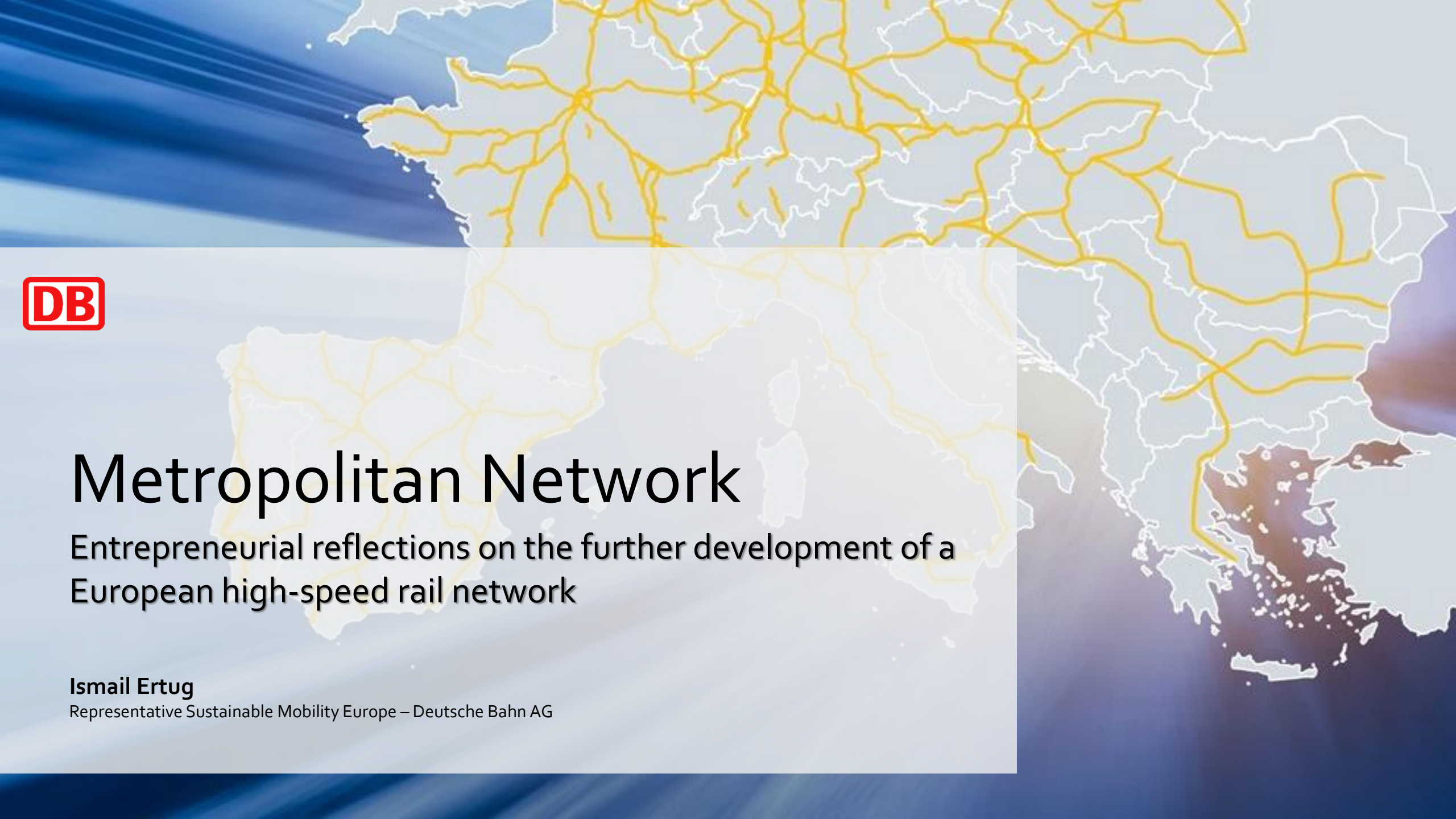


Metropolitan Network

Entrepreneurial reflections on the further development of a European high-speed rail network

Ismail Ertug
Representative Sustainable Mobility Europe – Deutsche Bahn AG

Joint effort to build a European travel demand model

Mission accomplished: Simulation of multi-modal demand in the EU by 2050

European partners

Basis of the study

- **European wide travel demand model** which is able to predict the impact of reduced travel times within a better connected HSR network as well as the natural growth of transport demand caused by changes in population and prosperity.
- **Predict multi-modal effects within the entire transport market** by including high-speed and conventional rail, private car, coach, and air transport.
- **PTV validated and completed its model with** external sources and **empirical data** from DB, ČD, NS, ÖBB, PKP Intercity, Renfe, SBB, SNCB, SNCF, and Trenitalia.

Publishing Author

DB

Commissioned Company

PTV GROUP

DB is committed to translate sustained support into momentum for Rail Infrastructure Development

European Level

- Green Deal: CO_2 Neutrality in 2050
- TEN-T: Highly ambitious Infra-Parameters
- CEF2: Infrastructure-Calls overdrawn
- ESSMS: Doubling by 2030/Tripling volume by 2050

National Level

- Climate Protection Law: CO_2 Neutrality in 2045
- Integrated Clockface Timetable (Deutschlandtakt)
- Increased funding for Infrastructure (New & Existing)
- Regulation aiming at fast-track planning procedures

Infrastructure Manager

DEUTSCHLAND BRAUCHT EINE STARKE SCHIENE

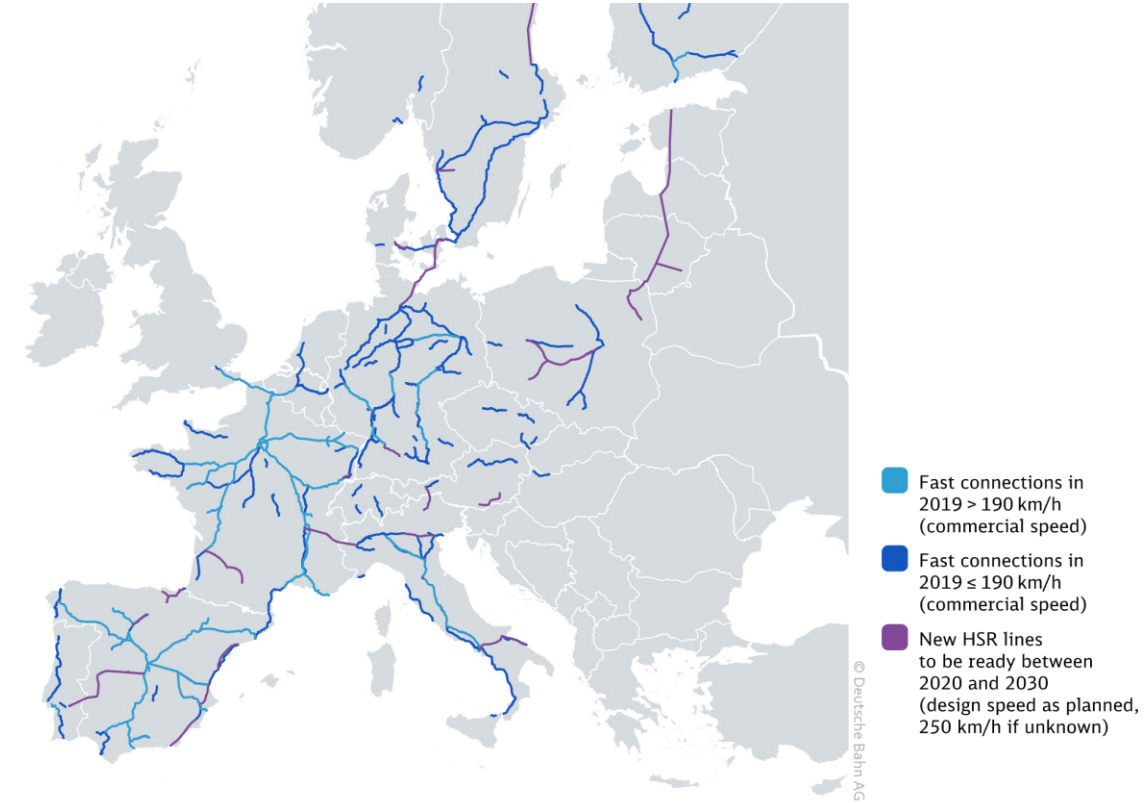
- „Starke Schiene“: Capacity boost of 30% until 2040
- Timely completion of TEN-T Network
- Optimization of capacity-efficient construction
- Digitalization of German Rail Network
- High Performance Corridors

What is missing? Vision 2050

Expansion measures up to 2030 and beyond are not sufficient

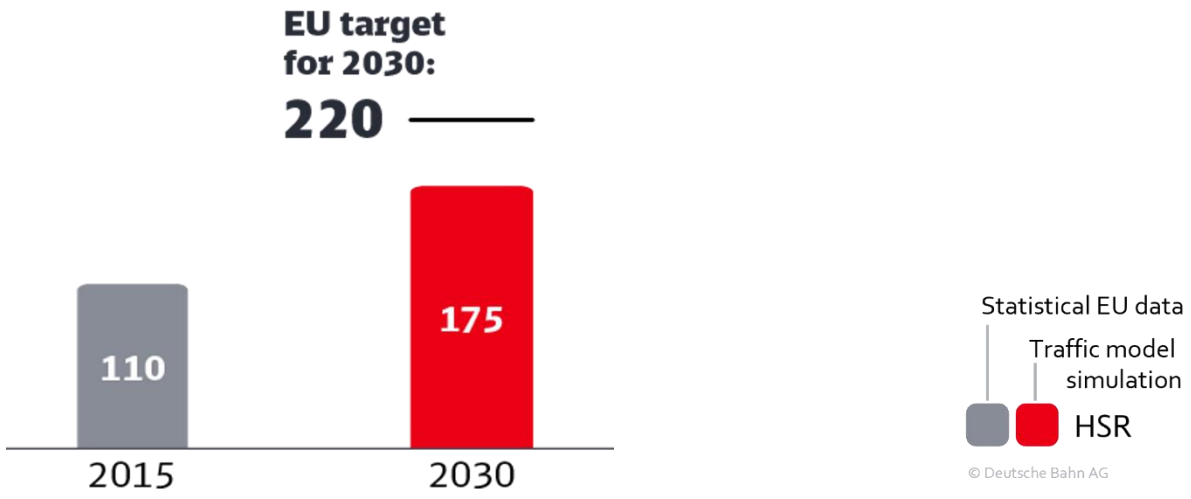
Interconnected European HSR network not achievable even with TEN-T

Planned HSR network until 2030



- **No** interconnected **European HSR network** exists based on infrastructure projects currently under construction or planned for completion by 2030
- **Cross-border HSR only possible to a limited extent**

HSR passenger kilometres –target and simulation 2030
[in billion pkm per year]



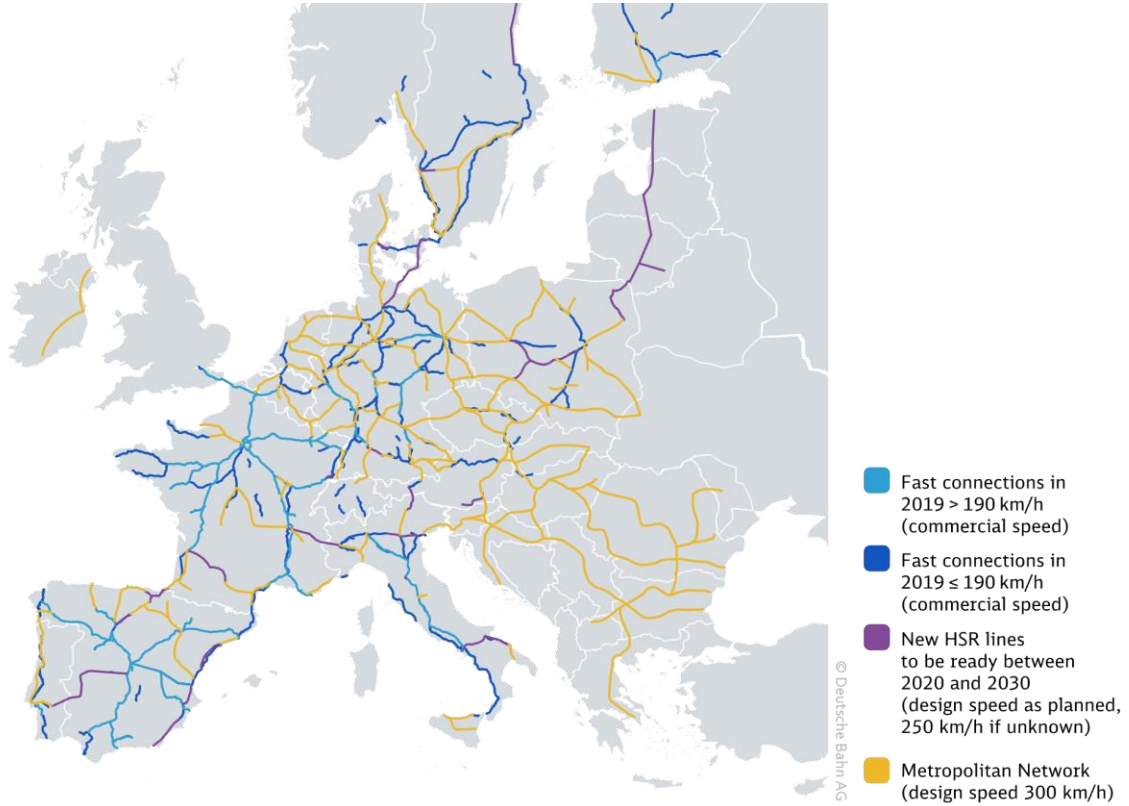
Target for 2030

- **Current plans** for expanding the HSR network by 2030 **will not be sufficient** to achieve the EU's target of doubling pkm
- Current plans will achieve 175 billion pkm, an increase of **only about 60%** of the passenger kilometres in 2015

Metropolitan Network

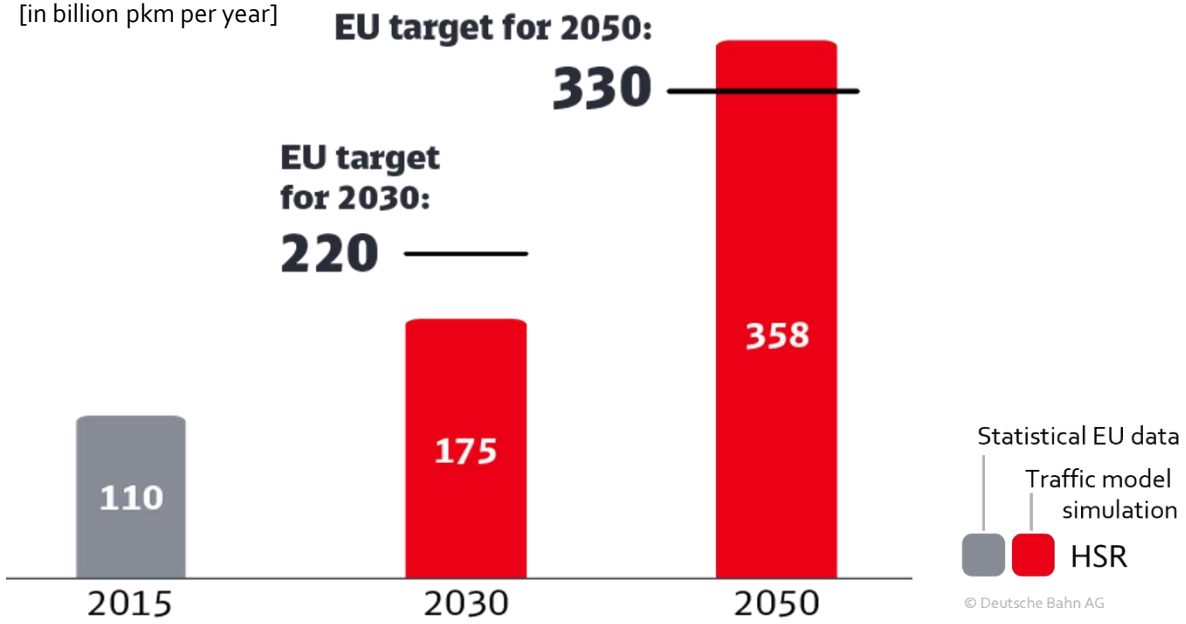
A new network to connect Europe's metropolitan regions – fast and frequently

Vision 2050: European Metropolitan Network



HSR passenger kilometres –target and simulation of the Metropolitan Network 2050

[in billion pkm per year]



Target for 2050

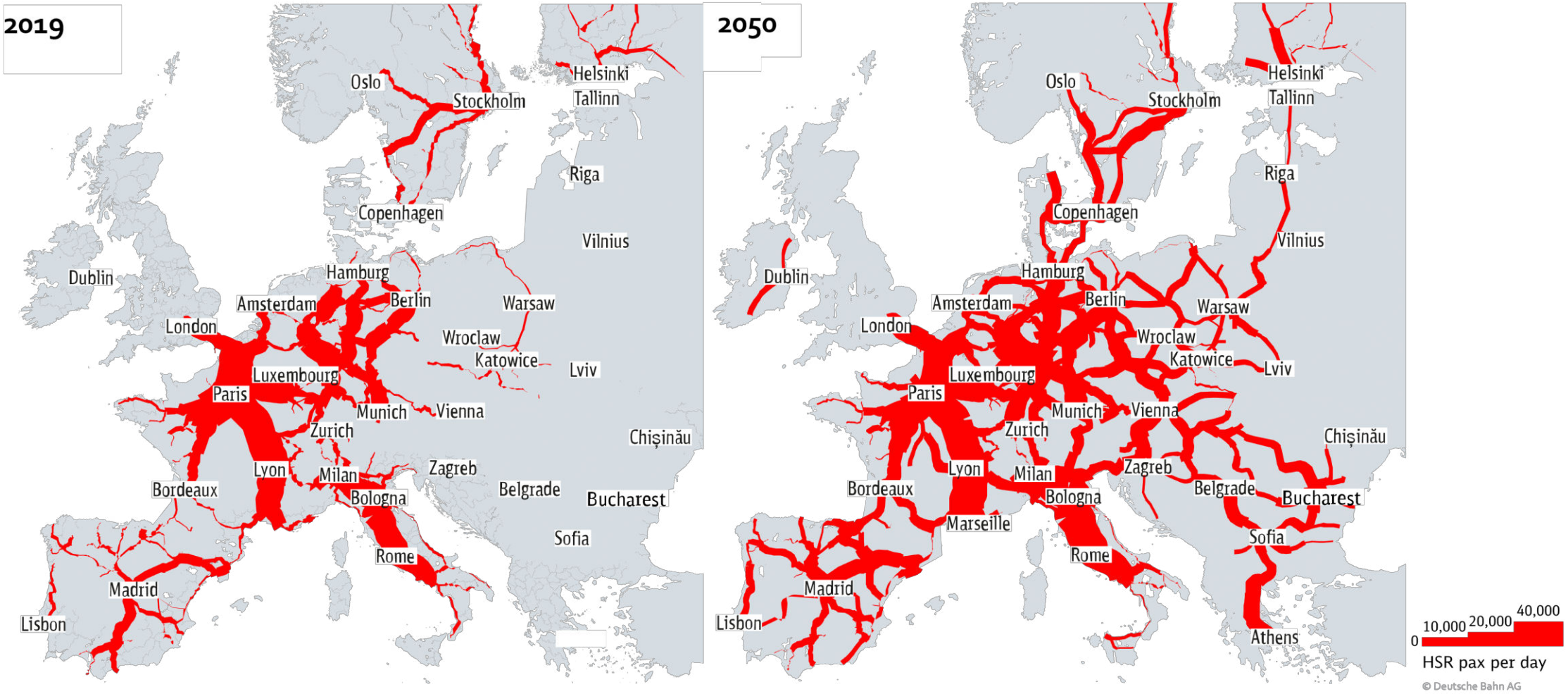
- **60%** of **EU citizens connected** by HSR network
- **Linking all European metropolitan regions frequently** with HSR
- Construction of new lines and expansion of existing lines to cover around **21,000 additional kilometres**

Metropolitan Network would significantly boost HSR demand

Numerous new high-demand corridors could emerge across Europe

HSR passenger volumes 2019 vs. 2050

[in pax per day, bars with more than 40,000 passengers are not differentiated in width]

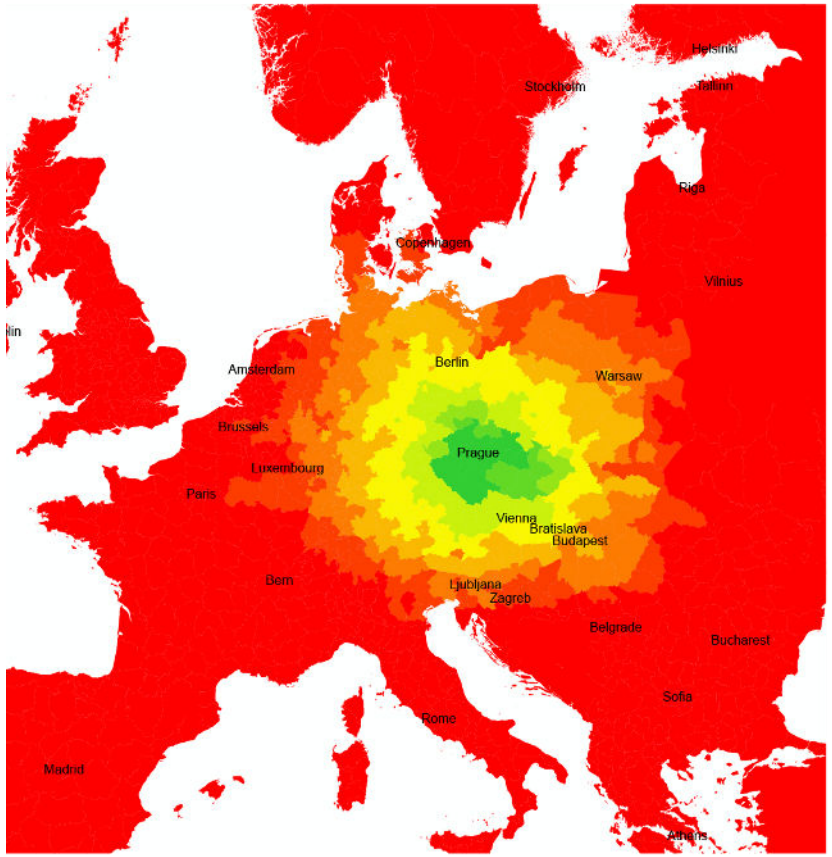


Europe grows together

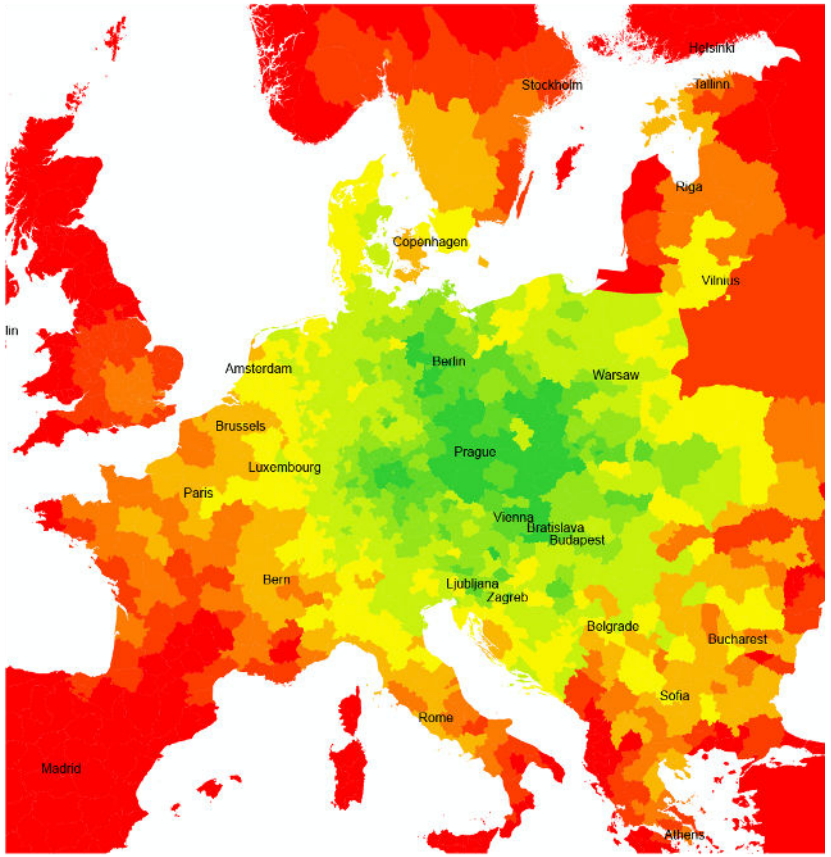
Metropolitan Network connects significantly more people

Perceived travel time of Prague

2019



2050



Perceived travel time

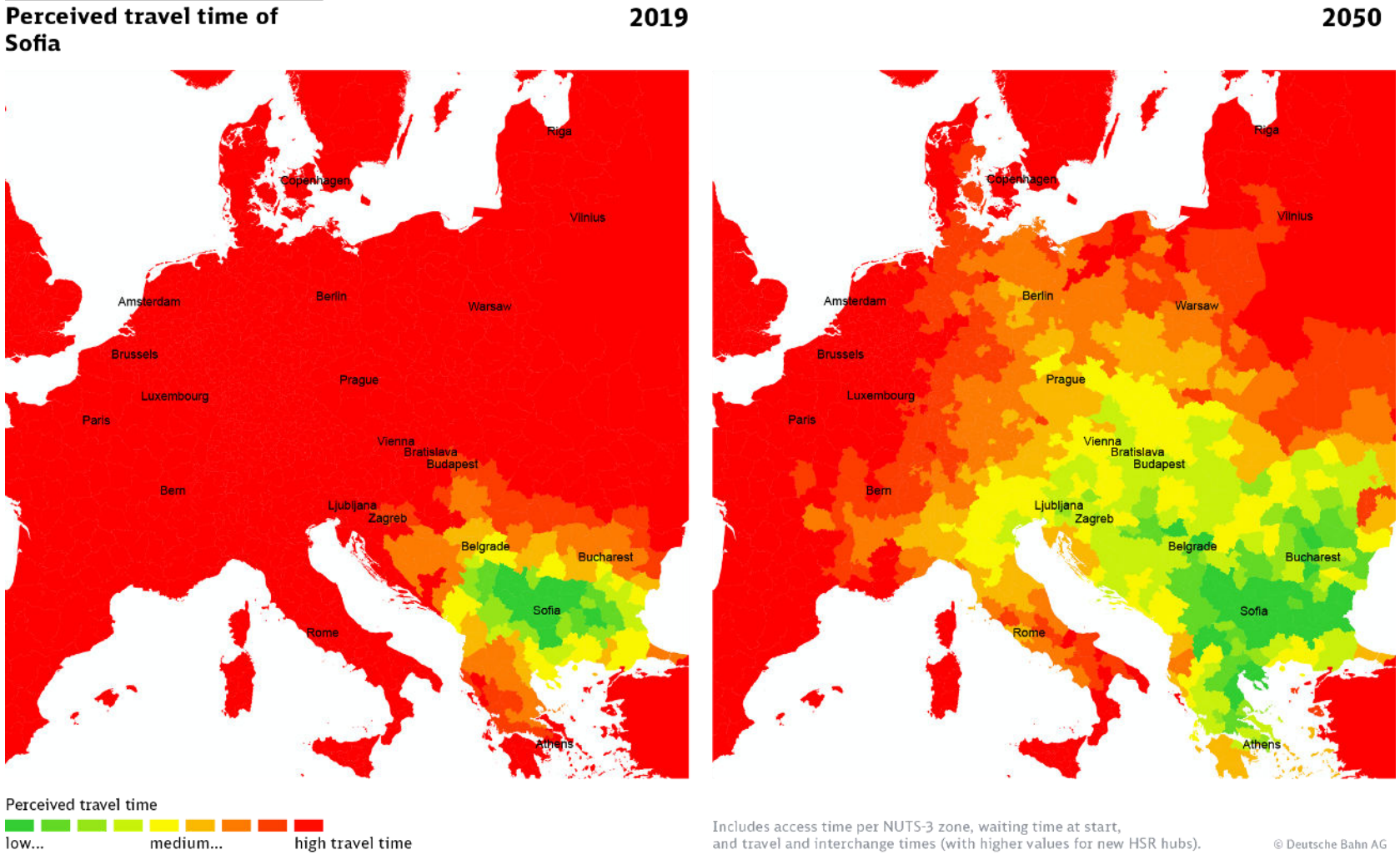
low... medium... high travel time

Includes access time per NUTS-3 zone, waiting time at start, and travel and interchange times (with higher values for new HSR hubs).

Europe grows together

Metropolitan Network connects significantly more people

Perceived travel time of Sofia

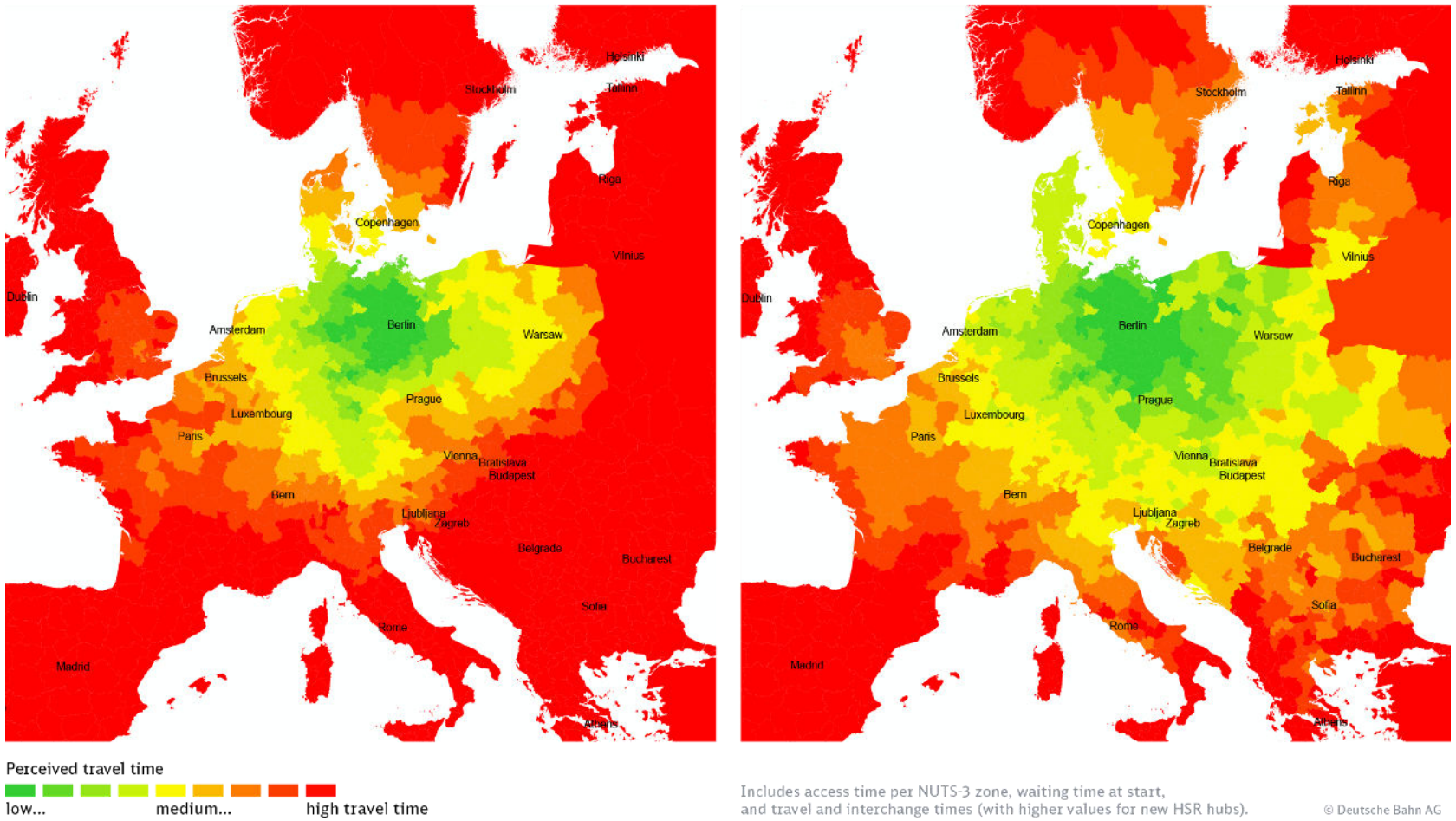


Includes access time per NUTS-3 zone, waiting time at start, and travel and interchange times (with higher values for new HSR hubs).

Europe grows together

Metropolitan Network connects significantly more people

Perceived travel time of Berlin

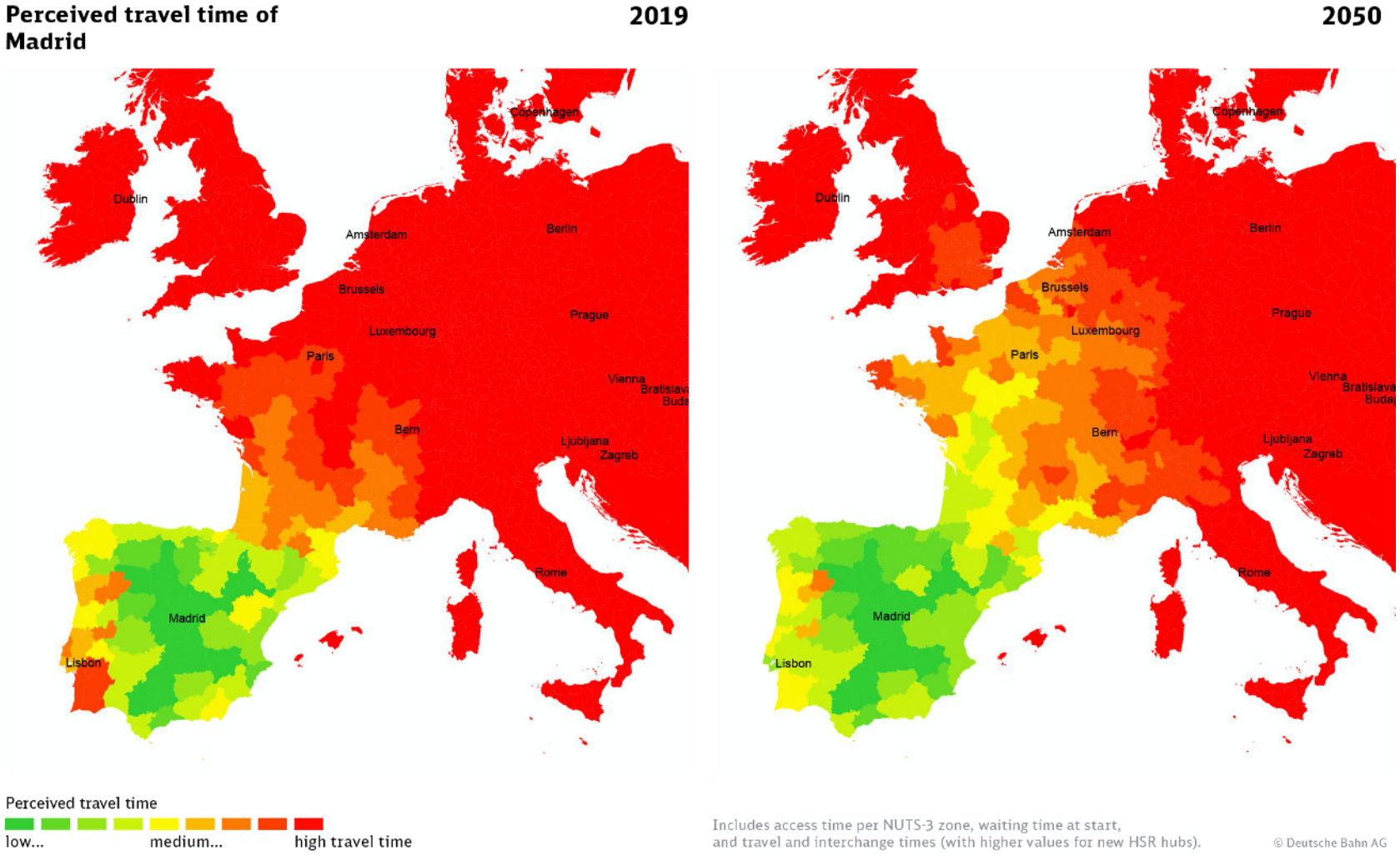


Includes access time per NUTS-3 zone, waiting time at start, and travel and interchange times (with higher values for new HSR hubs).

Europe grows together

Metropolitan Network connects significantly more people

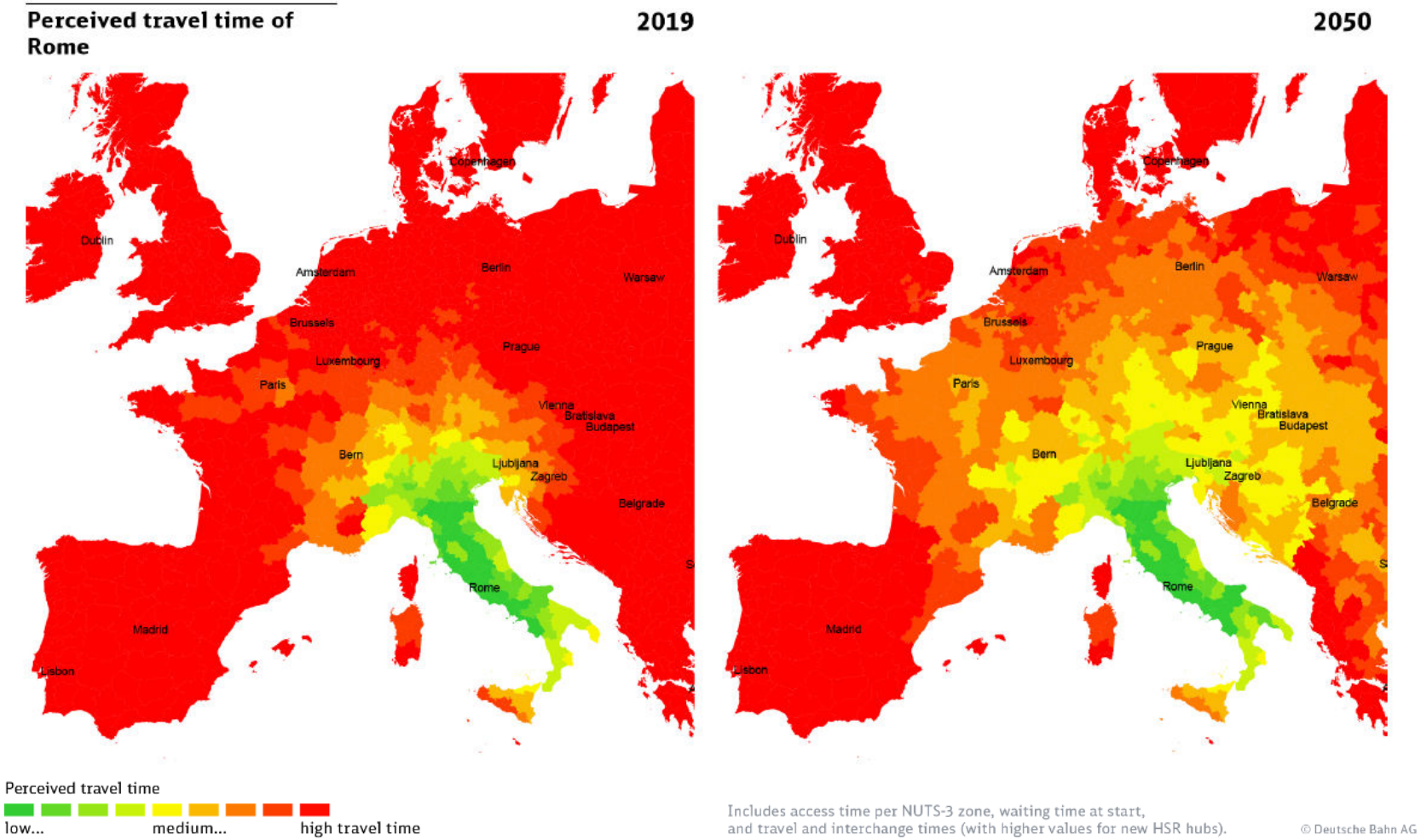
Perceived travel time of Madrid



Includes access time per NUTS-3 zone, waiting time at start, and travel and interchange times (with higher values for new HSR hubs).

Europe grows together

Metropolitan Network connects significantly more people

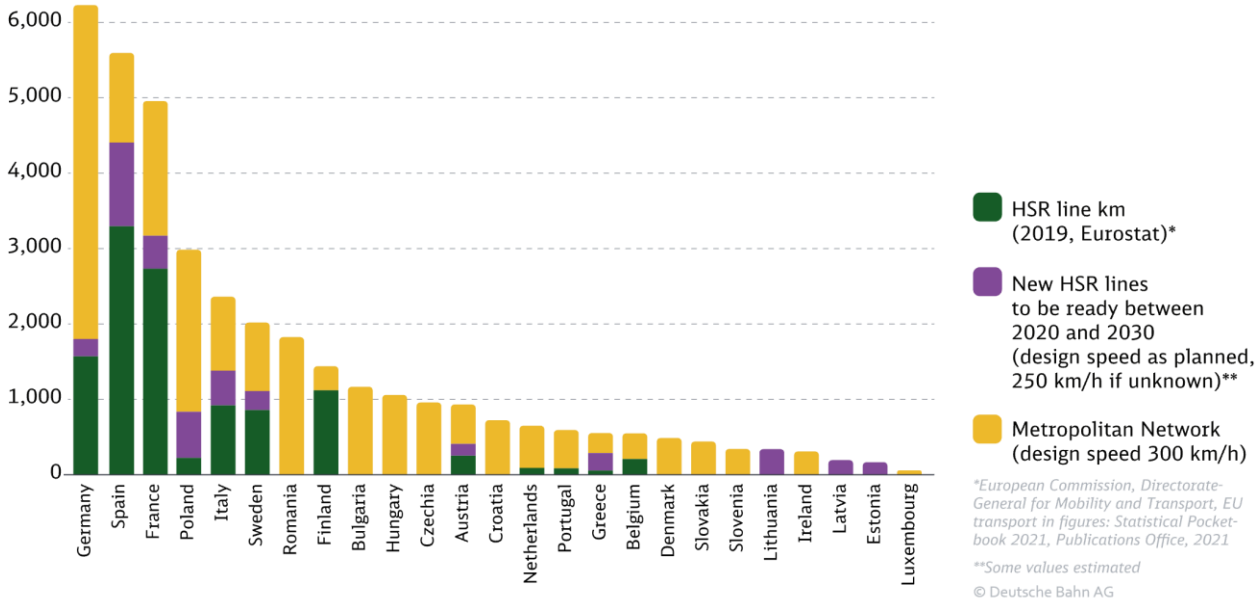


Includes access time per NUTS-3 zone, waiting time at start, and travel and interchange times (with higher values for new HSR hubs).

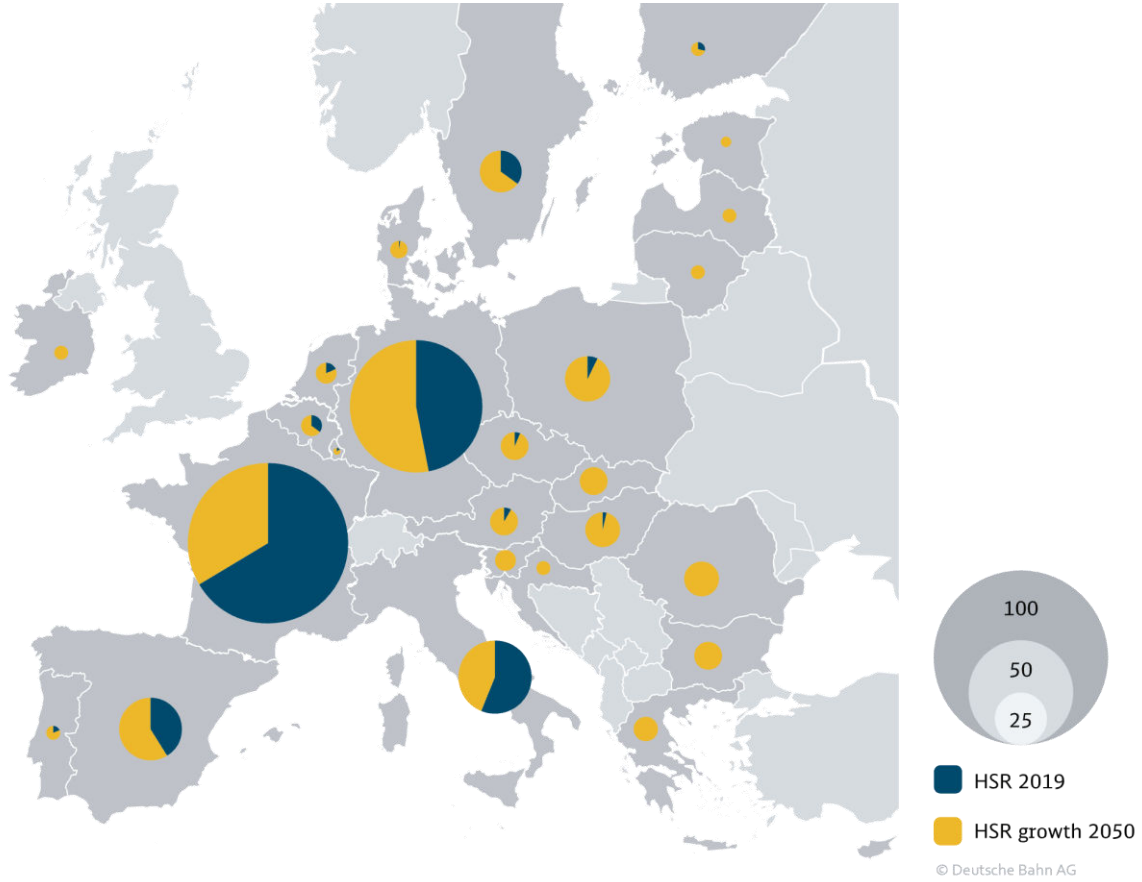
A major Europe-wide expansion could achieve the necessary growth

Significant expansion potential especially in the eastern countries of Europe

Current and necessary development of HSR infrastructure
[in km, per country]



HSR growth in the Metropolitan Network
[in billion pkm, per country, 2019 vs. 2050]



- Infrastructure of the yellow **Metropolitan Network has a length of ~21,000 km**
- Along with the new lines expected to be in service by 2030, the entire network would **more than triple the length of the 2019** EU27 HSR infrastructure (according to Eurostat: 11,336 km)
- **Germany, Poland, Romania, France and Spain** have the **highest absolute growth** in terms of HSR network length
- **Germany has the highest absolute expansion potential** due to a relatively high number of metropolitan regions to be connected due to the country's settlement structure

The way forward

Joint European effort is necessary to achieve the EU targets

Connect all metropolitan regions with high-speed rail

If **all of Europe's metropolitan regions** were **linked by a high-speed rail network** at hourly intervals at least, the volume of **high-speed rail traffic** could be **tripled by 2050**.

Implement a Europe-wide effort

Considerable action and **financial investments in infrastructure needs to be taken in nearly all European countries**, which will probably **exceed the scope of the current funding mechanisms**.

Go further than the TEN-T network

To complete a Europe-wide network, a **significant extension of current infrastructure should be discussed** and added to the program.

Create capacities for both conventional rail and freight

Using this **new infrastructure** efficiently would maximise **the capacity gain**.
This would **enhance connectivity and reduce congestion**.

Bring Europeans closer together

The **Metropolitan Network** would allow every European citizen to experience the **free movement of people, goods, and services** – the **foundation on which Europe is built**.

Management summary

- **Green Deal:** Expanding rail for green growth in Europe is essential for climate-friendly European transport policy. Aim is to **double European high-speed rail traffic by 2030** and **triple it by 2050**.

- **Current plans for the extension of Europe's infrastructure are not sufficient to achieve these targets**: Traffic growth based on current plans up to 2030 and the plans of the TEN-T network are not sufficient to achieve an interconnected European HSR network and the targeted growth.

- **Additional infrastructure is needed in Europe:** The **Metropolitan Network** proposal is a **rail network** with HSR infrastructure **connecting all metropolitan regions and major European cities**.
  Frequent connections will enable the targeted **tripling of HSR passenger kilometres by 2050**. This will require **massive infrastructure expansion** in European countries.

- The Metropolitan Network could **reduce travel time and increase frequency, enabling an increase of HSR's market share to almost 30% for distances from 300 km to 1,000 km by 2050**. Market share will be gained primarily from motorised private transport.

Thank you for your attention