INTERNATIONAL UNION
OF RAILWAYS

UIC

The worldwide railway organisation

UIC MEMBERS ALL AROUND THE WORLD

UIC MEMBERS

200
Members in 100 countries

3,000
Billion passenger kilometres

10,000
Billion tonne kilometres of freight

1
Million kilometres of lines

7
Million rail personnel

100
Cooperation with over 100 institutions

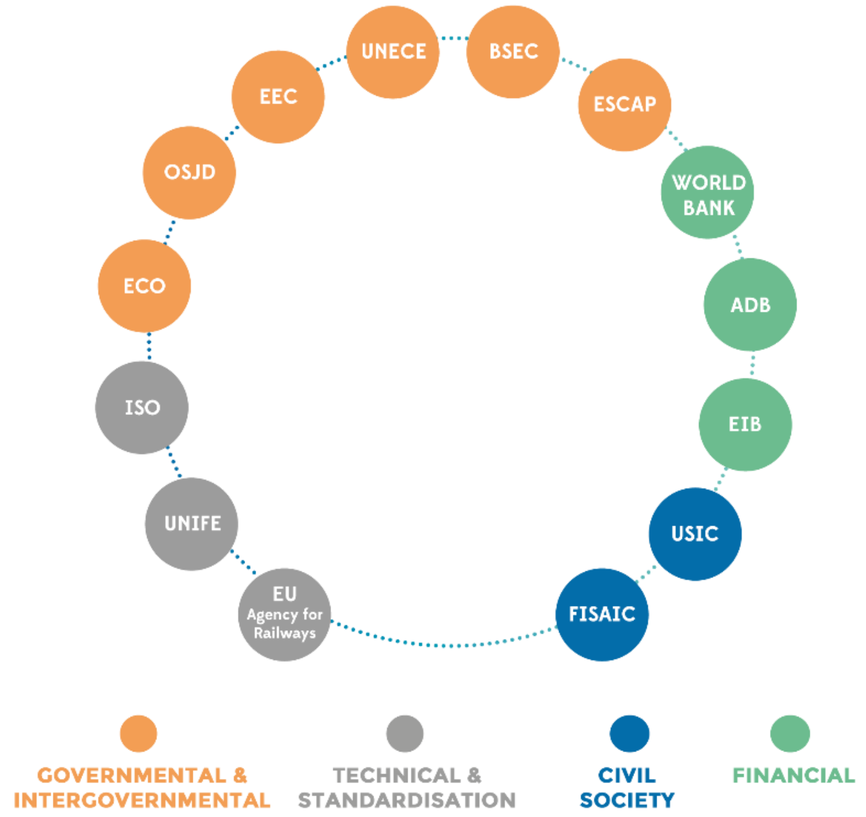
700
UIC Leaflets -
New IRSs (International Railway Solution)

85
Congresses, conferences, workshops per year

5 UIC global cooperation issues serving the entire railway community

- **Environment & Sustainable Development**
- **Safety & Security**
- **Freight / Intercontinental corridors**
- **Railway Signalling & Control Command**
- **Standardisation UIC leaflets, IRS**

Synergies developed by UIC with leading institutions

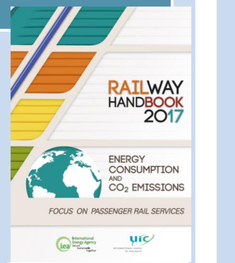


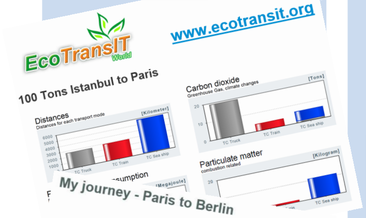
ADB: Asian Development Bank
BSEC: Black Sea Economic Cooperation
EEC: Eurasian Economic Commission
ECO: Economic Cooperation Organisation
EIB: European Investment Bank
ESCAP: The Economic and Social Commission for Asia and the Pacific
FISAIC: Fédération Internationale des Sociétés Artistiques et Intellectuelles de Cheminots
ISO: International Organization for Standardization
OSJD: Organisation for Cooperation between railways
UNECE: Economic Commission for Europe
UNIFE: Union des Industries Ferroviaires Européennes
USIC: International Railway Sports Association

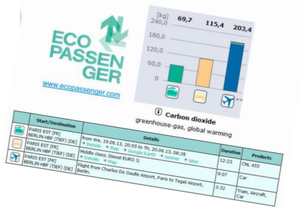
UIC ENVIRONMENTAL PROJECTS

Energy & CO_2eq

- Environmental performance
- SFERA, Leaflet 930
- OPEUS, …

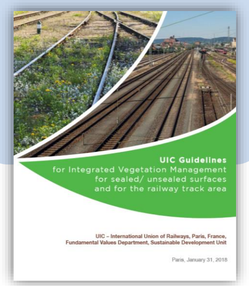






Sustainable land use

- Cost risk assessment on Creosote ban
- Guideline on weed control
- Cost risk assessment for future Glyphosate ban
- Capacity for Rail



Noise & Vibrations

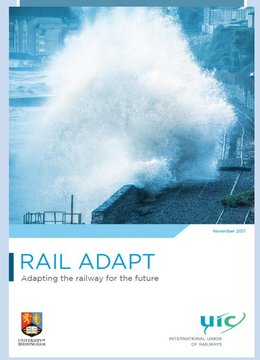
- Projects linked to EU legislation (WHO consultation)
- LL Blocks

Sustainable mobility

- Door-to-door best practices guideline

Adaptation

- Rail adapt methodology to adjust to climate change and integrate it with business as usual



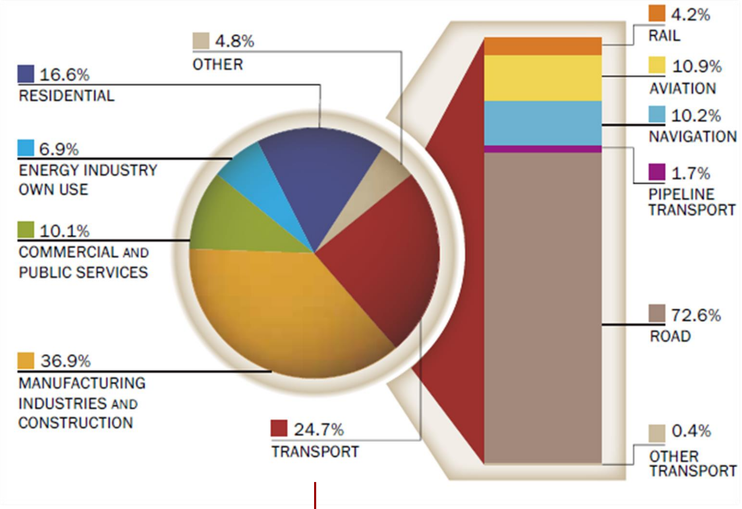
Global

- Procurement
- Support for expert networks
- Conferences, workshops & meetings

LAST NEWS ON THE CLIMATE

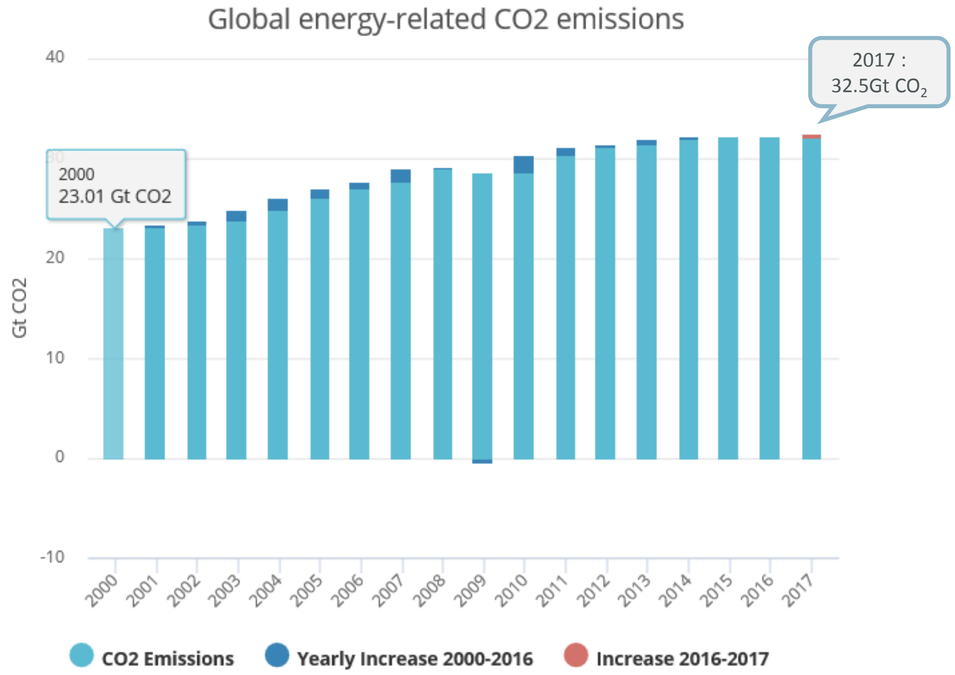
- Global energy demand increased by 2.1% in 2017, more than double the rate of growth in 2016. CO2 emissions from fossil fuel combustion increased by 1.4% in 2017 to a record level of 32.5 GtCO2. Thus, CO2 emissions increased in 2017 after three years where they remained stable (2014, 2015 and 2016).

- Current national climate commitments set us on a course to around 3.2°C of warming, and 'business as usual' would mean a rise of 4.5°C.



24,7% global energy-related CO_2 emissions

28,8% global final energy consumption



Global Energy & CO_2 Status Report *- The latest trends in energy and emissions in 2017 (http://www.iea.org/geco/)*

- Transport : 24,7% of global energy related CO2 emissions

UIC COMMITMENTS

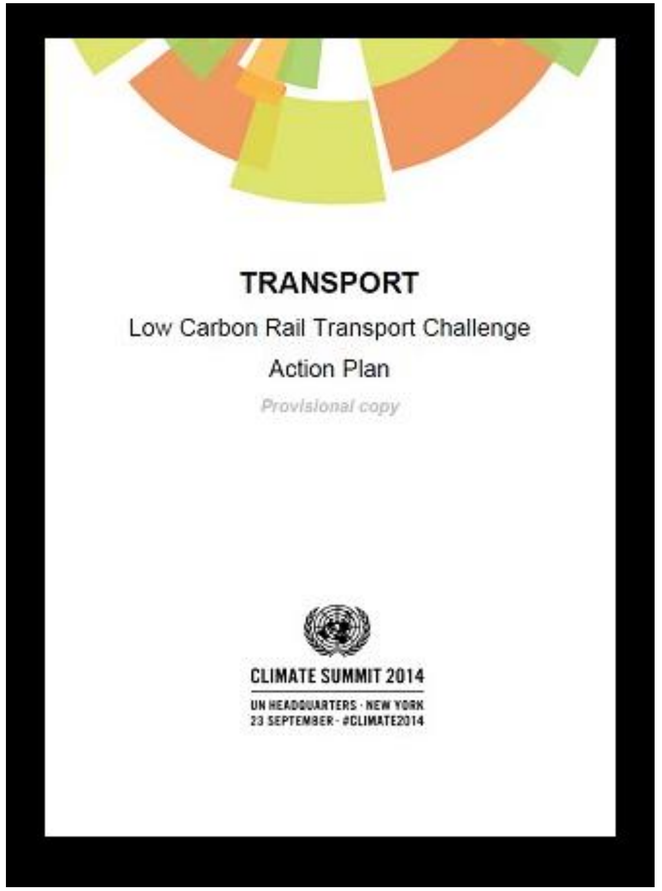
LOW CARBON RAIL TRANSPORT CHALLENGE

- Presented by UIC at the UN Climate Summit in 2014

- Railway Sector seen as a sustainable alternative to other modes of transport

- The challenge includes 3 sets of voluntary targets :
  - To improve rail efficiency
  - To decarbonize electricity supply
  - To achieve a more sustainable balance of transport modes

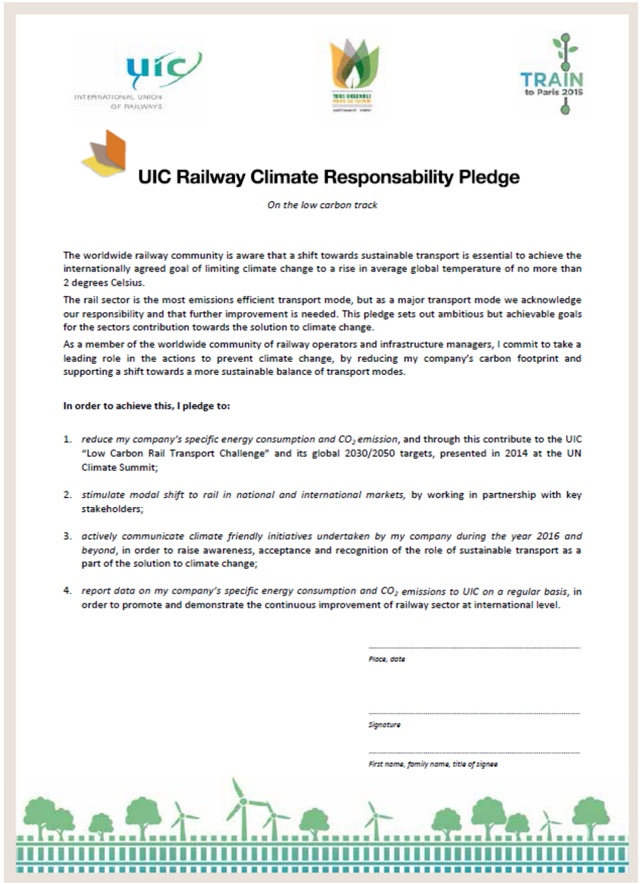
- Railway operators are therefore supposed to :
  - Invest in electrifying trains
  - Improve load factors
  - Procure more efficient rolling stock
  - Develop more efficient energy and traffic management systems
  - Promote efficient driving



UIC COMMITMENTS

RAILWAY CLIMATE RESPONSIBILITY PLEDGE

- Modal shift challenge launched by UIC in 2015
- Calls for investments for a shift towards rail transport and away from carbon intensive transport options
- Signed by more than 70 members, representing the majority of global rail activity



UIC Railway Climate Responsability Pledge

On the low carbon track

The worldwide railway community is aware that a shift towards sustainable transport is essential to achieve the internationally agreed goal of limiting climate change to a rise in average global temperature of no more than 2 degrees Celsius.

The rail sector is the most emissions efficient transport mode, but as a major transport mode we acknowledge our responsibility and that further improvement is needed. This pledge sets out ambitious but achievable goals for the sectors contribution towards the solution to climate change.

As a member of the worldwide community of railway operators and infrastructure managers, I commit to take a leading role in the actions to prevent climate change, by reducing my company's carbon footprint and supporting a shift towards a more sustainable balance of transport modes.

In order to achieve this, I pledge to:

1. *reduce my company's specific energy consumption and CO_2 emission*, and through this contribute to the UIC "Low Carbon Rail Transport Challenge" and its global 2030/2050 targets, presented in 2014 at the UN Climate Summit;
2. *stimulate modal shift to rail in national and international markets*, by working in partnership with key stakeholders;
3. *actively communicate climate friendly initiatives undertaken by my company during the year 2016 and beyond*, in order to raise awareness, acceptance and recognition of the role of sustainable transport as a part of the solution to climate change;
4. *report data on my company's specific energy consumption and CO_2 emissions to UIC on a regular basis*, in order to promote and demonstrate the continuous improvement of railway sector at international level.

Place, date

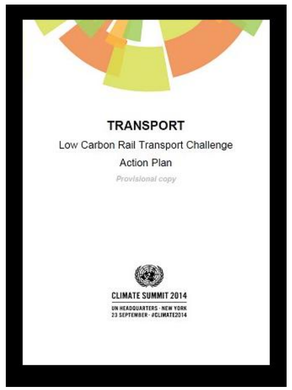
Signature

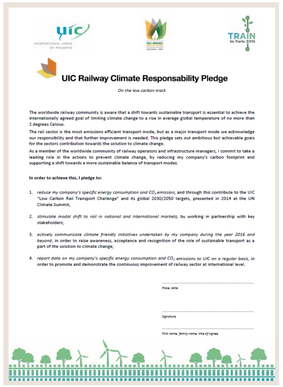
First name, family name, title of signee

UIC TARGETS

LOW CARBON RAIL TRANSPORT CHALLENGE

- Final energy consumption from train operations:
  - 50% by 2030 (1990)
  - 60% by 2050
- Average CO2 emissions from train operations:
  - 50% by 2030 (1990)
  - 75% by 2050
- Railway share of passenger transport (pkm) by 2030:
  + 50% (2010), +100% by 2050
- Railway share of freight land transport (tkm):
  = to road by 2030
  50% greater than road by 2050



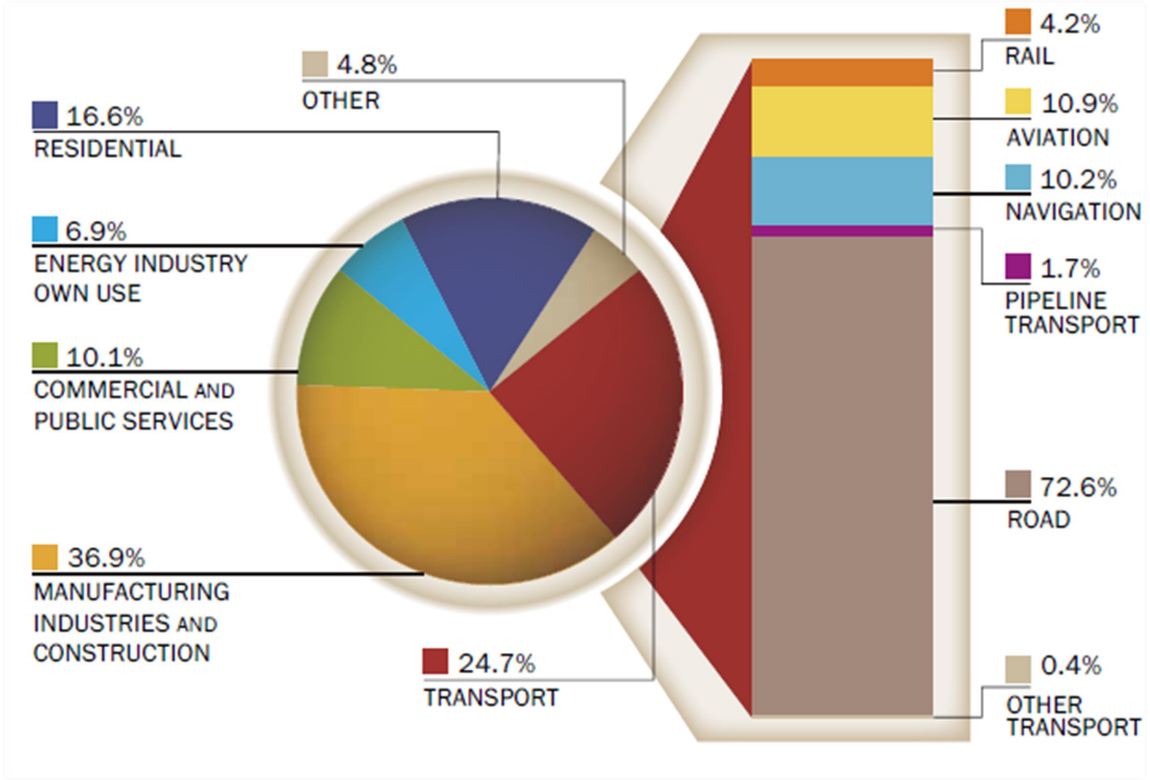


RAILWAY CLIMATE RESPONSIBILITY PLEDGE

- Contribute to the UIC “Low Carbon Rail Transport Challenge”,
- Stimulate modal shift to rail in national and international markets,
- Actively communicate to raise awareness,
- Report data on one’s company’s indicators above on a regular basis in order to promote and demonstrate the continuous improvements at an international level.

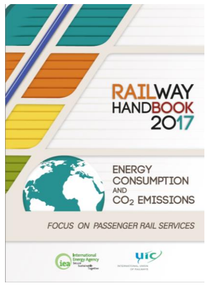
RAIL TRANSPORT EFFICIENCY

One of the most efficient and sustainable mode of transport



4,2% global transport CO_2 emissions

1,9% transport final energy demand (75,3% for road transport)



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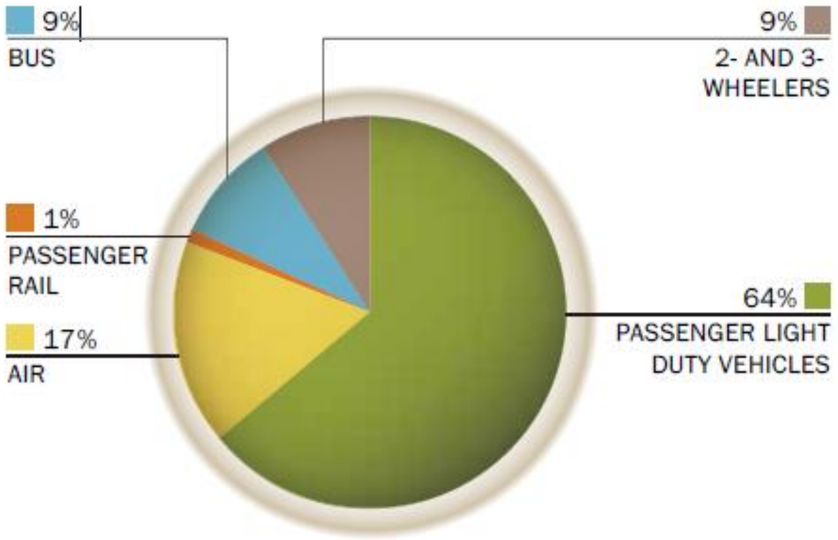
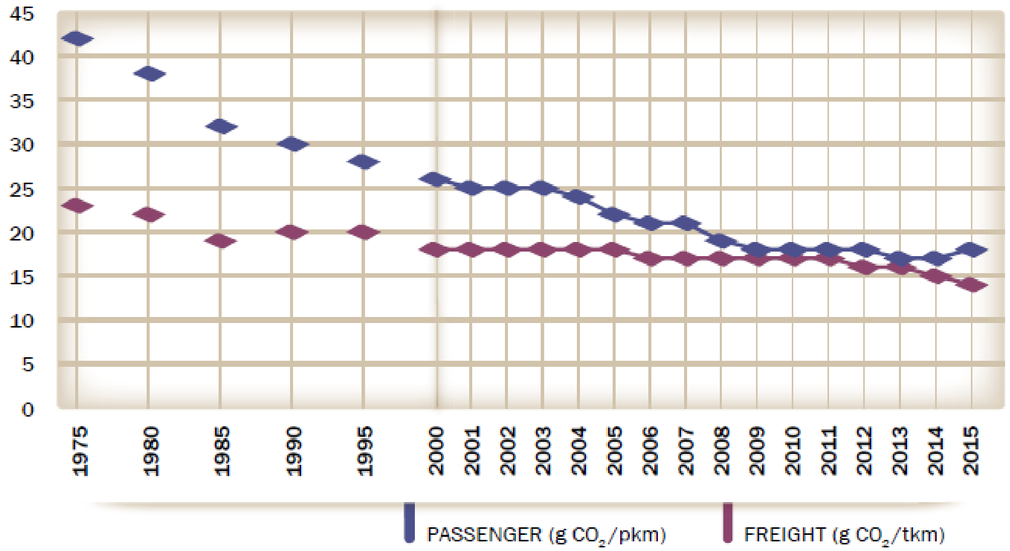
FOCUS ON PASSENGER RAIL TRANSPORT

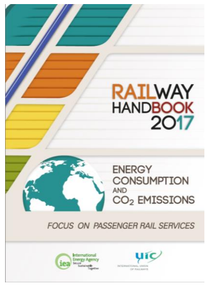


Source: IEA estimates based on IEA (2017b) and IEA (2017c)

- The most energy efficient passenger transport mode per pkm
- Requires less than 1/10th of energy needed to move an individual by car or by airplane.
- Despite accounting for 9% of the global passenger activity (in pkm) in 2015, it only represents 1% of the final energy demand in passenger transport.
- In 2015, around 75% of the passenger rail activity took place in Asia.

- **Passenger Rail has decreased its energy consumption between 2005/2015**
  - 27,8% per PKM
- **Passenger Rail has decreased its CO_2 emissions between 2005/2015**
  - 21,7% per PKM





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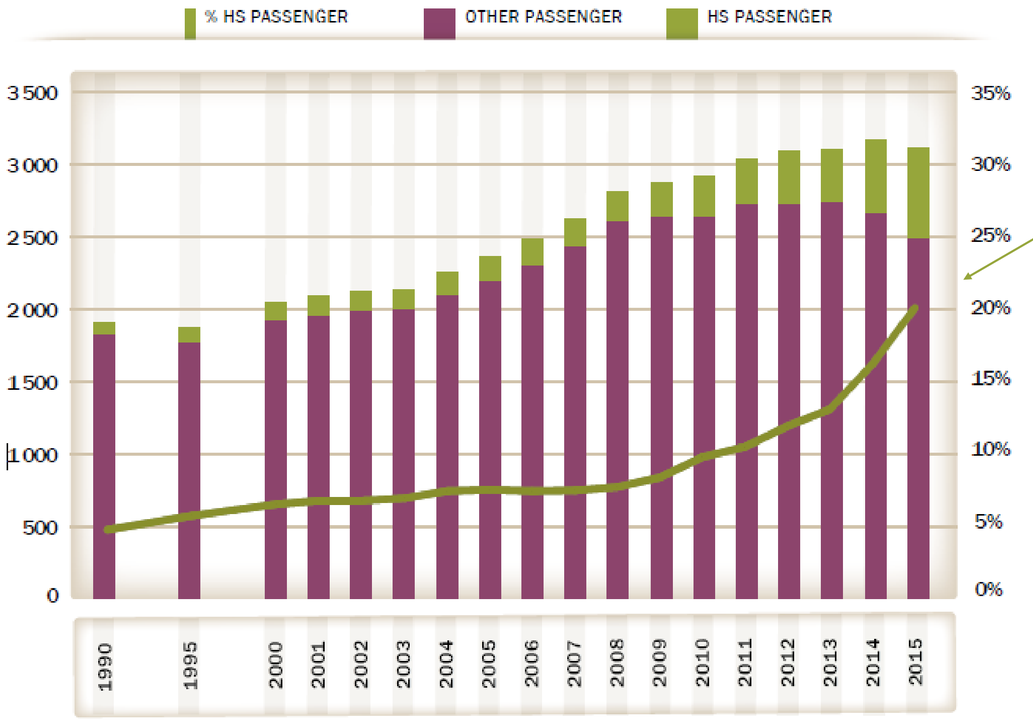
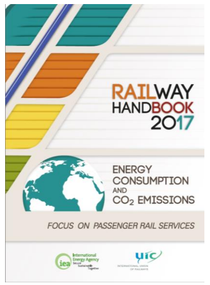
FOCUS ON HIGH SPEED RAIL

- Global HSR activity grew by 14% per year between 2005 and 2015. Large growth due to a surge in HSR activity in China (by nearly 170% between 2012 and 2015).
- China, Europe and Japan together account for 95% of the global total.
- In 2015, the HSR sector consumed one fifth of the total electricity demand from passenger rail, and 15% of its final Energy use.
- Passenger movements in China and Japan take place at a lower energy intensity per pkm compared with European averages, despite higher energy intensities per train-km:
  - loads three times larger than the European average



HSR share in global intercity rail doubled from **10% to 20%** between 2010 and 2015.

Source: Elaboration by IEA based on UIC (2016a)



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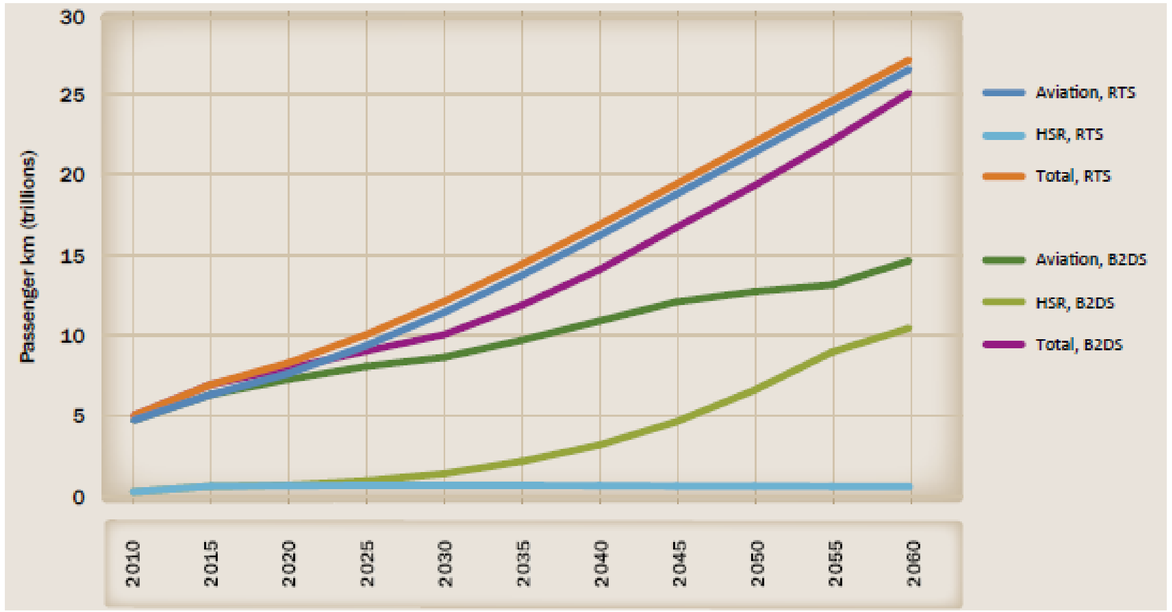
HIGH SPEED RAIL AND AVIATION

- The energy use per pkm of HSR is about **90% lower** than aviation.
- HSR has the potential to emit very low or zero CO_2 emissions in the future, if electricity generation systems manage to decarbonize alongside.
- IEA projections of low carbon scenarios show that a large shift from aviation activity to HSR needs to take place in order to reduce CO_2 emissions. In a scenario aiming to meet the ambition outlined by the Paris agreement (B2DS), nearly all global aviation activity at short to medium distances (up to 1 000 km) is substituted with HSR by 2060.

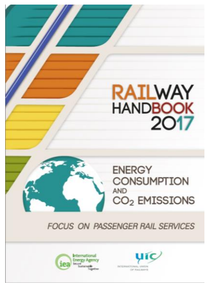
Projections on the modal shift from aviation to HSR, according to a reference technology scenario (RTS), a 2°C Scenario (2DS) and a Beyond 2°C Scenario (B2DS)



IEA projections of low carbon scenarios:

- 2°C Scenario [2DS] = 50% chance of limiting global warming to 2°C
- Beyond 2°C scenario [B2DS] =50% chance of limiting global warming to 1.75°C

Source: IEA, 2017d.



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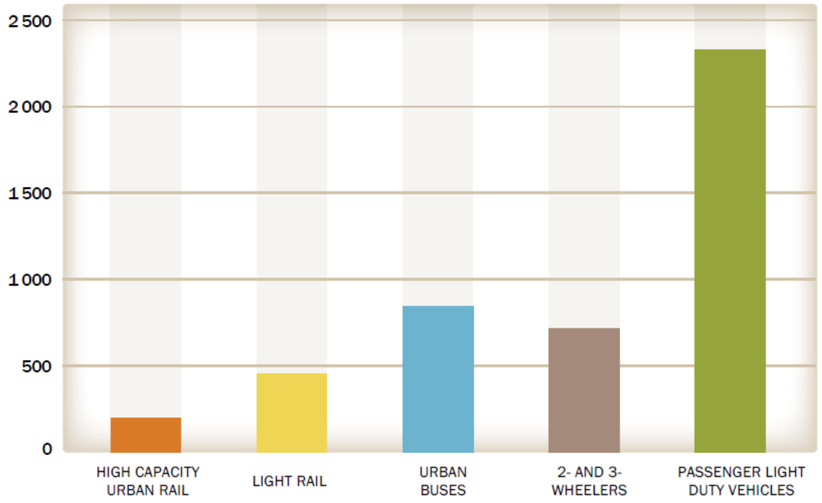
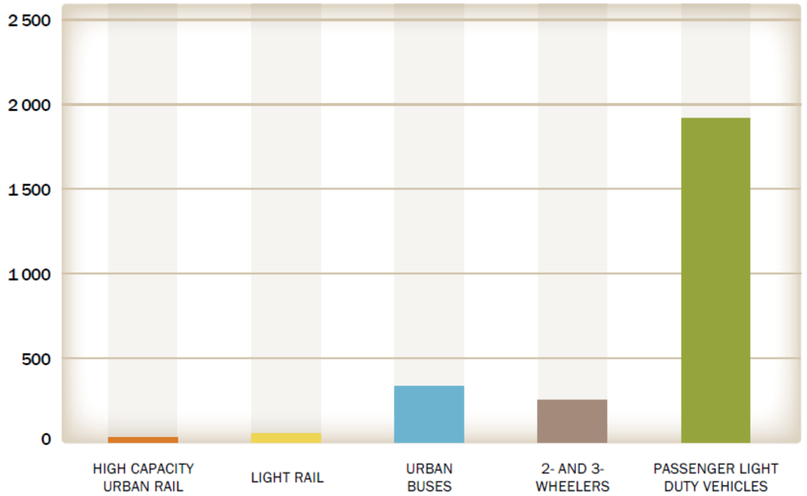
FOCUS ON URBAN RAIL

Fig. 106: Energy intensity by urban passenger transport mode (kJ/pkm), 2015



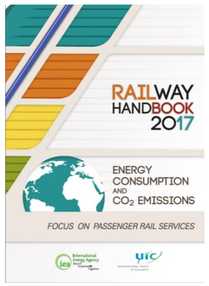
Source: IEA estimates based on IEA (2017b), ITDP (2014), UITP (2002) and UITP (2015b)

Fig. 108: CO_2 intensity by urban passenger transport mode (gCO_2/pkm), 2015



Source: IEA estimates based on IEA (2017b), ITDP (2014), UITP (2002) and UITP (2015b)

- The specific energy consumption of high capacity urban rail is the lowest of all urban passenger transport modes.
- The low energy intensities and mainly electric powertrains used for urban rail mobility further strengthen the advantages of urban rail over other transport modes.
- CO2 emission intensity of urban rail is less than one tenth the intensity of urban PLDVs.



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