



## Key Messages for COP21

The European Rail Industry: Manufacturing the world's most sustainable and innovative mobility solutions



# A holistic approach:

The European Rail Industry is innovating on numerous aspects of the rail system...

## Driver Assistance Systems

Up to 15% savings achievable in eco-efficient driving.

## Medium Frequency traction transformers

Up to 5% saving potential in reducing transformer losses.

## Improved aerodynamics in HS Trains

Up to 15% traction energy savings can be performed by optimising the shape of the train.

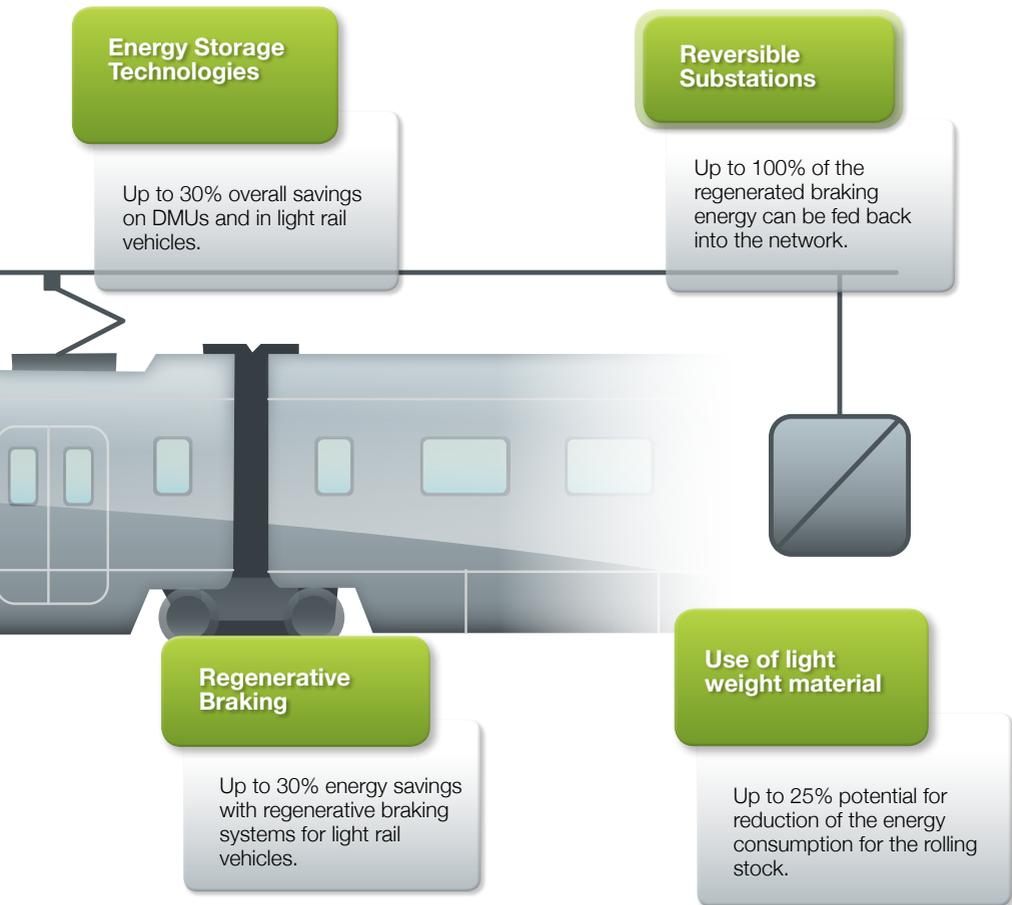


## Use of waste heat in DMUs for heating and cooling

Up to 50% reduction of annual energy consumption of the air conditioning system.

## Park Train Management

Between 5 and 20% savings by using external power supply and better controlling methods.



...making the most environmentally-friendly transport mode even more energy efficient and carbon-conscious.

# UNIFE Positioning on COP21

Representing over 80 small, medium, and large rail supply companies to the European Union and internationally, UNIFE—the European Rail Industry Association, is an active promoter of the environmentally-friendly nature of rail transport, the modal shift to rail as a means to reduce global transport sector carbon emissions, and investment in rail innovation for an even more attractive and carbon-conscious rail system. UNIFE and its members are actively engaged in the UNFCCC negotiations and are especially focused on the COP21 negotiations in Paris.

## Reducing transport sector emissions is central to achieving global climate change targets

Transport is currently responsible for 22.7% of global CO<sub>2</sub> emissions. Moreover, transport emissions are increasing at an alarming rate with a 53% increase between 1990 and 2011 making it abundantly clear that in the fight against climate change, a strategy to reduce transport sector emissions is crucial.

## Rail transport—a key tool to reducing transport sector emissions

The significant transport sector contribution to overall CO<sub>2</sub> emissions is due to the reliance of the majority of transport on fossil fuels. Within the nearly 23% share of transport in overall CO<sub>2</sub> emissions, rail clearly stands out as the most carbon-conscious transport mode, contributing just over 3.3% to overall

global transport emissions (or less than 1% of overall emissions) while transporting 9% of world passenger and freight-tonne kilometres. Furthermore, despite overall emissions of transport increasing, the emissions of the rail sector have decreased significantly in the past three decades and continue to do so.

## The role of the rail supply industry

Even with a past environmental performance record better than any other major mode, the rail sector is committed to further reducing its GHG emissions. In particular, the European rail industry, representing 46% of the global market for rail supplies, is actively focused on continual innovation of rail system technology in order to further improve energy efficiency and reduce GHG emissions while at the same time boosting the attractiveness of rail transport and thus eliciting a modal shift from more polluting transport modes to rail.

Over the past two decades, the European rail industry has provided considerably more energy efficient products to its customers. In 2010, an estimated 20% energy reduction had already been obtained compared to 1990 vehicles. On certain types of vehicles, the savings could represent as much as 50%. Regenerative braking or energy storage technologies have contributed to these results. Nevertheless, further gains in energy efficiency are still possible to reduce the energy consumption and carbon footprint of the railway system, and the industry is committed to achieving this long term goal.

# Our Messages and Vision



Rail is the most environmentally-friendly transport mode contributing to only 0.7% of global energy-related CO<sub>2</sub> emissions while meeting 9% of the global mobility demand compared to 22% of global energy-related emissions emitted by all other transport modes: road, aviation and maritime<sup>1</sup>.



A modal shift to rail (as the most sustainable mode of transport) should be at the backbone of any transport sector strategy to reduce CO<sub>2</sub> emissions. The European rail industry is constantly investing in innovation to make the transport mode more and more attractive to users in order to increase the demand for this carbon-conscious transport mode.



The European rail industry is fully committed to developing technology for rail that is even more energy efficient and environmentally-friendly which will continue the decades-long trend of declining rail transport emissions.



Much of rail transport relies on electric energy which allows for even further CO<sub>2</sub> emissions reductions as the energy sector shifts to renewable, low-carbon energy generation. This technology and infrastructure has already been deployed in many parts of the world, whereas the other major transport modes are almost entirely reliant on fossil fuels.

The **European rail industry** is strongly positioned and committed to improving rail system technology, with two main goals:

- **Further improvement of the environmental performance of its products** (rolling stock, infrastructure, signaling systems, etc.) in terms of energy efficiency and emissions (when rail equipment is directly emitting CO<sub>2</sub>) across all rail transport segments: high-speed, mainline, urban/suburban, and freight
- **Boosting the attractiveness of rail transport to end users** through the improvement of the quality of transport to end users by improving the capacity, reliability, and life cycle costs of rail equipment. This will result in a reduction of CO<sub>2</sub> by eliciting a modal shift to rail which is proven to have much better emission performance in terms of passenger-km and freight-km than any other mode.

<sup>1</sup> OECD/IEA Railway Handbook 2014: energy Consumption and CO<sub>2</sub> emissions

# Initiatives and COP21 activities

## A greater role for transport in the UNFCCC climate negotiations

UNIFE supports the efforts of the [Paris Process on Mobility and Climate \(PPMC\)](#), [Partnership on Sustainable Low Carbon Transport \(SLoCaT\)](#) as well as the [UIC Train to Paris initiative](#) to elevate the profile of the transport sector amidst the UNFCCC climate negotiations. As transport accounts for nearly a quarter of global emissions and whose share is rising, transport stakeholders should play a strategic role in the debate. Moreover, sustainable transport modes that offer a high mobility to emissions ratio (such as rail transport) should form the backbone of any transport sector strategy to combat climate change.

## Recognition that rail is the backbone of a carbon-conscious transport strategy

UNIFE fully promotes the messages of the [UIC Low Carbon Rail Transport Challenge](#) and the [UIC Train to Paris](#) and echo the assertion that rail transport is the most environmentally-friendly transport mode and that a significant shift from more polluting modes of transport such as road and air to rail is necessary in order to meet the ambitious CO<sub>2</sub> reduction targets required to fight climate change.

## A central role for finance in sustainable transport policies

UNIFE believes that sustainable transport policies should acknowledge the central role of finance, be it from donor governments or Multi-lateral Development Banks (MDBs), National Development Banks (NDBs) and institutional investors. Furthermore, appropriate financing mechanisms are necessary to ensure the implementation of coherent sustainable transport policies and for the scaling up of action on mobility and climate change.

## Support for the European Commission's ambitious transport decarbonisation objectives

UNIFE supports the European Commission's objectives for the decarbonisation of transport as outlined, notably, in the [2011 Transport White Paper](#) which calls for a 20% reduction from 2008 levels by 2030, and a 60% reduction from 1990 levels by 2050 to be brought on in part by boosting the competitiveness of cleaner transport modes such as rail.

Rail generates only

**0.7%**

of total energy-related CO<sub>2</sub> emissions

while meeting **9%** of global mobility demand



**22%**

of total energy-related CO<sub>2</sub> emissions emitted by other transport modes

## Support for rail innovation initiatives focused on energy and sustainability

UNIFE sees innovation in rail technology as a major lever to reducing the carbon footprint of the broader transport sector. As the coordinator of the Shift2Rail preparatory phase, UNIFE and its members, along with the broader sector endeavoured to create a massive European Public-Private Partnership for rail research to create a step change in rail technology that would boost the capacity, reliability and reduce the lifecycle cost of the rail system. Furthermore, the Shift2Rail Master Plan specifies that its five Innovation Programmes will be structured around five cross-cutting themes that take into account the interactions between the Innovation Programmes and the different subsystems; with one focusing on “Energy and Sustainability”. Now that Shift2Rail has been adopted by the EU and is an established joint undertaking, UNIFE supports its activities and sees it at the heart of a policy to elicit a modal shift to rail transport—which will inevitably result in lower transport emissions.

## Other EU-funded rail R&D projects

UNIFE and its members, alongside operators and infrastructure managers, are currently engaged in major R&D projects, the results from which will be translated into even more energy efficient products:

- **OSIRIS** (Optimal Strategies to Innovate and Reduce energy consumption In urban rail Systems), aimed at testing and implementing technological and operational solutions to achieve a consistent reduction in the energy consumption of urban rail solutions. This will enable a reduction of the overall energy consumption within Europe’s urban rail systems of 10% compared to current levels by 2020.

- **MERLIN** (Management of Energy for smarter RaiLway systems in Europe: an INtegrated optimisation approach) is demonstrating the viability of an integrated management system to achieve a more sustainable energy usage in European electric mainline railway systems. A 10% reduction in energy consumption is expected to be achieved where the results of the project are implemented.

- **REFRESCO** (towards a REgulatory FRamework for the use of Structural new materials in railway passenger and freight CarbOdyshells) is setting the framework for the implementation of new materials (lighter and less energy consuming materials) through the evolution of certification processes for rolling stock.

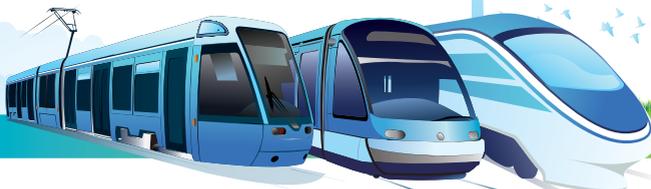
## Industrial Focus on Energy Efficiency Innovation

**20%**  
energy reduction  
over 2 decades

as much as  
**50%**  
savings on  
certain vehicles

1990

2010



# What does it take to move 1000 people

**1 TRAIN  
(8 carriages)**



**15 BUSES**



**250 TO 1000 CARS**



UNIFE represents the European Rail Industry in Brussels since 1992. The Association gathers around 80 of Europe's leading large and medium-sized rail supply companies active in the design, manufacture, maintenance and refurbishment of rail transport systems, subsystems and related equipment.

UNIFE also brings together 15 national rail industry associations of European countries. UNIFE members have an 84% market share in Europe and supply 46% of the worldwide production of rail equipment and services.



UNIFE is a member of the Partnership on Sustainable Low-Carbon Transport (SLoCaT) and a sponsor of the Paris Process on Mobility and Climate (PPMC)



Avenue Louise 221  
B-1050 Brussels  
Belgium

Tel: +32 2 626 12 60  
Fax: +32 2 626 12 61  
Email: [general@unife.org](mailto:general@unife.org)

[www.unife.org](http://www.unife.org)  
Twitter: @UNIFE  
LinkedIn: UNIFE Brussels