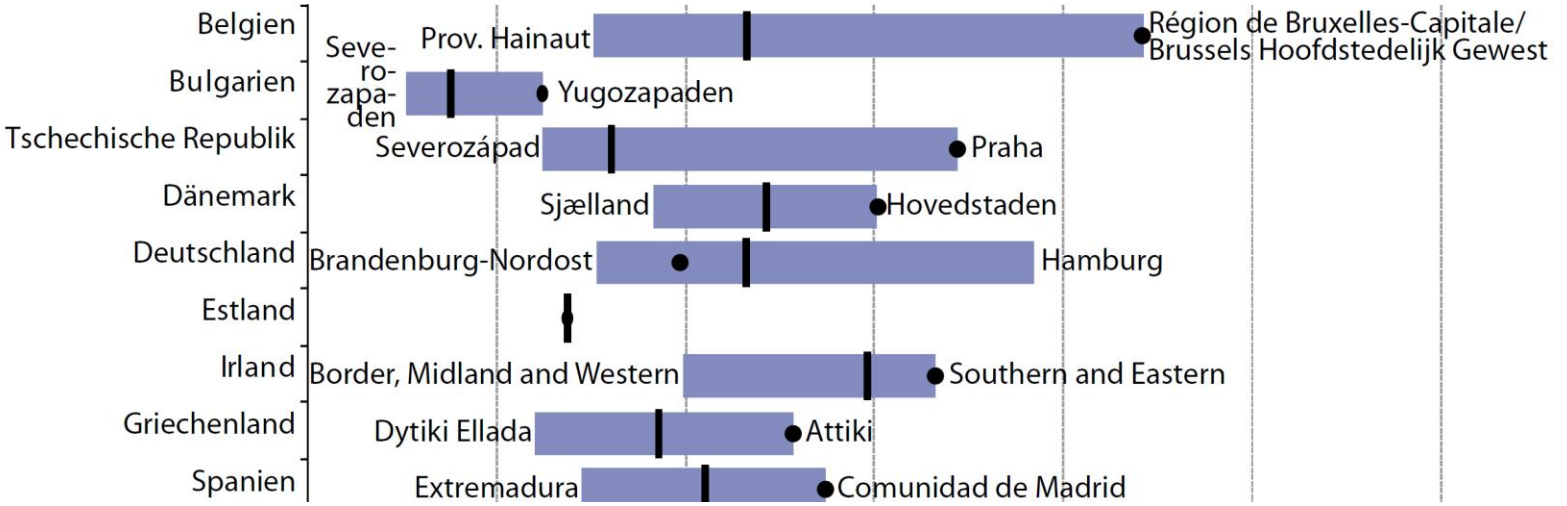
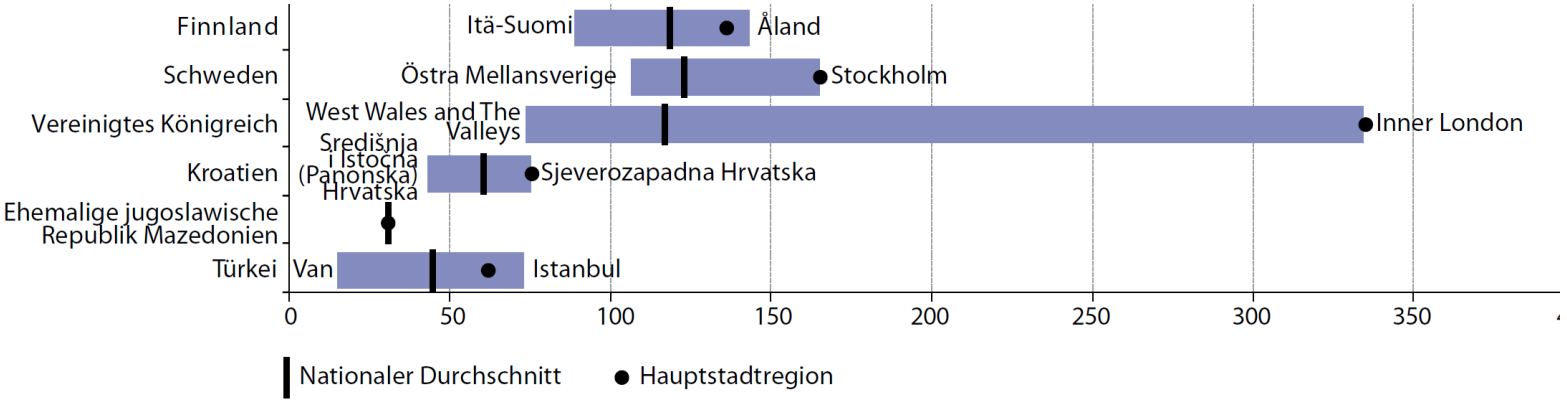
NLS Finland
Annual average
change in population
per 1 000 inhabitants
> 5.0
1.0 - 5.0
-1.0 - 1.0
-5.0 - -1.0
< -5.0
N
0
100
200 km
Nordic
average
5.6

The twenty highest:		
1	Inner London (UK)	332
2	Luxembourg (LU)	266
3	Bruxelles-Cap. / Brussels Hfdst. (BE)	223
4	Hamburg (DE)	188
5	Bratislavský kraj (SK)	178
6	Île de France (FR)	177
7	Praha (CZ)	175
8	Stockholm (SE)	172
9	Groningen (NL)	170
10	Åland (FI)	166
11	Wien (AT)	161
12	Oberbayern (DE)	160
13	Bremen (DE)	160
14	North Eastern Scotland (UK)	158
15	Darmstadt (DE)	158
16	Utrecht (NL)	157
17	Noord-Holland (NL)	
18	Hovedstaden (DK)	
19	Bolzano / Bozen (IT)	148
20	Berkshire, Buckinghamshire & Oxfordshire (UK)	142

Regional GDP per capita in the EU27 in 2009
(in PPS, EU27 = 100)



BIP je Einwohner, in KKS, nach NUTS-2-Regionen, 2007 (1) (in % des EU-27-Durchschnitts, EU-27=100)



(1) Türkei, 2006.

Quelle: Eurostat (tgs00006).

Figure 7.1: Gross domestic product (GDP) per inhabitant, in purchasing power standard (PPS), highest and lowest NUTS 2 region within each country, 2008 ([1])
(in % of the EU-27 average, EU-27 = 100)

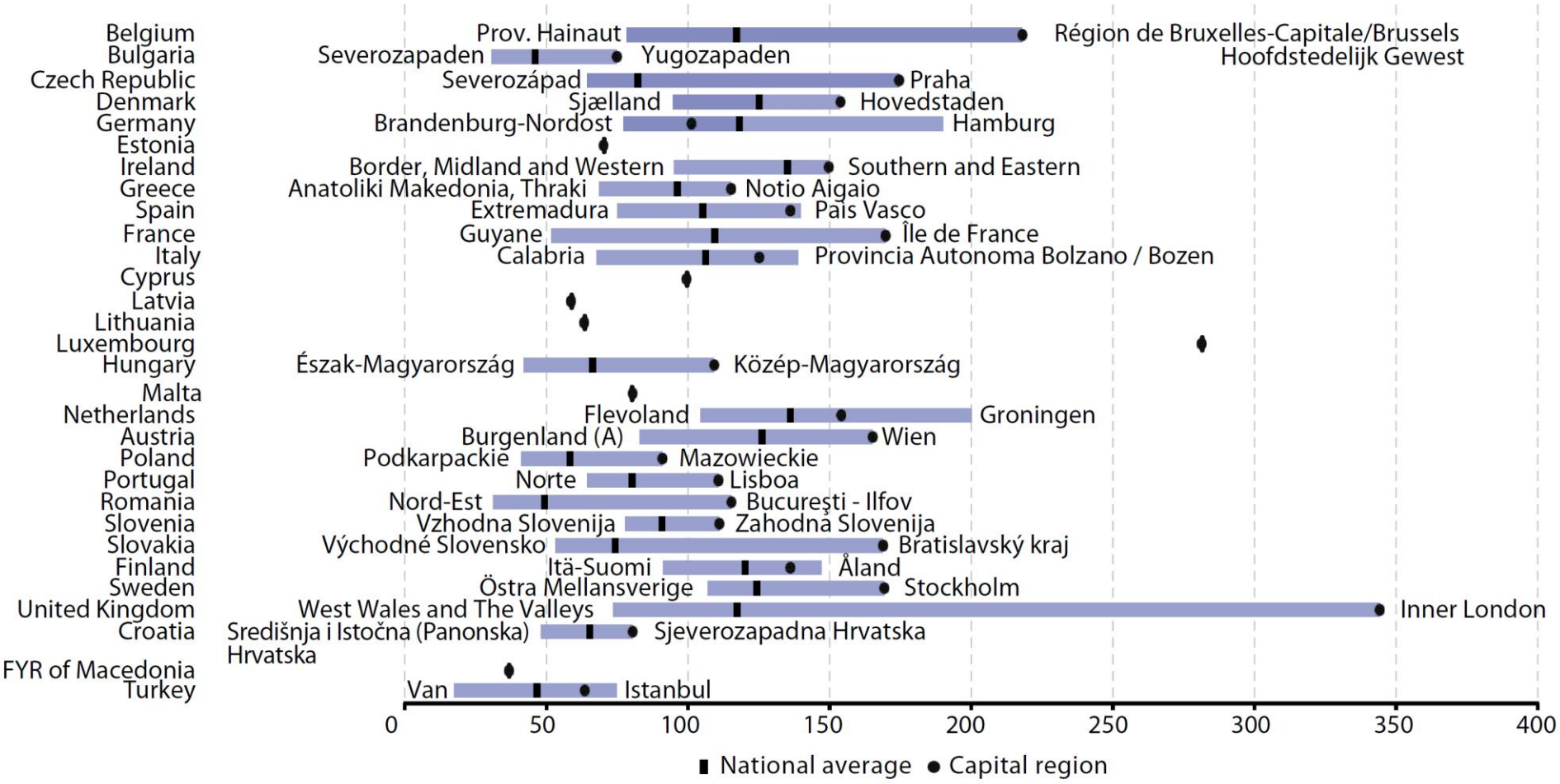
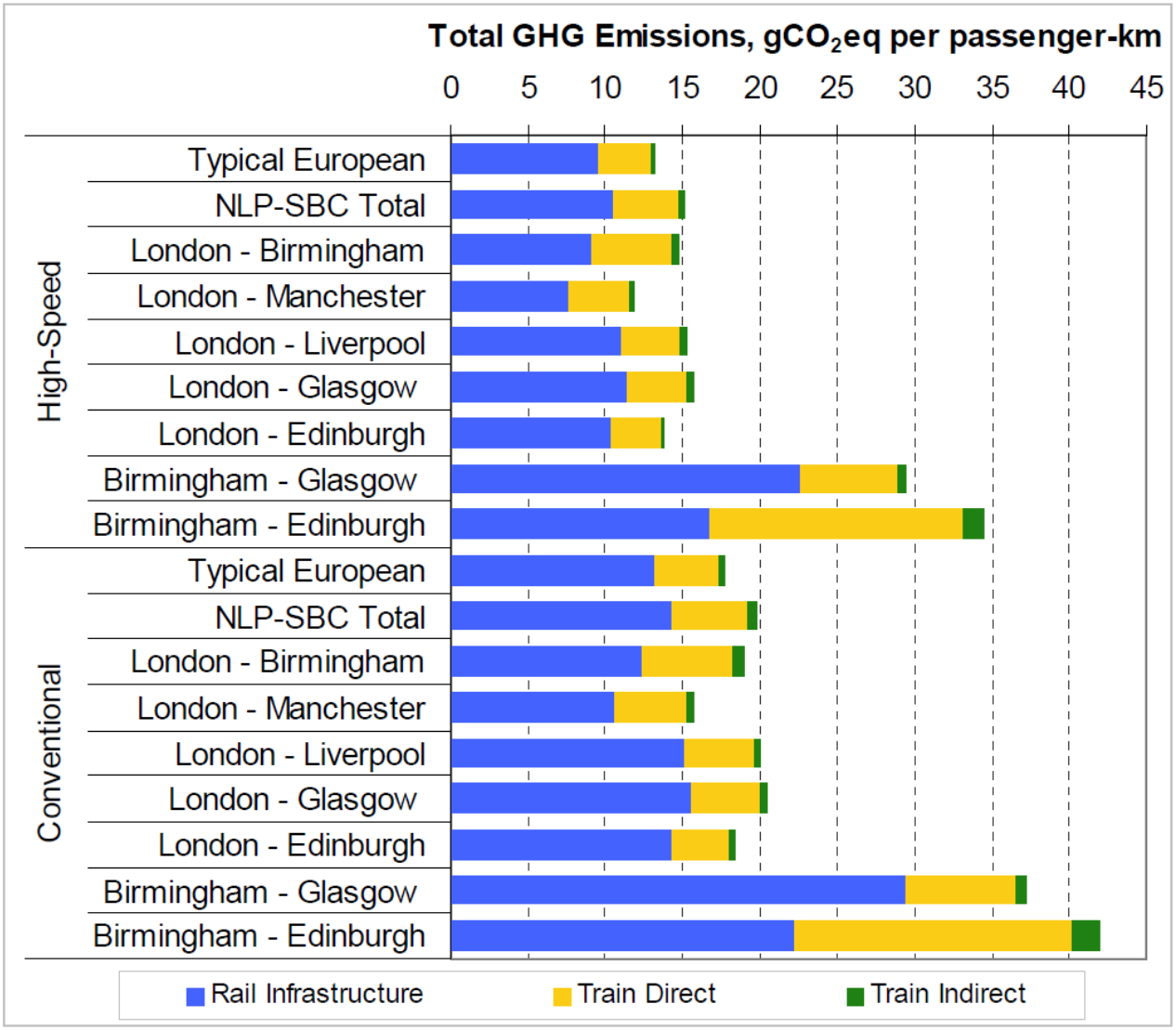
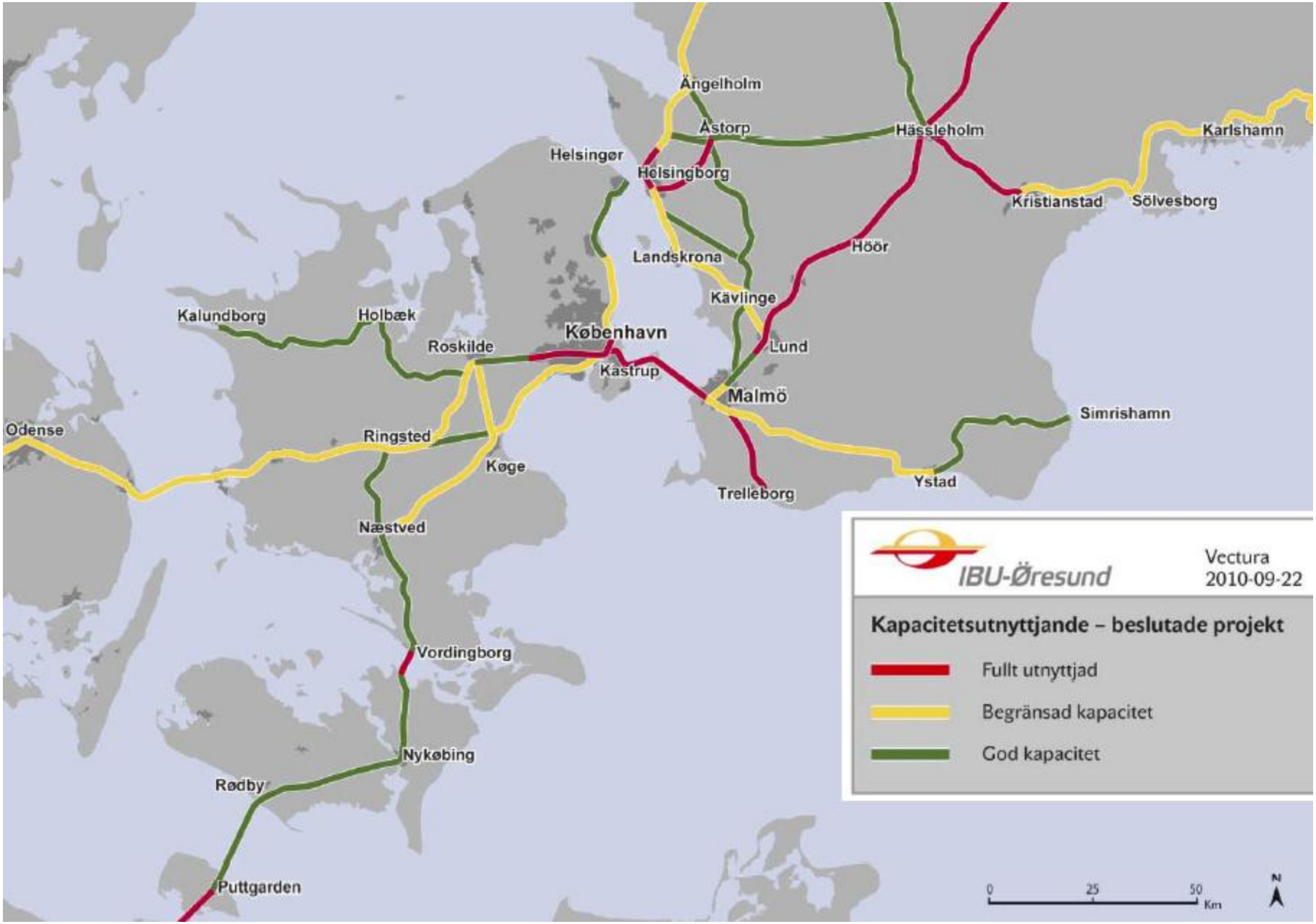


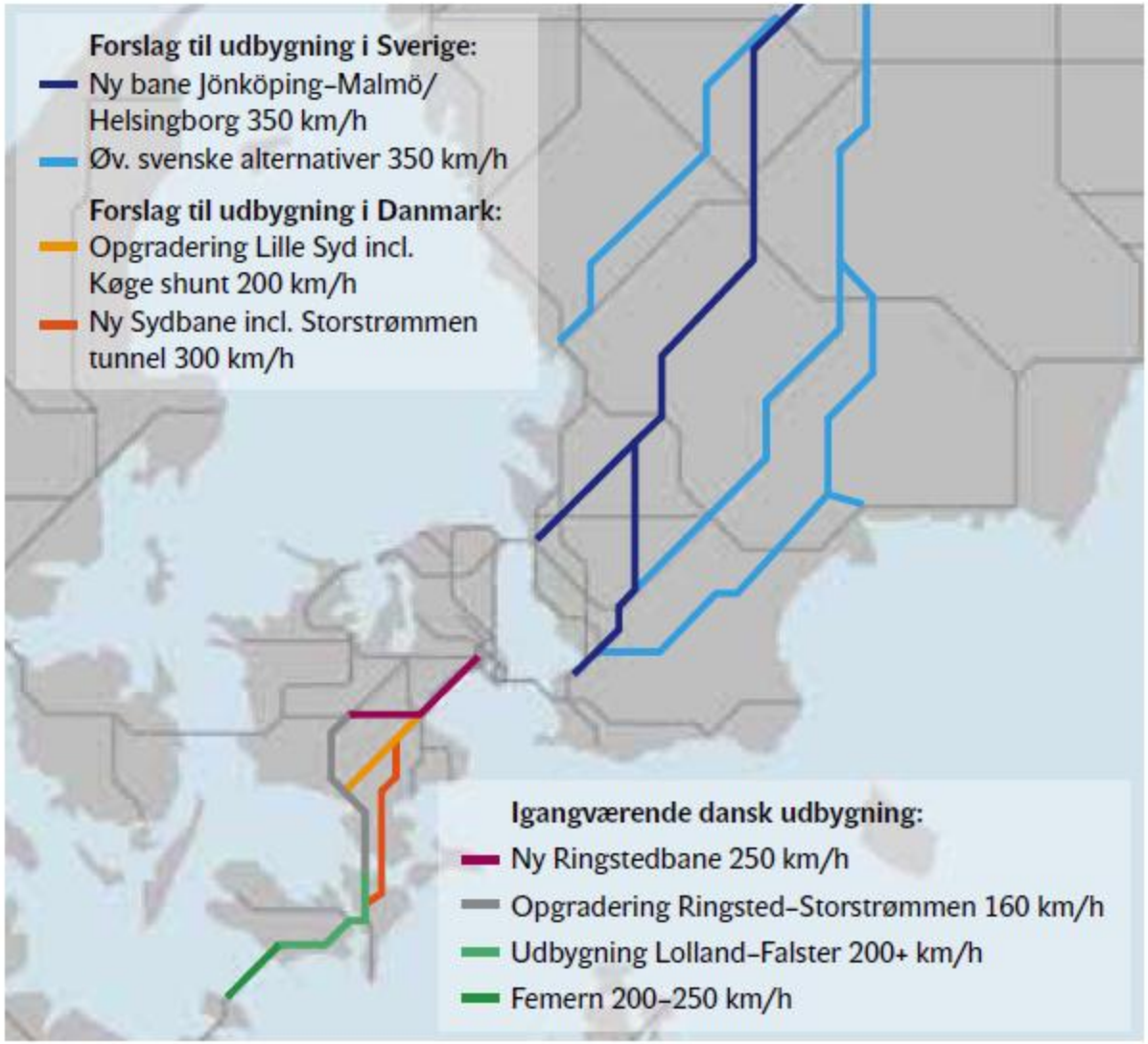
Figure 3.3: **Breakdown of the total GHG emissions from conventional and high-speed rail per passenger-km for different routes (assumes future trains and carbon intensity of electricity)**



Notes: The figures presented also take into account the net impacts of modal shift and demand creation on the totals.

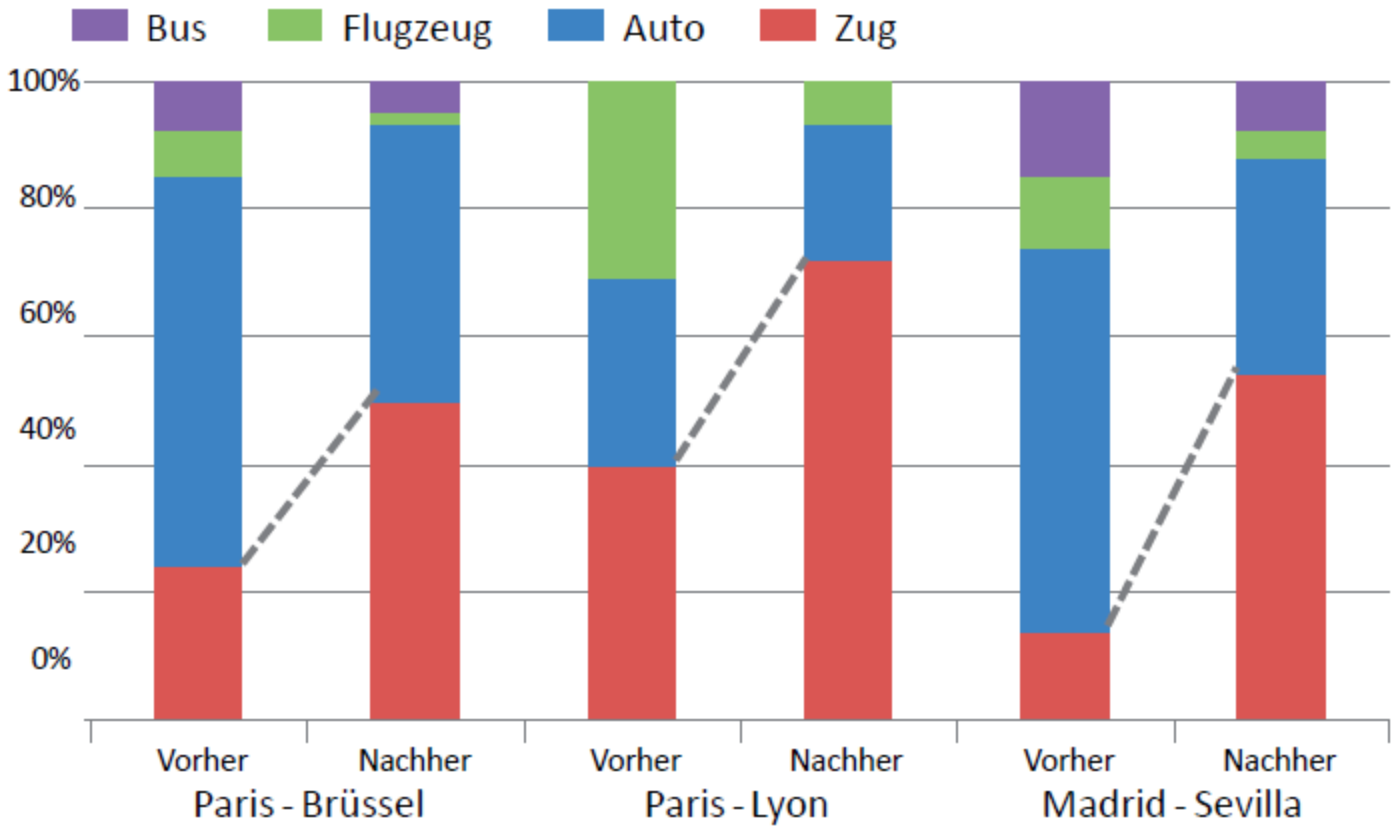
Quelle:
Network Rail


Ängelholm
Åstorp
Hässleholm
Karlshamn
Helsingør
Helsingborg
Kristianstad
Sölvesborg
Höör
Landskrona
Kävlinge
Kalundborg
Holbæk
København
Roskilde
Lund
Kastrup
Malmö
Simrishamn
Odense
Ringsted
Køge
Trelleborg
Ystad
Næstved
Vordingborg
Nykøbing
Rødby
Puttgarden
IBU-Øresund
Vectura
2010-09-22
Kapacitetsutnyttjande – beslutade projekt
Fullt utnyttjad
Begränsad kapacitet
God kapacitet
0
25
50
Km
N

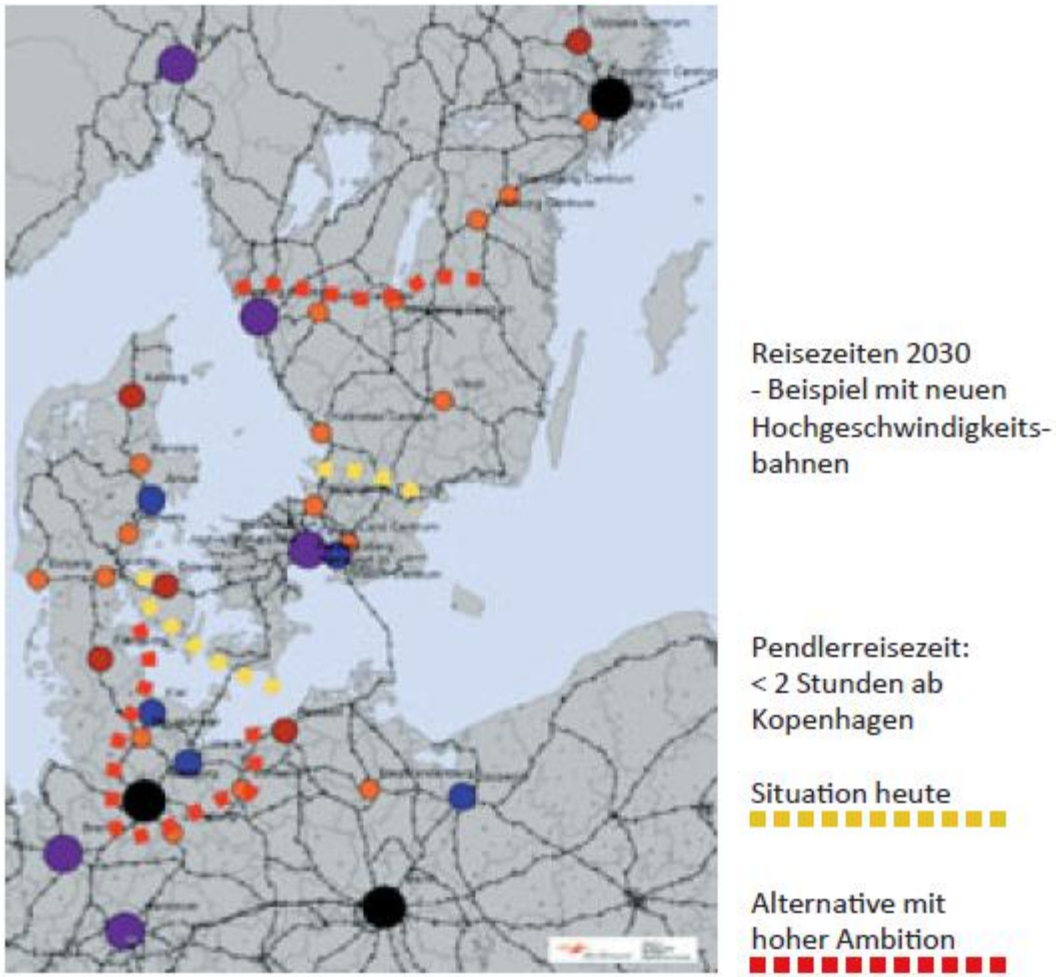


Figur 54. IBU-projektets analyserede strækninger i det sydøstlige Danmark og sydlige Sverige (excl HH/Ring 5).

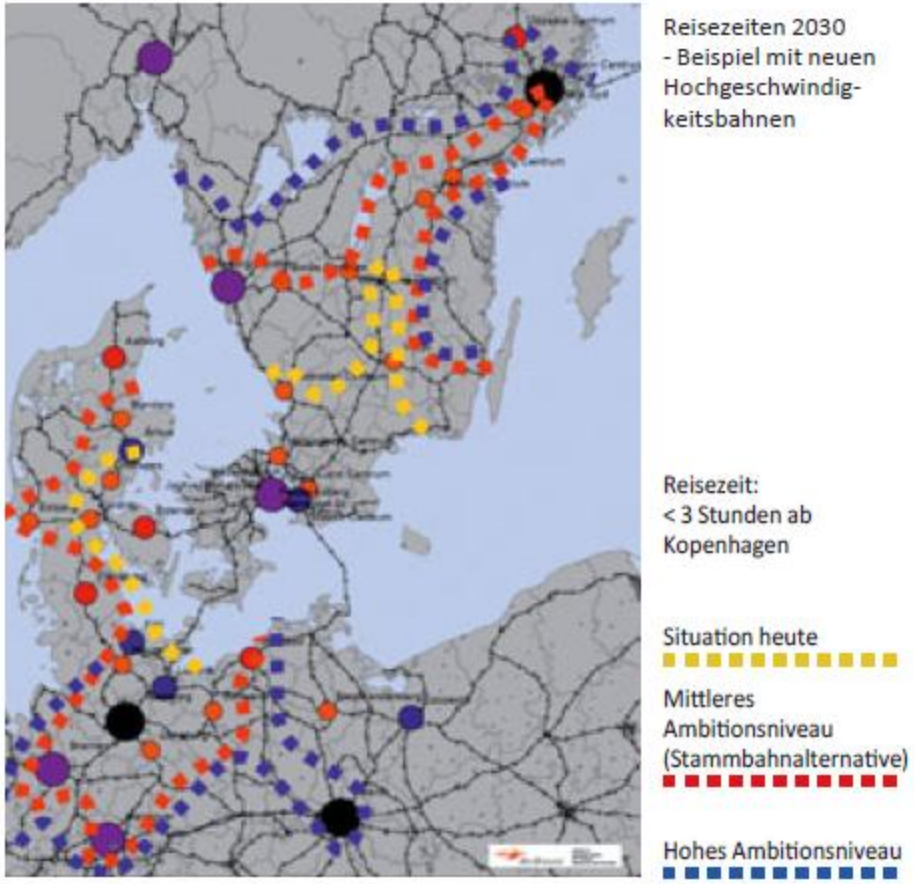
Entwicklung der Marktanteile.
Beispiele für die Einführung von Hochgeschwindigkeitszügen.



Quelle: IBU-Oeresund



Quelle: IBU-Oeresund



Quelle: IBU-Oeresund

„Europe‘s cool cities“ (Spiegel 34/2007)

HanseBelt
Region mit Rückenwind

Gemeinsam für unsere Region: Mitglieder des HanseBelt e. V.

AHRENSBURG

Basler AG
www.baslerweb.com

edding AG
www.edding.com

JOB GmbH
www.job-gruppe.com

Hako-Werke GmbH
www.hako-werke.de

BAD OLDESLOE

Minimax GmbH & Co. KG
www.minimax.de

BAD SCHWARTAU

Heinz von Kempen

SCHWARTAUER WERKE GmbH & Co. KGaA
www.schwartauer-werke.de

BAD SEGEBERG

SEGEBERGER KLINIKEN GRUPPE
www.segebergerkliniken.de

BARGTEHEIDE

Getriebebau NORD GmbH & Co. KG
www.nord.com

DALDORF

Bernd Jorkisch GmbH & Co. KG
www.jorkisch.de

EUTIN

Sparkasse Holstein
www.sparkasse-holstein.de

HEILIGENHAFEN

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www.eggers-druck.de

LAUENBURG

MEWA Textil-Service AG & Co. Lauenburg OHG
www.mewa.de

LÜBECK

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J.G. Niederegger GmbH & Co. KG
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Lübecker Hafen-Gesellschaft mbH
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L. Possehl & Co. mbH
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Sparkasse zu Lübeck AG
www.spk-luebeck.de

inlingua Sprachcenter u. Übersetzungsbüro Lübeck
www.inlingua-luebeck.de

Lübecker Wachunternehmen Dr. Kurt Kleinfeldt GmbH
luebecker-wachunternehmen.de

BOCKHOLDT Gebäudedienste KG
www.bockholdt.de

IHK zu Lübeck
www.ihk-schleswig-holstein.de

Immobilien-Anlagegesellschaft NEUE LÜBECKER mbH
www.neueluebecker.de

TT-Line GmbH und Co. KG
www.ttline.com

Dräger
www.draeger.com

MALENTE

Kuhnke AG
www.kuhnke.de

NORDERSTEDT

Jungheinrich Norderstedt AG & Co. KG
www.jungheinrich.de

MOLFSEE

Prof. Dr. Bernd Rohwer

REINBEK

Party Rent Hamburg Bernard & Roes GmbH
www.partyrent.com

SCHWARZENBEK

LMT Fette Werkzeugtechnik GmbH & Co. KG
www.lmt-fette.com

SCHWERIN

IHK zu Schwerin
www.ihkzuschwerin.de

SIERKSDORF

HANSA-PARK Freizeit- und Familienpark GmbH & Co. KG
www.hansapark.de

WAHLSTEDT

GRUNDFOS Pumpenfabrik GmbH
www.grundfos.de

arko GmbH
www.arko.de

LICHTENHELDT GmbH
www.lichtenheldt.de

WENTORF

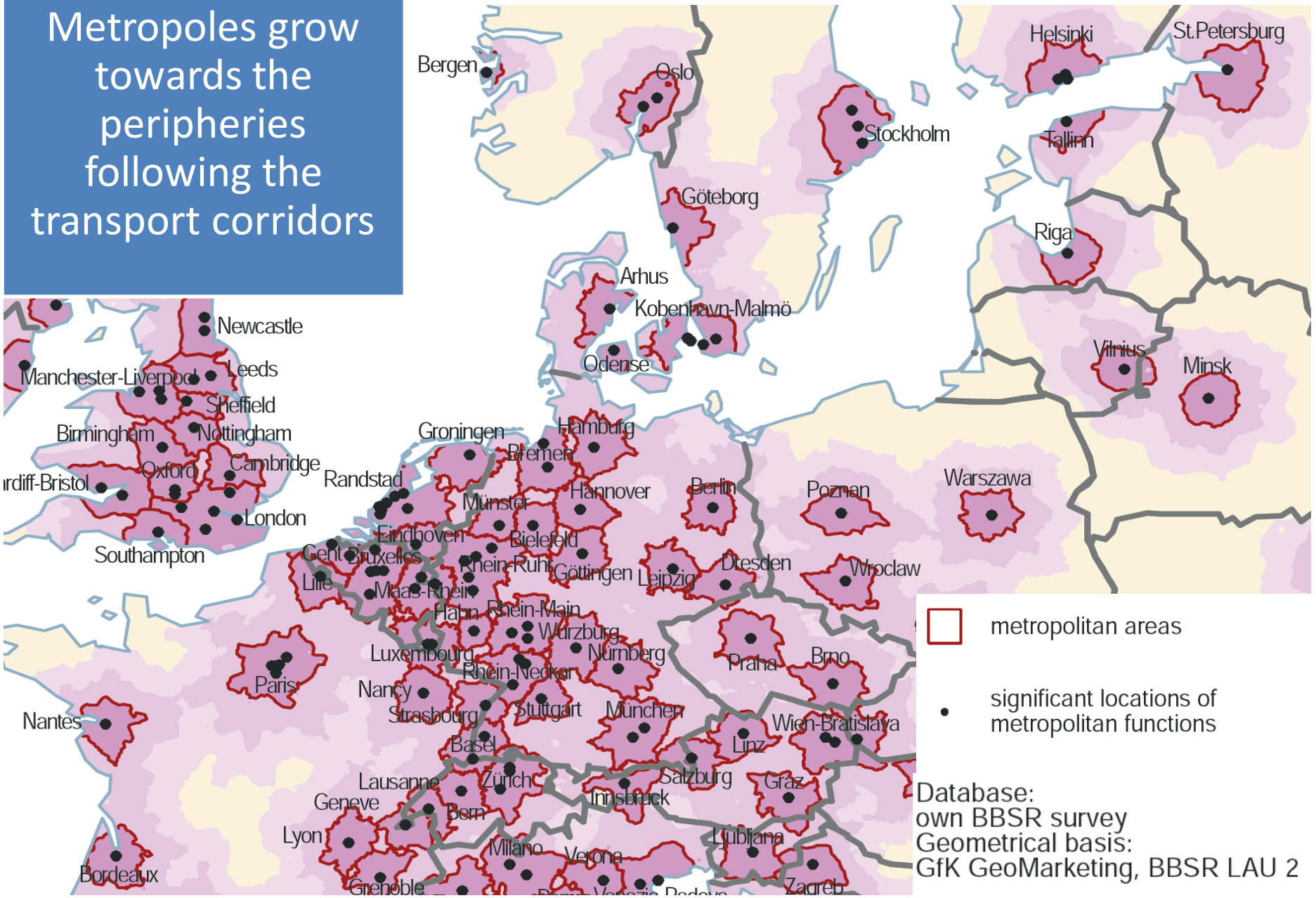
Buhck Gruppe
www.buhck.de

WISMAR

Seehafen Wismar GmbH
www.hafen-wismar.de

German Pellets GmbH
www.german-pellets.de

Metropoles grow towards the peripheries following the transport corridors



Accessibility ranking of European Regions

Region	Total ranking	Air ranking	Railway ranking	Road rankning
Öresund	106	55	891	949
Eastern Jutland	620	522	900	897
Stockholm	739	581	1,171	1,232
Oslo	563	383	1,247	1,255
Hamburg	69	61	277	398
Gothenburg	563	406	1,118	1,171
Berlin	44	33	323	476

Source: IBU 2/COWI, 2009a