PRIME
Platform of Rail Infrastructure Managers in Europe

PRIME 14

13 June 2019, Bern

Point 4 –

Rail's role in mitigating climate change

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Rail's role in mitigating climate change

Elisabeth Werner,
European Commission

European Commission

European Commission

WELL FUNCTIONING EU TRANSPORT SYSTEM

The Commission's study on Sustainable Transport Infrastructure Charging and Internalisation of Transport Externalities

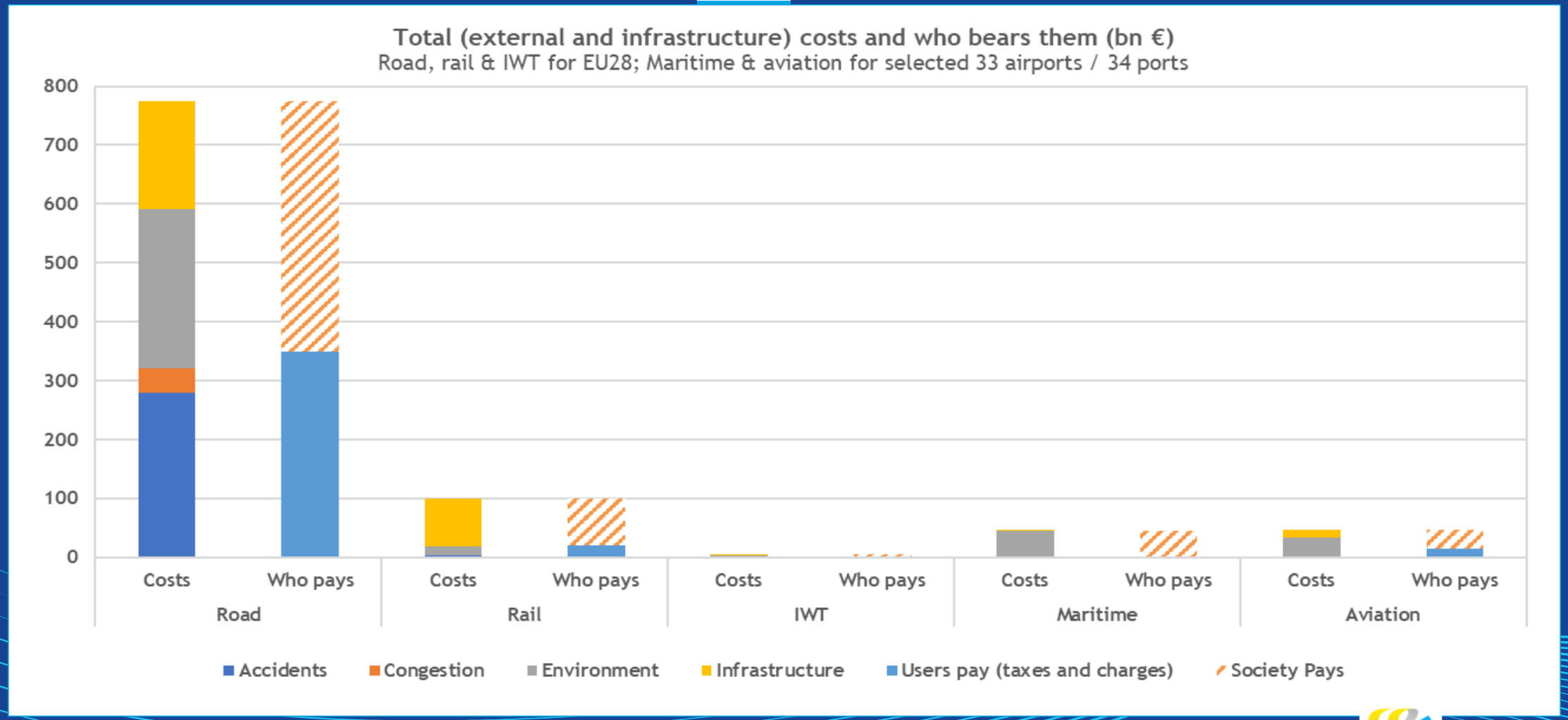
EU strategy on climate neutral Europe:

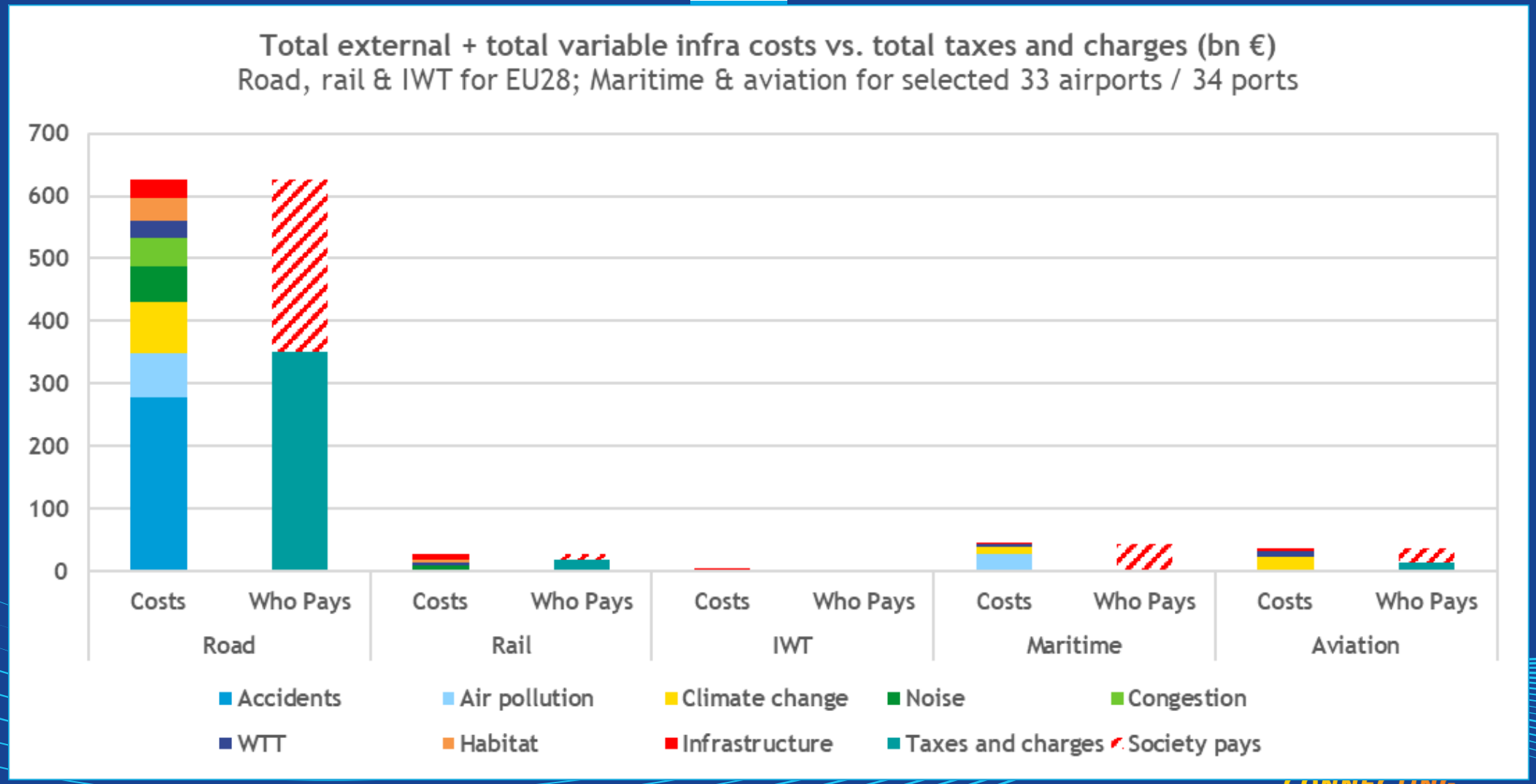
'A Clean Planet for all'

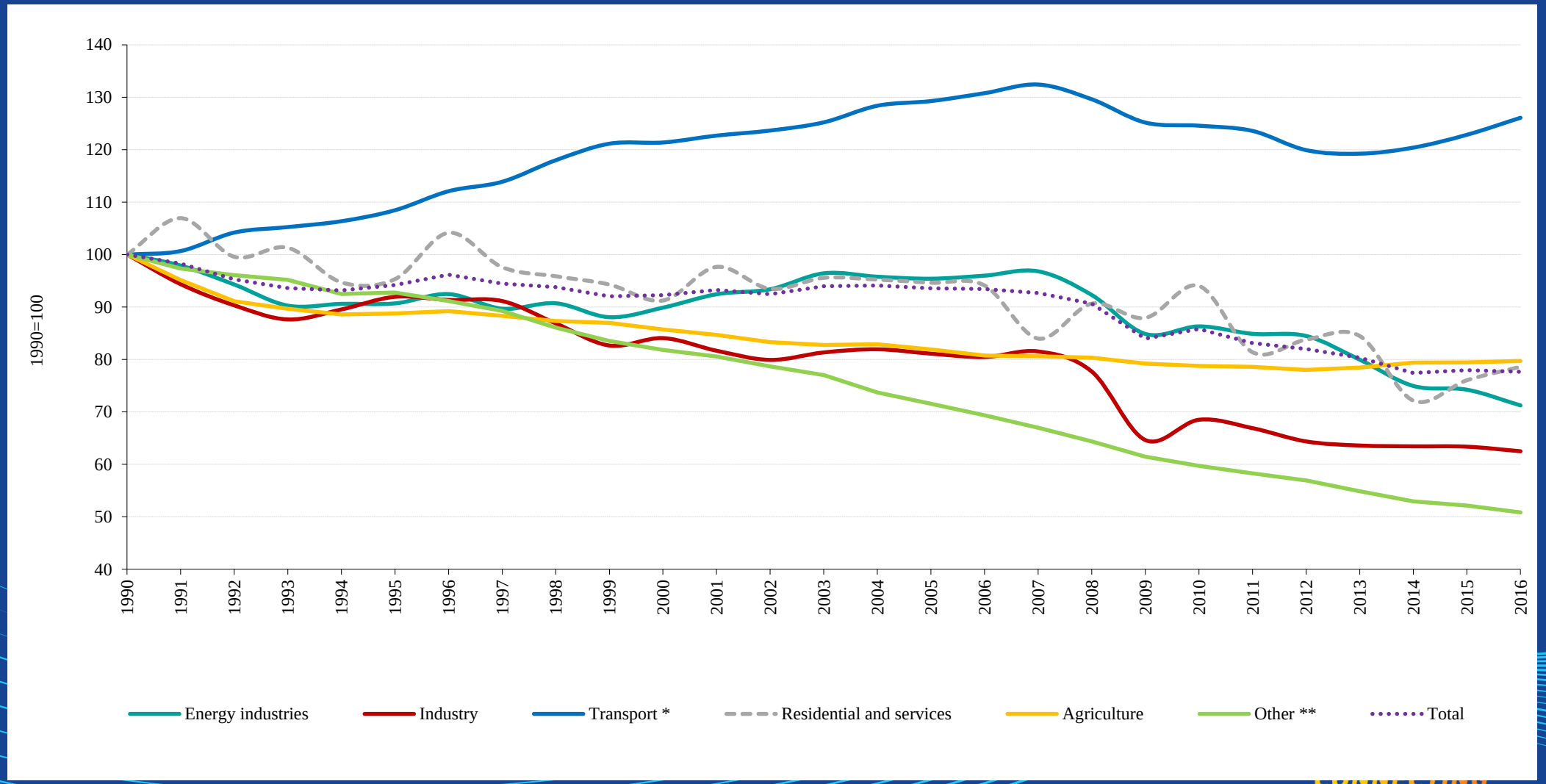
@Transport_EU

Mobility and Transport

CONNECTING EUROPE


Total (external and infrastructure) costs and who bears them (bn €)
Road, rail & IWT for EU28; Maritime & aviation for selected 33 airports / 34 ports
800
700
600
500
400
300
200
100
0
Costs
Who pays
Road
Rail
IWT
Maritime
Aviation
Accidents
Congestion
Environment
Infrastructure
Users pay (taxes and charges)
Society Pays


Total external + total variable infra costs vs. total taxes and charges (bn €)
Road, rail & IWT for EU28; Maritime & aviation for selected 33 airports / 34 ports
700
600
500
400
300
200
100
0
Costs
Who Pays
Road
Rail
IWT
Maritime
Aviation
Accidents
Air pollution
Climate change
Noise
Congestion
WTT
Habitat
Infrastructure
Taxes and charges
Society pays


1990=100
140
130
120
110
100
90
80
70
60
50
40
1990
1991
1992
1993
1994
1995
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1998
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2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
Energy industries
Industry
Transport *
Residential and services
Agriculture
Other **
Total

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Rail's role in mitigating climate change

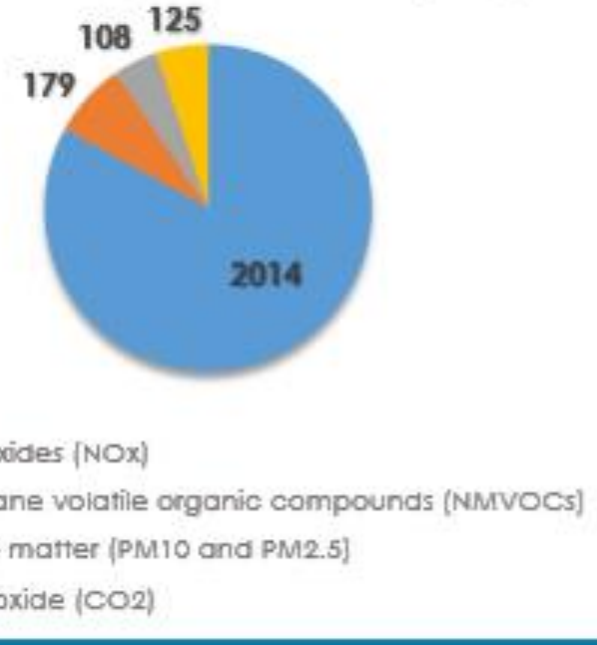
Vygantas Vaitkus
Lithuanian Railways


LG IN CLIMATE CHANGE
2019-06-13 | BERN

ELECTRIFICATION OF SECTION VILNIUS – KLAIPĖDA

LITHUANIA PLANS TO ELECTRIFY RAILWAY LINE FROM THE LITHUANIAN-BELARUSIAN STATE BORDER TO KLAIPĖDA UNTIL 2023.

Yearly reduction of pollution emissions *(tones)*



Implementation period: year 2019 - 2023

LG USES GREEN ENERGY

8,2 %

2018

100 %

2019

FROM YEAR 2018 ALL ELECTRIC TRAINS USE ONLY RENEWABLE RESOURCES

FROM YEAR 2019 LG USES ELECTRIC ENERGY ONLY FROM RENEWABLE RESOURCES

THE ENVIRONMENTAL IMPACT OF LG ACTIVITIES

LG BENCHMARKING
YEAR 2017 AND 2018

REDUCTION OF CARBON DIOXIDE EMISSION

11,286 gCO_2e/tkm
(Increase in train usage efficiency)
(*freighf*)
-3,2 %

29,852 gCO_2e/tkm
(100% of the electricity from renewable energy sources)
(*passenger*)
-41,5 %

REDUCED EMISSION FROM EQUIPMENT
(Lower fuel burn rates, especially for liquid fuels)

19,211 t
Tribes from equipment
-14,2 %

REDUCED WASTE GENERATION
(Additional funds, waste disposal, reuse of materials)

4 439 t
Waste for recycling
-33,8 %

REDUCED COLLISION WITH ANIMALS
(Installation of technical protection measures)

157
Collision with animals
-16 %

REDUCED EMISSIONS TO WASTEWATER
(Control and maintenance of cleaning equipment)

4,824 t
Pollutants released into surface water
-16,4 %

RAIL BALTICA - AN ENVIRONMENTALLY SUSTAINABLE INFRASTRUCTURE

RAIL BALTICA WILL BE FULLY ELECTRIFIED AND **REDUCE THE ENVIRONMENTAL FOOTPRINT OF HUMAN MOBILITY** (CO2 EMISSIONS, POLLUTION AND NOISE)

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Rail's role in mitigating climate change

Alain Quinet

SNCF Réseau

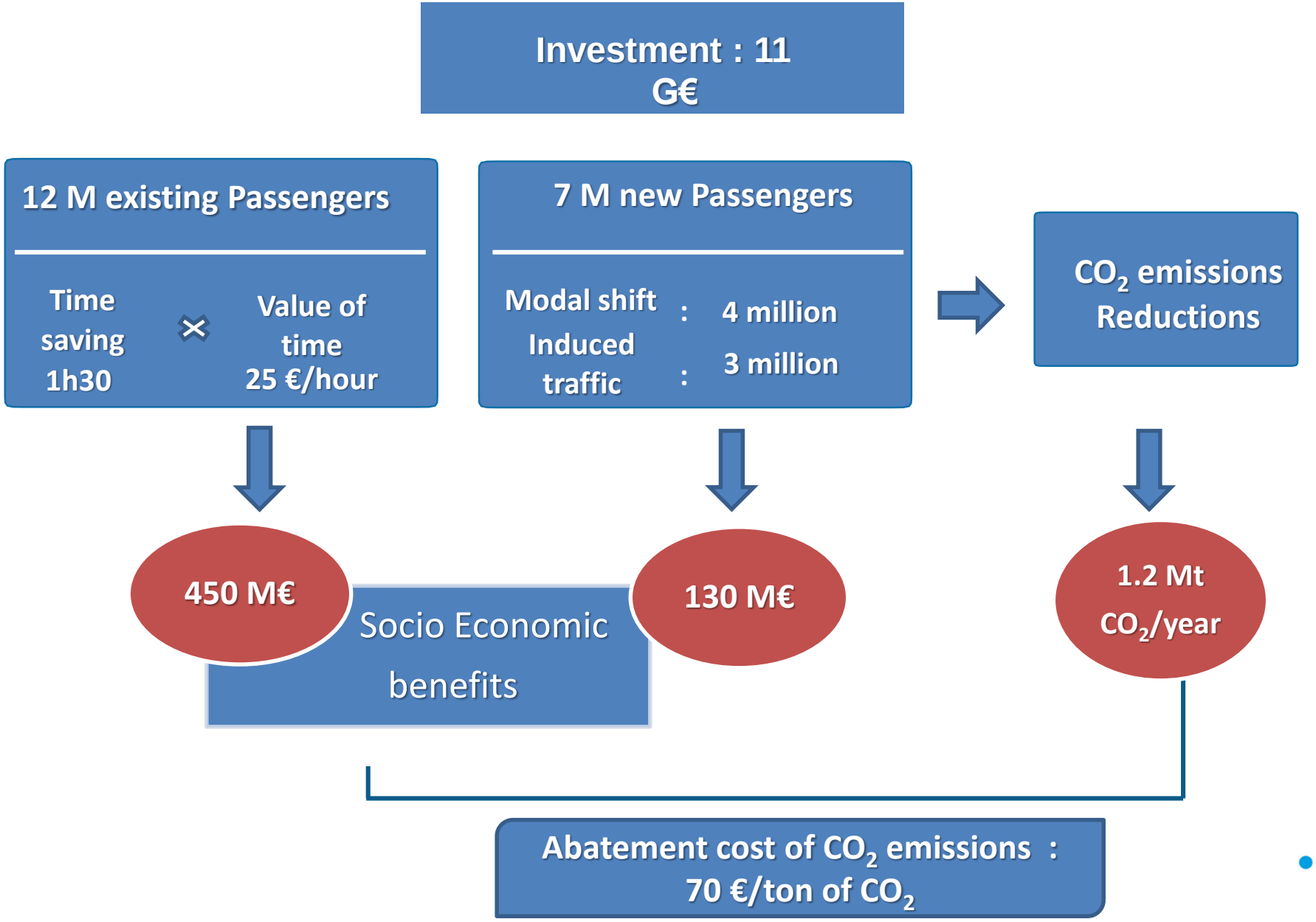
SNCF RÉSEAU

PRIME
Rail's role in mitigating climate charge:

Socio-economic evaluations of Rail projects

Alain Quinet

1 Abatement cost of the construction of HSL Paris-Lyon



2 Monetary value of climate benefits

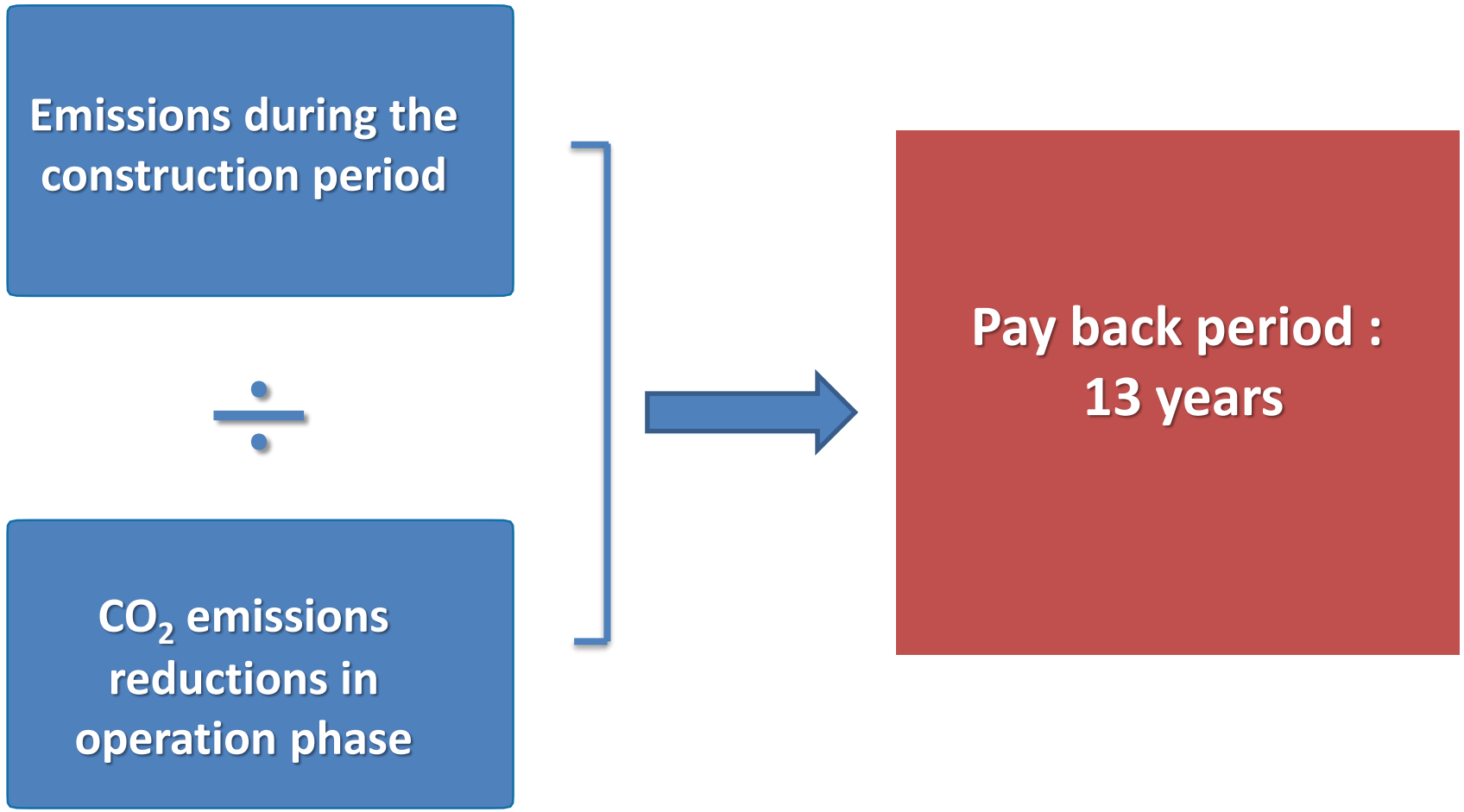
$\frac{\text{CO}_2 \text{ emissions}}{\text{1,2 Mt CO}_2\text{/year}}$ × Shadow price of carbon consistent with the carbon neutrality objective

↓

Climate benefits of the HSL Paris Lyon = [5% - 20 %] x initial investment

Depending on the reference scenario

3 Carbon Footprint



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Joaquin Jiménez Otero, ADIF

RAIL'S ROLE IN MITIGATING CLIMATE CHANGE

Spanish Contribution to Reflection

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Joaquín Jimenez Otero, ADIF, International Senior ViceDirector

A rapid overview of our experience and commitments

- What we (railways) have already got
- What we need to get in future
  - Passengers Liberalization
  - Freight To complet RFC network

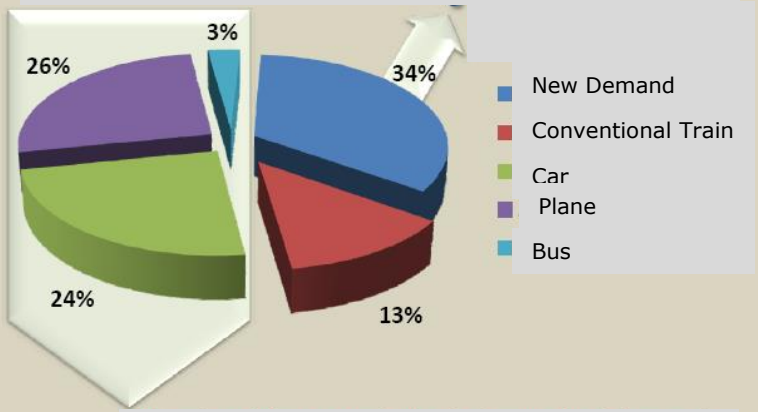
    Digitalization: Offer & Management of Capacity
    Commercial support and Customers oriented TIC tools
    Develop relationship with Ports and Shippers
- What are we (railways) already giving
  - Concrete results on both topics
    - » **Climate Change**
    - » **Energy Efficiency**
- What we need
  - Financing (ourselves, Green Bonds, EU)
  - **Time to consolidate trust on rail**

    keeping demanding stress on us & giving results

Impact on demand and mobility: already got

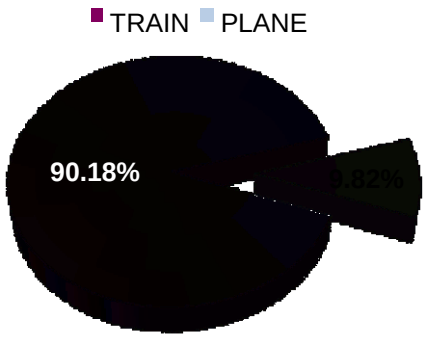
HS generates Growth and employment
HS Madrid - Sevilla: Success from 1992, the first explotation year

34% new demand induced by High Speed

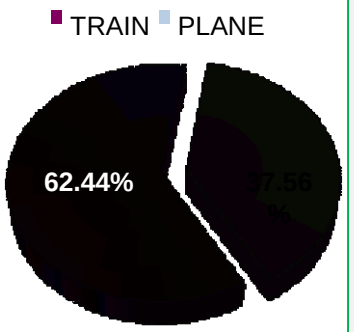


HS transfer passengers from other transport modes less respectful with environment

Madrid - Sevilla



Madrid-Barcelona



72.17% **occupation** **86.29%**

Market share
Madrid-Sevilla
HS 90,2% in 2015

➢**FROM 1992 (25 YEARS)** HS SERVICES IN SPAIN HAVE TRANSPORTED 358 MILLION PASSENGERS (90 M OF THEM ON VARIABLE GAUGE TRAINS) SAVING:

12,9 MILLION TONNES OF CO_2
2,6 MILLION TON EQUIVAL. FUEL
4,29 Billion EUR (total investments 51,76 B EUR)

➢ HS TRAINS IN SPAIN HAVE **29% LESS ENERGY** CONSUMPTION BY PASSENGER THAN CONVENTIONAL TRAINS

➢ HS TRAINS IN SPAIN AVOID **3kg CO_2 EMISSIONS** FOR EACH PASSENGER COMING **FROM CONVENTIONAL TRAINS** AND **31kg CO_2 FROM CAR AND PLANE** AS A MEAN VALUE

➢ RENFE'S **CARBON FOOTPATH** 24.2gr CO_2 / Unit Transport (56% less than 1990 figure)

Source: FFE / Transportation Research Record Review 2010

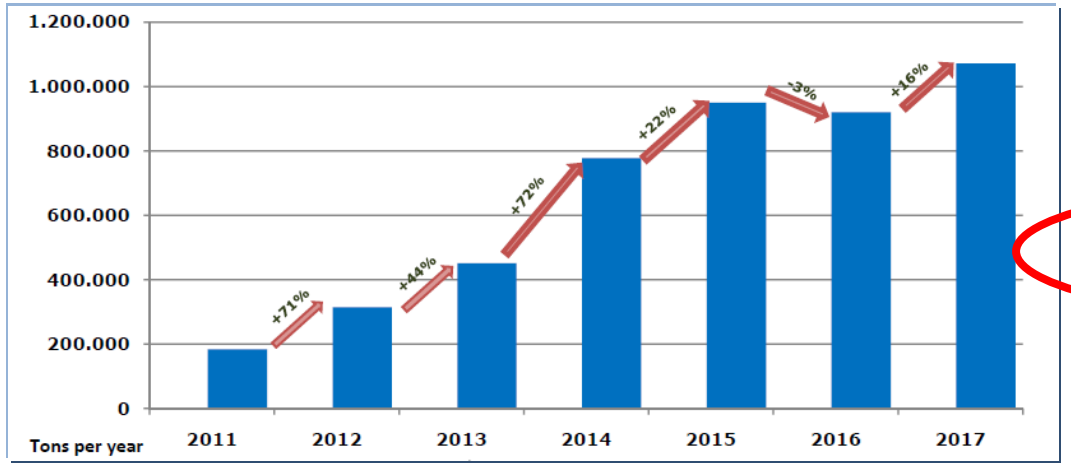
Results:International RFT Patterns in the Med Corridor, on the Way

1.- Recovery of International Freight Rail Traffic on Barcelona – French Border section

	2012	2013	2014	2015	2016	2017	2012-2017
Tons	1.048.097	1.237.208	1.605.058	2.248.696	2.249.581	2.306.107	+120%
Trains	1.852	2.088	2.521	2.773	2.762	2.785	+50%

International Freight Trains registered at Portbou and Figueres Stations

2.- Higher Increase on Standard Gauge Freight Traffic (Barcelona-LFP-Perpignan)



2011 227 trains/year
2014 870 trains/year
2017 1.118 trains/year

2019 ↑ 27%
2020 ↑↑ +70% additional

765 Tons/Train Iberian Gauge

1.081 Tons/Train Standard Gauge

New container traffic service between Monzón and Lyon on standard gauge tracks

Renfe Mercancías, Terminal Intermodal de Monzón (TIM) and TP Nova have launched a new international intermodal container traffic service between Spain and France using the high-speed track and the Perthus Tunnel.

(19/12/2018) class="MsoNormal" style="text-align:justify">

Trains run between Monzón Intermodal Terminal, Best, located in the Port of Barcelona, and the French one, the Lyon-Vénissieux terminal, from where they return also loaded with containerized goods. From the Spanish and French terminals, the containers are distributed to their final destination both by road and by rail.

This traffic, which has a load capacity of up to 72 Teus per train, is initially a weekly service, although Renfe Mercancías plans to increase the number of trains at a later stage.

Up to 72 TEUs per train from Barcelona Port to Lyon-Vénissieux….and return…on standard gauge tracks

ADIF & ADIF AV OWN COMMITMENTS:
ACTION PLAN AGAINTS CLIMATE CHANGE 2018-2030

5 LINES FOR ACTION

- Energy Management
- Energy Efficiency
- Decarbonisation and renewable energy
- Resilience improvements
- Culture and sensibility

EXPECTED RESULTS

REDUCTION OF ENERGY CONSUMPTION

Period 2018/2030	Year 2030	
2.900	422	GWh

REDUCTION OF GREEN HOUSE GAZ EMISIONS

Period 2018/2030	Year 2030	
777	107	kt CO_{2eq}

MODAL CHANGE

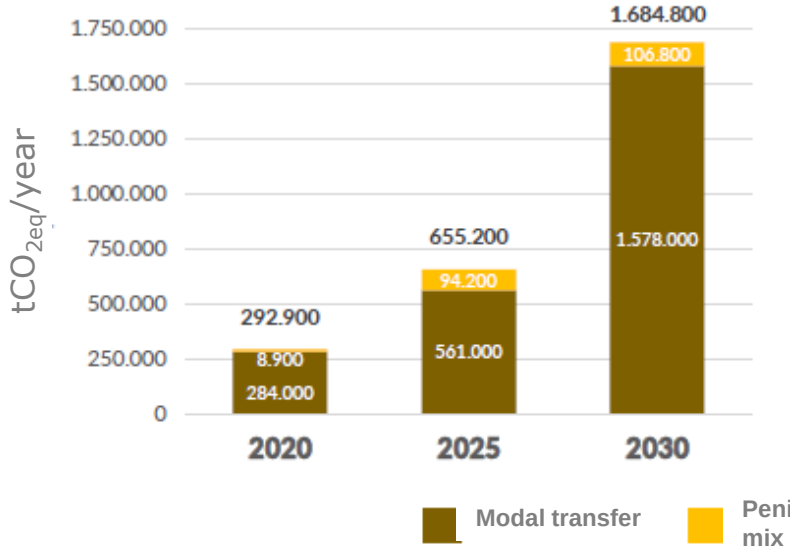
Period 2018/2030	Year 2030	
8.400	1.587	kt CO_{2eq}

GREEN ENERGY (Origin Warranty Certificate)

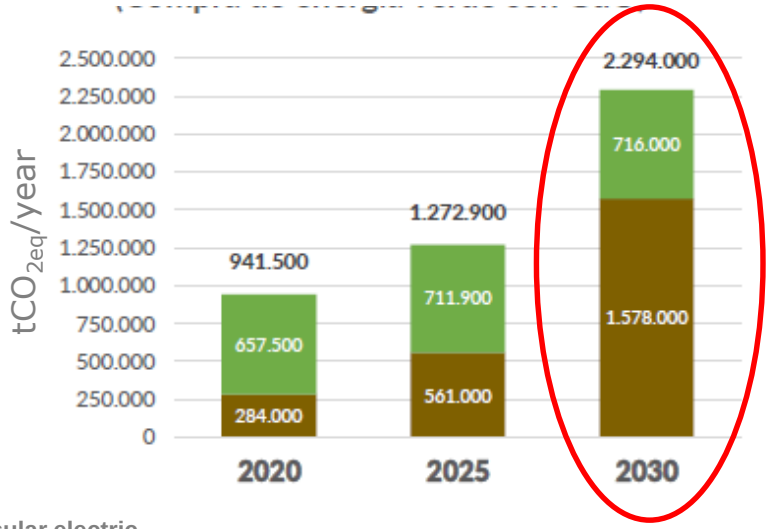
Period 2018/2030	Year 2030	
3.700	716	kt CO_{2eq}

ANNUAL GOALS FOR TOTAL GHG EMISSION REDUCTION

According to peninsular electric mix



According to electric market (Green energy purchase with GOWC)

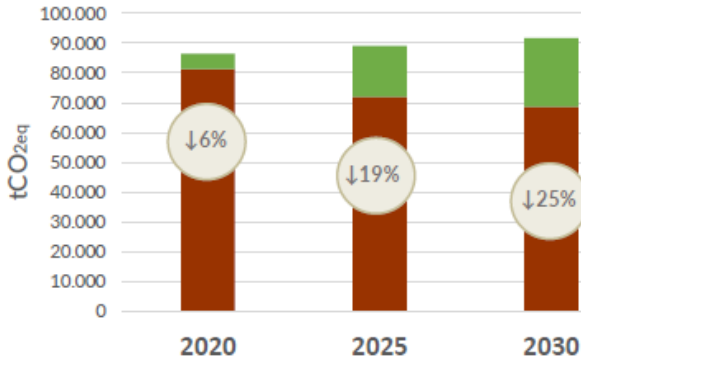


Modal transfer

Peninsular electric mix

Green Electric market

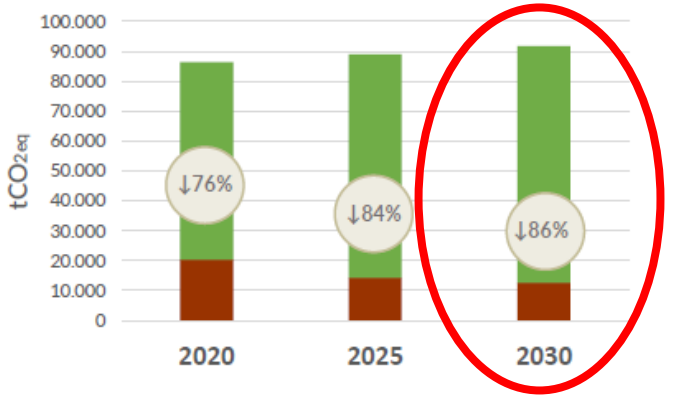
According to peninsular electric mix



Emission reduction foreseen thanks to the Plan

Carbon footprint Adif and Adif-AV (simulation)

According to electric market (Green energy purchase with GOWC)

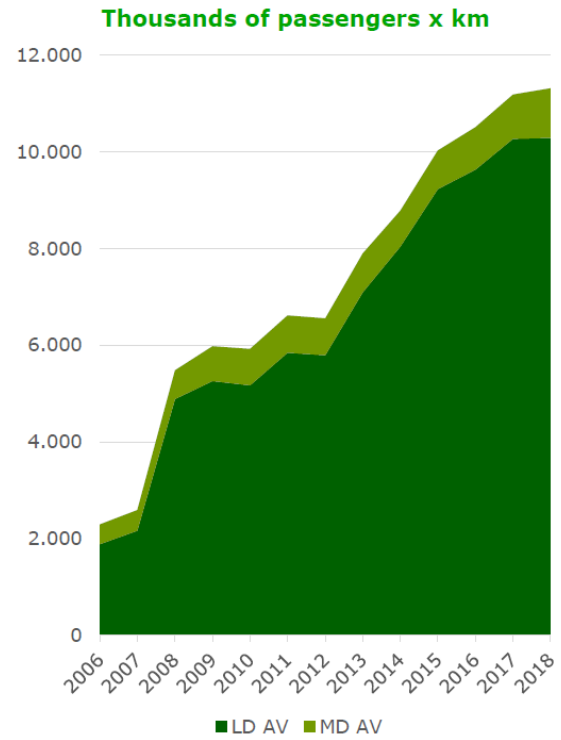


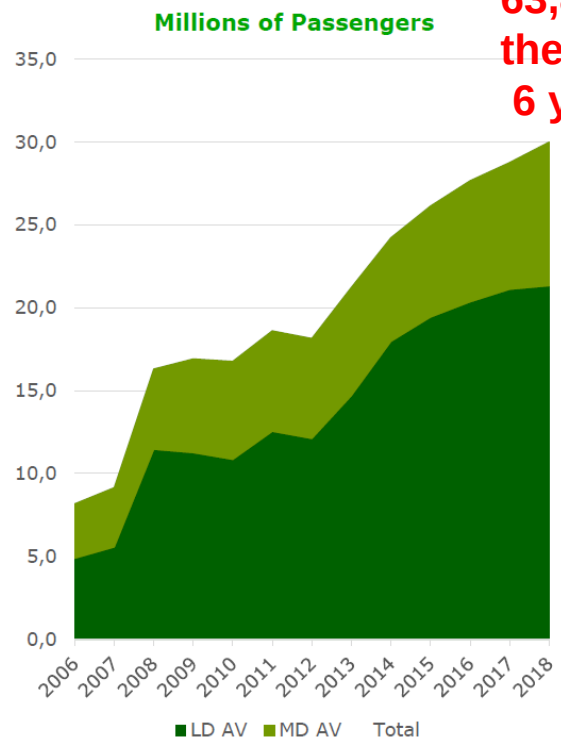
Emission reduction foreseen thanks to the Plan

Carbon footprint Adif and Adif-AV (simulation)

LIBERALISATION PROCESS ALREADY STARTED SUPPORTED BY AN IMPRESSIVE INCREASE ON HS DEMAND

Evolution of high-speed traffic on the Adif network





63,8 % increase on the last 6 years

Framework Capacity Offered by direction and day

Packages	AXIS 12.- MADRID BARCELONA	AXIS 13.- MADRID EAST	AXIS 14.- MADRID SOUTH	TOTAL
A	48	32	48	**128**
B	16	16	16	**48**
C	5	4	4	**13**
TOTAL	69	52	68	**189**
Current	**43**	**37**	**39**	**119**
% increase Offered/Current	**60%**	**40%**	**70%**	**60%**

Capacity currently used in red. Average day estimate

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Rail's role in mitigating climate change

Pier Eringa
ProRail

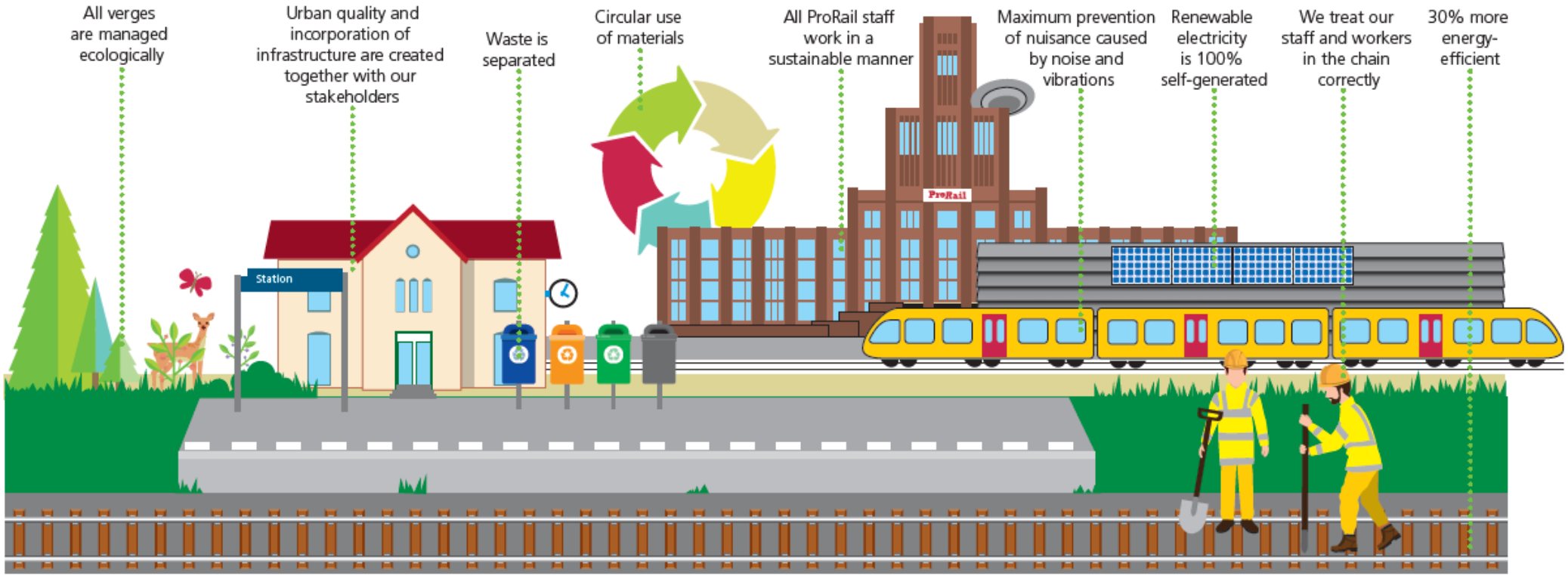
ProRail

ProRail

Going, Growing, Green

ProRail

Sustainable rail



2016 — 2030

- We employ **20 people** who found themselves distanced from the labour market
- **Waste from travellers** is collected separately at 9 stations
- **25,000 sleepers with low carbon footprint** installed during renovation of Winterswijk – Zutphen track section
- **215 ecological bottlenecks** resolved
- So-called **ANA bells** have been placed at **100 level crossings** These automatic level-adjusting bells adjust their volume in accordance with ambient noise
- **Solar panels** on the Inktpot
- All stations fitted with **LED lighting** on the platforms and **dimmable switches** on the platforms of **385 stations**
- **Circular** railway yard in Groningen completed
- Sustainable station **Assen** completed
- CO_2 footprint of ProRail = **0**


-49%
-95%
+2°C

Air France verliest marktaandeel binnen Frankrijk aan trein

Maatschappij Air France brengt de capaciteit op korte vluchten met 15 procent terug en laat 465 medewerkers vertrekken. Reizigers kiezen vaker voor hogesnelheidstreinen.

Marissa van Loon 13 mei 2019 Leestijd 1 minuut

Op routes waar hogesnelheidstreinen via Parijs binnen twee uur op een bestemming zijn, heeft Air France 90 procent van haar marktaandeel verloren.

Koeltrein uit Spanje met vers fruit gaat duizenden vrachtwagenritten vervangen

DI 7 MEI, 07:04 ECONOMIE

Sinaasappels en sla komen voortaan met deze trein vanuit Spanje. NOS

deVerdieping
Trouw

Belasting op vliegen scheelt uitstoot en schaadt de economie als geheel niet

GROEN

Elisa Hermanides 2:00, 13 mei 2019

▲ Schiphol. © ANP

De economie zal niet lijden onder belastingen op vliegen, zo blijkt uit een uitgelekt rapport van de Europese Commissie.


café
BALKON
ICE

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Rail's role in mitigating climate change

Josef Doppelbauer
ERA

EUROPEAN UNION AGENCY FOR RAILWAYS

Railways for a sustainable future

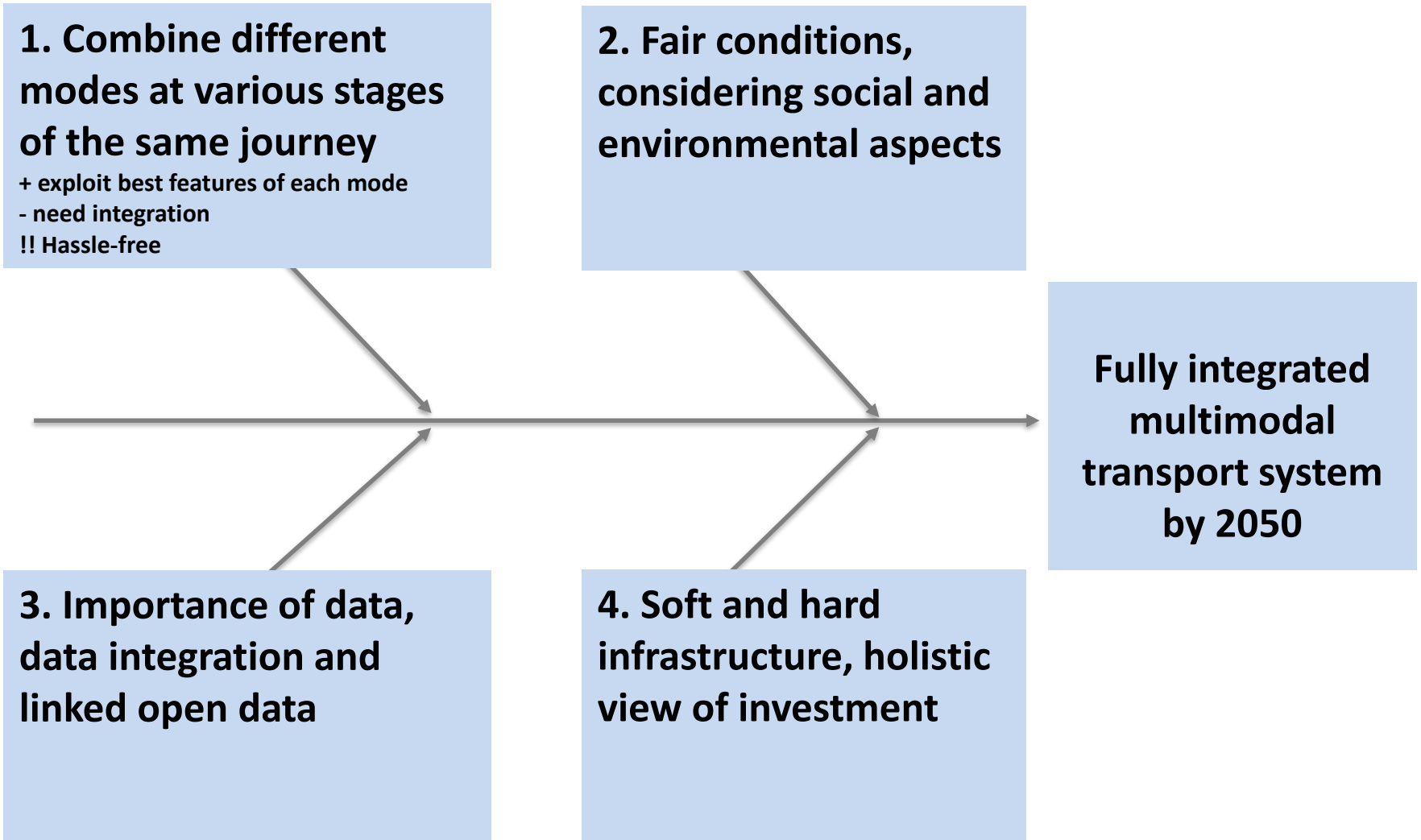
Josef Doppelbauer - Executive Director

EUROPEAN
UNION
AGENCY
FOR RAILWAYS

Setting the Scene

- Transport of people and goods is essential for society and economy

- The transport sector is faced with **enormous challenges**:
  climate change, NO_x, fine dust, congestion, accidents...
- **Rail** can become the mode of transport of the 21st century **addressing these challenges** – if it provides a **convincing offer**



Rail is the critical component

Enhancing railway sustainability

Sustainability usually encompasses three aspects:

- **Environmental:**
  - a reinforced role of railways as **backbone of transport** can substantially contribute to the fight against climate change (rail has a higher energy efficiency compared with other transport modes)
- **Economic:**
  - ERA contribution in making the railway business more **competitive** (e.g. through TSIs, CSMs, VA, SSC, registers and data sharing)
- **Social:**
  - importance of a railway system which is

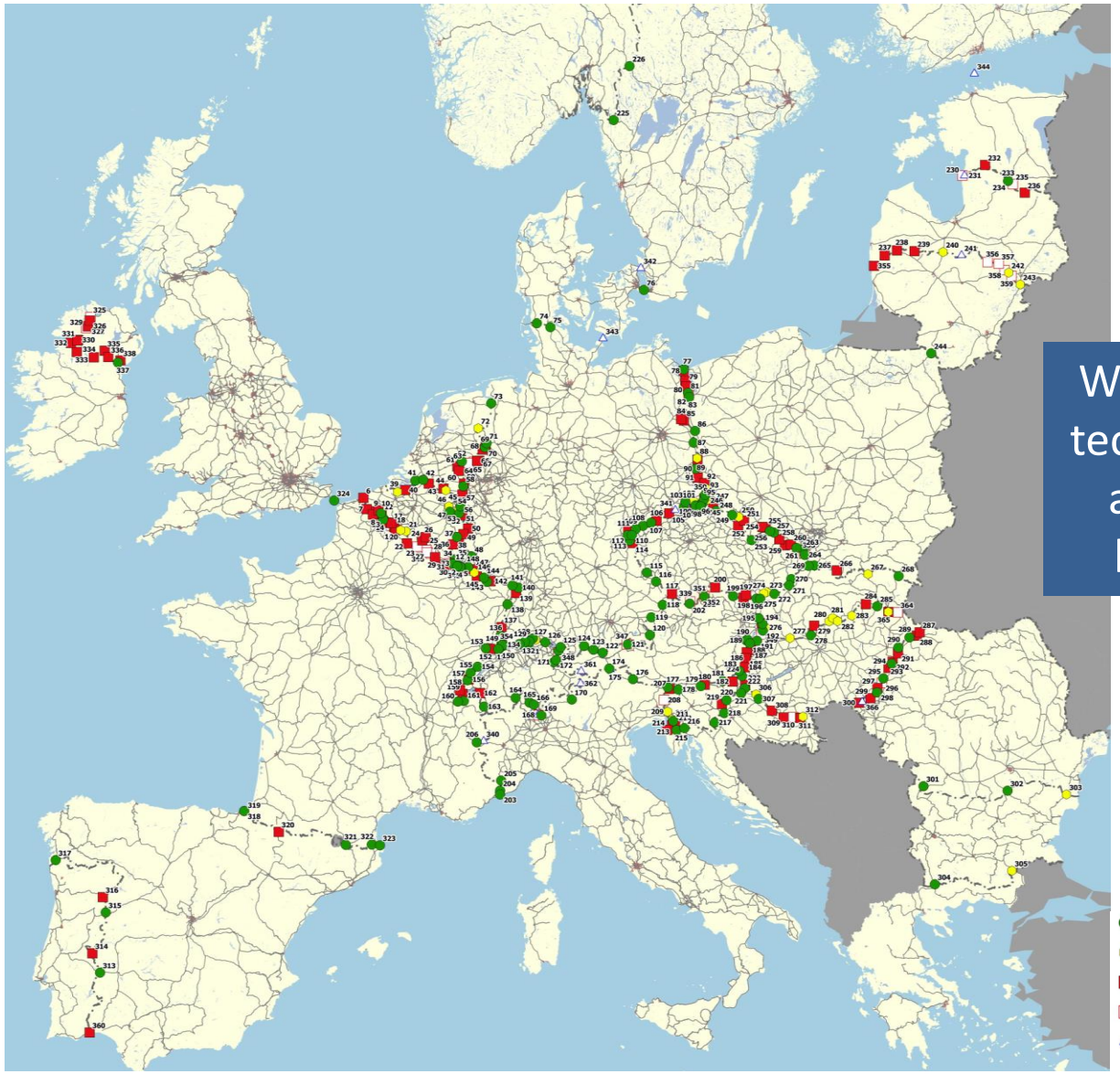
    "safe - connected – affordable"

    to be a key enabler of social cohesion

    (e.g. by facilitating job mobility within the rail sector and access to work, education and healthcare)

EUROPEAN UNION AGENCY FOR RAILWAYS

Rail Border Crossings in Europe



We need to eliminate technical, operational, and organisational barriers in Europe

- Operational link: regular passenger services
- Operational link: only freight or touristic services
- Non-operational (historic) link
- Redundant historic link for public rail transport
- Proposed or projected new infrastructure link

Source: European Commission, Comprehensive analysis of the existing cross-border rail transport connections and missing links on the internal EU borders, Final report, March 2018

ERA as European Authority

From 16th of June 2019 onwards, ERA will be mandated to authorise vehicles and to issue Single Safety Certificates for train operation across borders in Europe. With this historic turning point, we come one major step closer to the Single European Railway Area.

Source: IRG-rail

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Making the railway system work better for society.

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Discover our job opportunities on **era.europa.eu**

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Lea Paties

Shift2Rail