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## **Economic Commission for Europe**

Inland Transport Committee

### **Working Party on Transport Trends and Economics**

**Twenty-sifth session**

Geneva, 10–12 September 2013

Item 8 (e) of the provisional agenda

**Review of the transport situation, transport trends  
and economics in ECE region –**

**Transport Trends and Challenges in the rail sector**

## **2012 Trends in Rail Transport**

**Submitted by the International Union of Railways (UIC)**



INTERNATIONAL UNION  
OF RAILWAYS

*unity, solidarity, universality*

# 2012 TRENDS in Rail Transport

Snejana MARKOVIC-CHENAIS

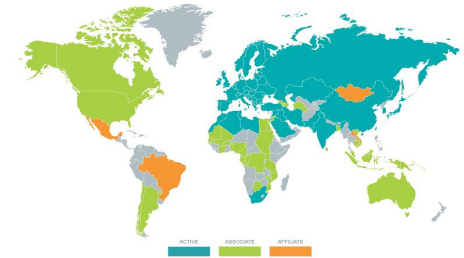
[markovic@uic.org](mailto:markovic@uic.org)

# UIC: the International Union of Railways

➤ More than 200 members on all continents

➤ Members are:

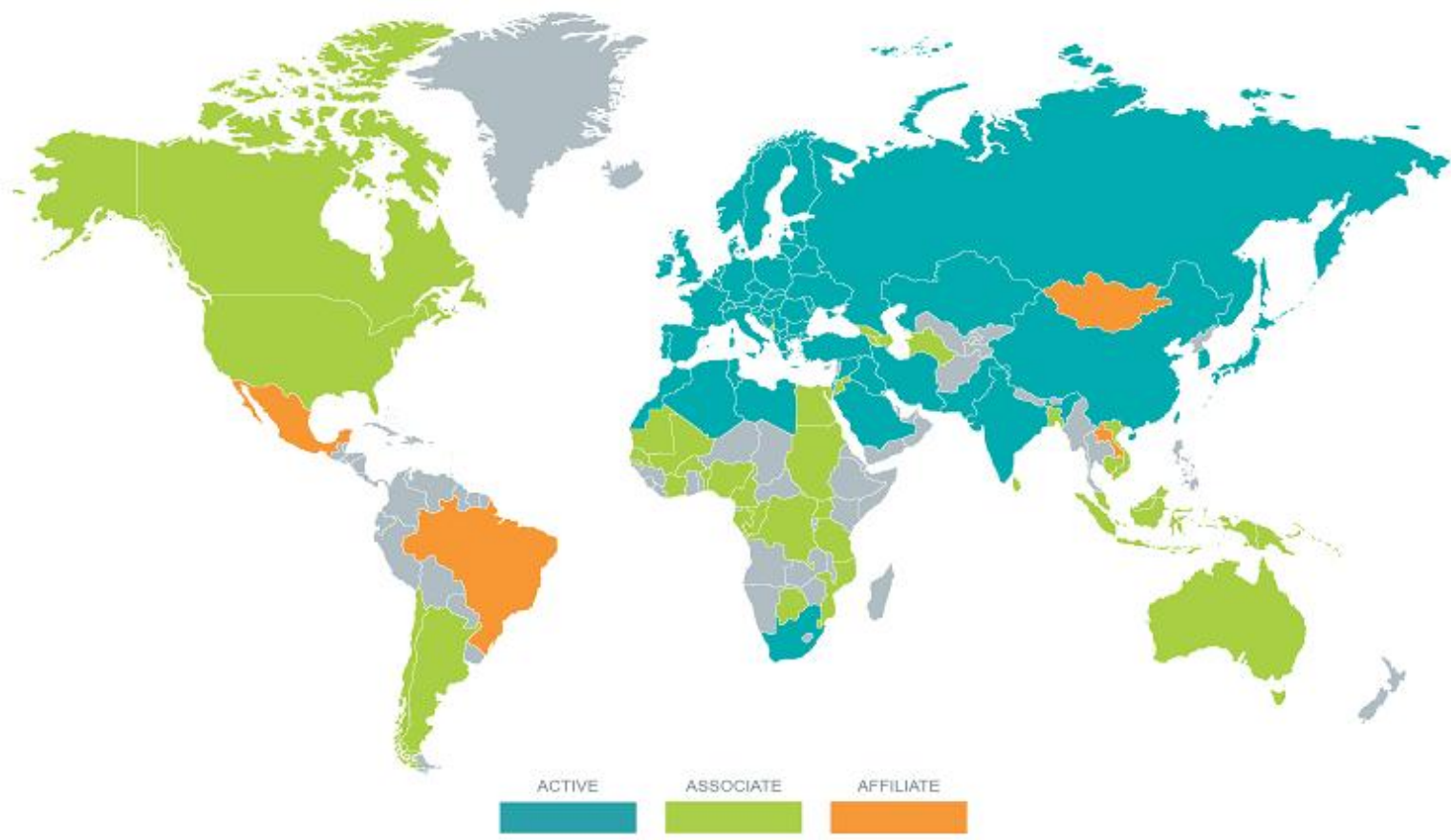
- Railways
- Rail operators
- Infrastructure managers
- Railway service providers
- Public transport companies
- Railway authorities



➤ Public or private railway companies

# UIC 2013

3



# UIC Mission

**Promoting the development of rail transport  
at world level,  
in order to meet challenges  
of mobility and sustainable development**

# UIC's role



# Statistics publications

- Yearbook : final data
- Synopsis : provisionnal numbers
- Time series indexes and values

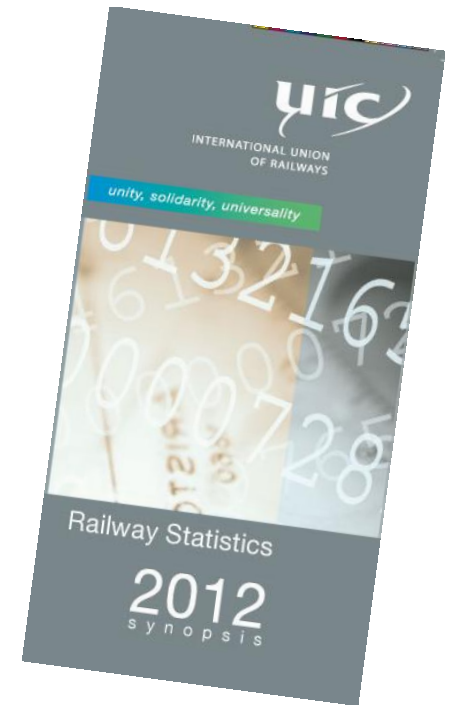
## Also on-line data

- Quarterly , synopsis..

Access to Railisa data base :

<http://uic.org/spip.php?article1352>

UIC Statistics are company based,  
given and validated by our members



[Click here to visit UIC statistics webpage](http://uic.org/spip.php?rubrique988)

<http://uic.org/spip.php?rubrique988>

# Synopsis with 2012 data

download it at <http://uic.org/spip.php?article1347>

- Provisional data, annual basis
- All continents
- length of lines
- Rolling Stock
- Average staff strength
- Train performance in train-km
- Rail Traffic in pass., pass-km, tonnes, tonne-km, High speed traffic.





# International Railway Statistics

NETWORK

TRANSPORT STOCK

STAFF

OPERATION

PASSENGER TRAFFIC

FREIGHT TRAFFIC

FINANCIAL RESULTS

ENERGY

ACCIDENTS

FERRIES

HIGH-SPEED

FIVE YEARLY TABLES

- Yearly published
- Public data



### Passenger-kilometres (billions)

	2006	2007	2008	2009	2010	2011	2012	Δ%
Europe *	464,5	469,2	483,8	470,5	472,8	485,6	480,0	-1,2%
Russian Federation	177,6	173,4	175,9	153,6	139,0	139,8	144,6	3,4%
<i>Europe with Russian Federation</i>	642,1	642,6	659,7	624,1	611,9	625,5	624,6	-0,1%
Africa	61,5	61,6	62,0	62,2	62,3	49,3	49,3	0%
America	12,8	13,3	14,0	13,5	12,0	20,8	20,9	0,3%
Asia Oceania and Middle East	1 646,0	1 788,6	1 950,9	2 012,0	2 079,3	2 187,8	2 171,7	-0,7%
<b>WORLD estimates</b>	<b>2 362,4</b>	<b>2 506,1</b>	<b>2 686,6</b>	<b>2 711,9</b>	<b>2 765,4</b>	<b>2 883,4</b>	<b>2 866,6</b>	<b>-0,6%</b>

### Tonne-kilometres (billions)

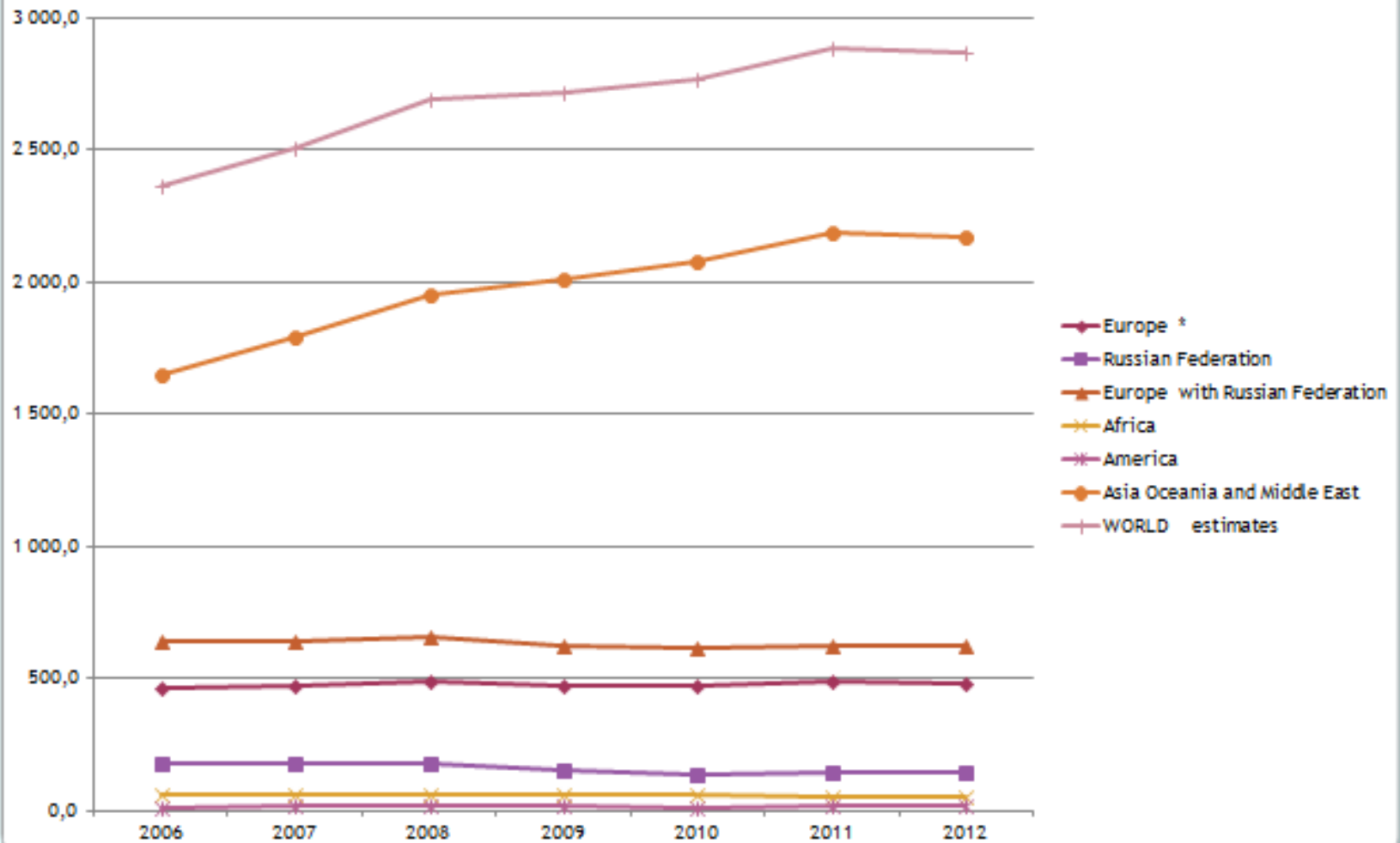
	2006	2007	2008	2009	2010	2011	2012	Δ%
Europe *	695,8	723,2	986,8	546,0	700,6	648,6	621,4	-4,2%
Russian Federation	1 950,8	2 090,3	2 116,2	1 865,3	1 903,2	2 127,2	2 222,4	4,5%
<i>Europe with Russian Federation</i>	2 646,6	2 813,6	3 103,0	2 411,4	2 603,8	2 775,8	2 843,8	2,5%
Africa	142,2	139,2	138,4	137,1	139,2	139,1	139,1	0%
America	3 519,5	3 540,2	3 513,8	2 973,2	3 076,1	3 132,6	3 231,0	3,1%
Asia Oceania and Middle East	2 872,6	3 095,9	3 452,7	3 466,2	3 462,0	3 621,2	3 593,1	-0,8%
<b>WORLD estimates</b>	<b>9 180,9</b>	<b>9 588,9</b>	<b>10 207,9</b>	<b>8 987,9</b>	<b>9 281,2</b>	<b>9 668,6</b>	<b>9 807,0</b>	<b>1,4%</b>

### Length of lines (kilometres)

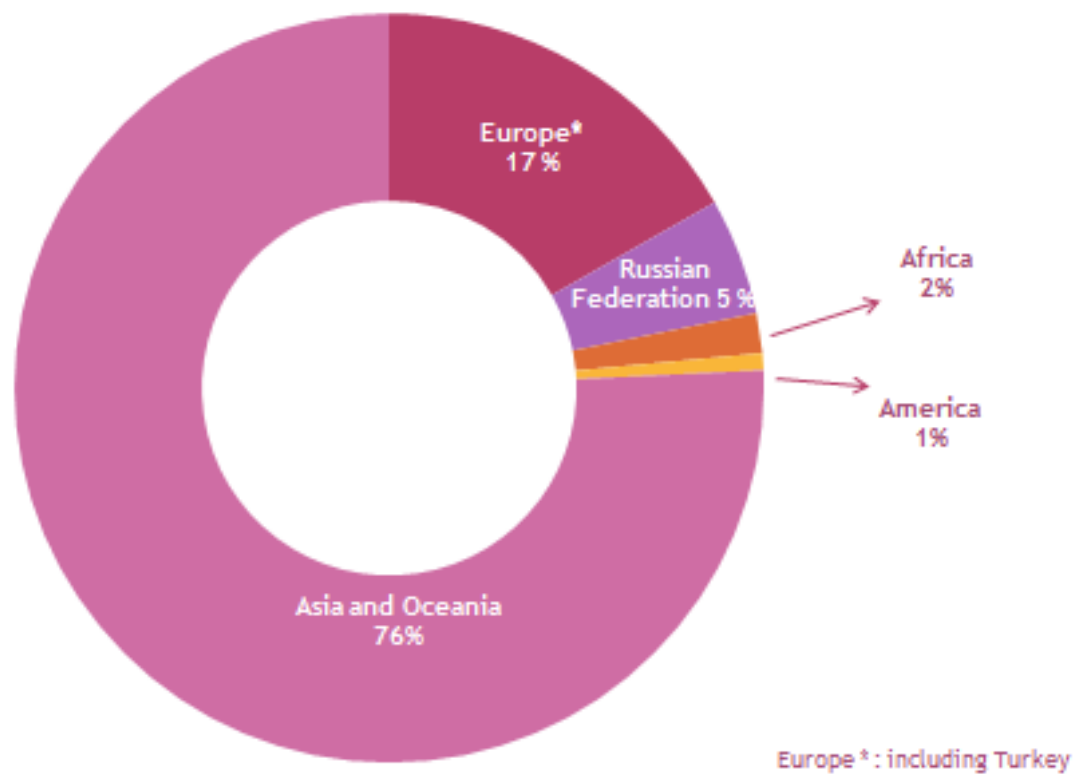
	2006	2007	2008	2009	2010	2011	2012	Δ%
Europe *	264 204,9	264 630,4	263 805,8	268 465,9	285 408,3	270 341,9	265 115,6	-1,9%
Russian Federation	85 253,0	84 158,0	85 194,0	85 281,0	85 292,0	85 167,0	84 249,0	0,1%
<i>Europe with Russian Federation</i>	349 457,9	348 788,4	348 999,8	353 746,9	370 700,3	355 508,9	349 364,6	-1,7%
Africa	52 159,0	52 400,0	52 482,0	52 299,0	50 274,5	70 505,1	70 504,6	0%
America	385 272,2	389 862,8	386 772,8	383 079,2	375 773,6	369 222,0	369 222,0	0,0%
Asia Oceania and Middle East	221 788,0	222 644,5	221 827,0	224 151,0	224 204,9	233 570,4	232 365,9	-0,5%
<b>WORLD estimates</b>	<b>1 008 677,1</b>	<b>1 013 695,7</b>	<b>1 010 081,6</b>	<b>1 013 276,1</b>	<b>1 020 953,2</b>	<b>1 028 806,4</b>	<b>1 021 457,1</b>	<b>-0,7%</b>

\* including Turkey

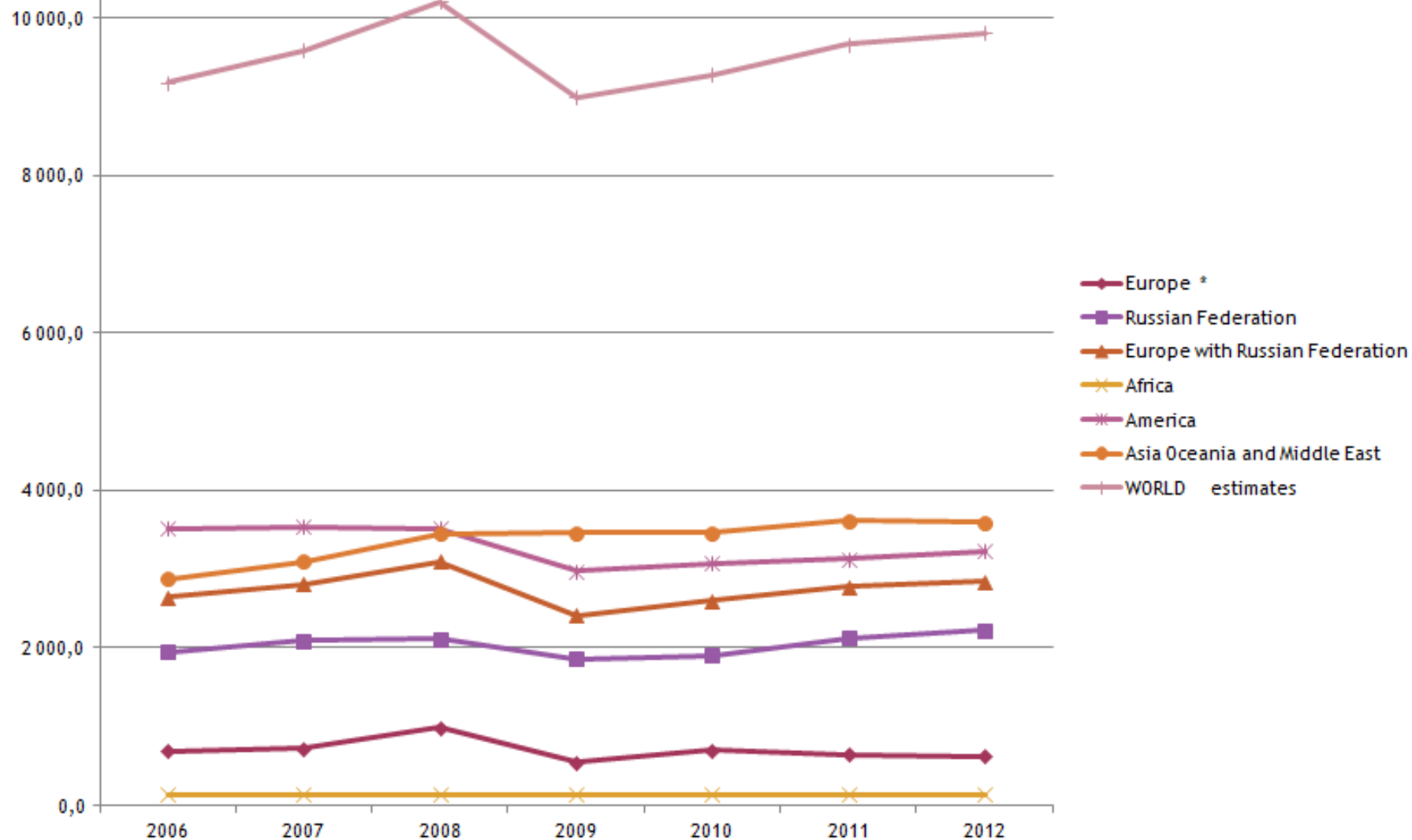
### Passenger-kilometres (billions)



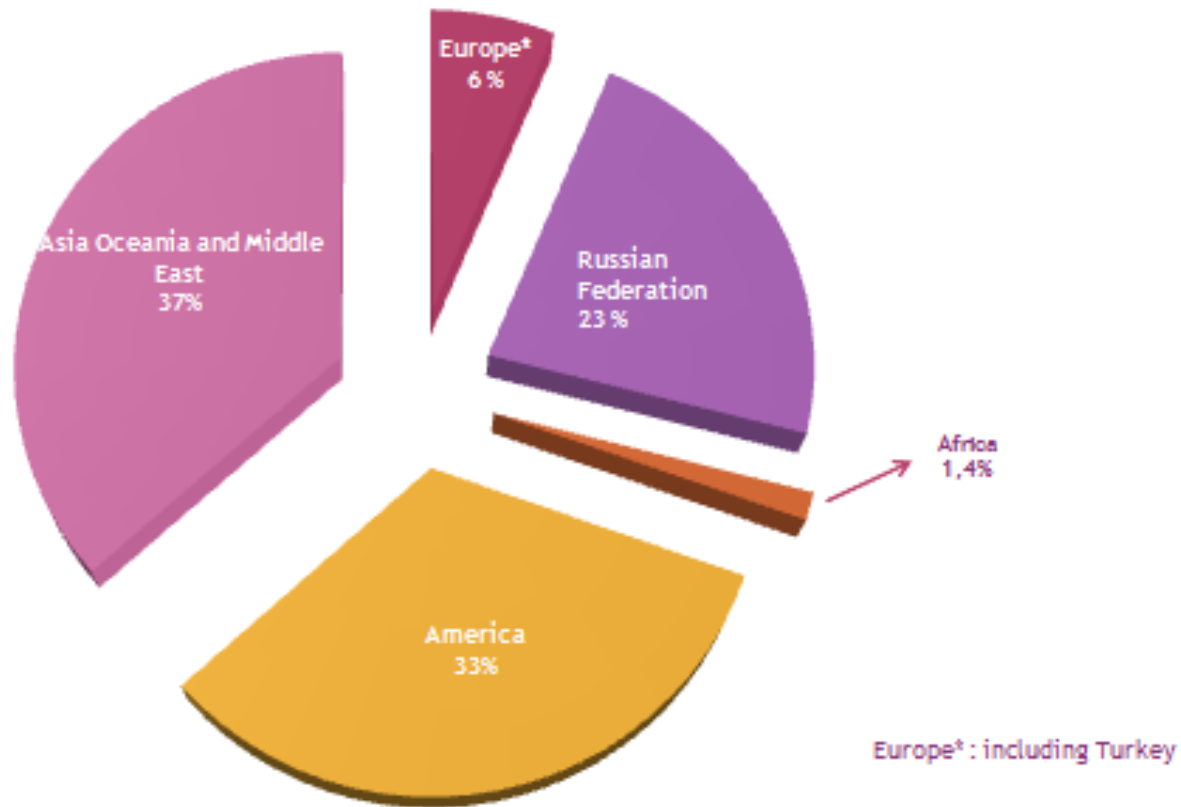
## Passenger-kilometers Share in 2012



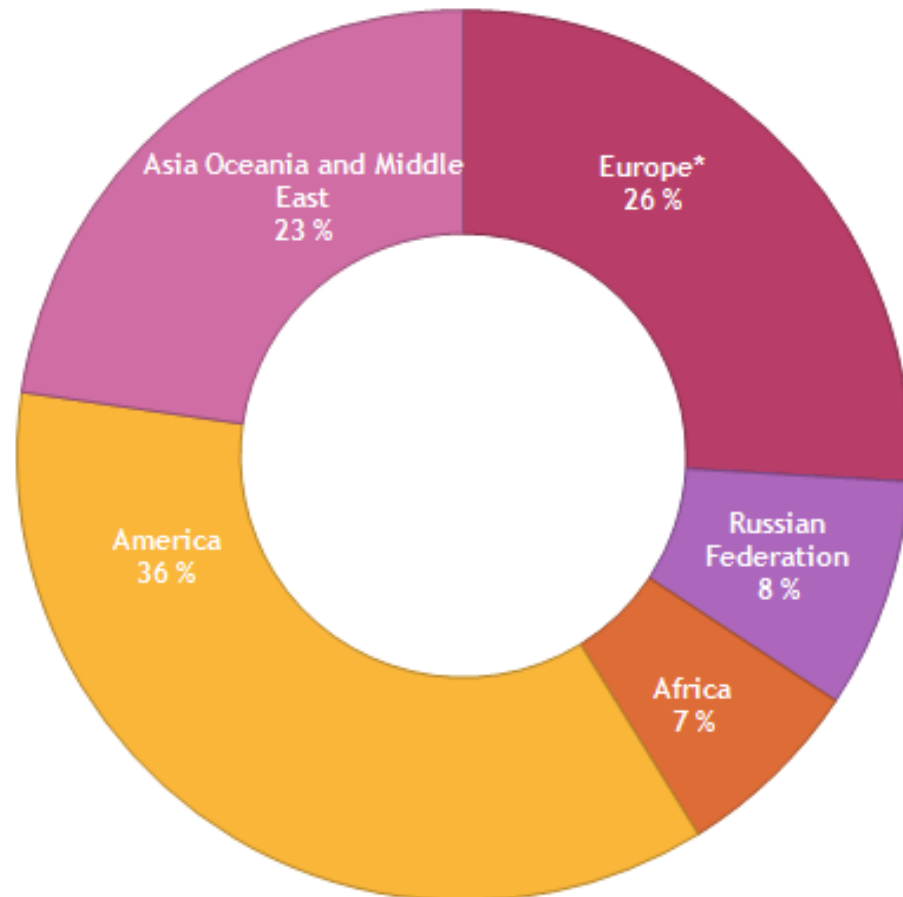
## Tonne-kilometres (billions)



## Tonne-Kilometers share in 2012



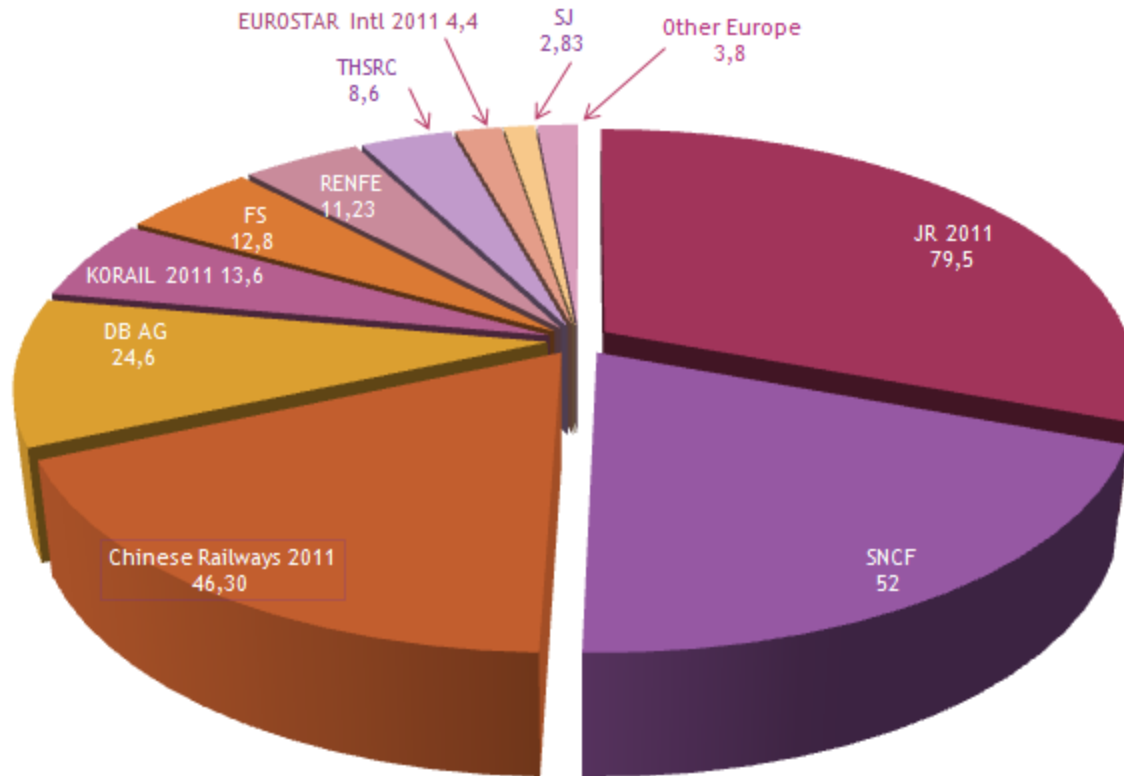
## Length of line share in 2012



Europe\* : including Turkey

## High Speed Traffic 2012

passenger-kilometres (billions)

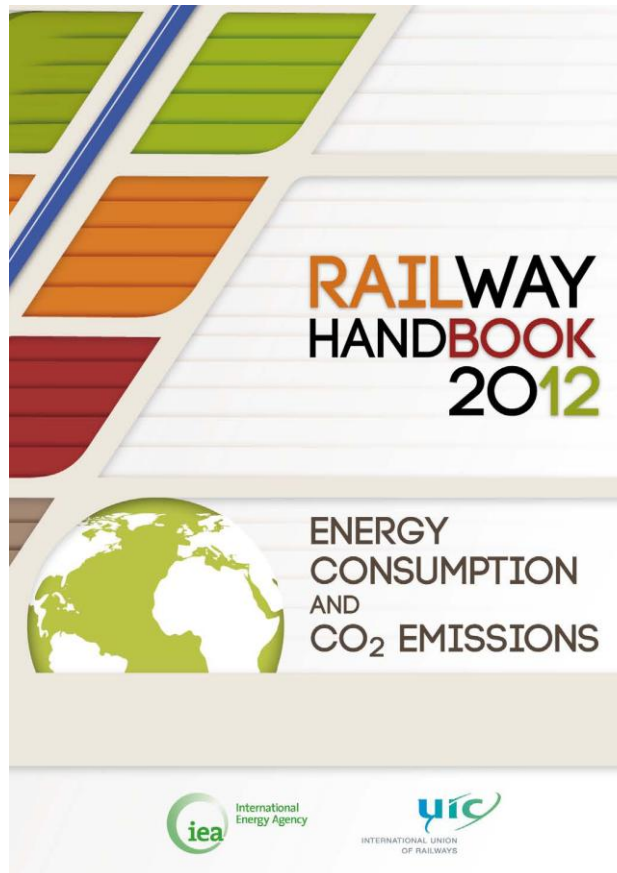


Other Europe : CD, CP, NS, SNCB 2011, SZ, TCDD, VR.



Coming soon - end October 2013 :

# Railway Handbook 2013: energy and CO2 emissions from the world railway sector"



# UIC studies on external costs on UIC website

UIC was a pioneer in launching external costs *estimations* on European level with different transport modes :

3 studies were completed with INFRAS/IWW in 1995, 2000, 2004.

<http://uic.org/spip.php?rubrique1588>

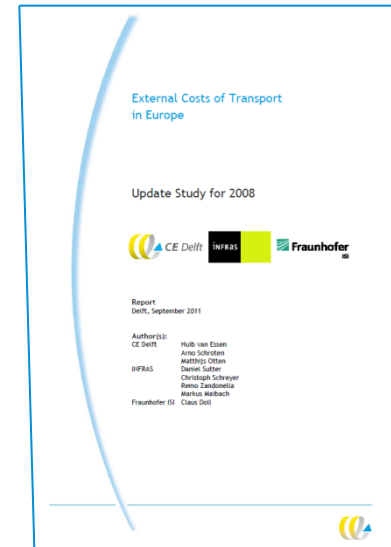
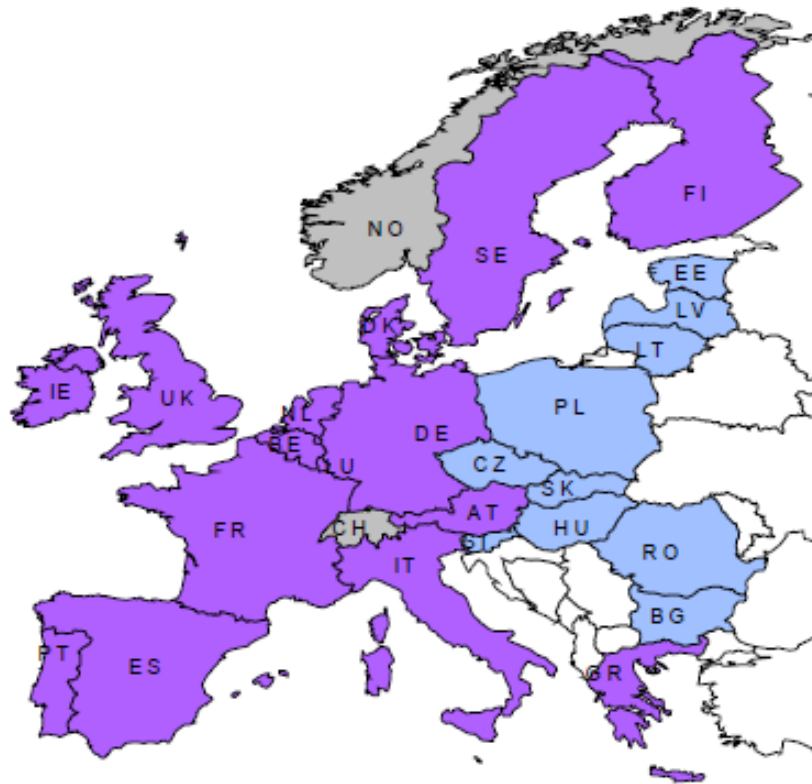
> **2012 : new study with data 2008 (CE Delft, INFRAS, Faunhofer ISI) : available on UIC website**

> [http://uic.org/IMG/pdf/external\\_costs\\_of\\_transport\\_in\\_europe-update\\_study\\_for\\_2008-2.pdf](http://uic.org/IMG/pdf/external_costs_of_transport_in_europe-update_study_for_2008-2.pdf)



# 2012 Study : External costs of Transport In Europe - data 2008

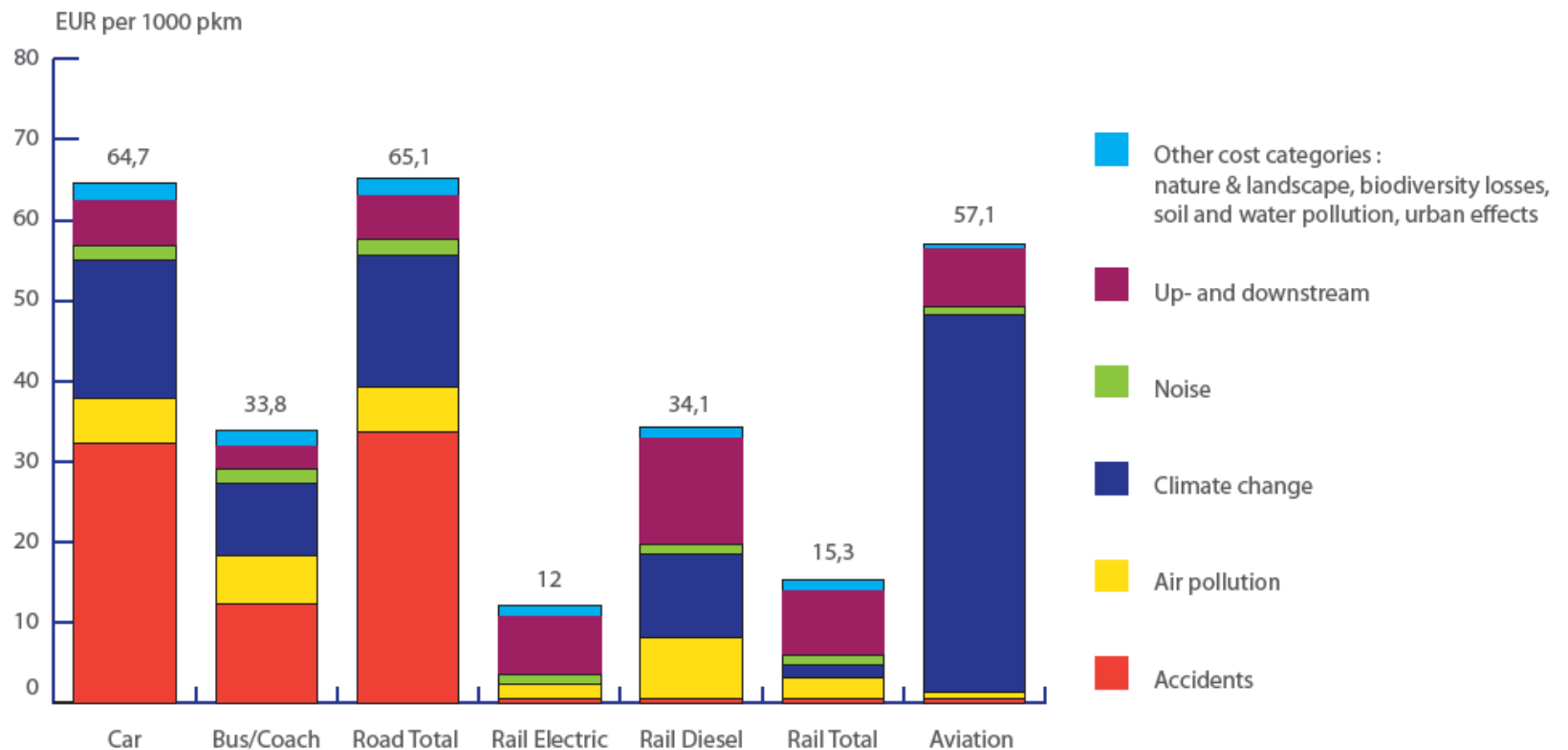
## > Same means of transport - extended geographical scope



Violet and grey coloured countries (EU-15 plus Norway and Switzerland) have already been covered in the last external cost study (INFRAS/IWW, 2004); the light blue countries (new member states) are included in the present study for the first time. Note that Malta and Cyprus are excluded, since they do not have any relevant railway infrastructure.

# Affordability & external costs

Figure 4: Average external costs 2008 for EU-27: passenger transport  
(excluding congestion)  
without motorcycles and mopeds<sup>5</sup>

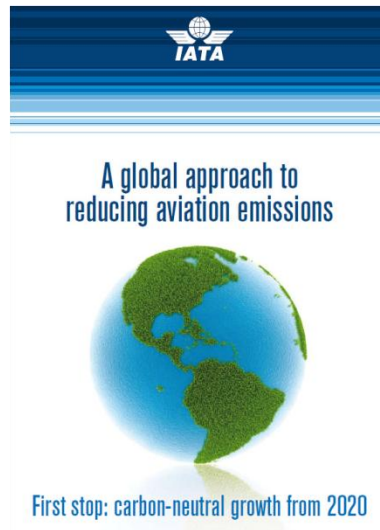
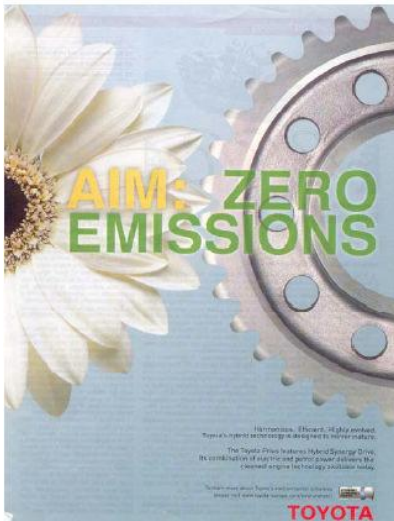


Source: UIC External costs study

■ ■ ■ Thank you for your kind attention

Visit our website at <http://uic.org>

# There is a real battle of data and communication...



Sustainability Company NS

Clean A

Polluting G

CO<sub>2</sub> emissions per passenger kilometre 41 grams

Paper of train tickets from ticket machine Sustainable FSC-paper

Weekly cleaning of the train Biodegradable soap

Sustainable energy Top 10 largest buyer in the Netherlands

Sustainability: no hype for NS.

NS has already been dealing with sustainability for many years. Our trains are getting ever less polluting and ever more energy efficient. Between 1990 and today we have reduced our total CO<sub>2</sub> emissions by 10%, while the numbers of passengers has increased substantially. Our trains now emit 41 grams of CO<sub>2</sub> per passenger kilometre compared to 100 grams for cars. There is still some work to do, but we are on the right track.

www.ns.nl/duurzame

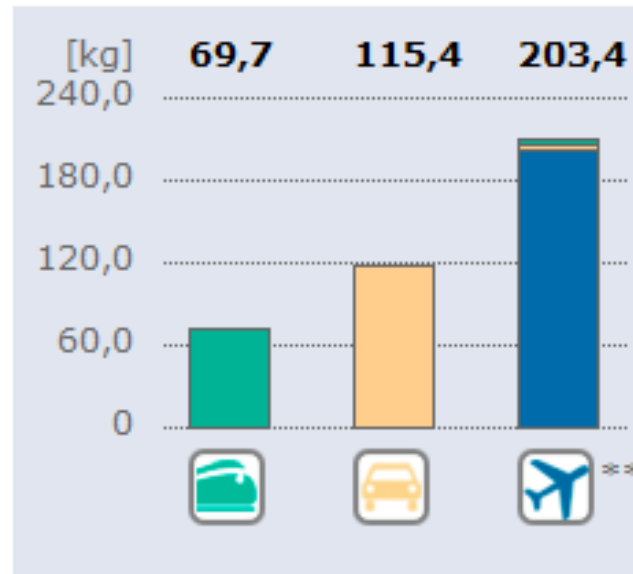


... we need to engage with robust data to attract investment

# My journey - Paris to Berlin



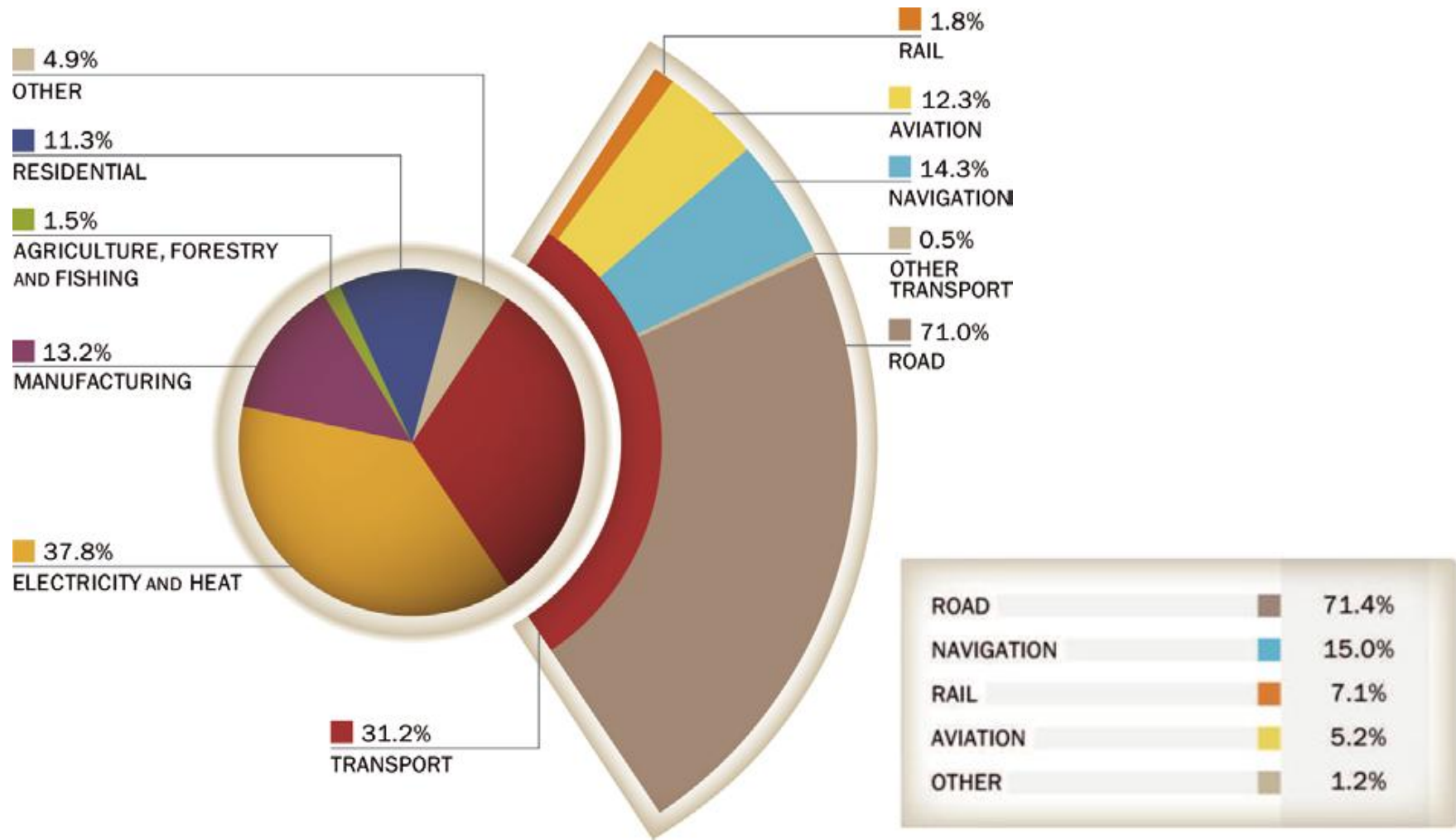
[www.ecopassenger.com](http://www.ecopassenger.com)



**i Carbon dioxide**  
greenhouse-gas, global warming

	Start/Destination	Details	Duration	Products
	PARIS EST [FR] BERLIN HBF (TIEF) [DE]	from We, 19.06.13, 20:05 to Th, 20.06.13, 08:28 → <a href="#">Details</a> → <a href="#">Map</a> → <a href="#">Google Earth</a> → <a href="#">sooner</a> → <a href="#">later</a>	12:23	CNL 455
	PARIS EST [FR] BERLIN HBF (TIEF) [DE]	Middle class; Diesel EURO 3; → <a href="#">Details</a> → <a href="#">Map</a>	9:07	Car
	PARIS EST [FR] BERLIN HBF (TIEF) [DE]	Flight from Charles De Gaulle Airport, Paris to Tegel Airport, Berlin.	3:32	Train, Aircraft, Car

# EU27 - Total CO<sub>2</sub> Emissions by sector



Source: UIC-IEA Handbook 2012



# ANSWERING TO RAIL CHALLENGES & STRATEGY TOWARDS 2050

**Advantages** for a huge modal **shift to rail** thanks to:

- . safety, green, high speed and urban rail systems, longer-distance trips,

**Becoming a very different railway:**

- . Reliable, affordable and attractive services , seamless and safe mobility network.

- . High quality services will stimulate the popular support that can help underpin public investment.

- . An increasing inter-modal environment, integrated transport system, with rail as its backbone,

- . Cost transparency in more competitive economies.

# HOW TO

Achieving substantial market share by

. **Attractiveness** : Value for Money, Capacity, Consistency, Connectivity

- **Sustainable development** – Environment & Energy, Optimised Life Cycle Assessment, Silence, 0 CO<sup>2</sup>-Nox-PM10
- **Safety and security** – Performance, People, Certified Process
- **Resilience** – High reliability (R&D), degraded mode mangmt
- **Leadership** – within the sector, of the sector as a mode and by Europe as a region in the global context (barriers, education)
- **Funding** – Securing Investment, ...

The goals for rail of the EU Commission's 2011 Transport White Paper:

*By 2050 rail should substantially expand its modal share over medium and long distances for both passenger and freight, based on a dense network connected to all core airports and sea-ports, a major expansion of the high-speed network, and the deployment of ERTMS and of a European multimodal information, management and payment system.*

. Current **EUROPE: 6% share of the passenger market , only around 16%** of the inland freight market (road transport 70% ) , 8,000 km HS lines for 100 million HS pass/y

An economic contributor: 1 M staff, 10 000's companies-€ 80 Billion industry

. Growth in transport demand by 2050:

=> **freight > + 80% and passenger > + 50%, € 1.5 trillion in infrastructure (-> 2030)**

=> Major urban centers **free of CO<sup>2</sup> emission and -70% GHG**

=> + 50% up to annual **€ 200 billion/y congestion**

=> Increase in freight moved by rail **x8 and in passenger travel x 12**, HS Rail becoming credible up to 4 hours travel time, 1000 km travel distance.

# In a Single European Railway Area

within the Single European Transport Area

- . Restructuring and consolidation among rail operators for **further market opening**.
- . Combined with the need to provide competitive **door-to-door services across borders**,
- . Increasing **direct competition** between multinational, multi-modal market players.
- . **Rail Infrastructure managers more European**, based on network arrangement, joint ventures across states, greater alignment of technical standards.
- . Technical and market regulation on a pan-European basis. The European Railway Agency as the single authority for **safety certification and authorisation processes**, drawing on a regional network of supporting agencies.

An analogous development is likely to become necessary for **rail market regulation** as well, leading to the creation of a European regulatory body.

# ASIAN RAILWAYS

- > TOP 10: China, Russia, I..., Kazakhstan,...., ..., Mongolia.=  
**99% of Asia Tkm**
- > **X3 Tkm , x2-3 km in 20 years**
- > **50% population in Urban areas in 2025**
  - => Challenging **energy, traffic congestion , security & safety...**
  - => Growth of Rail tkm is correlated to growth of GDP=> A need of 20 MMUSD/y rail investment in China.
- > BEFORE CRISIS: Chinese rail tkm>+60% on 10-year period, from **1.5 Mtkm in 2000 to 3.5 Mtkm in 2025**

# EUROPE & ASIA

- > The Asian railway system faces various **internal challenges**
- > The Euro-Asian routes are hampered by :
  - political challenges (liberalization, opening of the markets),**
  - logistical,**
  - management and infrastructure challenges :**
    - . Track standards,
    - . Missing links,
    - . Inland terminal structures and lack of well-functioning intermodal systems
- > **Perception of security** and **security standards** are a fundamental issue until 2025.

# TECHNICAL COOPERATIONS IN EURO-ASIA RAIL TRANSPORT LINK

## I. Cooperation in the field of **transport policy**.

- Scientific technical and economic **information** on the basis of modern information technologies, shared know-how and intelligence;
- **Statistics on container shipping** by rail in the foreign traffic using the Trans-Siberian main line, benchmarking other modes;
- Mutual participation as guests at corresponding **meetings** of the higher directing bodies of partner organizations.

## II. Cooperation in the field of **international transport corridor (ITC)**

### 1. **Based on the ITC development group of expert**

- Freight transportation as part of **solid container and contrailer trains** in Eurasian traffic collaboratively
- Alleviating **crossing of borders**
- Making up **competitive through rates**
- Cooperation regarding UIC project implementation in the sphere of development of Eurasian transport **connections**

### 2. **Based on UIC security platform**

- Increasing Security on international freight corridor



### **III. International cooperation in the sphere of innovations.**

Ex: Electronic documents & “Electronic train” project realization.

### **IV. Cooperation in the sphere of international education.**

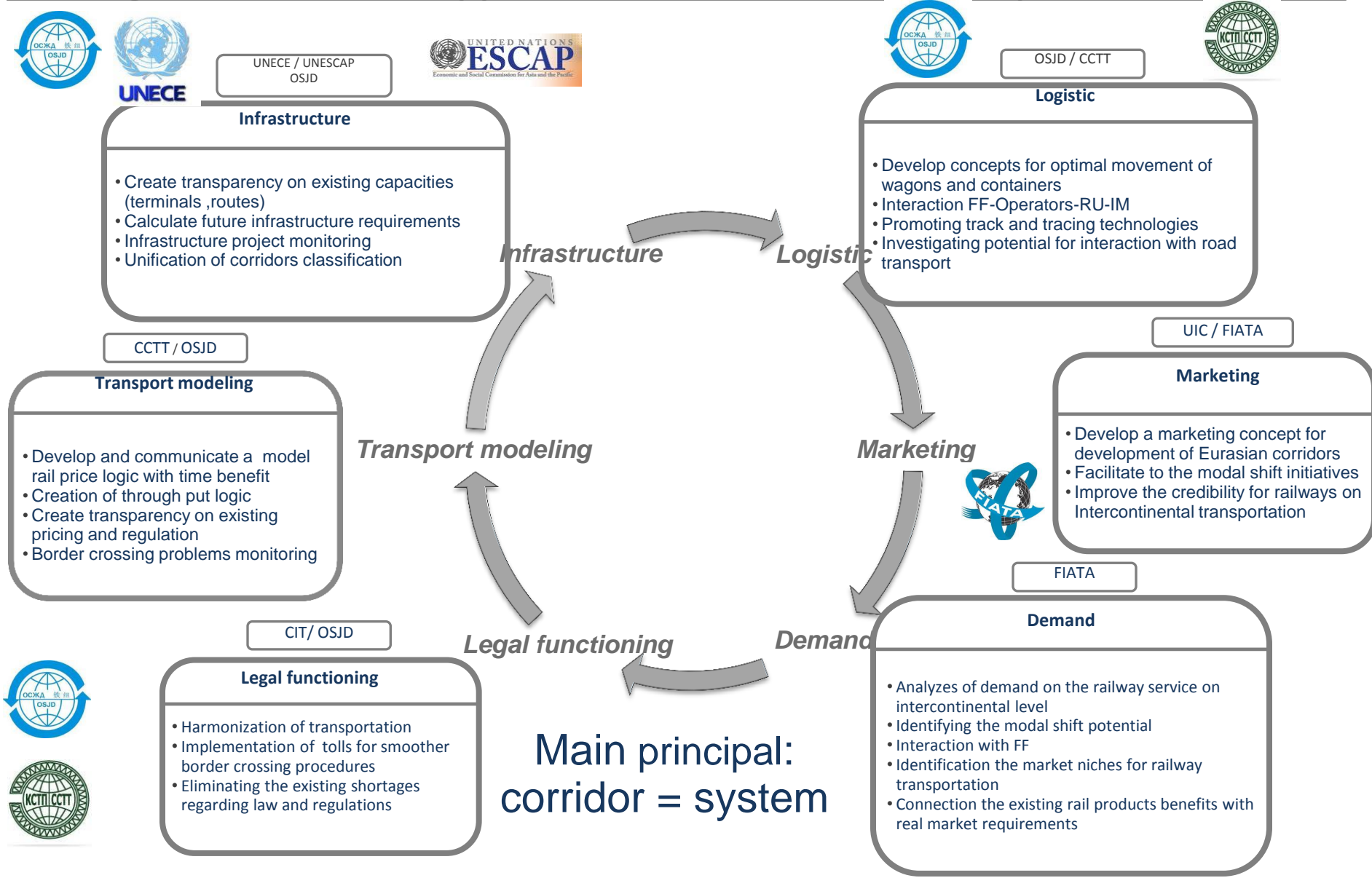
Development of educational programs and training of specialists

# 2010-2012 INTERNATIONAL COOPERATION FOR EURO-ASIAN CORRIDORS

- . An intense program of cooperation initiated and re-activated by UIC with the main railways pro, financial or inter-governmental bodies related to EATL



# Starting an Institutional approach to the coherent development of corridors



# Current technical work to develop EATL 2011~2012 (1) with institutions AND members

- Standardised **Automatic Gauges Changeover systems 1435/1520** and further certification of freight wagons on 1435/ 1520
- International Corridor mapping on infrastructure and rolling-stock requirements (ERIM on European side) in order to improve **interoperability** and **safety**
- **Boarder crossing issues**
  - Harmonization of GHG and NHM
  - Cooperation on DIUM (uniform distance table)
  - Harmonization of the exchange of wagons (legal aspects)
  - Unified Consignment Note

# Current technical work to develop EATL 2011~2012 (2) with institutions AND members

- Updating of joint **OSJD/UIC leaflets**
- **Coding** and Information
- **Financing** and inter-accounting
  
- **Terminology:** development of Rail Glossaries in many languages for common understanding (Russian as a new language since 2011)
  
- **Security** on corridors: cooperating with NATO TG-IST and involving CCTT into Steering Committee of UIC Security Platform, representing the interests of the concerned railways, in addition to the representatives of the UIC regions.

# Focusing the status of AGCS Working Group

- Collection and analysis of relevant data and experience about cross boarder railways traffic in a view of application of AGCS
- Finding and recommendations on the availability of application of AGCS
- Share of best practices on application of AGCS
- Analysis of legal aspects and admission procedure for rolling stock with AGCS including certification
- Reporting on the results of research and analyses for examination by executive bodies of UIC and OSJD

Tender documents will be prepared by UIC and OSJD members. Consultant will be jointly selected after the call for the tender

**MORE CONCERNED MEMBERS ARE INVITED TO JOIN as the aim is to set an international standard.**

# Status of activity on Euro-Asian Landbridge Mapping (RNE+ERTMS+PAN+OSJD corridors)

## What is in common

- Type of mapping activity,
- GIS technology and (general) geographical scale
- Permanent line segmentation,
- Linear line referencing, dynamic line segmentation

## What is different

- database structures
- data contents
- **OSJD-UIC cooperation could focus on:**
  - . International data exchange and dissemination.
  - . Harmonized description of lines
  - . Terminal mapping /descriptions

## What can be improved

**INVOLVING PARTIES and FUNDS, especially from Asian part**

# Status of work on Transsiberian routes

- Improvement of cargo transportation via alternative transport corridors
- Common analysis of the OSJD corridor N°1
- Consolidation of best practices regarding cargo transportation
- Elaboration of proposals to facilitate the development of cargo transport
- Increasing the traffic on the Trans-Siberian Railway (TSR)
- Improving the legal basis of the transportation process
- Establishing a common information space
- Developing a harmonized legal
- Planning and exercising test runs of trains





# UIC Sustainability Unit - Introduction

- > **Cooperation with international organizations to advance sustainable transport and railways**

UIC was very active in the Rio+20, is represented at the UNFCCC COPs, participates in UNECE Adaptation Expert Group and works with UNEP

- > **Publications and research on various sustainability and environment topics**

Research topics include Noise, Energy Efficiency, Emissions, Climate Change Adaptation, Carbon Footprint of High Speed Rail and many more

- > **Conferences, events and meetings**

To share best practice and find solutions to common problems

- > **Information, reports, meetings – [www.uic.org/environment](http://www.uic.org/environment)**