

Game changer for a carbon neutral economy

Railway contribution to the Green Deal



Key targets for 2030 and European Green Deal

40 %

Cuts in GhG
emissions (compared
to 1990 levels)

32%

Share in renewable
energy

32.5%

Improvement in
energy efficiency

AMBITION: CARBON NEUTRAL ECONOMY IN THE EUROPEAN UNION BY 2050

EC Green Deal Package – ambitious targets, including among others...

- › a 90% reduction in transport emissions by 2050
- › a substantial part of the inland freight carried today by road to shift to rail and inland waterways
- › 1 million public recharging and refuelling stations needed for the 13 million zero- and low emission vehicles expected on European roads by 2025

Roadmap extract

- › ...no clear direct policy support for rail, but...



Strategy for sustainable and smart mobility

Measures to increase and better manage the capacity of railways

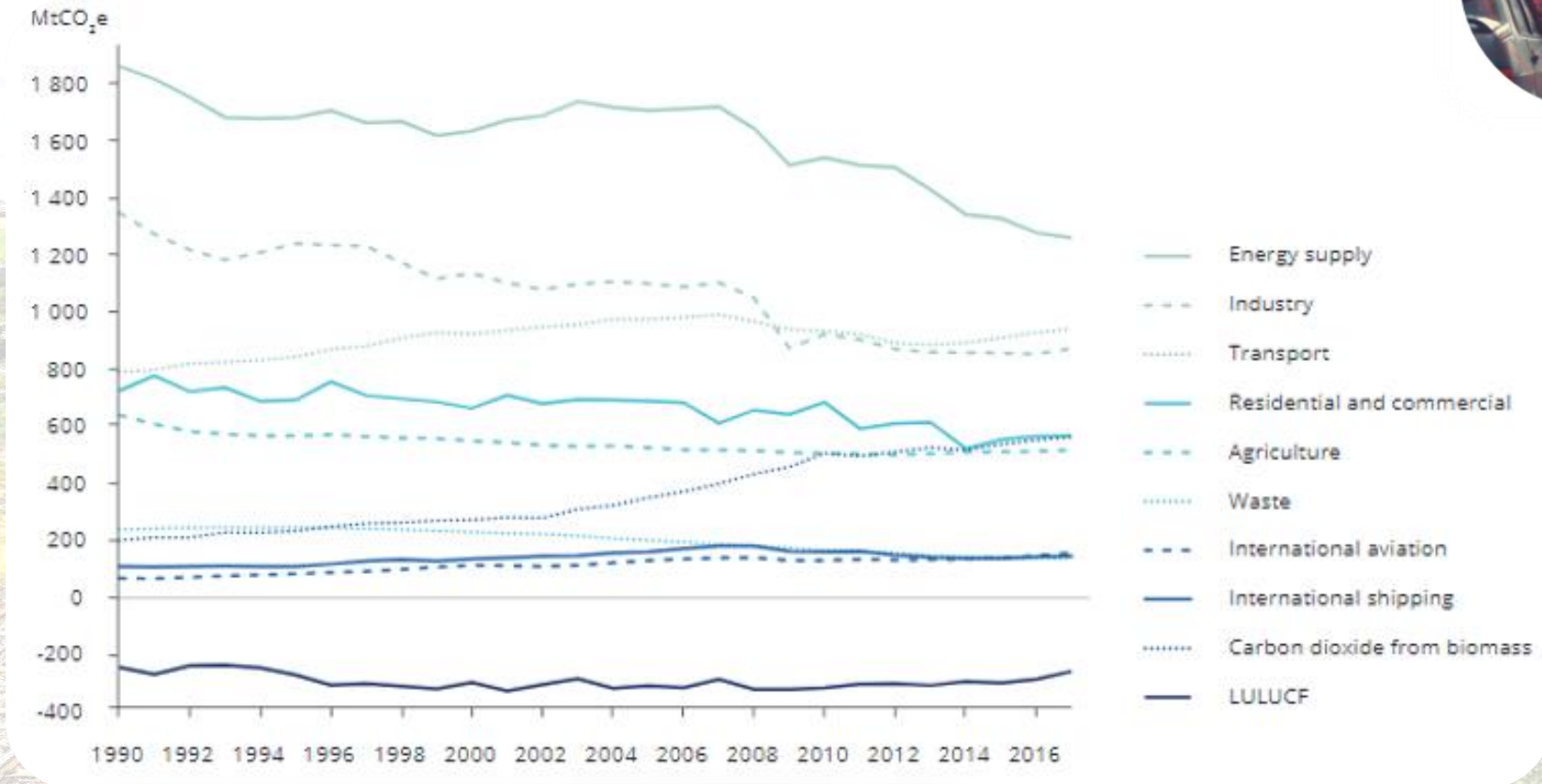
MAKING RAILWAY THE BACKBONE OF THE MOBILITY STRATEGY IN THE GREEN DEAL

Railway: a greener mode of transport

TRANSPORT: second sector in terms of emissions

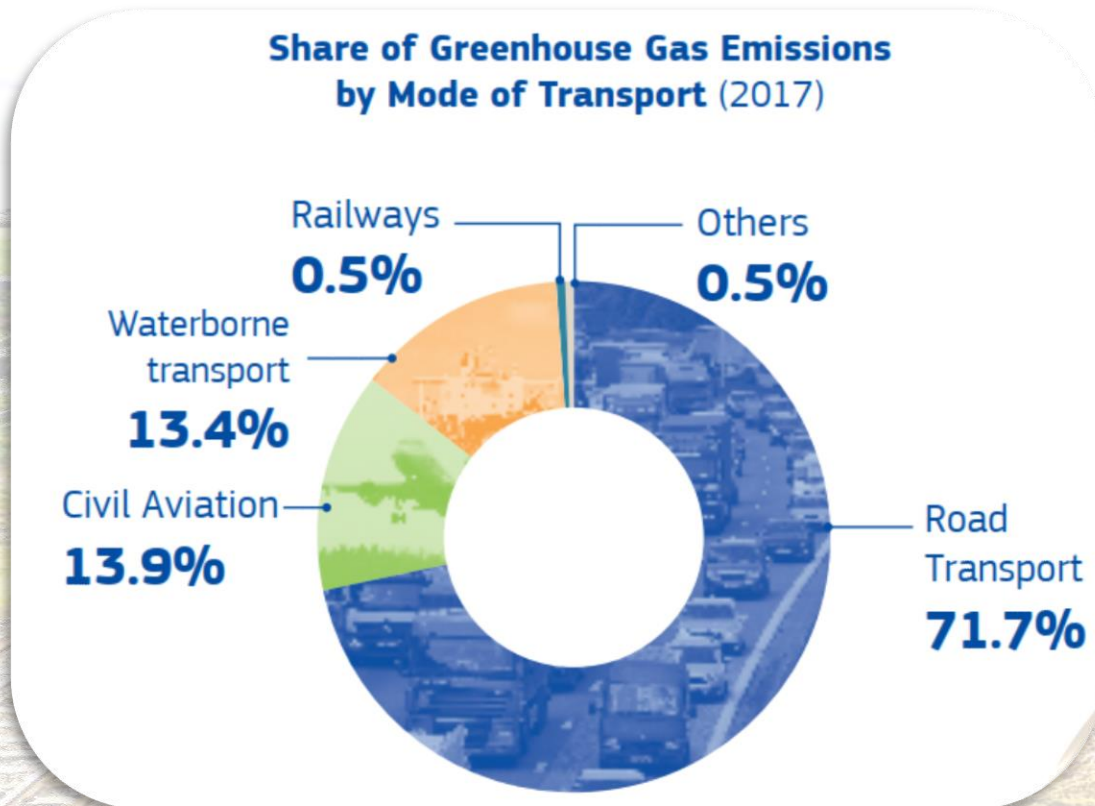


Transport represents **25%** of our emissions



Greenhouse gas emissions by main sector in the EU-28, 1990-2017 - Source: EEA

1. RAILWAY TRANSPORT: mode of transport with the lowest emissions and low impact on air quality

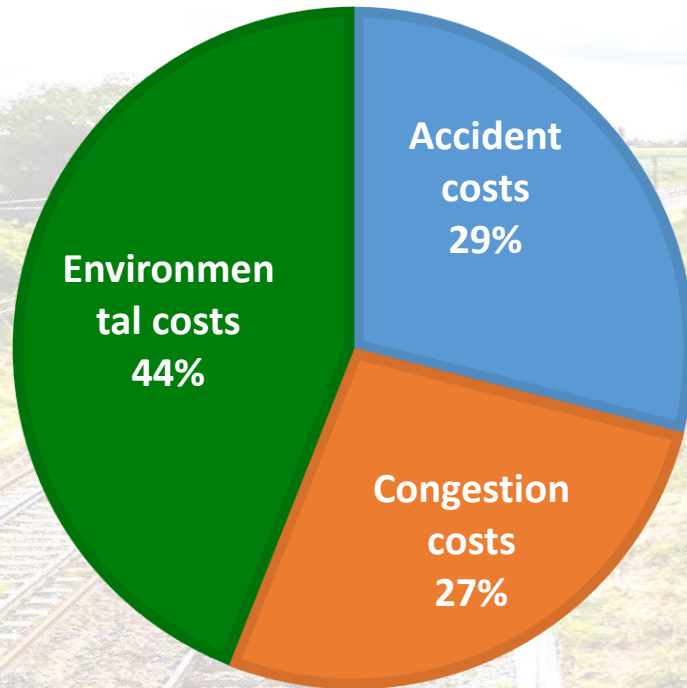


Source: European Commission, December 2019

- **Road** transportation and **aviation** increased CO₂ emissions between 1990 and 2017.
- **Railway** direct emissions declined by 66%.
- **Poor air quality** has negative impacts on human health and ecosystems.

2. RAILWAY TRANSPORT: mode of transport with the lowest external costs

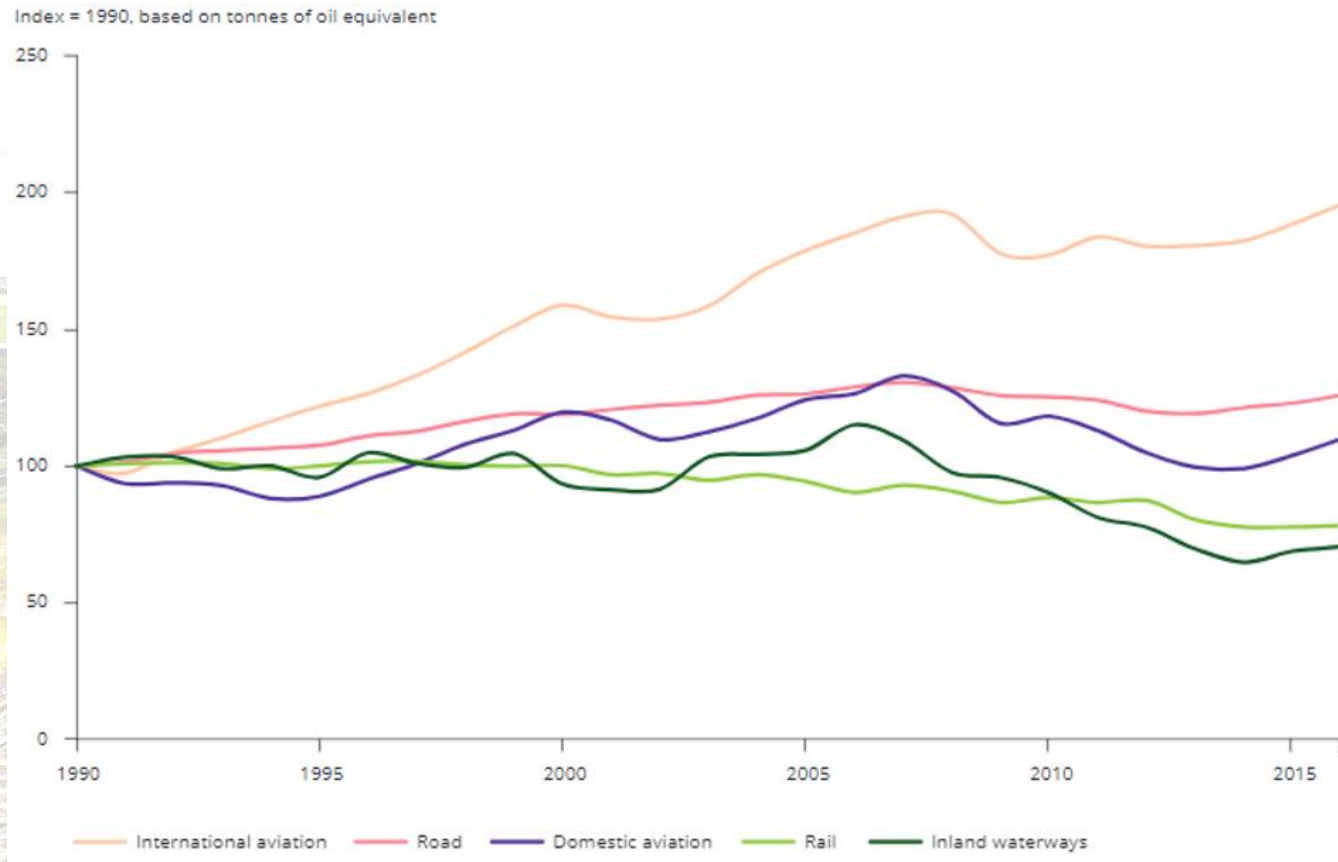
TOTAL EXTERNAL COSTS OF TRANSPORT (EU28)



Total external costs of transport in the EU28 are around 987 billion:

- road transport 820 billion
- rail 18 billion
- aviation 48 billion
- maritime 98 billion

3. RAILWAY TRANSPORT: sovereign mode of transport

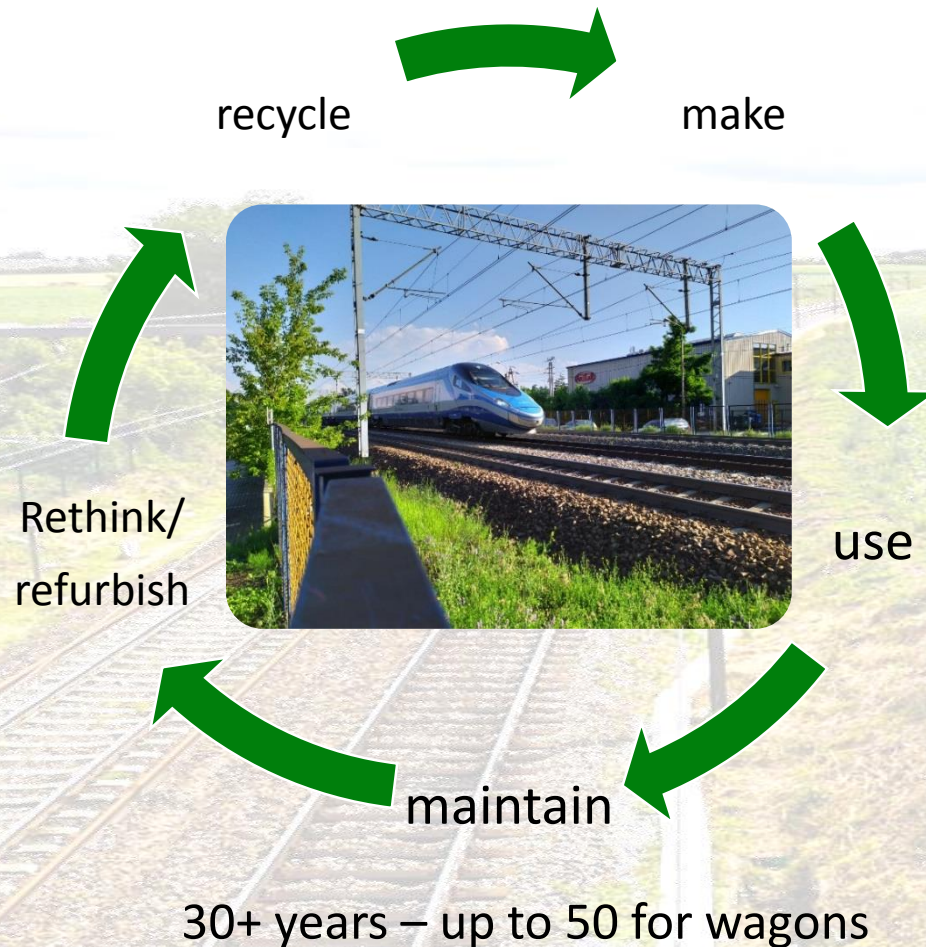


Energy consumption by transport mode - Source: Eurostat 2018

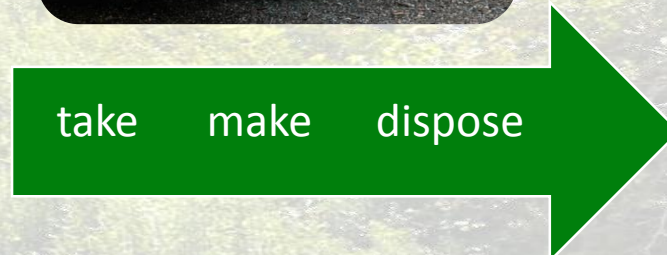
- EU energy dependency rate in 2017 was 55%.
- The railway sector only accounts for 1.7% of total EU energy consumption.
- Objective to reach a climate neutral industrial policy

4. RAILWAY PRODUCTS: long life expectancy

Life expectancy of a railway vehicle

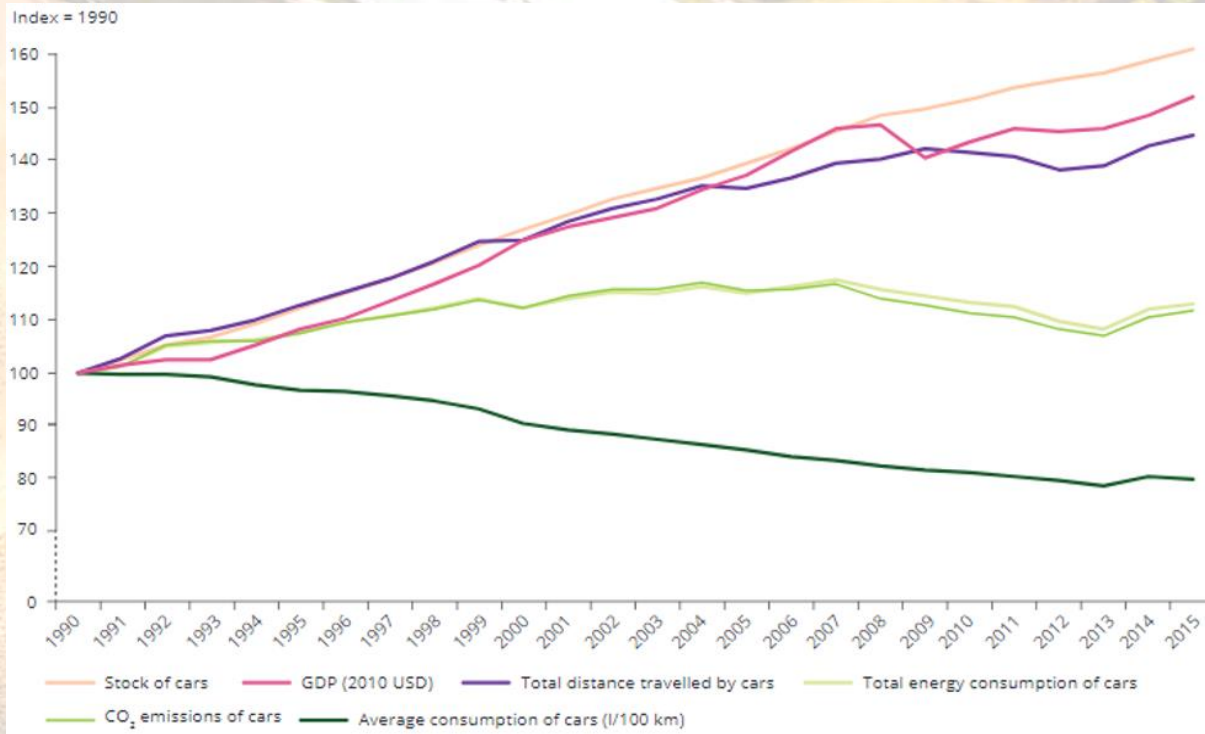


Life expectancy of a car, bus, truck



8 to 15 years

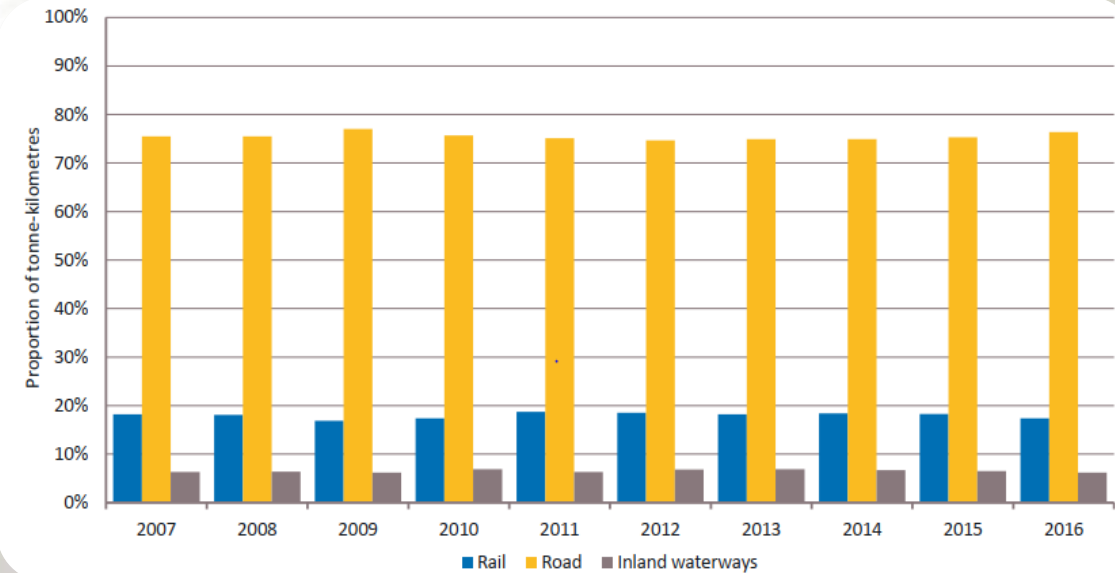
ROAD TRANSPORT: always more energy needs



Fuel efficiency and fuel consumption in private cars, 1990-2015 – Source: Enerdata (2019), World bank (2019)

Efficiency improvements are offset by growth in demand and negated by market trends (e.g. SUV effect)

In the freight sector, road remains the dominant mode within the EU also in freight transport and continues to handle around three-quarters of net ton-kilometres.



Freight land transport modal split 2007-2016 – Source: Eurostat

ROAD TRANSPORT: a source of congestion



Barcelona, 2 May 2010. Source: diagonal.cat

175 cars
2400 m²

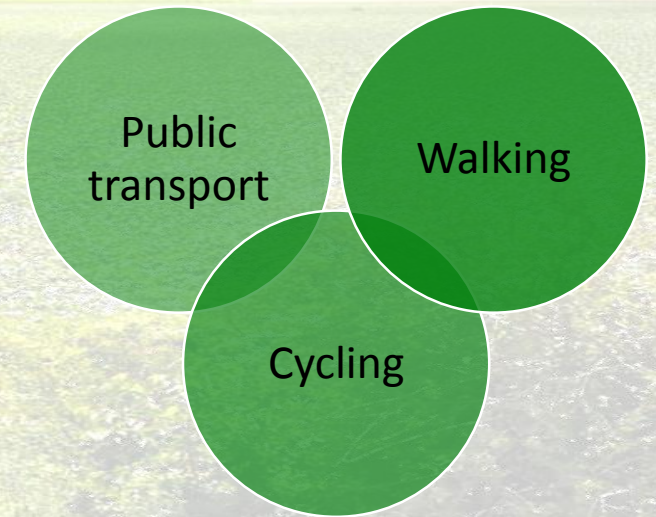
2 double bus
120 m²

1 tram
100 m²

By foot or bike
1 m² by foot
1,5 m² by bike

And parking spaces (private + public)!

Smart Urban mobility triptych



The “green level” of the BEV depends on the energy mix of the country where it is used

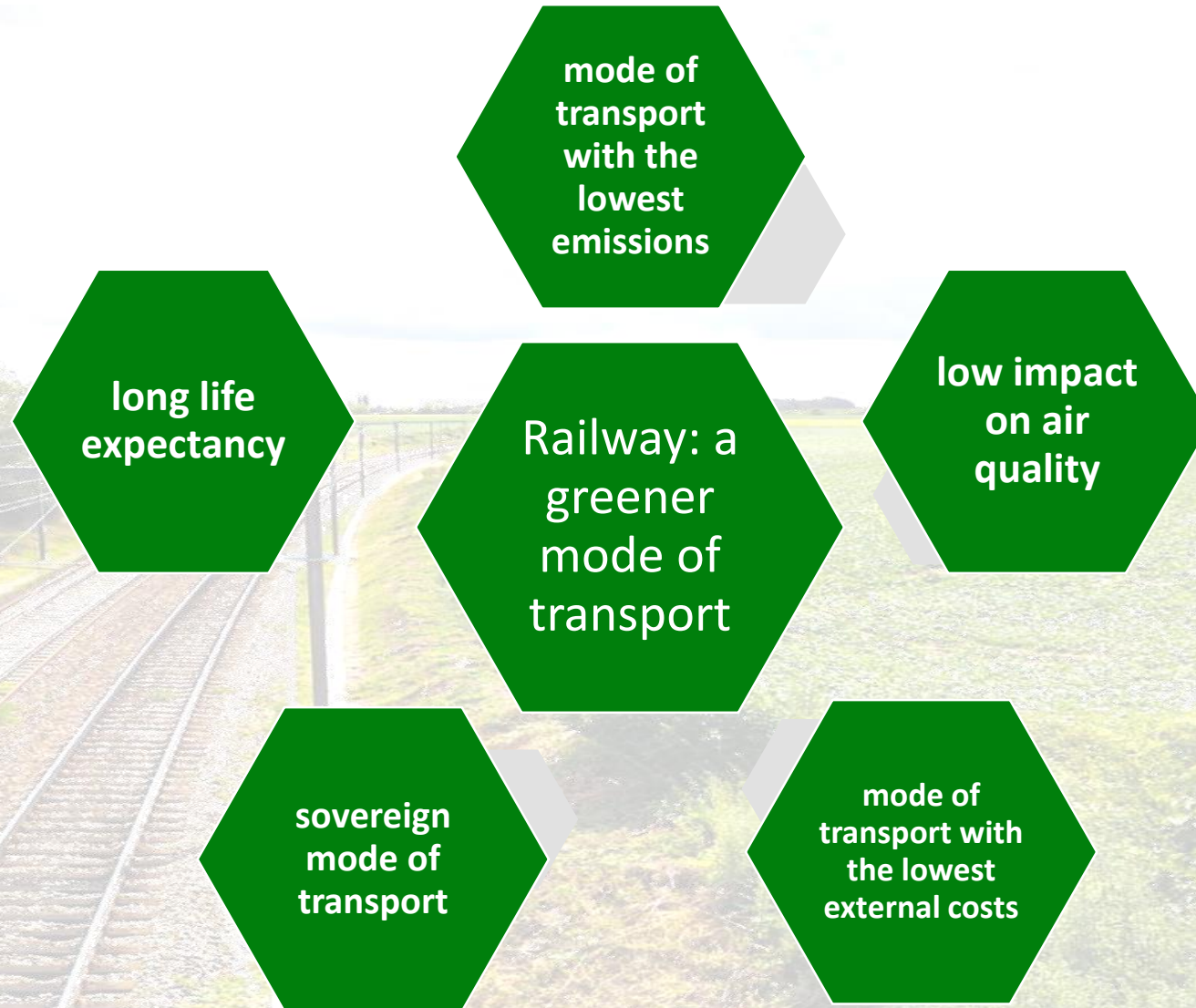
Material for batteries concentrated in specific geographical areas

The overall transport pattern needs to be tackled, including options such as car sharing and the modal shift to collective transport / soft mobility / micro-mobility

5 Key concerns on BEV

The smallest and lightest vehicles sufficient for the user's needs shall be used and be driven in an economical style.

As BEV ownership becomes more mainstream, this shall not lead to greater car use overall through a rebound effect.

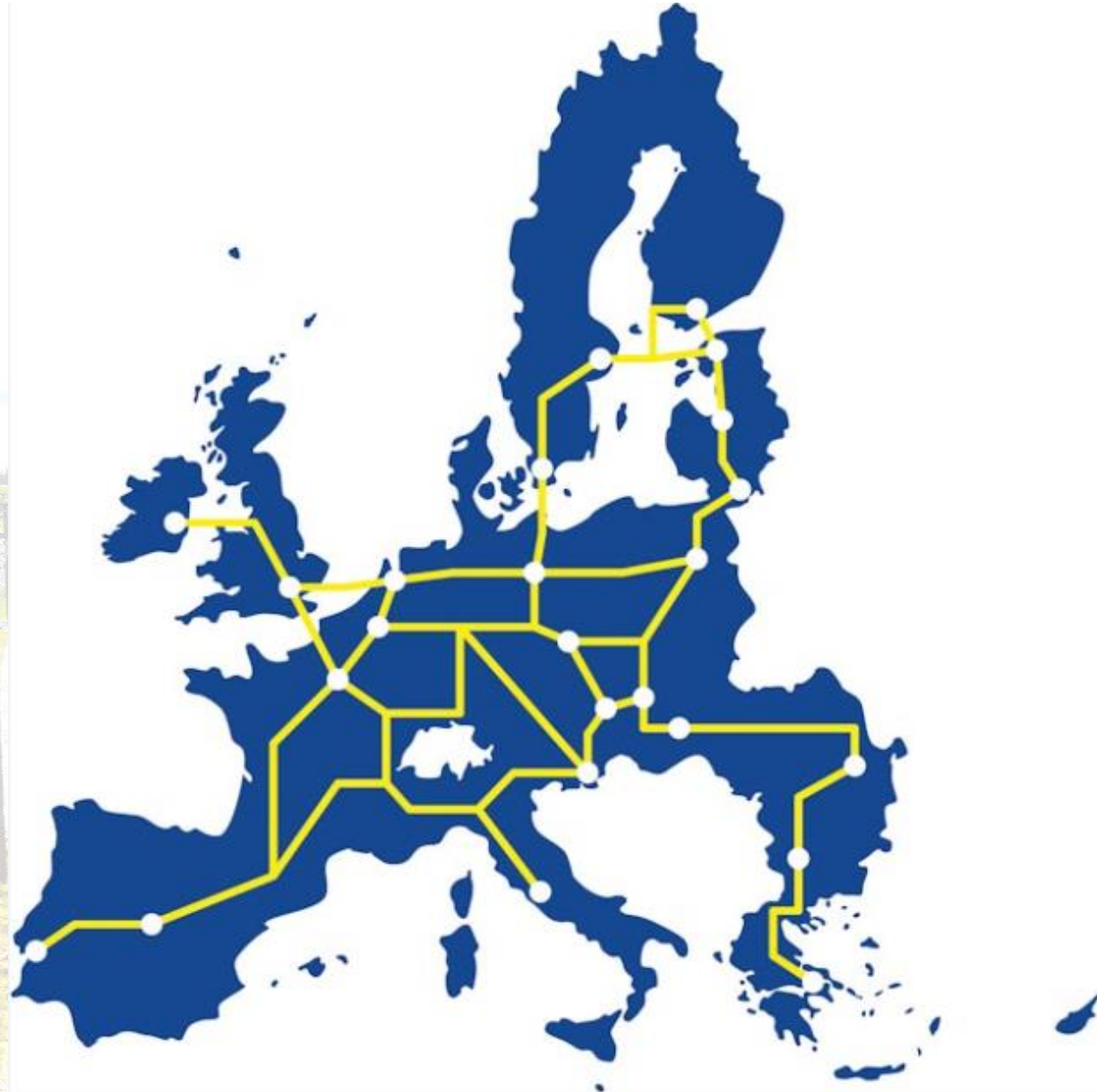




Strategy for a rail renaissance

Connect major urban areas in Europe by rail

1. Shift **commuter traffic from road to rail**, with strong positive impact on quality of living and greenhouse gas emissions.
2. Exploit **Rail's potential to substitute EU internal flights**



The key targets

Dublin airport: 31M pass./year

Budapest airport: 15M pass./year

Alicante airport: 14M pass./year

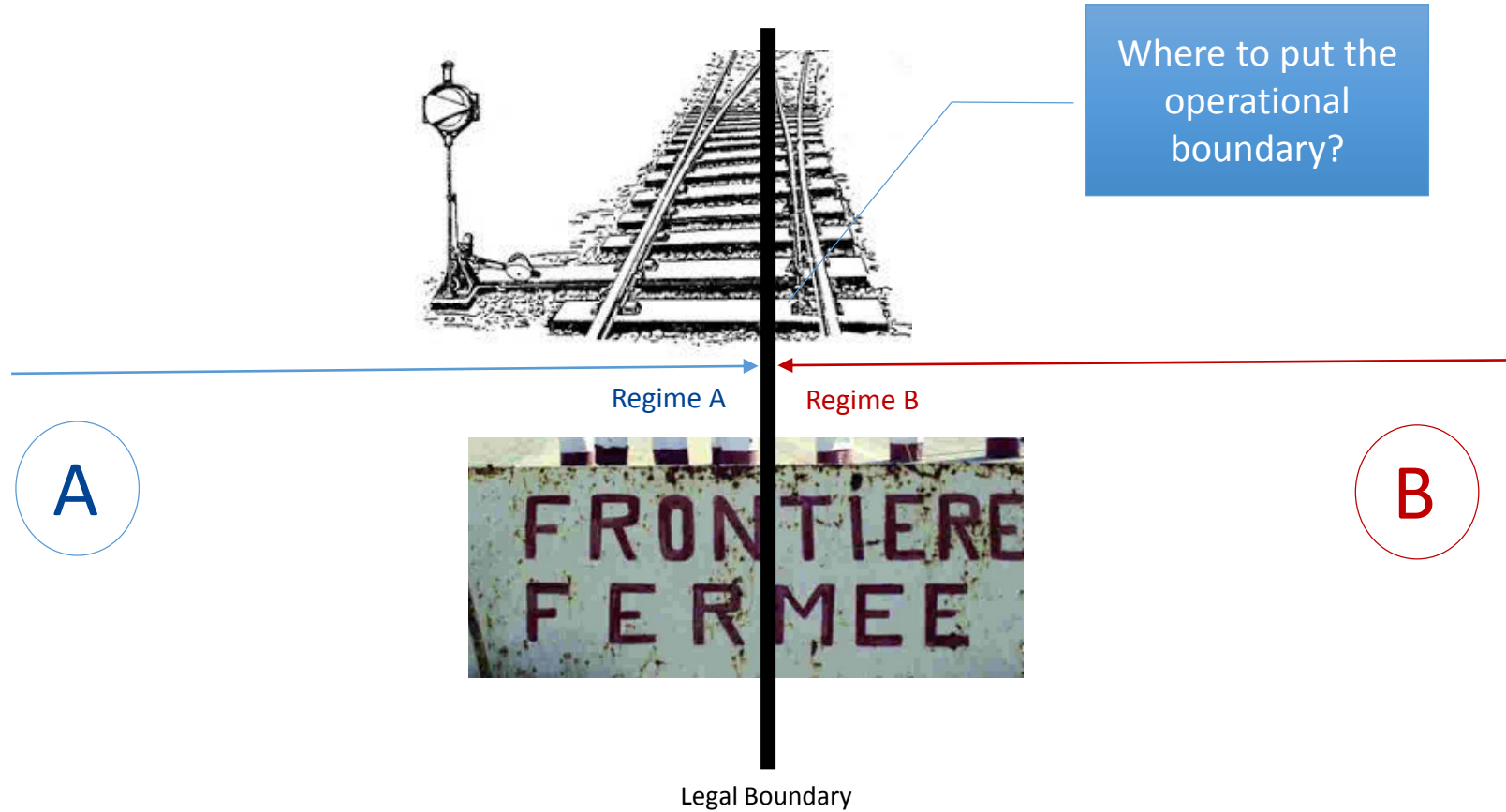
Bucharest airport: 14M pass./year

Develop a European network of night trains



cybersecurity
Interchangeable-Components
Digitalisation
ERTMS
Interoperability
ATO
data FRMCS
Fair-ticketing

Eliminate railway bottlenecks



Create a Eurocontrol for rail



European Union funding is very important for railway investments. European Union funding through

Cohesion Fund (CF)

European Regional Development Fund (ERDF)

Connecting Europe Facility (CEF)

European Investment Bank (EIB)

contribute an average of **12%** of the total funding for investment in rail infrastructure in Europe.

Conclusions



Mobility of Tomorrow

Multimodal Strategy Passengers - Freight

1. Multimodality

2. Fair conditions (social and environmental aspects)

Get people and goods from A to B
as fast, efficient, and non-polluting
as possible

Pollution, Global Warming
Congestion – self-blocking

Automotive:
autonomous
electrical

Regulation

Financing

Technology, AI,
communication networks

Digital Assets

Global Shift
of Influence

Integrated and low emissions multimodal transport system by 2050

Efficient transport network is
key for society and economy –
decarbonisation and safety

3. Importance of data integration

4. Holistic view of investment and transport safety

Rail as the backbone of multimodal mobility



Making the railway system work better for society.

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