



PASSPORT
on the
low carbon
track!





Name: _____

Address: _____

Date: _____

From: _____

To: _____

Km by train: _____



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Calculate your emissions with
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FOREWORD BY Jean-Pierre LOUBINOUX

Director General
International Union of Railways (UIC)

Urban congestion, pollution, rural connectivity, access to markets, development of corridors, and optimised management of infrastructure capacity are challenges that all modes of transport must work together to overcome.

Among all these challenges, protecting the environment – reducing CO₂ emissions, reducing energy consumption, using clean energy, and encouraging a shift towards more sustainable modes – has become a priority issue.

CO₂ emissions from transport are rising faster than any other sector. Transport itself is already responsible for around 25% of total carbon emissions from fuel combustion, of which the rail sector contributes just over 3%. It is precisely because of this low carbon intensity that rail transport is an important part of the solution to climate change. By striving for even greater performance and leveraging this by achieving a more sustainable balance between transport modes, we can support the United Nations effort to secure the two degree scenario.

It is to this end that a declaration, prepared by UIC on behalf of its 240 Member operators / infrastructure managers, setting global targets for the performance of the rail sector was announced at the United Nations Climate Summit in 2014. This year on the occasion of the COP 21 conference, the global railway community will come together at the UIC headquarters in Paris on 28 November to pledge further company level actions.

By choosing to travel to Paris COP 21 with one of the trains organised by UIC Members for this historical occasion, you demonstrate that you care for the environment, and that you “walk the talk”.

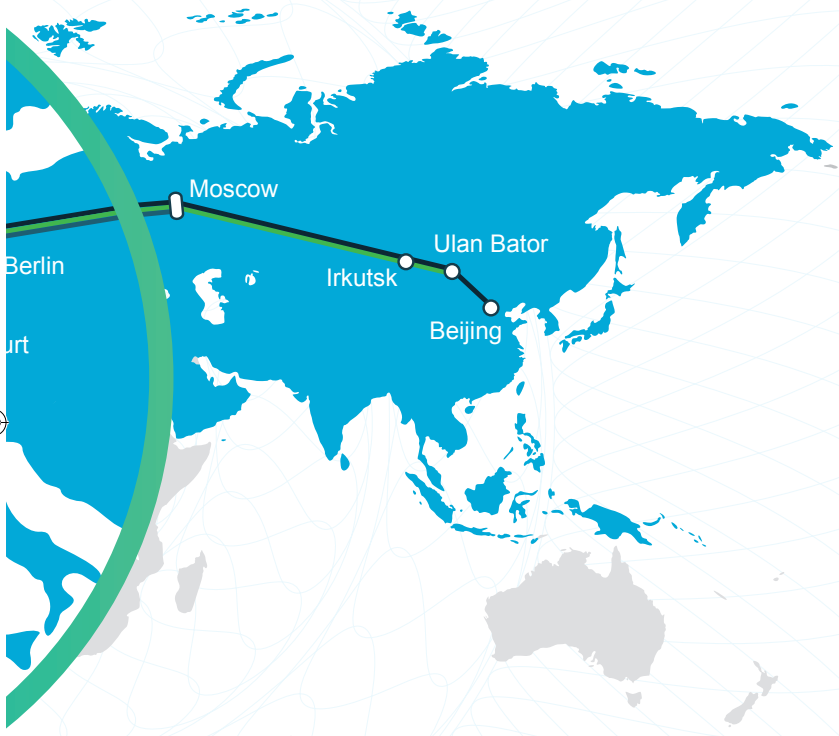
Participants from around the world will attend this symbolic event. These actions are part of a long list of efforts undertaken by railways across the globe, over the last several decades and for decades to come, as we are committed to working collectively to overcome this common challenge.



A UIC coordinated international campaign



Supported by UIC Members, special trains will depart from major cities **across Europe and Asia** to bring to **COP 21** delegates, representatives of national governments, NGOs, decision-makers, the private sector and journalists.



Countries	UIC Members Coordination	Departure	Km to Paris
China - Mongolia - Russia	RZD	Beijing via Moscow	10 439
The Netherlands	NS	Rotterdam	443
Germany	DB	Berlin	1 075
Belgium	Thalys/SNCB	Bonn	556
Switzerland	SBB	Basel	546
Portugal	CP	Lisbon	2 132
Italy	FS	Milano	815
Spain	RENFE	Madrid	1 265
United Kingdom	ATOC	London	497

on the low carbon track!



The UIC “Train to Paris” Campaign will use renewable electricity certified with Guarantees of Origin, kindly provided by ECOHZ.

Furthermore, the **International Union of Railways** is supporting the “**Climate Neutral Now**” Program of the **UNFCCC**.

From Copenhagen 2009 to Paris 2015!



In partnership with the United Nations Framework Convention on Climate Change (UNFCCC) and the United Nations Environment Programme (UNEP) which already took the “Train to Copenhagen” in the frame of the COP 15 in 2009, UIC signed two Memoranda of Understanding.

UNFCCC, with Secretariat in Bonn, Germany is an international treaty agreed on during the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in June 1992. The head of the Secretariat has been Mrs. Christiana Figueres, from Costa Rica, since 2010.

The purpose of the Convention is to *“stabilise greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous human interference with the climate system.”* And that *“such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened, and to enable economic development to proceed in a sustainable manner.”* climatenutralnow.org



UNEP

UNEP partnership with UIC has always been strong and during COP 15, Mr. Achim Steiner, Executive Director, even took the “Train to Copenhagen”.

UNEP, with headquarters in Nairobi, Kenya, is an international agency created in June 1972, aiming to carry out environmental best practices in the following fields: atmosphere, ecosystems both marine and on Earth, governance and green economy. The present Executive Director of UNEP is still Mr. Achim Steiner.

RAILWAYS AND CLIMATE CHANGE

Railways are climate friendly. Passenger and freight services emit very low levels of green house gases. Total worldwide rail activity generates less than 3% of energy-related CO₂ emissions from transport while accounting for more than 9% of the world's passengers and freight movements. Investing to increase rail market share can reduce total transport greenhouse gas (GHG) emissions. In fact it will not be possible to achieve the "2 Degrees Scenario" without moving transport activity from road to rail.

ENERGY

Railways have improved their energy efficiency for both passenger and freight transport, energy intensity has improved by 33% since 1990 (final energy consumption/traffic unit relative to the baseline year for the "UIC Low Carbon Rail Transport Challenge¹").

Rail is the only means of transport that consumes significant quantities of renewable energy. More than one third of railway lines in the world are already electrified. There are no technical obstacles to a fully-electrified rail system connected to clean and green energy.

HEALTHY AND LIVEABLE CITIES

Increasing rail market share and reducing rail greenhouse gas emissions will also reduce local air pollution. In urban areas railway stations are the "hubs" of sustainable mobility: the World Bank recommend a vision of sustainable cities based on compact, mixed-use, pedestrian-friendly development organized around a train station.

TRANSPORT, COSTS & EFFICIENCY

Worldwide, road infrastructure occupies 37 times more land than rail infrastructure, and for each kilometer of track, railways transport 10 times more than is transported on one kilometer of paved road.

Transport users should be presented with a price that reflects the true cost of their choices, based on the "polluter pays" principle. This requires the removal of policies and subsidies that support unsustainable transport.

JOBS AND SOCIAL INCLUSION

Railways create employment, provide green jobs and enhance social inclusion. A job can be considered to be green whether it provides "decent work" (productive and undertaken "in conditions of freedom, equity, security and human dignity"(UNEP/ILO 2012). Working in railway operations, in the construction and maintenance of rail infrastructure, the manufacture of rail rolling stock or the operation of rail services, is considered by UNEP a good and decent work.

1. See section on "UIC Low Carbon Rail Challenge" and the Responsibility Pledge.



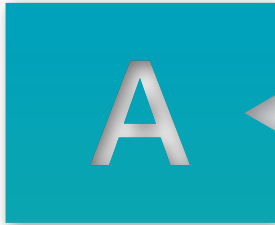
More sustainable transport systems are essential to achieve the climate change “2 Degrees Scenario”

The time for picking sector winners is over



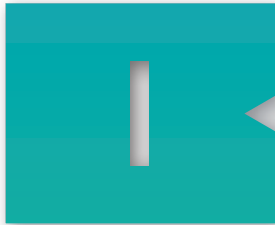
An integrated approach required

Combined action is needed to avoid GHG emissions, shift transport to most efficient mode and improve environmental performance of fuels + vehicles



Transport Policy matters

It is not feasible to devolve transport to discussions on energy and cities



Co-benefits need to be taken seriously

Transport can benefit greatly if sustainable development co-benefits are taken more seriously by the UNFCCC process



The transport sector can't ignore pre-2020 ambition & action

Transport activity in many cities in the developing world will almost double between now and 2020

Source: Intergovernmental Panel on Climate Change (IPCC)



UNFCCC mechanisms must encourage action in all sectors

Transport should be better integrated in technology and financing mechanisms under the UNFCCC



Policy recommendations

1

Prioritize transport emissions

It will not be possible to achieve the Intergovernmental Panel on Climate Change (IPCC) recommended “2 Degrees Scenario” without tackling transport emissions. All Intended Nationally Determined Contributions (INDC) should give thorough detailed consideration to transport.

2

Internalization of external costs

There is an urgent need for changes to transport policy, to introduce a consistent, fair policy framework that internalizes external costs.

3

Rebalance transport investments, to achieve a higher “carbon return”

1 US Dollar invested on 1 passenger-km in rail is 100 times more efficient than 1 US Dollar invested on 1 passenger-km in road in terms of CO₂ emissions.

4

Support electrification

The length of electrified railway lines has doubled in the period 1975-2011. Currently more than 21% of electricity comes from renewable sources, and this percentage increases every year.

5

Integrate rail stations into urban design and city logistics

Cities and megacities produce more than 70% of CO₂ emissions. The city centre location of railway stations enable effective intermodality through transfers to urban public transport services in addition to cycling, walking, car sharing and city logistics.

6

Support modal shift for freight transport, with simplification of border crossing and standardization across rail corridors

Simplification of border crossing and standardisation of the rail system for transport corridors is needed to promote a shift towards low carbon, efficient, multi-modal sustainable freight transport.

“UIC Low Carbon Rail Challenge” and the Responsibility Pledge

At the UN Climate Summit in September 2014, UIC presented the “**Low Carbon Rail Transport Challenge**”. This initiative set out a vision for development of the rail sector at the global level, as a sustainable alternative to other modes of transportation with higher carbon intensity, such as road and aviation.

The challenge includes three sets of voluntary targets: **to improve efficiency, to decarbonise electricity supply and achieve a more sustainable balance of transport modes.**

UIC is committed to reduce specific final energy consumption (**50% by 2030 and 60% by 2050**) and specific average CO₂ emissions from train operations (**50% by 2030 and 75% by 2050**), all relative to a 1990 baseline.

In order to reach these goals railways are investing in electrification, improving load factors, procuring more efficient rolling stock, developing energy and traffic management systems, and promoting efficient driving.

UIC has also launched a “**Modal Shift Challenge**”, calling for investments that will increase the modal share of railways at the expense of high carbon transport: the target is for the rail share of passenger transport (in passenger-km) to achieve a 50% increase by 2030 and a 100% increase by 2050, relative to a 2010 baseline; and for the rail share of freight land transport (in ton-km) to achieve parity with road by 2030 and reach 50% greater than road by 2050.

One key component of the “Modal Shift Challenge” is the “**Railway Climate Responsibility Pledge**”. During the “Train to Paris” high level event on the evening of 28 November 2015, this signed pledge will be presented to high level representatives of the United Nations. This sets out company level actions to compliment the global targets.

The Pledge has been signed by UIC Members all over the world →





unity, solidarity, universality



Railway Climate Responsibility 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 CO₂ 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 CO₂ emissions to UIC on a regular basis*, in order to promote and demonstrate the continuous improvement of railway sector at international level.



UNIFE Positioning on COP 21



Representing over 80 small, medium, and large rail supply companies to the European Union and internationally, the Association of the European Rail Industry (UNIFE), 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 COP 21 negotiations in Paris.

The role of the rail supply industry



Industrial Focus on Energy Efficiency Innovation

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.

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, signalling systems, etc.) in terms of energy efficiency and emissions (when rail equipment is directly emitting CO₂) 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 CO₂ 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.



UNIFE messages and vision:



- ➔ Rail is the most environmentally-friendly transport mode contributing to only 0.7% of global energy-related CO₂ 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 maritime¹.
- ➔ A modal shift to rail (as the most sustainable mode of transport) should be at the backbone of any transport sector strategy to reduce CO₂ 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.

1. OECD/IEA Railway Handbook 2014: Energy Consumption and CO₂ Emissions.

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- 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 CO₂ 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.

UNIFE messages and activities related to COP 21

A greater role for transport in the UNFCCC climate negotiations



UNIFE supports the efforts of the **Paris Process for 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 CO₂ reduction targets required to fight 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.








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”.

Other EU-funded rail R&D projects

UNIFE and its members, alongside railway undertakings 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.



Calculate your emissions with EcoPassenger!

First launched by UIC in 2005, **EcoPassenger** is an online tool that provides a clear and user friendly interface (also for smartphones and tablets), allowing users to compare the time and environmental costs of travelling by train, road and air (www.ecopassenger.org).

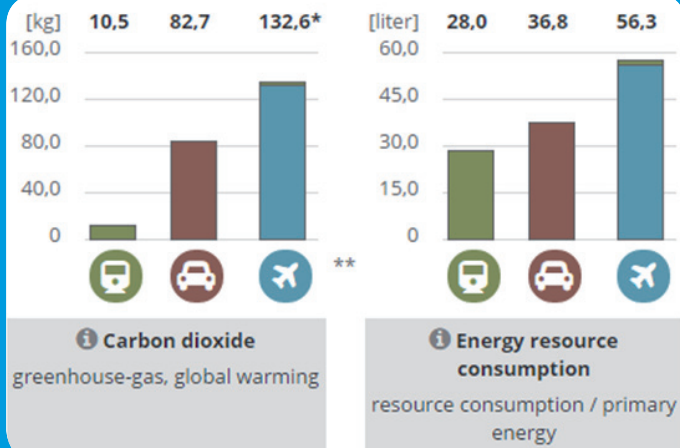
The EcoPassenger methodology redesigned in 2015 includes **the latest methodologies on carbon emissions reporting** according to the consultation with key independent stakeholders and a robust scientific support. The tool has received awards from the European Commission and a number of important international institutions (e.g. International Energy Agency (IEA), European Environment Agency (EEA), UNEP, World Wide Fund for Nature (WWF)) have acknowledged EcoPassenger's role to compare the different modes of transport.

The methodology implements the main guidelines on carbon accountability such as the Euronorm CEN 16258 published in 2012 ("Energy consumption and GHG emissions of transport services in Europe") or the GHG Protocole Scope 2 published in 2015.

For these reasons **EcoPassenger has become a reference tool for the calculation of transport environmental performance**, and not only a tool for comparison between different modes. It is regularly used by private companies and public organizations seeking to make informed transport choices.



**CALCULATE CO₂ EMISSIONS OF THE TRIP
MILAN-PARIS**



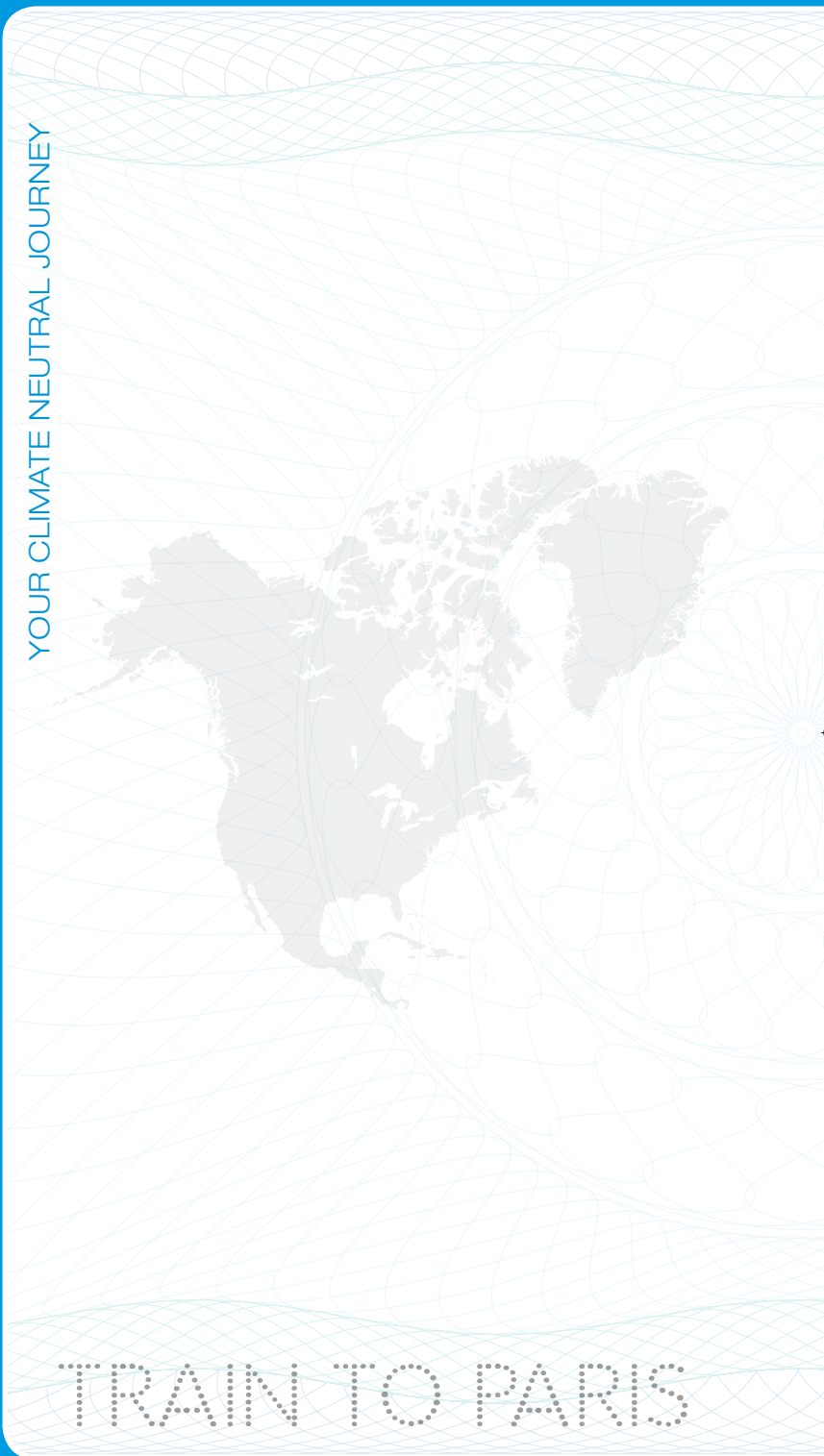
Carbon and Energy Footprint Comparison of Major Transport Modes for the journey Milan-Paris (source: www.ecopassenger.org)

For freight transport, please have a look at Ecotransit, a very sophisticated tool, developed by a Consortium of shippers, transport companies and technical consultants: www.ecotransit.org





YOUR CLIMATE NEUTRAL JOURNEY



TRAIN TO PARIS





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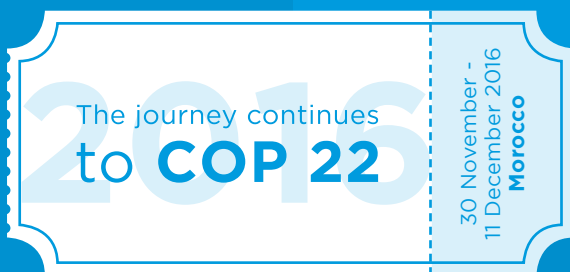
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