INTERNATIONAL UNION
OF RAILWAYS

unity, solidarity, universality

The sustainability of high speed

11th UIC Sustainability Conference
Madrid, 17 June 2010

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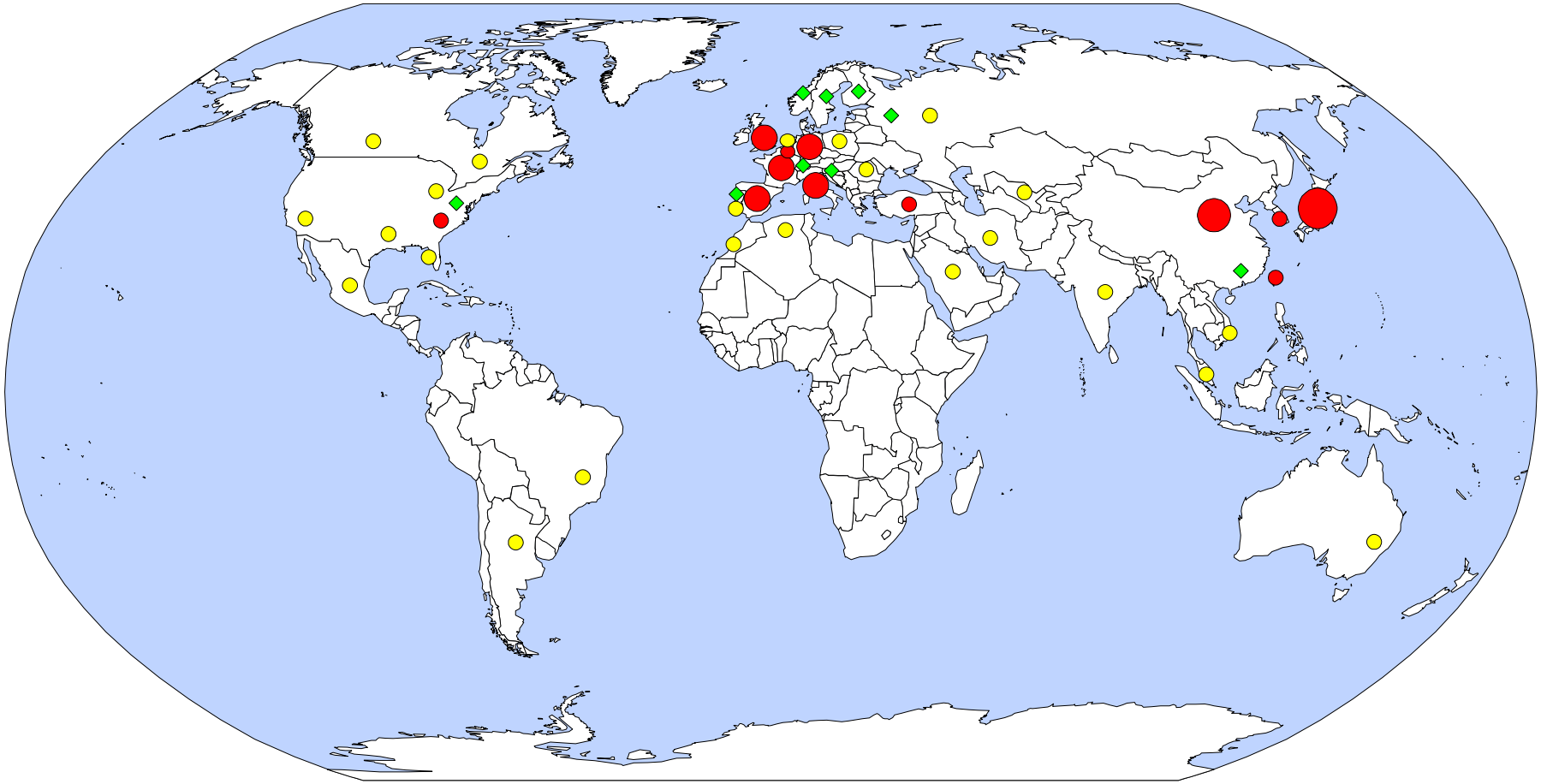
Director of the Passengers and High Speed Department, UIC

Some facts & figures on high speed

High speed rail systems in the world

In operation:	Planned:
France	Argentina
Germany	Brazil
Italy	Canada
Spain	India
Belgium	Indonesia
The Netherlands	Iran
United Kingdom	Mexico
	Morocco
Japan	Poland
Korea	Portugal
China	Russia
Taiwan, China	Saudi Arabia…
Turkey	
USA	

High speed rail systems around the world

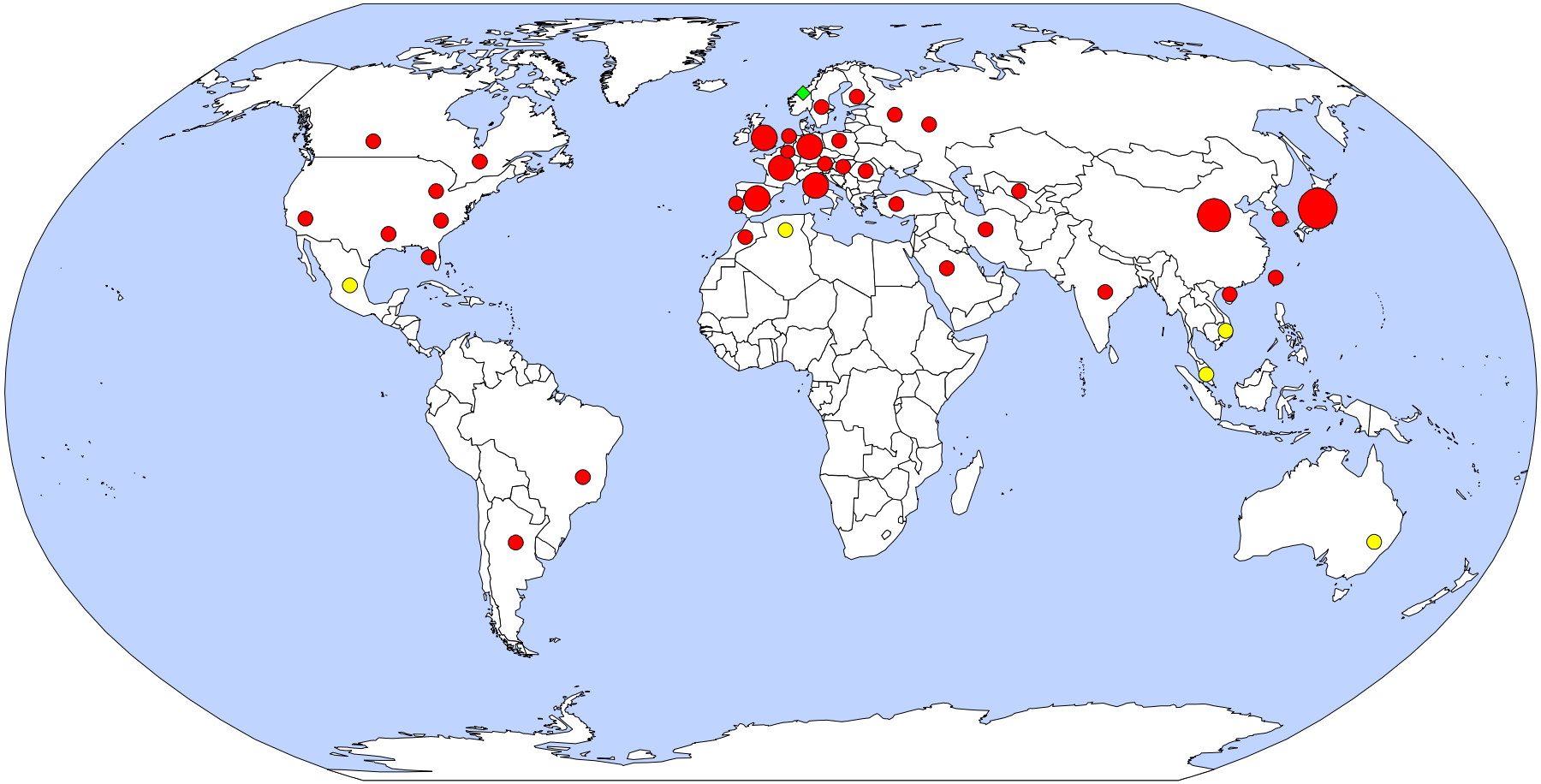


V ≥ 250 km/h in operation

V ≤ 200 km/h in operation

High speed in project

High speed rail systems around the world



V ≥ 250 km/h in operation

V ≤ 200 km/h in operation

High speed in project

High speed world network

World network (V $\geq$ 250 km):

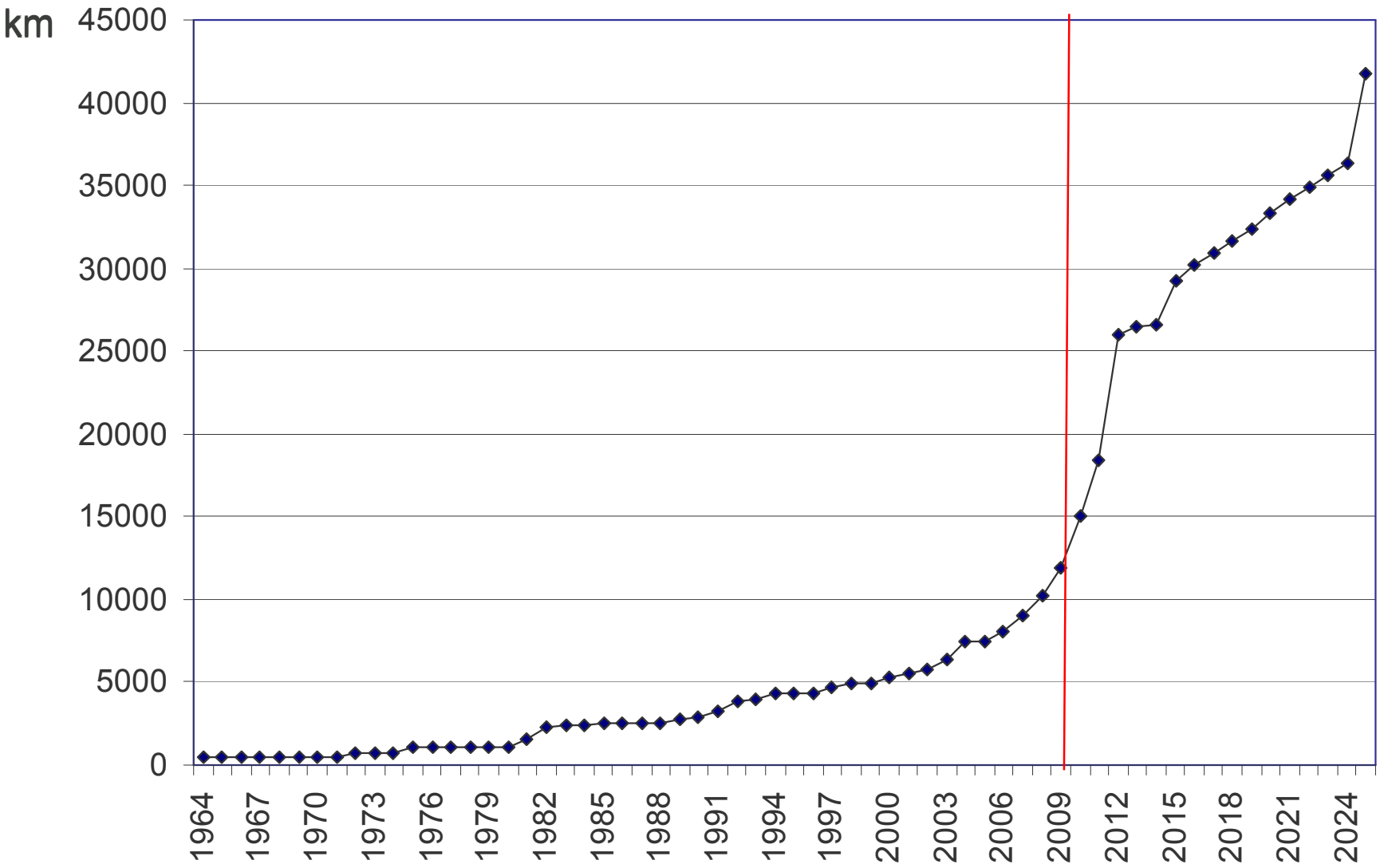
13.414 km of lines in operation

10.781 km of lines under construction

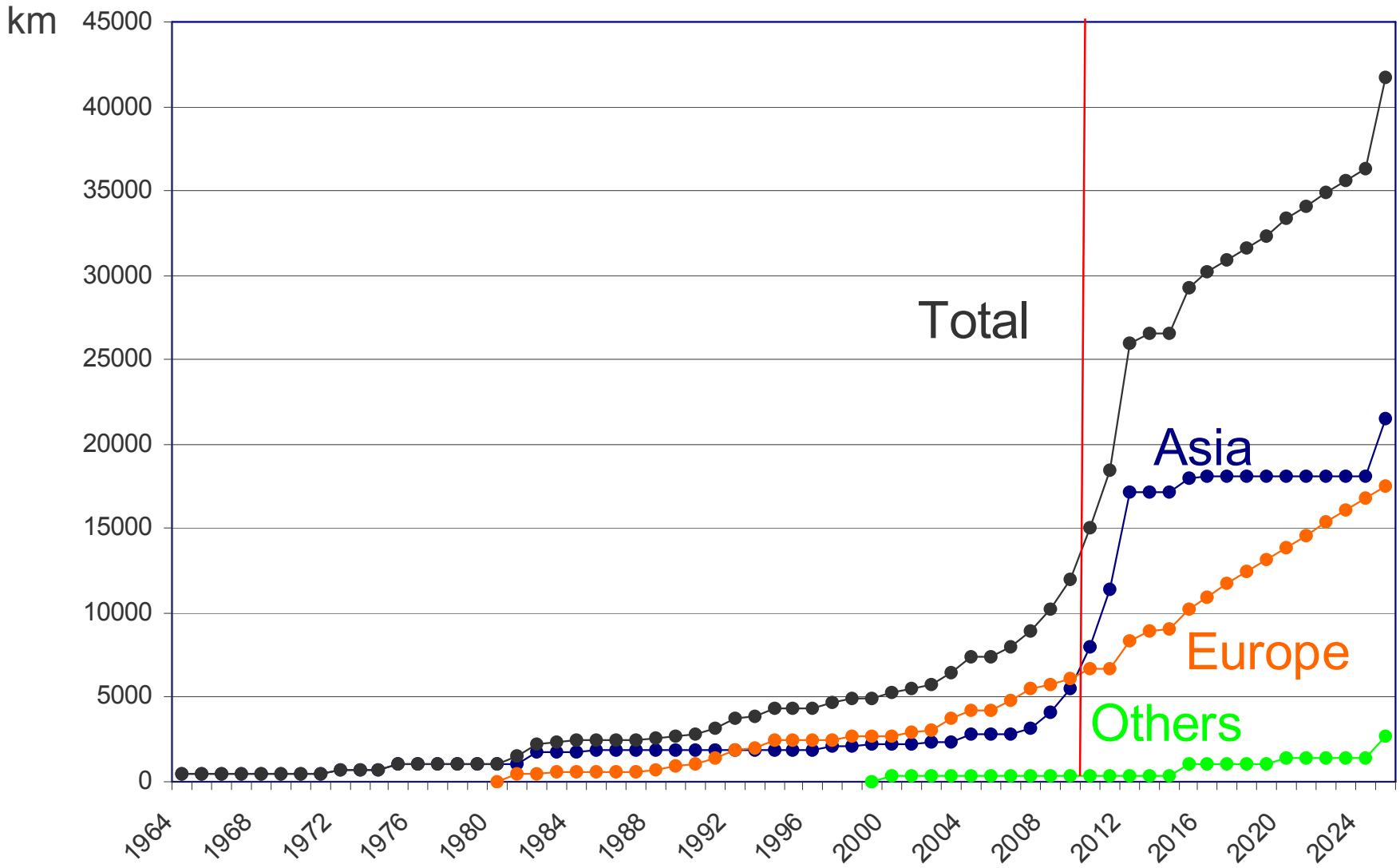
17.579 km of lines planned

May 2010

Expected evolution of the world HS network



Expected evolution of the world HS network



World rolling stock high speed fleet

High speed train sets* in operation in the world:

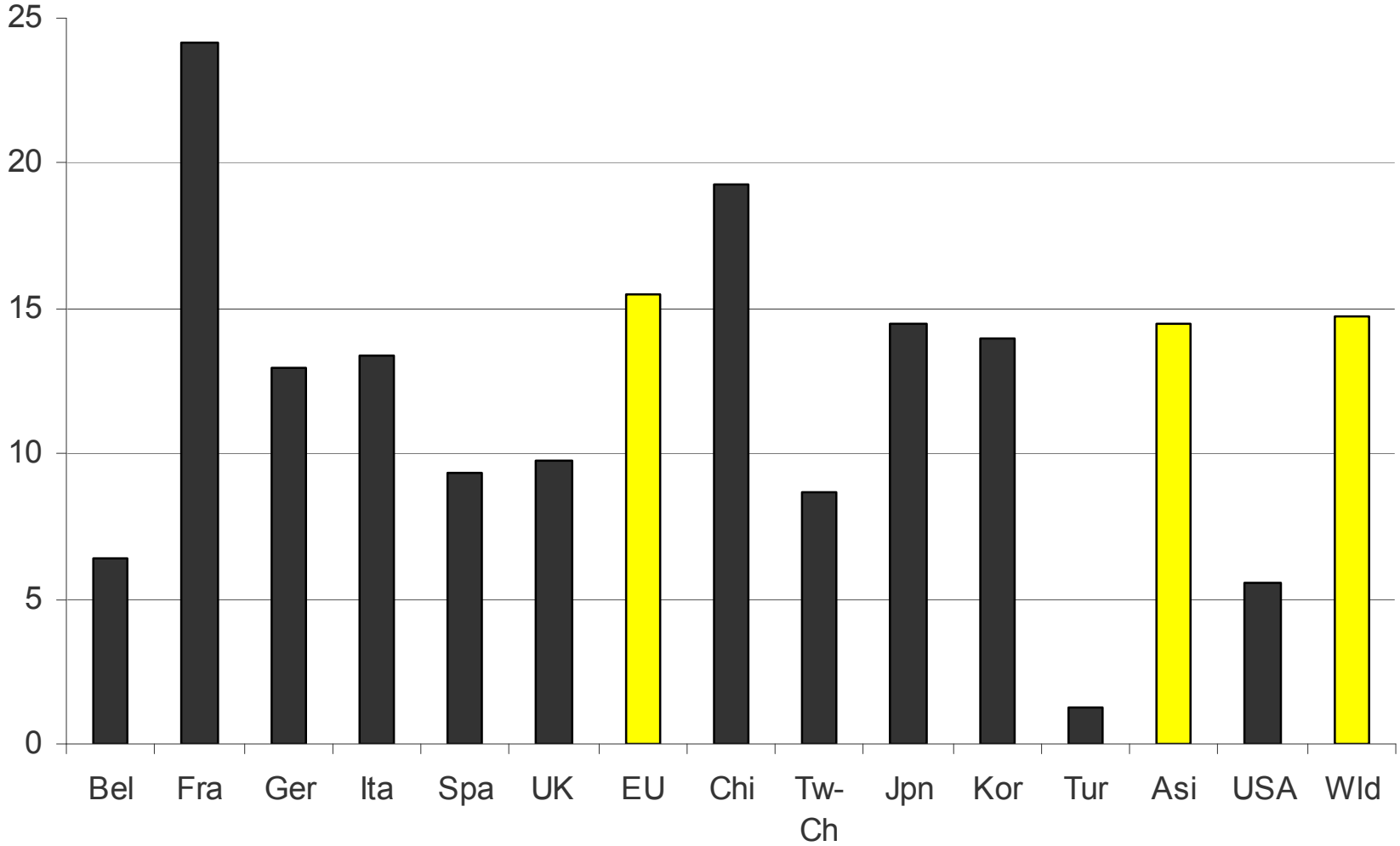
Maximum speed 200 km/h or more: 2.228

Maximum speed 250 km/h or more : 1.667

* and trains operating on dedicated high speed lines

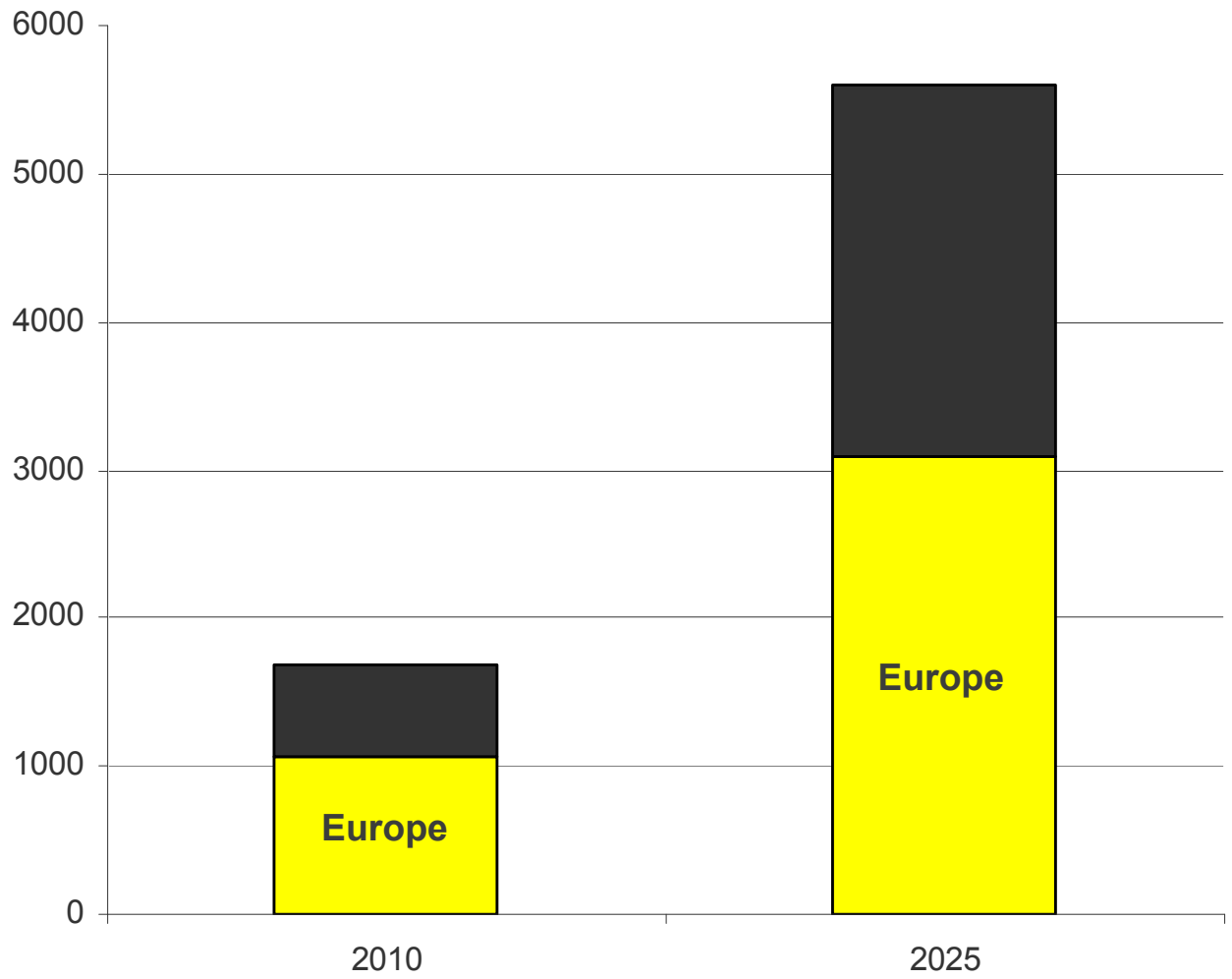
April 2010

Ratio rolling stock / infrastructure



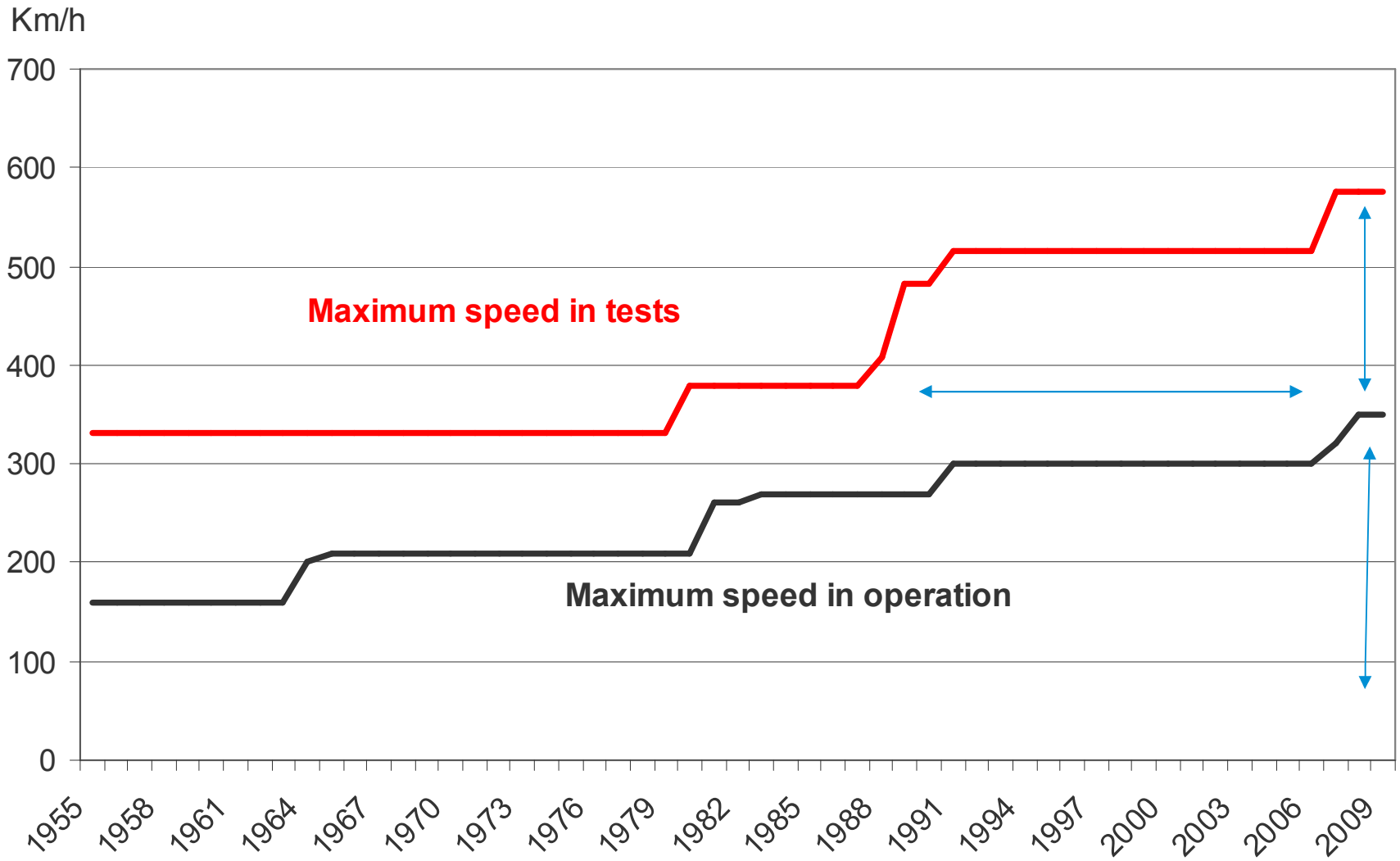
Number of train sets per 100 miles of HS line

Possible evolution of world fleet



Total number of train sets

Evolution of maximum speed on rails



Maximum speed in operation: 350 km/h – China

World rail speed record: 574,6 km/h – France, April 2007

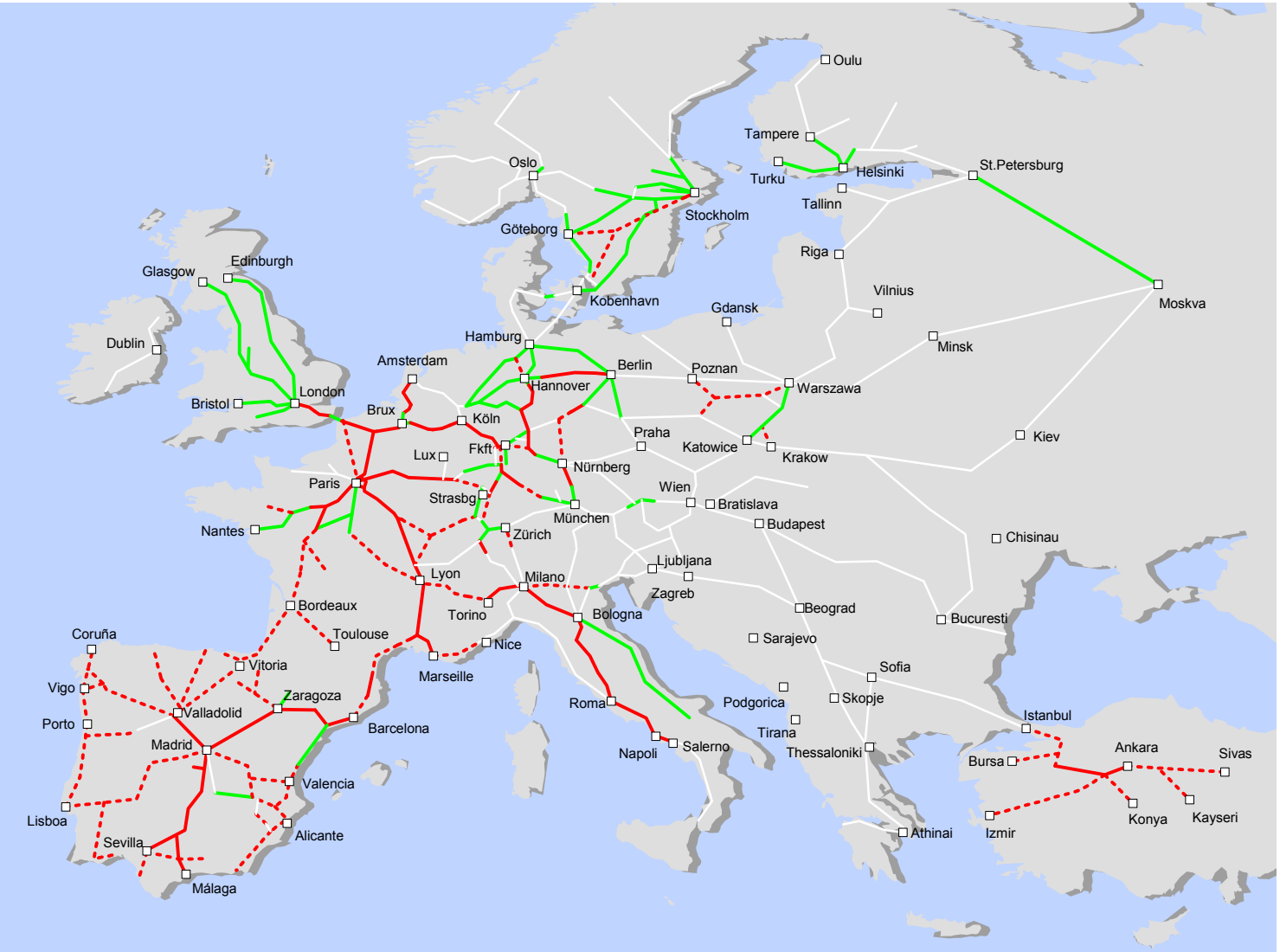
Japan

In operation
Under construction
Planned

European HS Network

Situation as at 05.2010

- v ≥ 250 km/h
- v ≥ 250 km/h Planned
- 180 ≤ v < 250 km/h
- Other lines



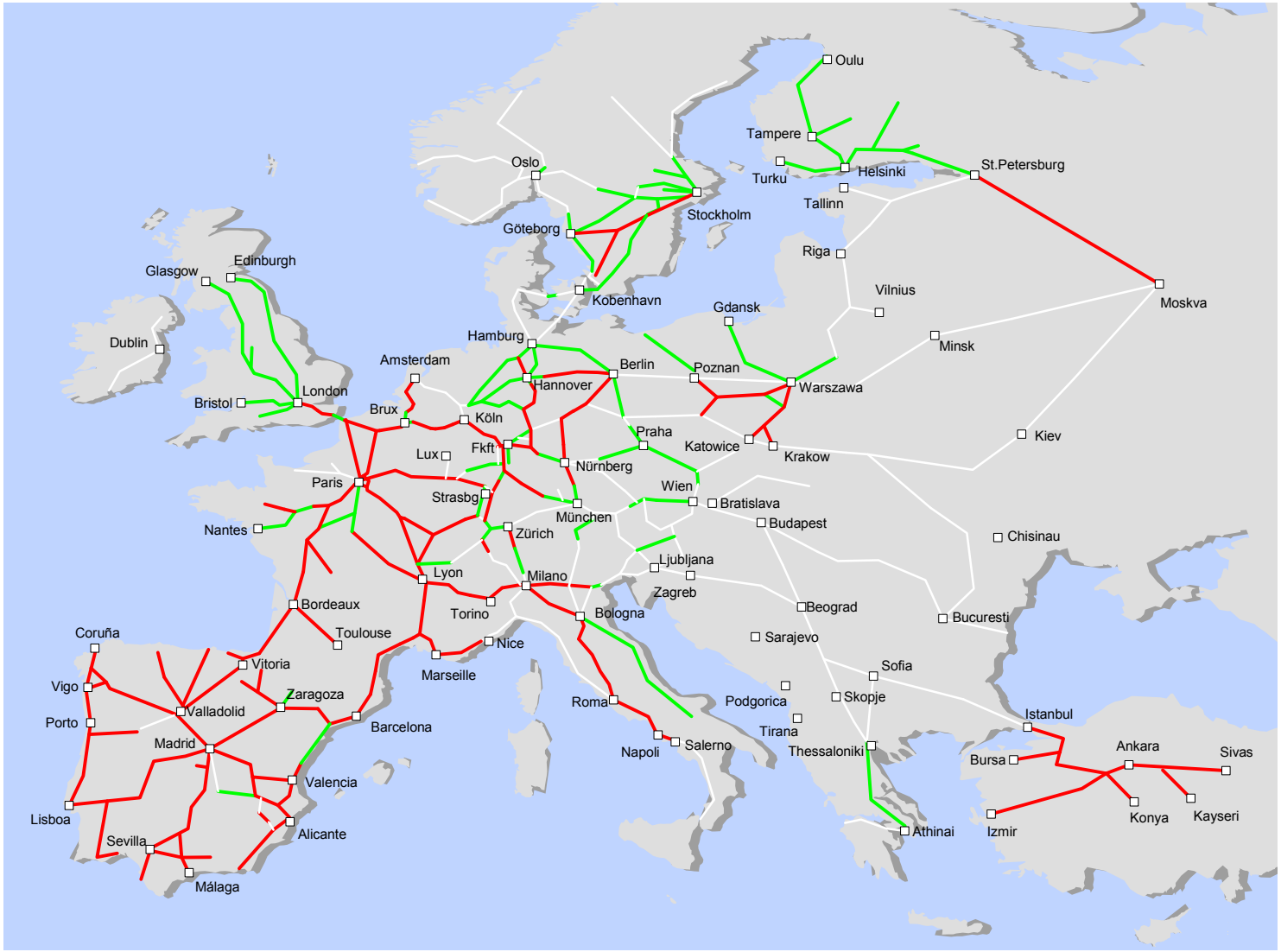
Information given by the Railways

UIC - High-Speed
Updated 05.2010

European HS Network

Forecasting 2025

- v ≥ 250 km/h
- v ≥ 250 km/h Planned
- 180 ≤ v < 250 km/h
- Other lines



Information given by the Railways

UIC - High-Speed
Updated 05.2010

Korea

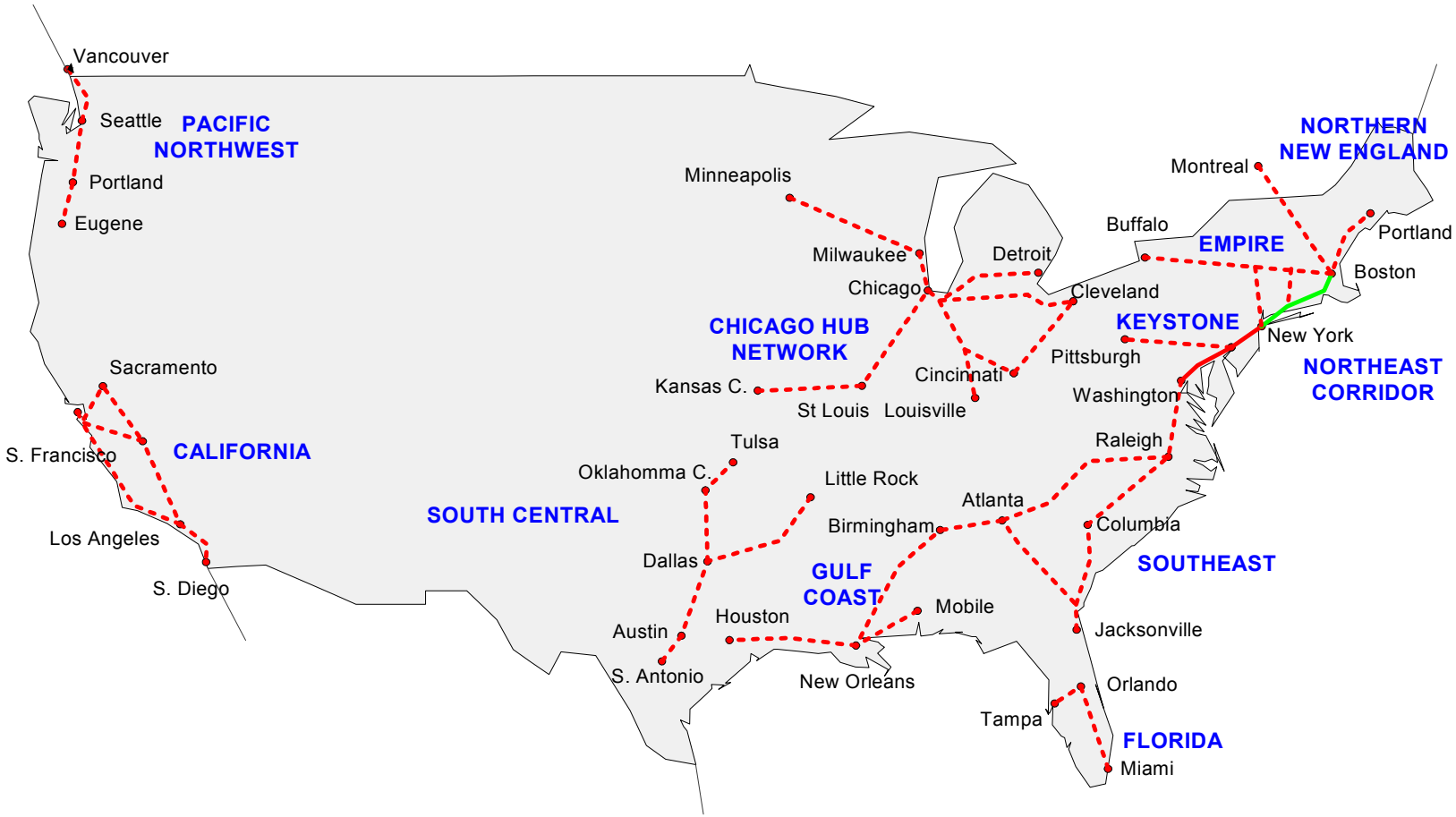
In operation (29/03/2004)

Under construction

China


Qiqihaer
Haerbin
Jilin
Shenyang
BEIJING
Tianjin
Dalian
Taiyuan
Jinan
Qingdao
Xian
Xuzhou
Zhengzhou
Nanjing
Chengdu
Shanghai
Wuhan
Ningbo
Changsha
Zhuzhou
Fuzhou
Taipei
Guanzhou
Shenzen
Kaohsiung
HAINAN
In operation (3.529 km)
Under construction
Updated June 2010

USA


Vancouver
Seattle
PACIFIC NORTHWEST
Portland
Eugene
Minneapolis
Milwaukee
Detroit
Chicago
Cleveland
Buffalo
Montreal
NORTHERN NEW ENGLAND
EMPIRE
Portland
Boston
New York
KEYSTONE
NORTHEAST CORRIDOR
CHICAGO HUB NETWORK
Pittsburgh
Cincinnati
Kansas C.
St Louis
Louisville
Washington
Sacramento
S. Francisco
CALIFORNIA
Los Angeles
S. Diego
Tulsa
Oklahomma C.
Little Rock
SOUTH CENTRAL
Dallas
Raleigh
Atlanta
Birmingham
Columbia
SOUTHEAST
GULF COAST
Mobile
Houston
Austin
S. Antonio
New Orleans
Jacksonville
Orlando
Tampa
FLORIDA
Miami

High speed and the environment

High speed advantages for Society

- Capacity of transport
  (400.000 passengers per day, Tokyo – Osaka)
  Permits reducing traffic congestion
  Helps economic development
  Shapes land-use
- Respects the Environment
- Is Safe

High speed advantages for Society

Capacity

Environment

Safe

Land occupancy

Some ratios on land occupancy:

- Average 3,2 ha/km
- Average motorways 9,3 ha/km

Parallel layout with a motorway:

- Paris – Lyons (1981 – 1983) 60 km (14 %)
- Paris – Lille (1993) 135 km (41 %)
- Cologne – Frankfurt (2002) 140 km (71 %)
- Milan – Bologna (2008) 130 km (72 %)

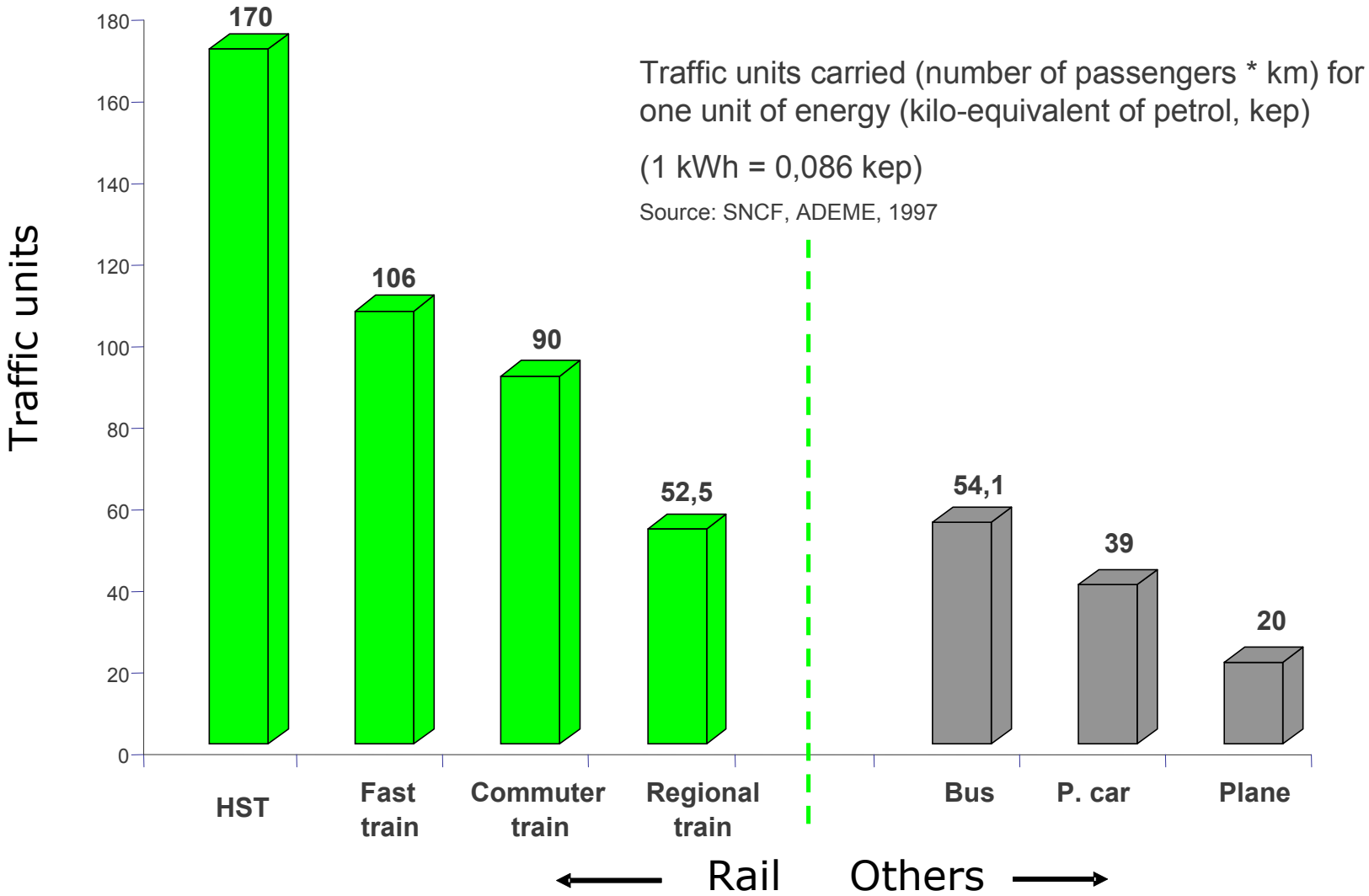
Parallel layouts

High speed line Paris – Lille (TGV Nord)

Parallel layouts

High speed line Cologne – Frankfurt

Energy efficiency comparison



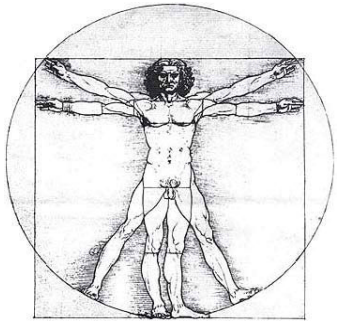
Traffic units carried (number of passengers * km) for one unit of energy (kilo-equivalent of petrol, kep)

(1 kWh = 0,086 kep)

Source: SNCF, ADEME, 1997

Comparison of carbon emissions

Magnitude of CO2 emissions per person
(in a 600 km trip):

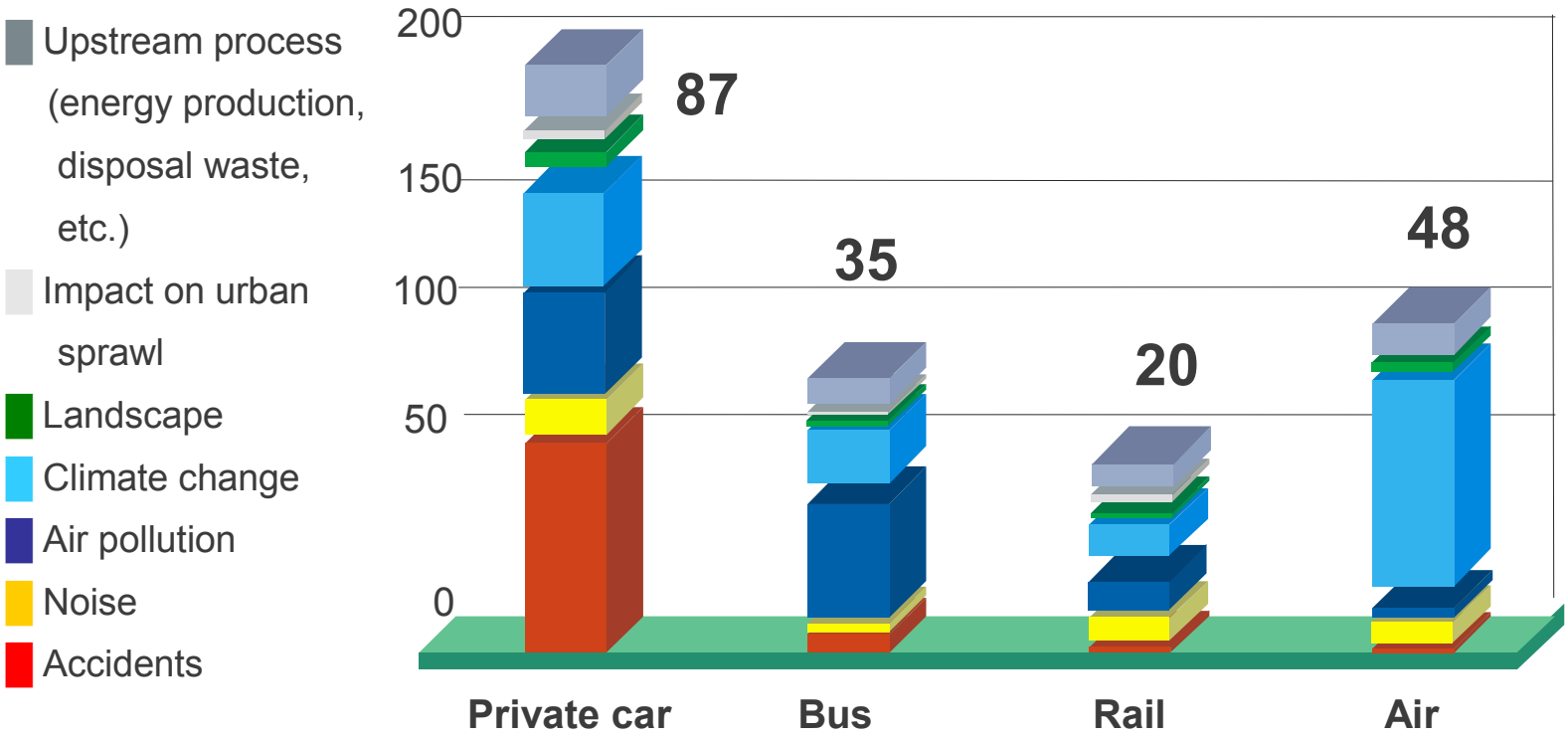


- 80 kg if travelling by plane
  (the weight of the passenger)

- 13 kg if travelling by high speed train
  (the weight of his/her suitcase)

External costs (average)

External costs = Part of the ticket paid by society



Magnitude of external costs in a medium-distance corridor, non-rush hour and without considering congestion (€ per 1000 passenger km)

UIC activities on High Speed

UIC High speed activities

Technical assistance based on the main principles:

- High speed is a complex system
- High speed is different in each country and in each case
- UIC is the forum for cooperation of high speed members

UIC study on high speed and Sustainability

Aims of the study

- Supply strong and credible arguments in favour of passenger's high speed rail development
- Enable members to convince governments to support High Speed projects
- Demonstrate the advantages of High Speed to society, in terms of:

  Energy Efficiency, CO^2 emissions, land use, external costs, urban development and other social aspects

UIC study on high speed and Sustainability

Cooperation Partners

- UIC High Speed
- UIC Environment & Sustainability Dept.
- SYSTRA (Paris based consultant)

Time frame

- Study finalised by 2010
- To be continued (possibly)

UIC study on high speed and Energy

Union International des Chemins de Fer

High Speed Committee

High speed, energy consumption and emissions

First draft

Study and Research Group for Railway Energy and Emissions

Fundación de los Ferrocarriles Españoles (Spanish Railway Foundation)

UIC study on high speed and Energy

Cooperation Partners

- UIC High Speed
- UIC Environment & Sustainability Dept.
- Fundación de los Ferrocarriles Españoles (FFE)

Time frame

- Study finalised by 2010
- To be continued (possibly)

Dissemination on high speed studies

UIC – High speed is finalising 4 important studies on:

- High speed and the City
- High speed and Territory Management
- High speed and Sustainable Mobility
- High speed and Energy

They will be presented at the
World Congress on High Speed (Beijing, Dec. 2010)

A large dissemination of these studies should be done during 2011

Training on UIC High Speed Systems

One week (5 days) Training Seminar, in which all the elements involved in a high speed system are analysed

7th THSS: 28 June – 3 July 2010, in Paris, UIC-HQ

7th World Congress on High Speed Rail

7 – 9 December 2010, CNCC – Beijing

Beijing 2010 HIGHSPEED
7th World Congress on High Speed Rail
第七届世界高速铁路大会

High speed rail spearheading greener transport

Organized by UIC & MOR - CARS

http://www.uic-highspeed2010.com.cn/

■ ■ ■ Thank you very much for your kind attention

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