INTERNATIONAL UNION
OF RAILWAYS

# RETOUR AUX FONDAMENTAUX

## Développement Durable

**Carole Escolan**
UIC Head of Unit Sustainable Development


Hanoi, Vietnam, 2018


Dortmund, Germany, 2018


Nearby Osaka, Japan, 2018


California, USA, July 2018


India, 2018


Coonabarabran, Australia, 2018

Lakeport, California, 2018



Japan, 2018

# REDUIRE DRASTIQUEMENT NOTRE IMPACT ENVIRONNEMENTAL



## LA RAREFACTION DES RESSOURCES NATURELLES

Une seule planète ne suffit plus pour 7,6 milliards d'individus, 9,8 milliards en 2050.

- Stagnation des surfaces agricoles, stagnation des rendements,
- Déforestation massive,
- Chute de 30% de la biodiversité entre 1970 et 2008, recul de 10% d'ici 2050 (IPBES), en trente ans, de près de 80 % des insectes volants en Europe (CNRS), 60% des animaux sauvages depuis 1970 (WWF)
- Augmentation des besoins en eau douce de 55% d'ici 2050, alors que les ressources sont menacées (pollution, utilisation excessive, réchauffement),
- Epuisement des ressources halieutiques (surpêche, pollution, etc.), 33% des stocks de poissons sont surexploités (FAO 2018),
- Chute des réserves en métaux rares,

**Jour du dépassement 2018 : 1er août**

Source wwf.org

## LE RECHAUFFEMENT CLIMATIQUE

Sur la voie d'un réchauffement de 4° avant la fin du siècle

- Elévation du niveau des mers de 1 mètre et inondations,
- Vagues de chaleur sans précédent,
- Graves pénuries d'eau,
- Acidification des océans,
- Dépérissement des forêts (feux, maladies),
- Perte irréversible de la biodiversité,
- Remise en cause de la sécurité alimentaire,
- Augmentation des maladies épidémiques et respiratoires,
- Augmentation de la pauvreté,
- Exodes massifs des populations.

Pour en savoir + : rapport du GIEC 2018. Pour rester sous la barre des 2°c , les Etats doivent tripler leur niveau d'engagement par rapport aux accords de Paris de 2015.

## L'AUGMENTATION DES INEGALITES

Si, du fait de la crise, les écarts de revenus entre pays riches et pays en développement ont diminué, les inégalités au sein même des pays n'ont jamais été aussi fortes.

- Les inégalités sociales engendrent des inégalités environnementales (précarité énergétique, malnutrition, exposition aux pollutions, etc.),
- Les inégalités sociales peuvent renforcer certains déséquilibres environnementaux (déforestation accrue, braconnage, conflits, etc.)

Huit personnes sur la planète détiennent autant de richesse que la moitié la plus pauvre de la population mondiale (OXFAM 2018)

## LES RISQUES LIES A LA POLLUTION

La pollution atmosphérique devrait devenir la principale cause environnementale de décès prématurés au niveau mondial d'ici 2050.

- Pollution de l'air (intérieur, extérieur),
- Pollution liée à la production de déchets,
- « Pollution » alimentaire.

## DES MODES DE PRODUCTION ET DE CONSOMMATION NON DURABLES

Une logique productiviste qui encourage la surconsommation de produits dont les prix ne reflètent pas les coûts écologiques.

- Consommation de produits jetables
- Obsolescence programmée

# SUSTAINABLE DEVELOPMENT UNIT



**Rail Sector representation at international level**
SLoCaT
UN
SUM4all (WB)
ITF (OECD)
IEA

UIC : Carole Escolan -Zeno

**Sustainable Development Unit**
-
Energy, Environment & Sustainability Platform & core group
Chair: Willy Bontinck, SNCB-NMBS

UIC: Head of Unit – Carole Escolan Zeno

**ERPC**
(European Railways Purchasing Conference)
Working group on sustainable procurement

Secretariat: Per Melby (Bane Nor)

Groupe Spécial

**Noise & vibration Network**
Chair: Jakob Oertli (SBB)
UIC: Pinar Yilmazer

**Energy & $CO_2$eq Emissions Network**
Chair: Bart Van Der Spiegel (Infrabel), Chloé Lima Vanzeler (SNCF)
UIC: Philippe Stefanos

**Sustainable Land Use Network**
Chair: Michael Below (DB), Thomas Schuh (OBB)
UIC: Pinar Yilmazer

**Emissions Network**
Chair – Philippe Clement
UIC: Pinar Yilmazer

**Sustainable mobility Network**
Chair: Margrethe Sagevik (SNB), Luigi Contestabile (FS)
UIC: Marie-Luz Philippe

**Reuse Network**
Chair:
Wim Bontinck
UIC: Isabelle de Keyzer

**Eco Scoring Network**
Chair:
UIC: Isabelle de Keyzer

# UIC COMMITMENTS



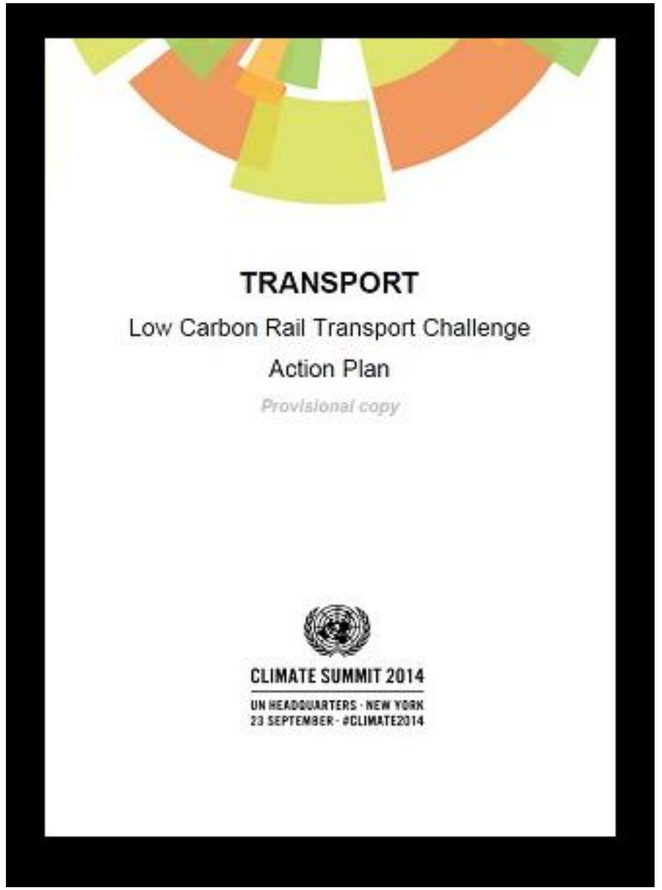
## LOW CARBON RAIL TRANSPORT CHALLENGE

- 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

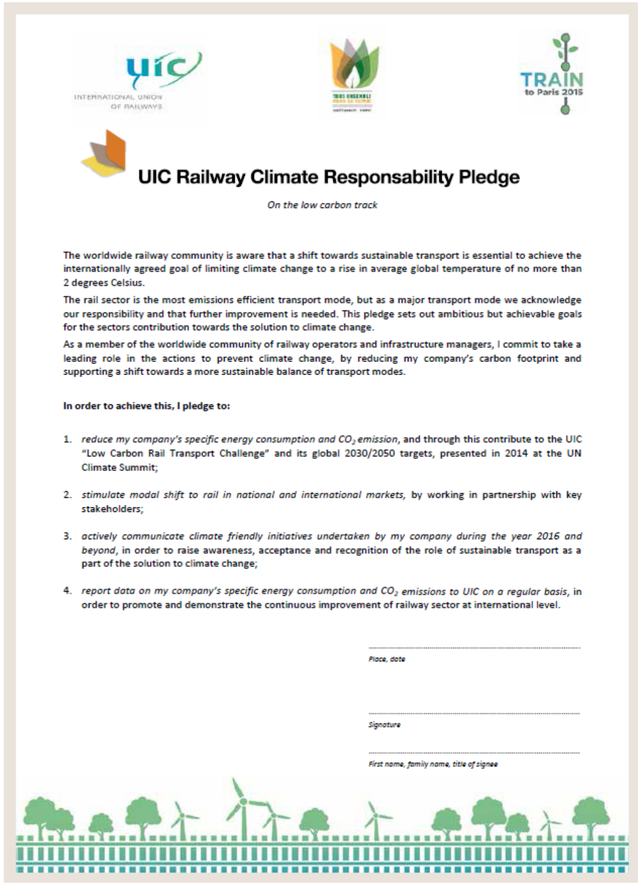


# UIC COMMITMENTS



## 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*

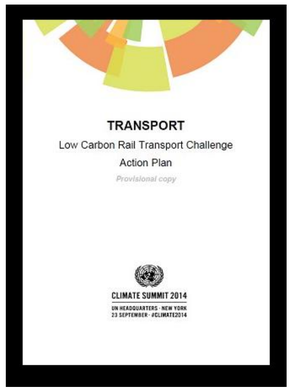
*First name, family name, title of signee*

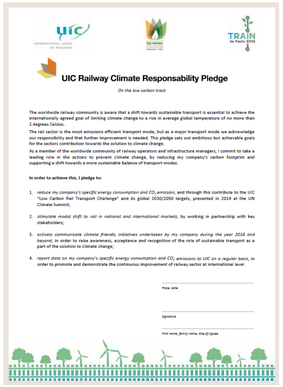
# UIC TARGETS



## LOW CARBON RAIL TRANSPORT CHALLENGE

- Final energy consumption from train operations:
  - 50% by 2030 (1990)
  - 60% by 2050
- Average $CO_2$ 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



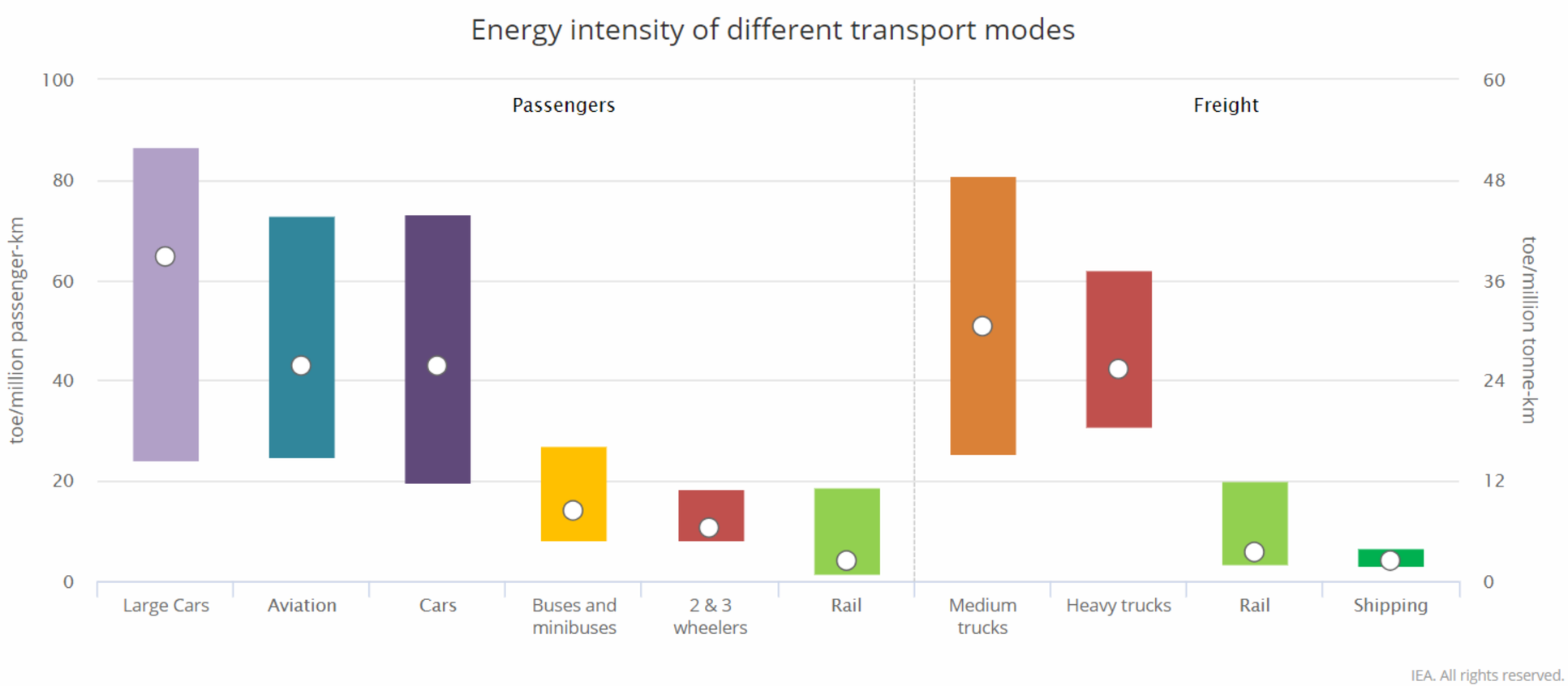

## RAILWAY CLIMATE RESPONSIBILITY PLEDGE

- 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.

# RAILWAY EFFICIENCY



One of the most efficient and sustainable mode of transport. While carrying out 8% of the world's passengers transport, represents only 2% of total energy demand

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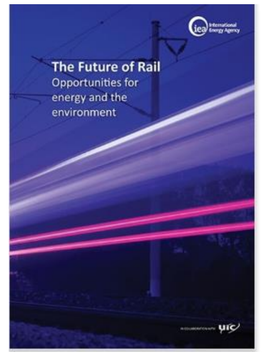
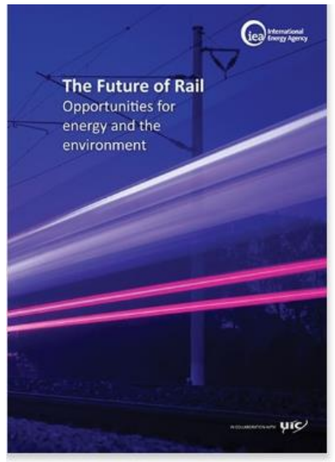
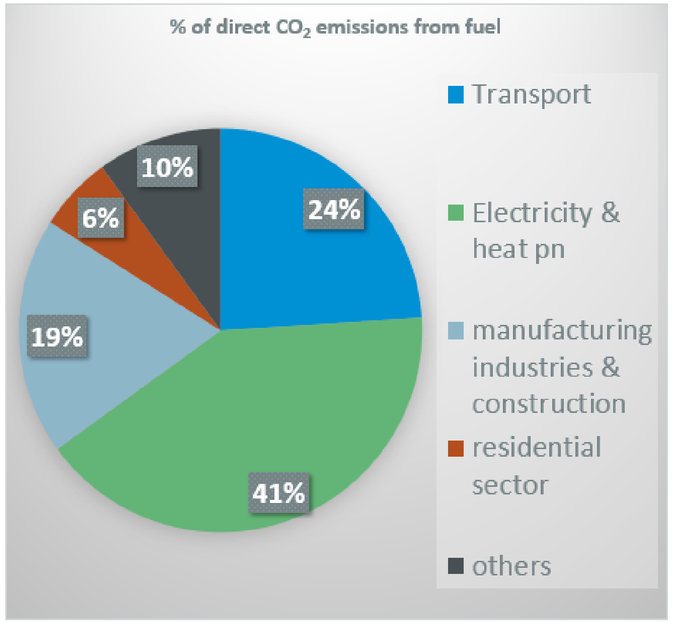


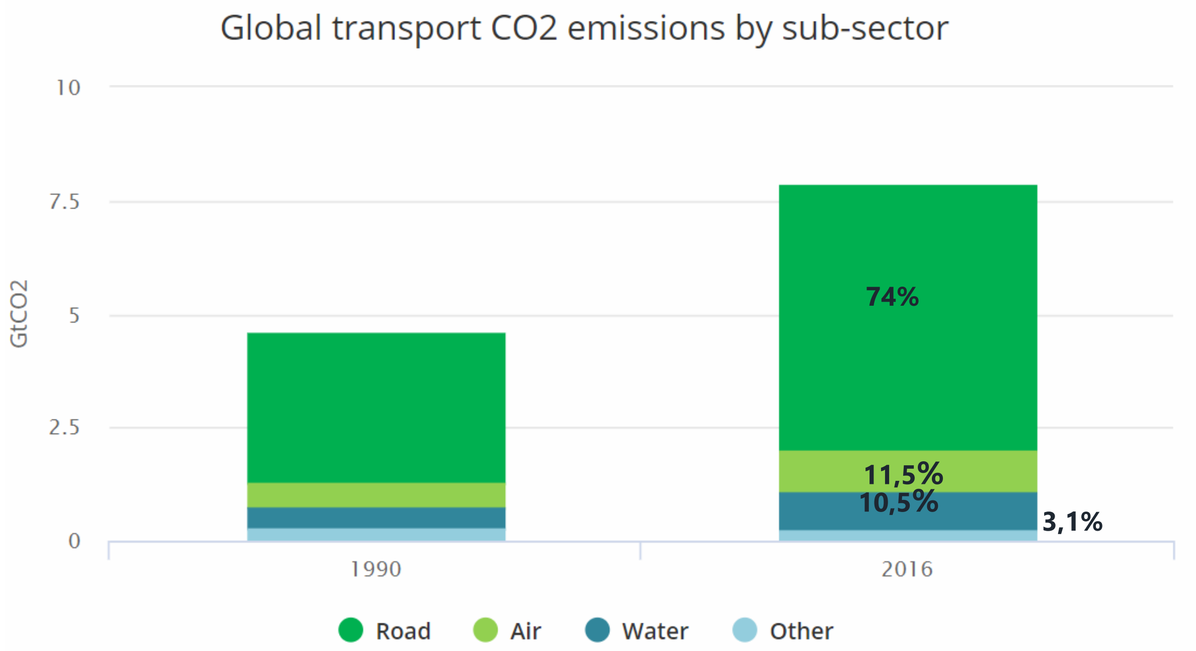
# RAILWAY EFFICIENCY






- In 2016, transport sector accounted for 24% of direct CO2 emissions from fuel combustion
- a level 71% higher than what was seen in 1990.




- Rail represents O,3% of direct CO2 emissions from fossil fuel combustion, 3% of all Well to wheel emissions (less than 2% for passenger rail).
- High efficiency of train operations means that it saves more oil than it consumes: if all services currently performed by railways were carried by road vehicles, GHG emissions would increase by around 12%.

https://m.youtube.com/watch?v=AyqQvAzpui8

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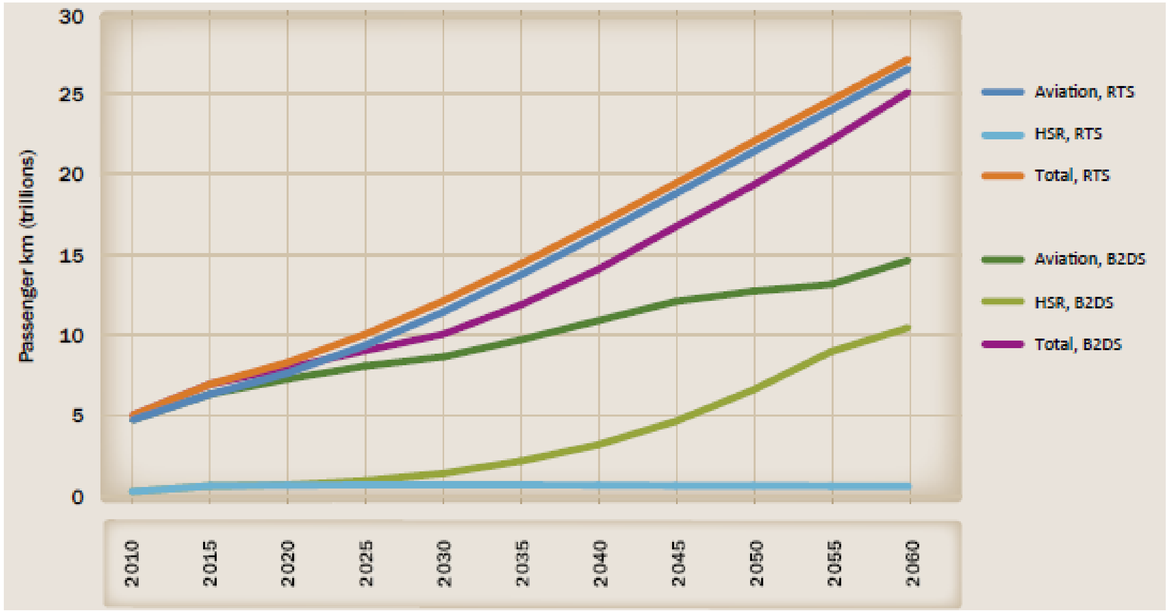
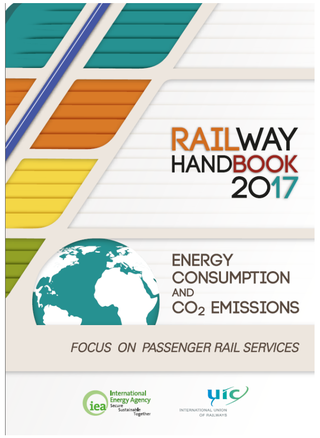
# High speed rail and aviation



- 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.

https://uic.org/IMG/pdf/handbook_iea-uic_2017_web2-2.pdf

# MODAL SHIFT

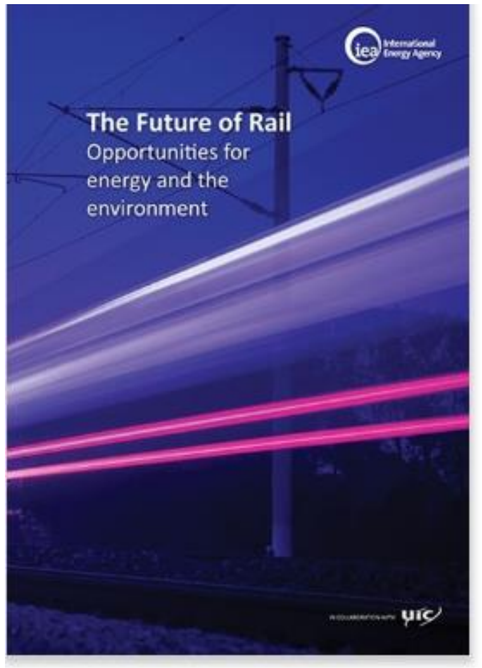
- **In a High rail scenario for 2050, by:**
  - minimizing costs per passenger or ton km,
  - maximizing revenues from stations,
  - ensuring that all modes of transport pay for the negative impacts that they generate (polluter pays principle),

  an aggressive deployment of rail can lead to consequently reduce $CO_2$ emissions in transport. This scenario leads to reduce and shift 11.5 trillion passenger-kilometres from airplanes, cars and two/three-wheelers, and 7.4 trillion ton-kilometres from trucks in 2050.

- **To reach Paris agreement**:

  the power sector has to decarbonize more rapidly, in line with the Paris agreement, GHG emissions due to electricity demand for rail operations could be further reduced.

- **Achieving the modal shifts outlined in this scenario requires both increased policy effort and substantial investment.**
  - Investments needed to increase the efficiency and effectiveness of rail transport by
    - reduction of bottlenecks,
    - the modernization of signalling systems,
    - the increase of axial loads and loading gauge in some strategic sections of the network.
    - improving the inter-modal nodes dedicated both to freight (ports, logistic centres) and to passenger traffic (stations, parking facilities, connections with public transport).
    - Investment in reliability, accessibility, safety, attractiveness for passengers
  - Green investments should be driven toward rail activities,
  - Thinking multimodality is key. Rail can’t work by itself, bring our societies toward a decarbonized and sustainable mobility by itself.
  - We have to think mobility globally, holistically, each mode bringing its own environmental, social and economic strength.
  - Thinking multimodality to offer customers journeys that are safe, reliable, comfortable, seamless and affordable to all is the best way to reach the Paris agreement.




# S'ADAPTER



## RAIL ADAPT
Summary for executives

**THE RAIL ADAPT VISION IS FOR**
"a transport system in which the **world's railways** have acquired the flexibility to intelligently adjust to climate change, thereby providing their economies and societies with reliable and cost-efficient transportation services".

**CLIMATE CHANGE**

- is a long term, slow acting but very high impact risk;
- affects all parts of railways in all parts of the world but in many different ways;
- can have beneficial effects but effects can also be catastrophic;
- requires leadership to plan and change but there is knowledge and the tools to do it.

The full report is available at **https://uic.org/railadapt-report**

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## RAIL ADAPT
Summary for executives

**The climate is changing.**

Globally, weather records are broken almost every year. Locally, the effects of floods, drought and other extreme weather events are disrupting railway operations more frequently, with an associated loss of revenue and a potential loss of business to other modes of transport.

Adaptation is the process of making changes to how services are delivered to be resilient to disruption now and in the future. These might be physical changes to infrastructure but also include organisational changes to enable intelligent adjustments to how services are provided, foresight of problems and learning from experience.

**The RailAdapt framework** sets out the context of climate change, the issues at stake, strategies and toolkits for dealing with them. It offers case studies to show how railways in different parts of the world are dealing with them today. It provides techniques and tools, adapted from other areas of risk management and from the varied experiences of engineers, operators and planners in different regions of the world, facing different challenges.

Challenges that you will face tomorrow are being managed somewhere in the world today, by asset managers, railway operators, rolling stock engineers, scenario planners and many others, and this framework and guidance document is designed to support both Boards and departmental managers in anticipating and facing up to those challenges.

- Where does Climate Change feature in your risk register?
- How well prepared is your organisation to manage the risks?
- Are you asking the right questions about your assets' future and your investment criteria?
- Do you have Climate Change adaptation embedded in all departments?
- Are you communicating with stakeholders so that everyone has a shared understanding?

These are some of the questions that Board's should be asking and answering to ensure the long-term health and sustainability of the organisations they lead, and of the railway sector generally.

***An adaptive railway organisation is one that adjusts intelligently to the changing climate, delivering service sustainably with value for money.***

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# AVOIR UNE VISION HOLISTIQUE : LA RSE