

The UIC Sustainable Development unit:
Keeping railways at the forefront as the most
sustainable mode of transport



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The UIC SUSTAINABLE DEVELOPMENT UNIT

MISSION

 To promote the train as the most sustainable mode of transport

(Tell to decision makers/Institution etc... that we represent « the solution » to the environmental problems connected to the transport sector)

 To provide our members with strategy, leadership, guidance, know-how (studies, projects and research) with respect to sustainable mobility issues.

Keeping Railways at the forefront as the most sustainable mode of transport

What is Sustainable Mobility?

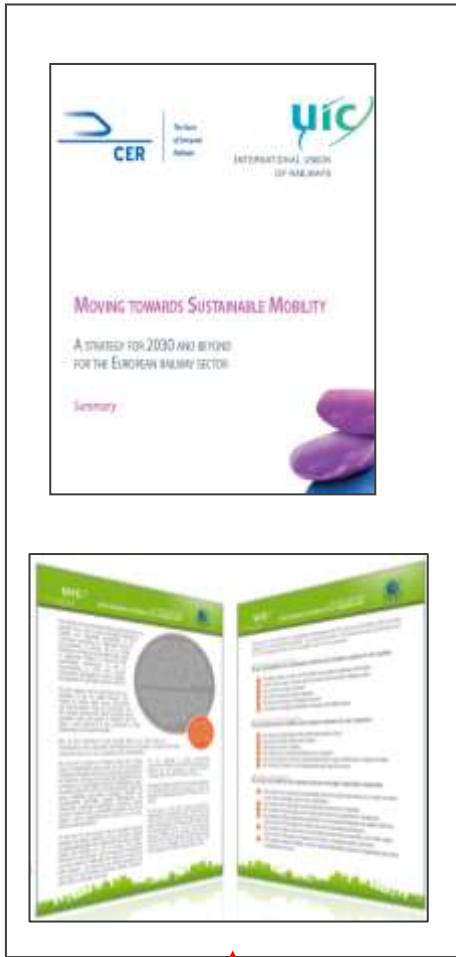
«The ability to meet the needs of society to move freely, to gain access, communicate, trade and establish relationship without sacrificing other human or ecological values today or in the future »



The World Business Council definition for Sustainable Mobility

A systematic approach:

STRATEGY



IMPROVEMENT



COMMUNICATION

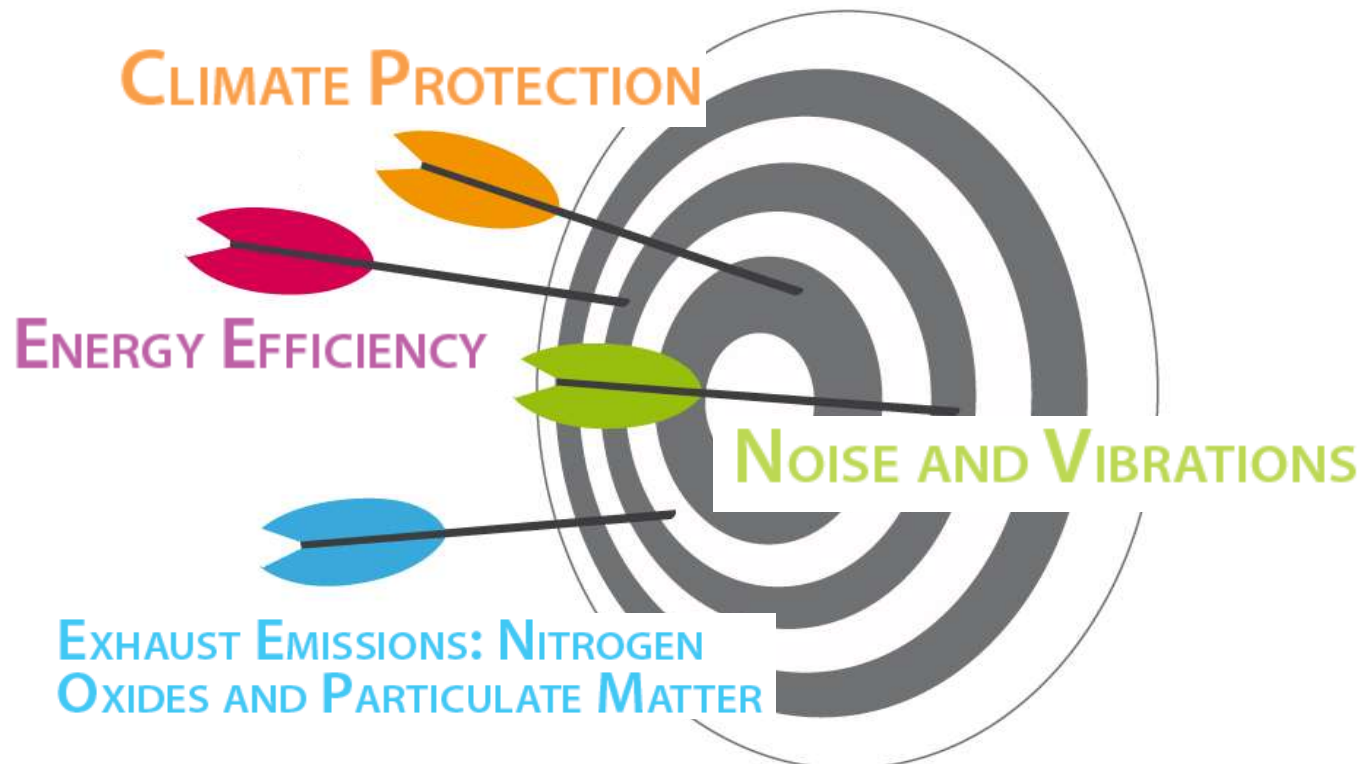


ENERGY AND CO₂ DATA

STRATEGY

Moving towards sustainable mobility: The EES Strategy for 2030 and beyond

(voted by UIC and CER at UIC General Assembly in December 2010)

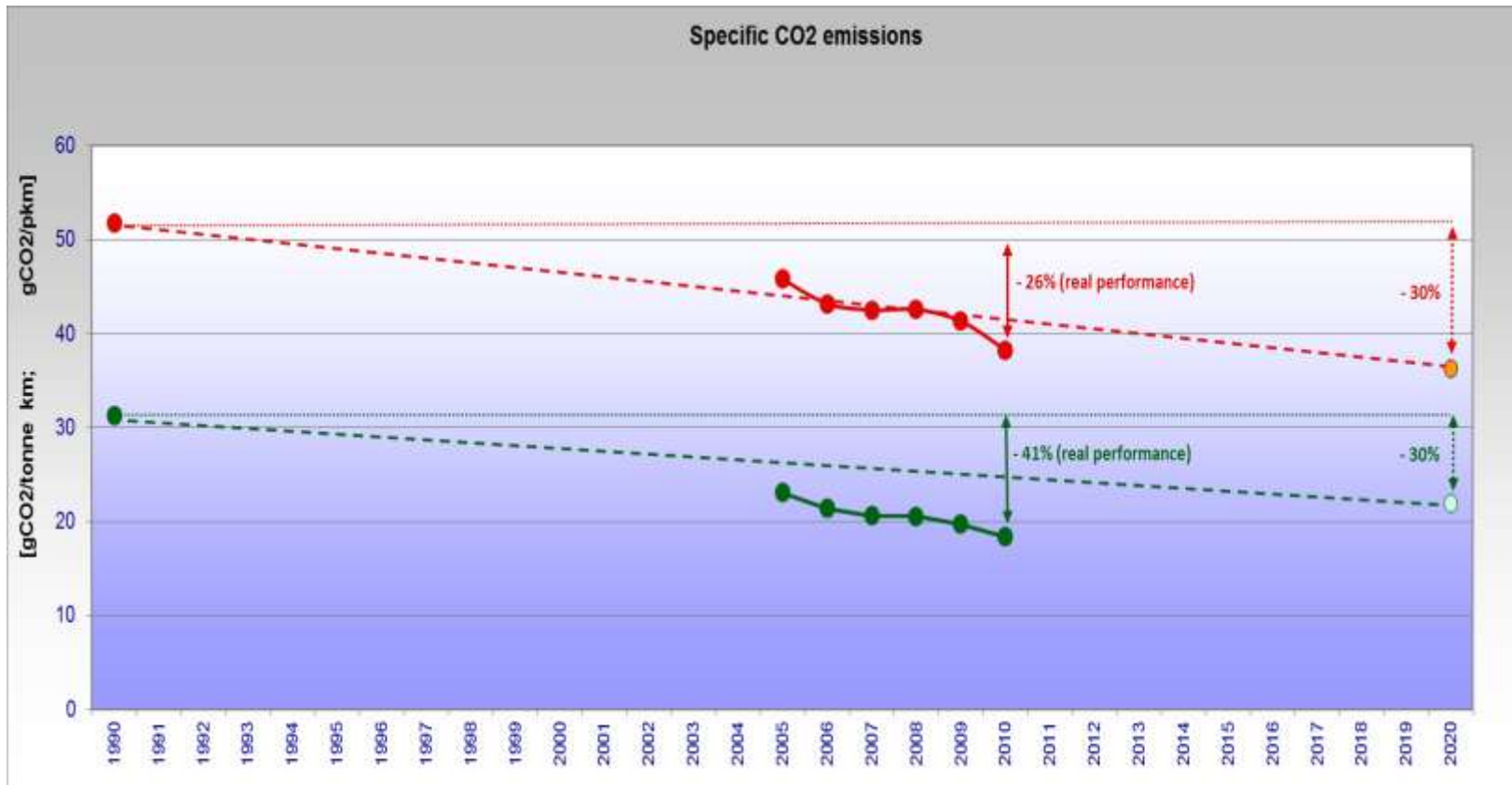


The EES Strategy 2030 Targets and beyond

	Target	Baseline	Horizon
Climate Protection	<ul style="list-style-type: none"> -50% pkm and tkm Not exceed Total CO₂ Emissions (1990) 	1990	2030
Energy Efficiency	<ul style="list-style-type: none"> -30% pkm and tkm 	1990	2030
Exhaust Emission	<ul style="list-style-type: none"> -40% Total PM 	2005	2030
	<ul style="list-style-type: none"> -40% Total NOx 	2005	2030

MONITORING PROGRESS TOWARDS TARGETS

Specific CO₂ emissions 1990-2010 trend: Passengers: -26% Freight:- 41%



Source: UIC Energy and CO₂ database

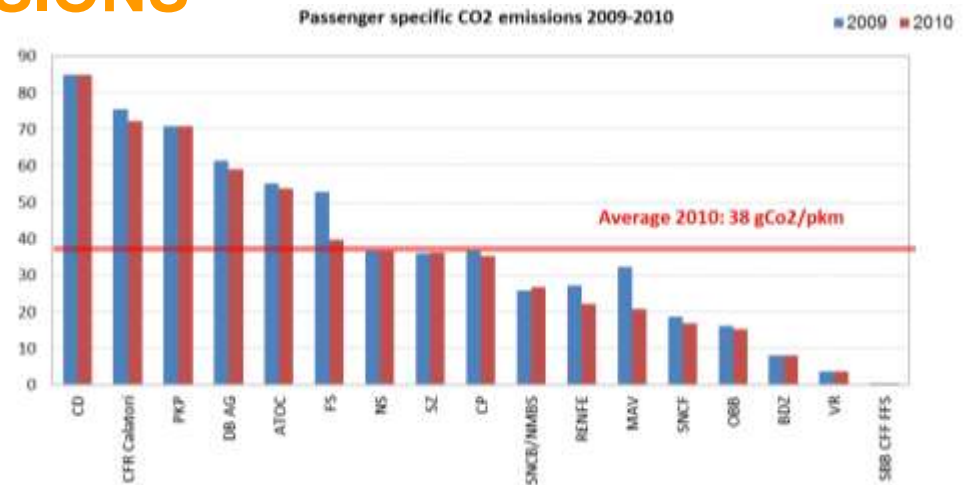
IMPROVEMENT

FOR SOME COMPANIES IT IS STILL A LONG WAY TOWARDS ZERO EMISSIONS

Specific CO2 emissions in passenger transport, 2010

38 grCO2/pkm (average)

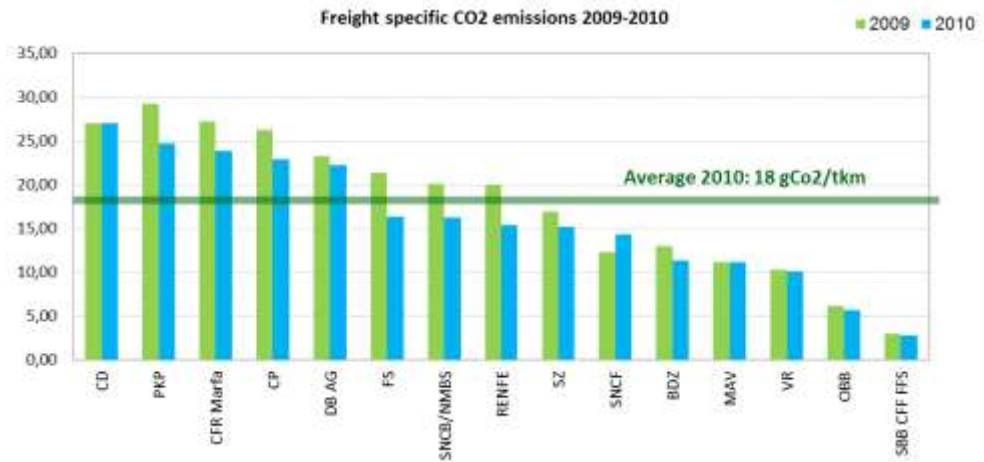
Passenger specific CO2 emissions 2009-2010



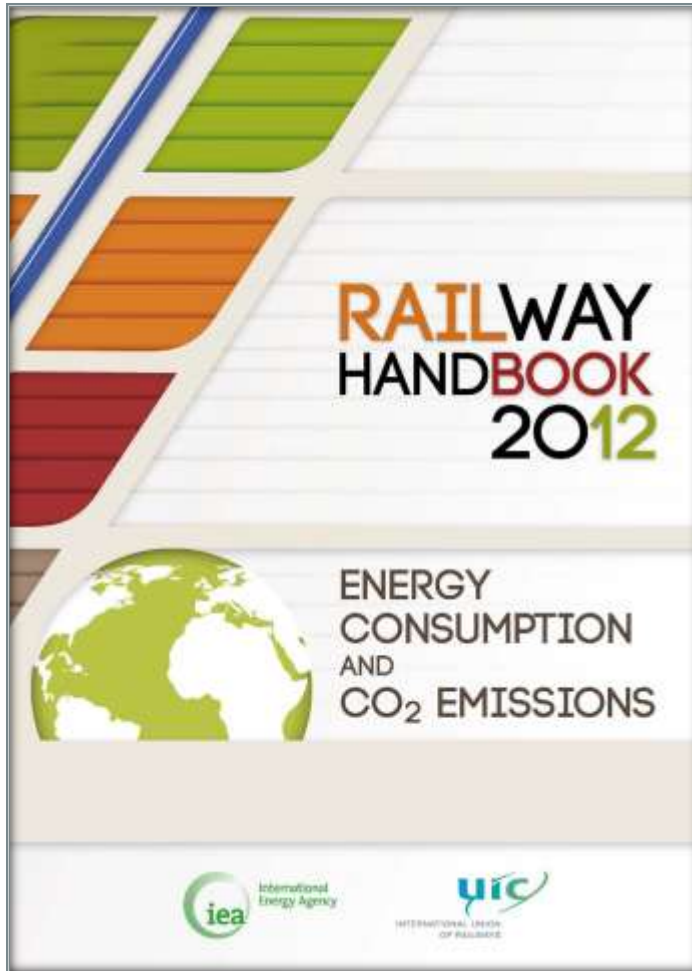
Specific CO2 emissions in freight transport, 2010:

18 grCO2/tkm (average)

Freight specific CO2 emissions 2009-2010



COMMUNICATION



- Joint initiative UIC-IEA (International Energy Agency)
- Will be launched in “RIO + 20”

Objectives:

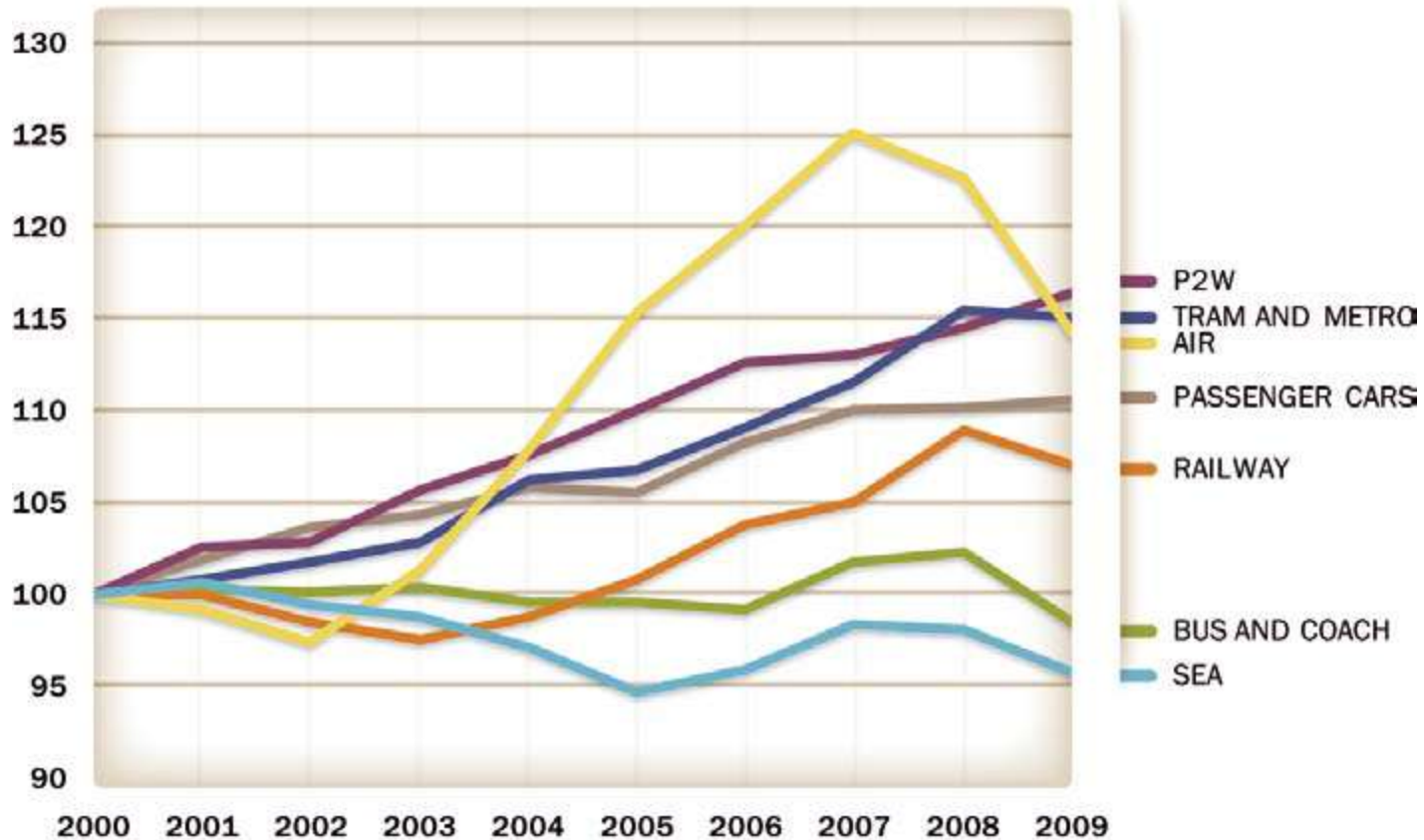
- Promote good performance of railways with sound evidence
- “Certification” of railways official data within international context
- Co-operation for robust Energy and Co2 data

Part I: Europe (EU27)

KEY FACTS

- ▶ In 10 years (2000-2009), no significant change in **modal split** has been recorded.
- ▶ Railways modal share in 2009 was 6% for passenger and 7% for freight transport activities.
- ▶ Transport **CO₂ total emissions** grew by nearly 28% from 1990 to 2009: all transport modes – except railways - have increased their total emissions.
- ▶ In 2009, road was responsible for 71% of total CO₂ emissions from transport sector. Navigation was responsible for 14.3% and aviation for 12.3%.
- ▶ In 2009, railways produced 1.8% of total CO₂ emissions from transport sector, corresponding to **0,6% of total CO₂ emissions** in EU27.

Fig.3: Modal evolution of passenger traffic activity, 2000-2009 (pkm)



Year 2000=100

Source: EC (2011) and UIC (2011a)

Fig.9 Total CO₂ Emissions by sector, 2009

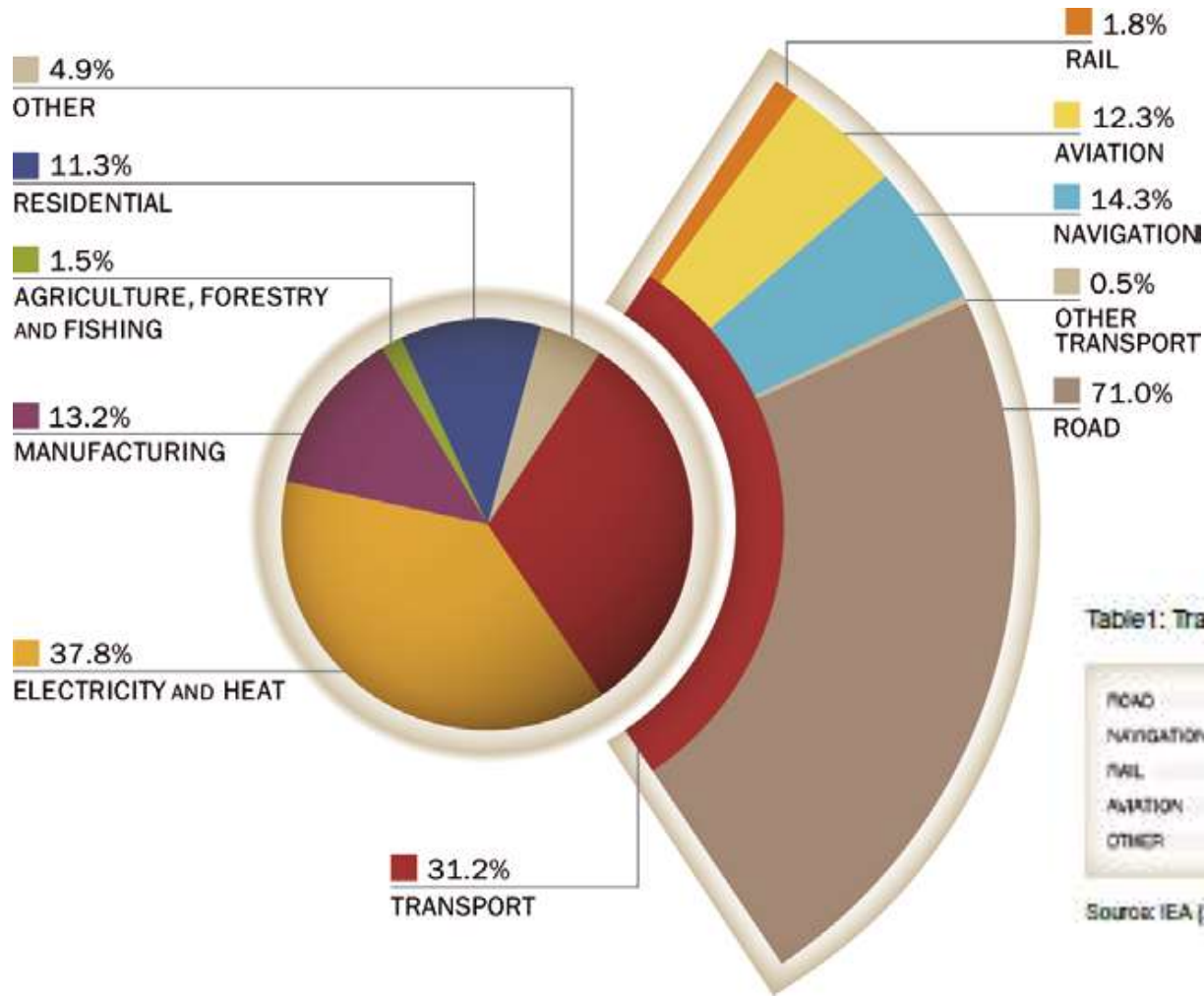
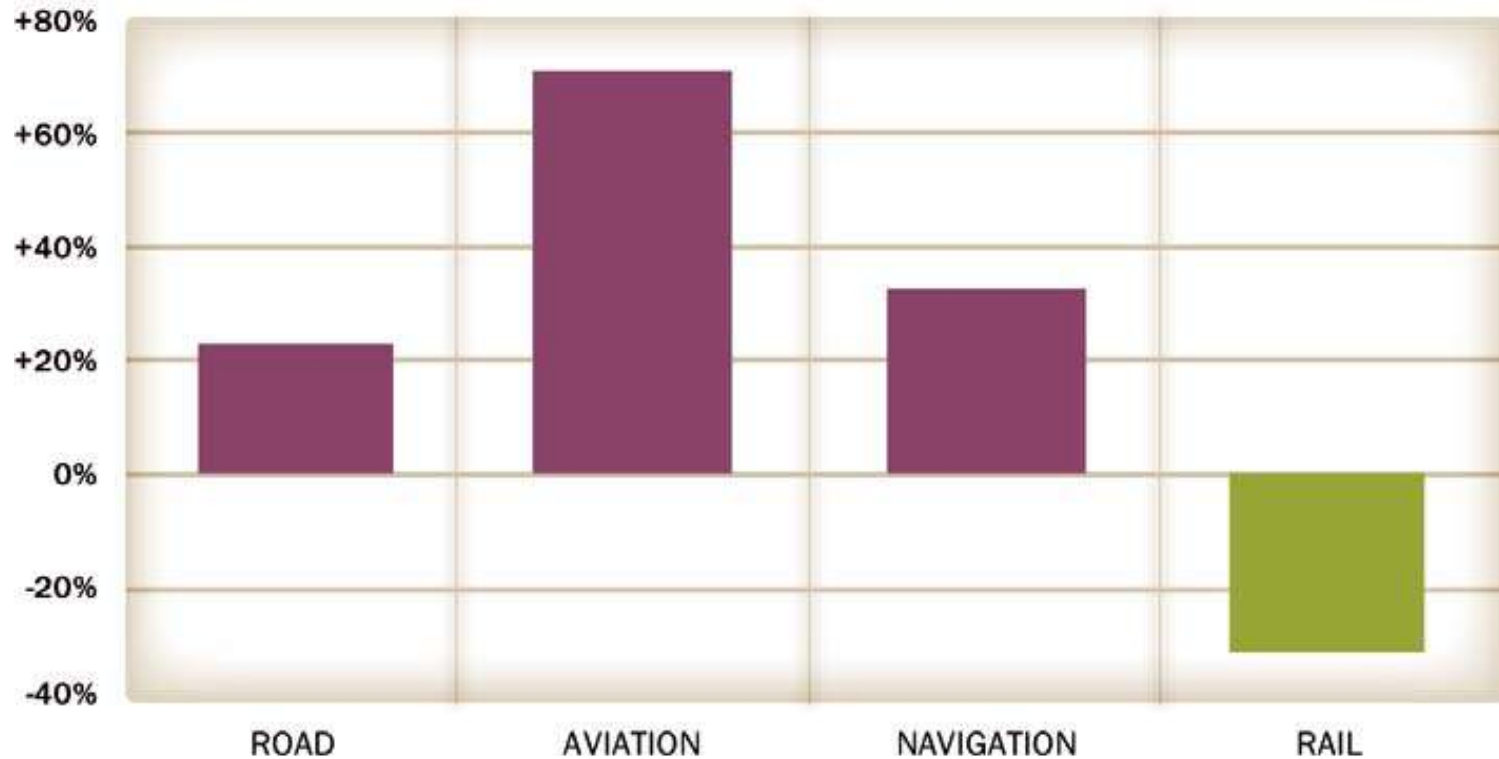


Table1: Transport modal share, 2009 (transport units)

ROAD	71.4%
NAVIGATION	15.0%
RAIL	7.1%
AVIATION	5.2%
OTHER	1.2%

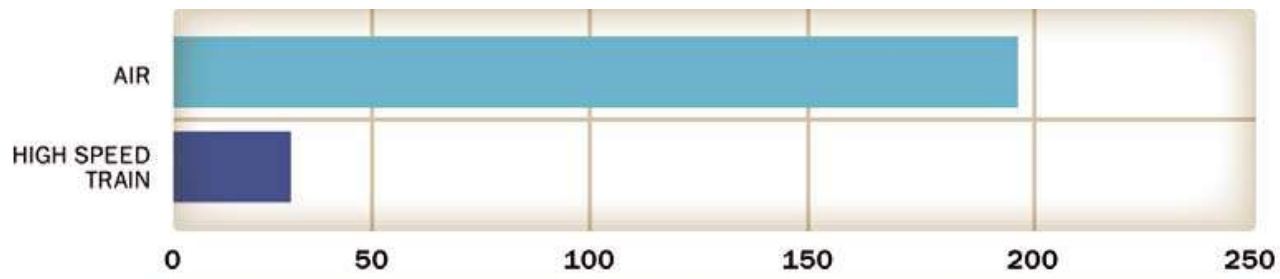
Source: IEA (2011a) and UIC (2011b)

Fig.12: Change in CO2 total emissions from fuel combustion by mode, 1990-2009

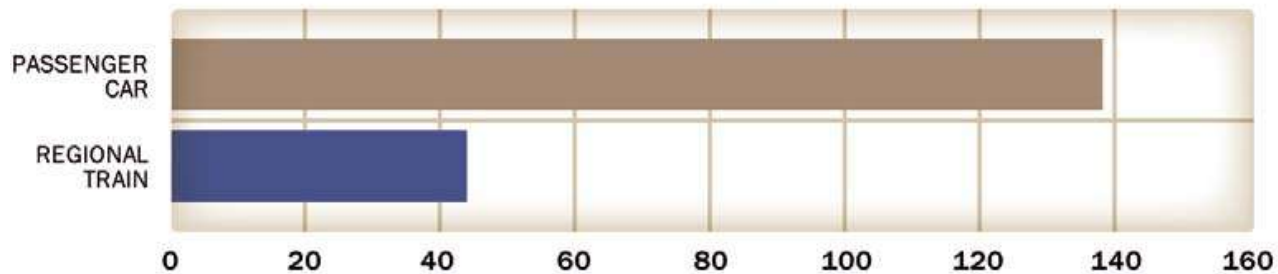


Source: elaboration based on IEA (2011a)

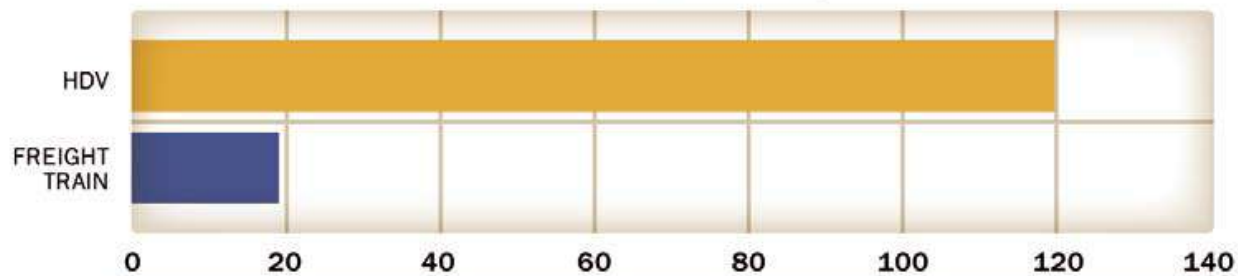
CROSS INDICATORS: Plane vs highspeed, car vs regional, freight train vs HDVs EU average



WTW GHG INTENSITY (gr CO₂eq/pkm)



WTW GHG INTENSITY (gr CO₂eq/pkm)



WTW GHG INTENSITY (gr CO₂eq/tkm)

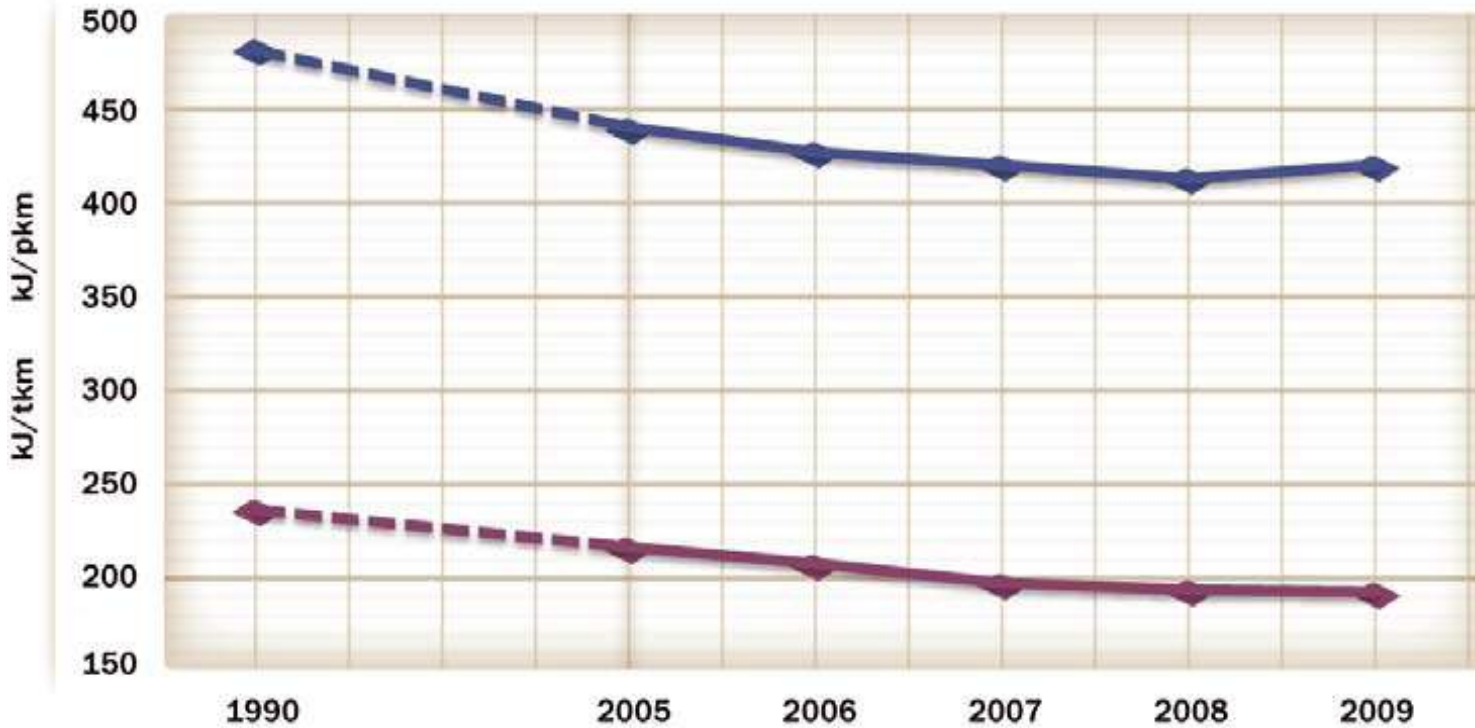
Source: IEA (2012), UIC (2011a)

Part I: Europe (EU27)

RAILWAYS KEY FACTS

- ▮ The total **length of railway lines** in Europe has remained stable since 1990 (around 210 000 km).
- ▮ In 1990, only 30% of railway lines were **electrified**. In 2009, this percentage reached 53%.
- ▮ Railways have improved their **energy efficiency** from 1990 to 2009.
- ▮ In 2009 electricity used by railways in Europe was produced with an average of **30% from renewable sources**. This percentage has highly increased in the last 4 years
- ▮ From 1990 to 2009 European railways have **reduced** passenger specific emissions by 20% and freight specific emissions by 38%: freight sector has already reached the **2020 target** for specific emissions reduction

Fig.24: Specific energy consumption by train, 1990-2009 (kJ/pkm, kJ/tkm)



	1990	2005	2006	2007	2008	2009	Δ 1990 2009
PASSENGER (KJ/PKM)	478.8	437.8	425.6	418.7	411.0	418.7	-13%
FREIGHT (KJ/TKM)	234.0	214.8	205.3	195.4	192.1	190.5	-19%

Fig.26: Railways electricity mix by country, 2009

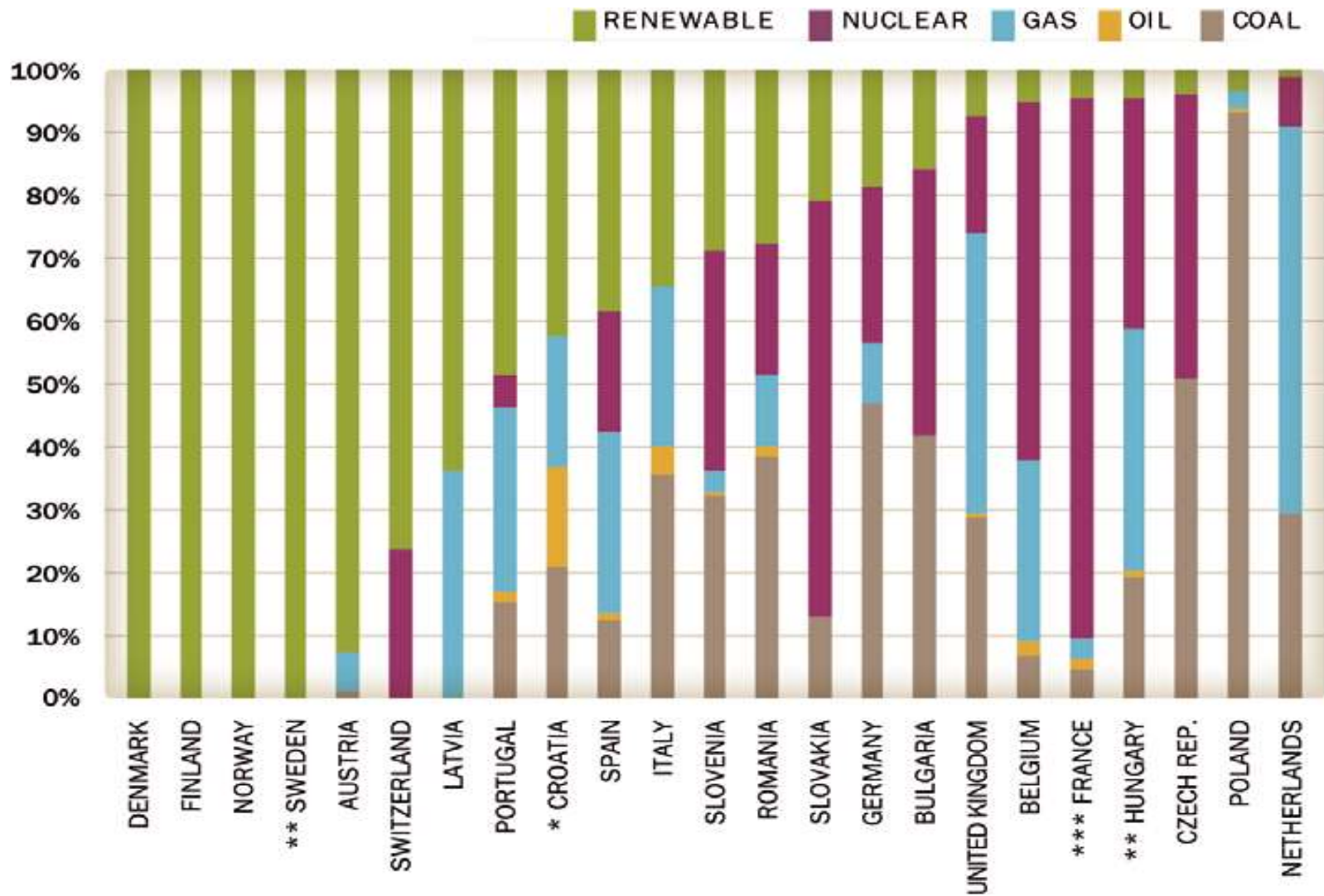


Fig.27: European Railways electricity mix, 2005 inside - 2009 outside

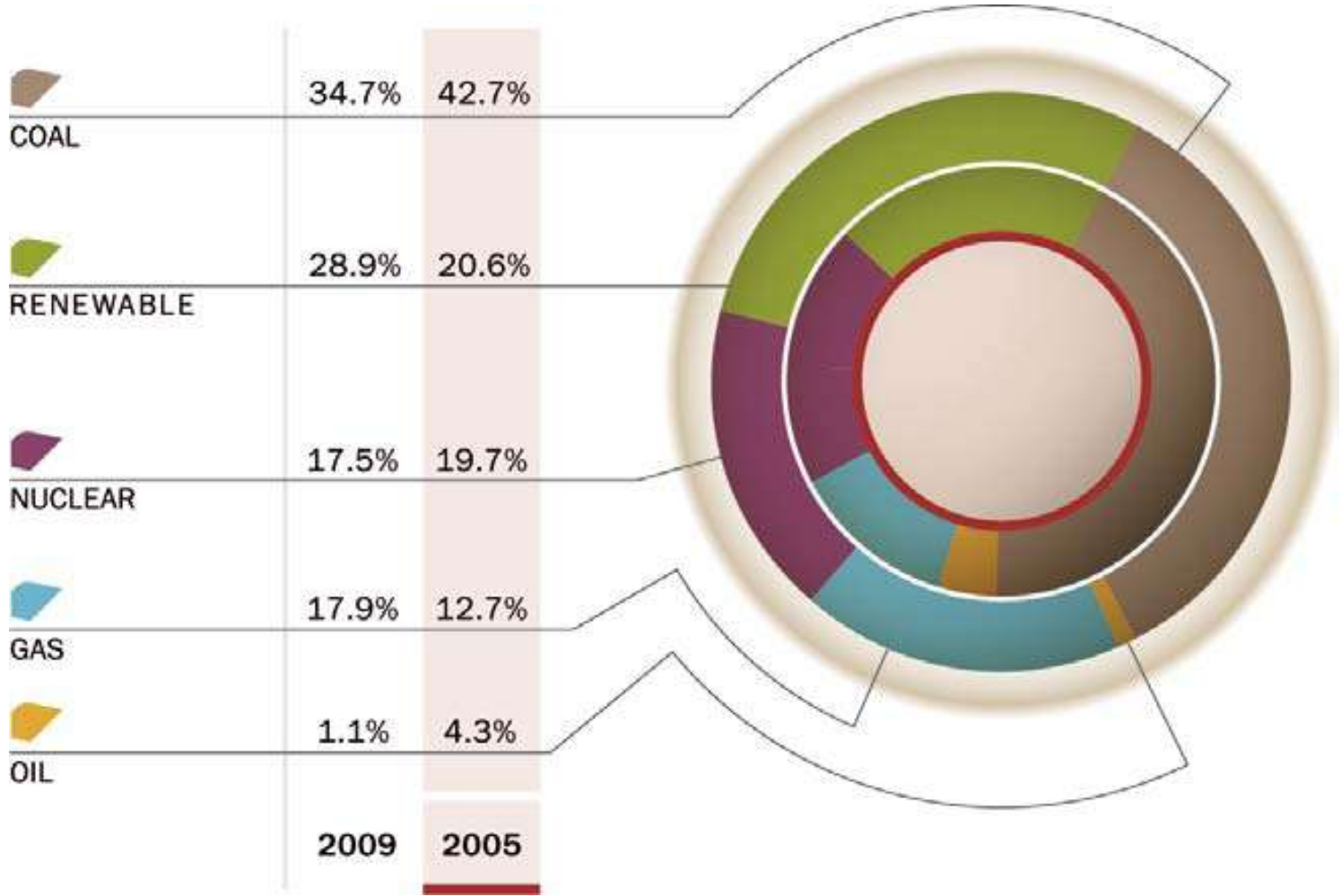
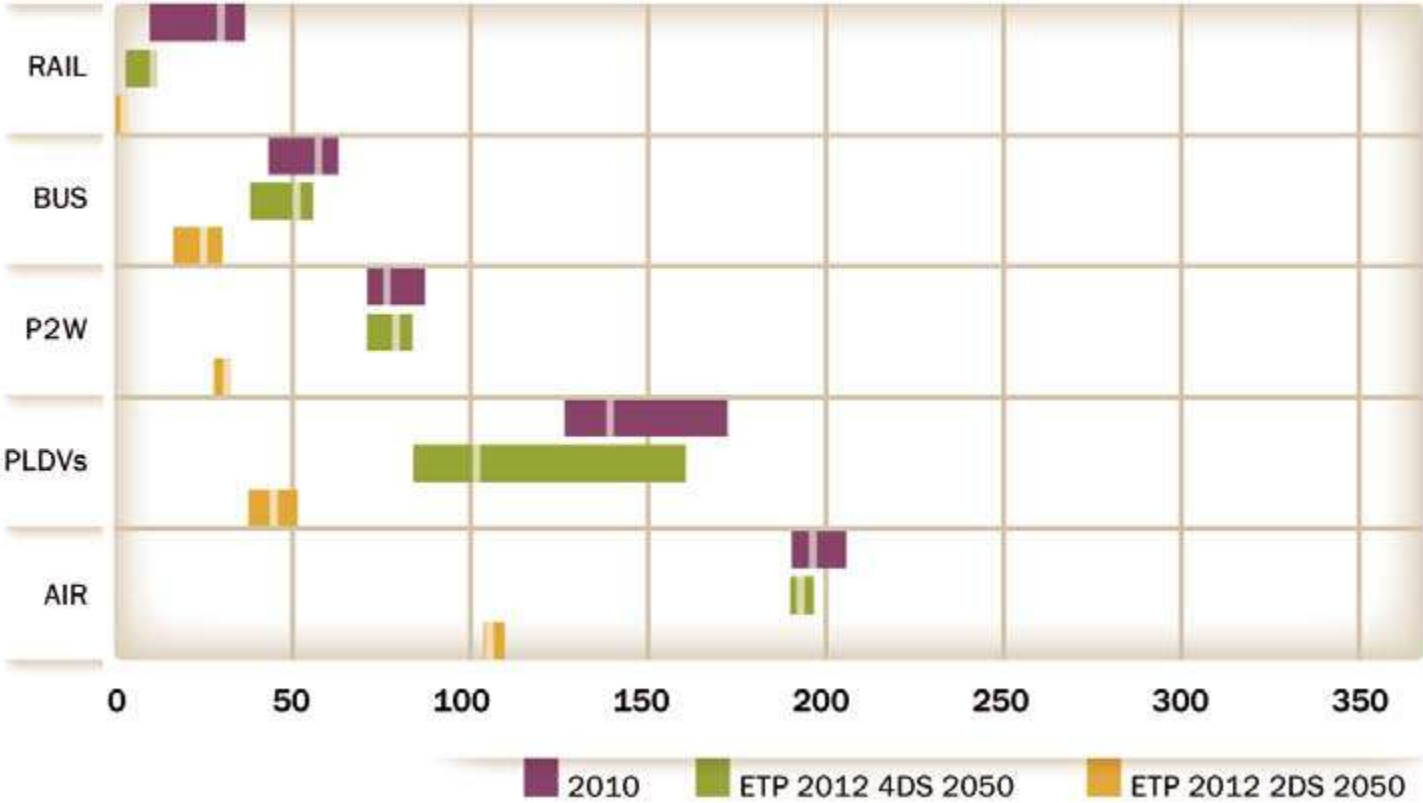
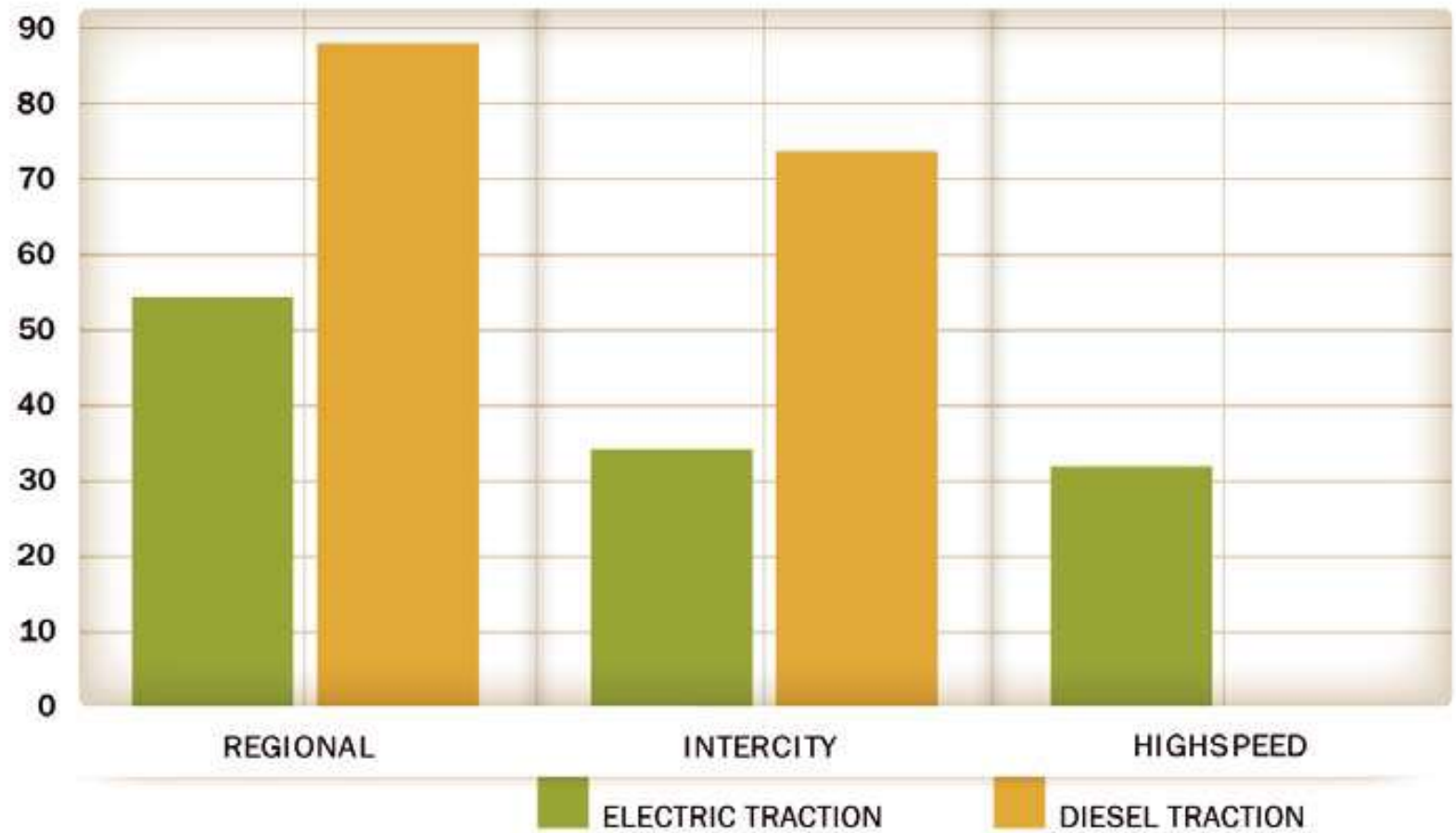


Fig.15: EU27 evolution of the GHG intensity of motorised passenger transport modes, 2010-2050 (WTW gCO2/pkm)



Source: IEA (2012)

Fig.33: Passenger specific CO₂ emissions by service type and traction type, 2005 (gCO₂/pkm)

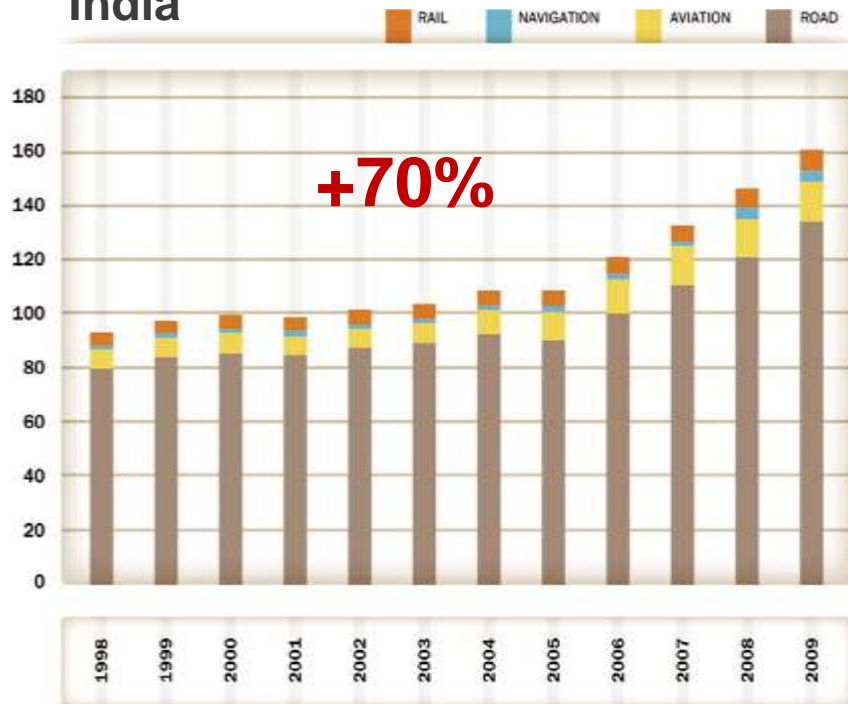


Andoutside Europe ?

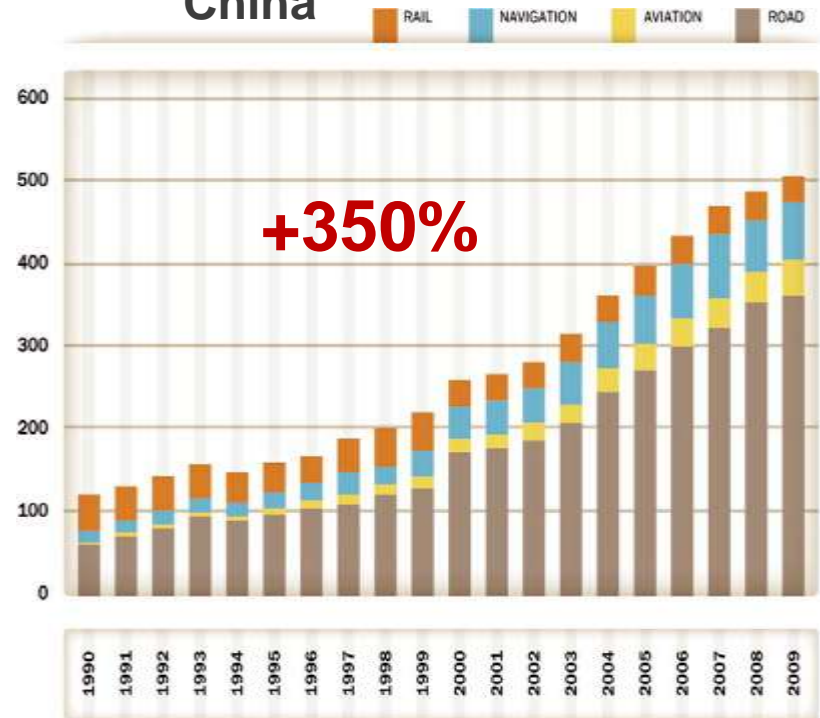
A decorative graphic consisting of several colorful, irregular shapes resembling pieces of paper or leaves, scattered around the central text. The colors include purple, yellow, red, blue, and brown.

Transport CO2 emissions by mode, 1998-2009 (million tonnes)

India

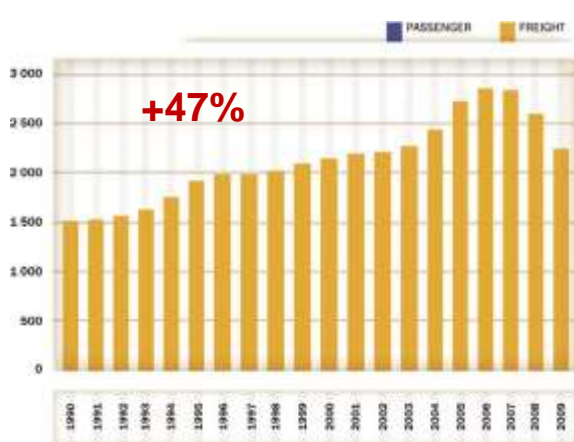


China



Railway transport activity 1990-2009 (billion transport units)

USA



Russia



Australia



India



China

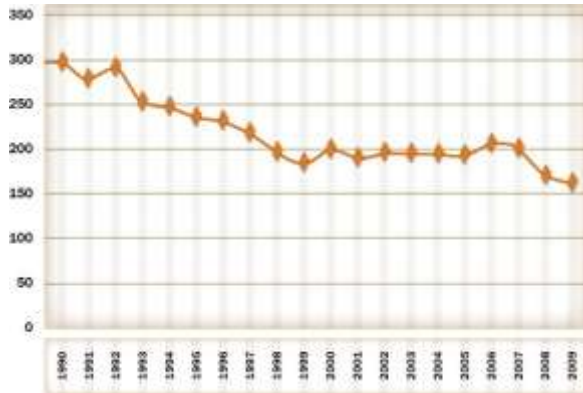


Iran

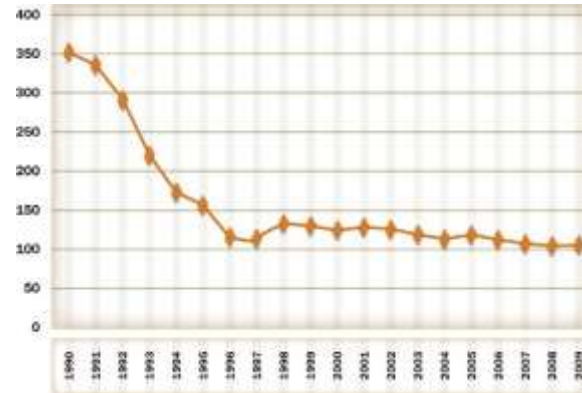


Railway specific energy consumption, 1990-2009 (kJ/transport unit)

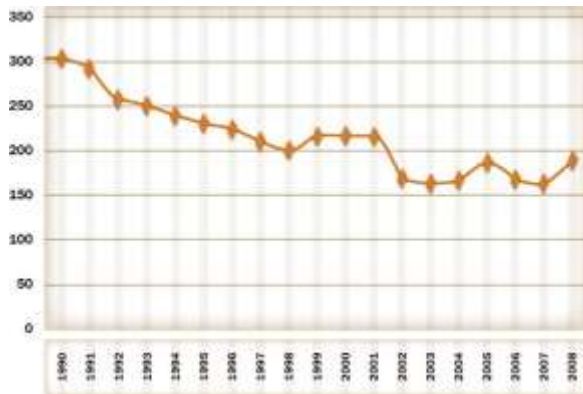
USA



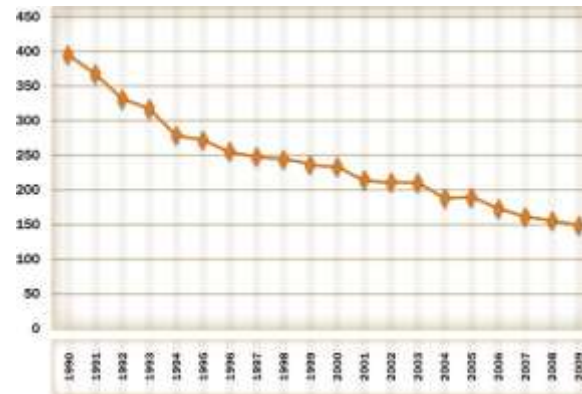
India



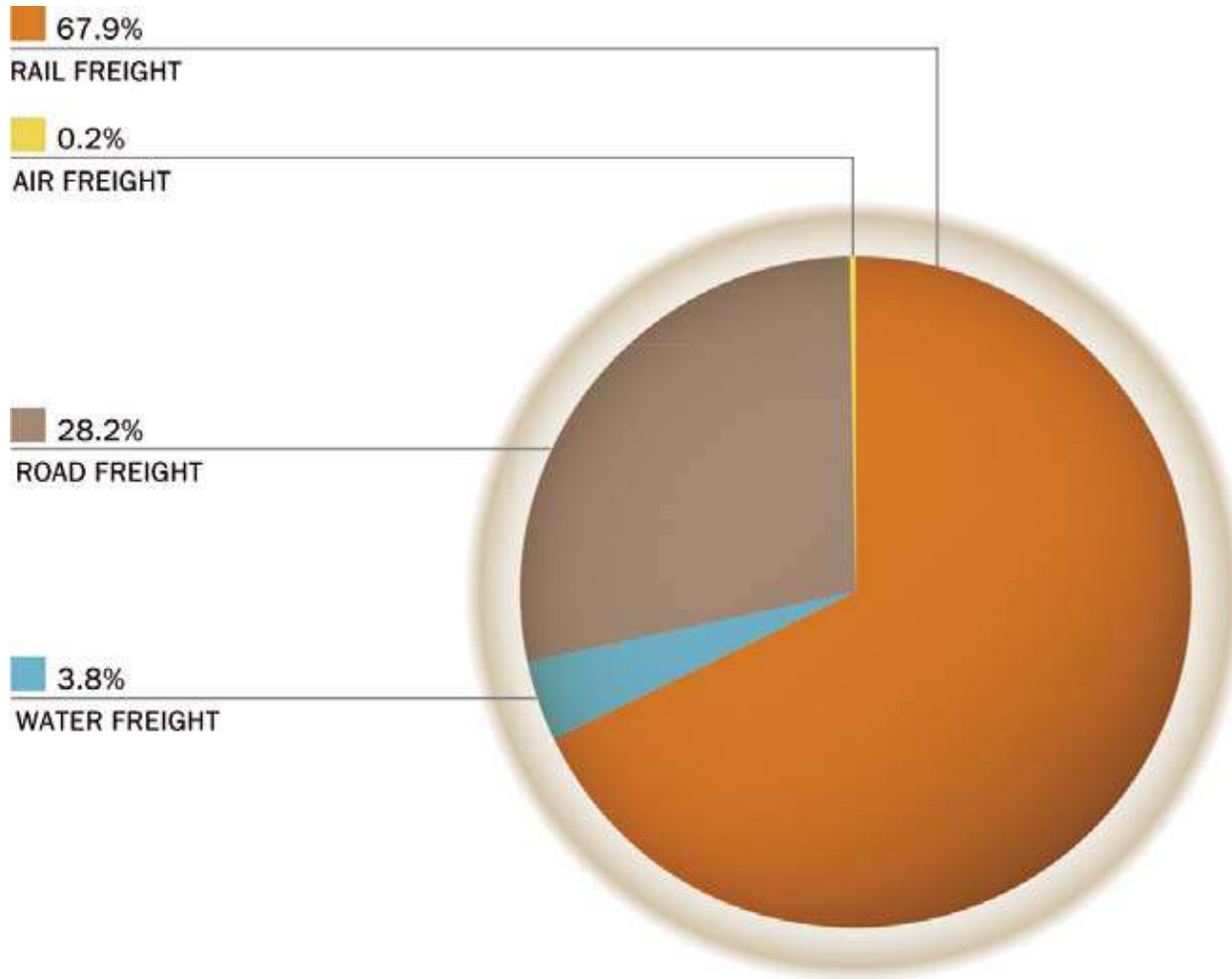
Australia



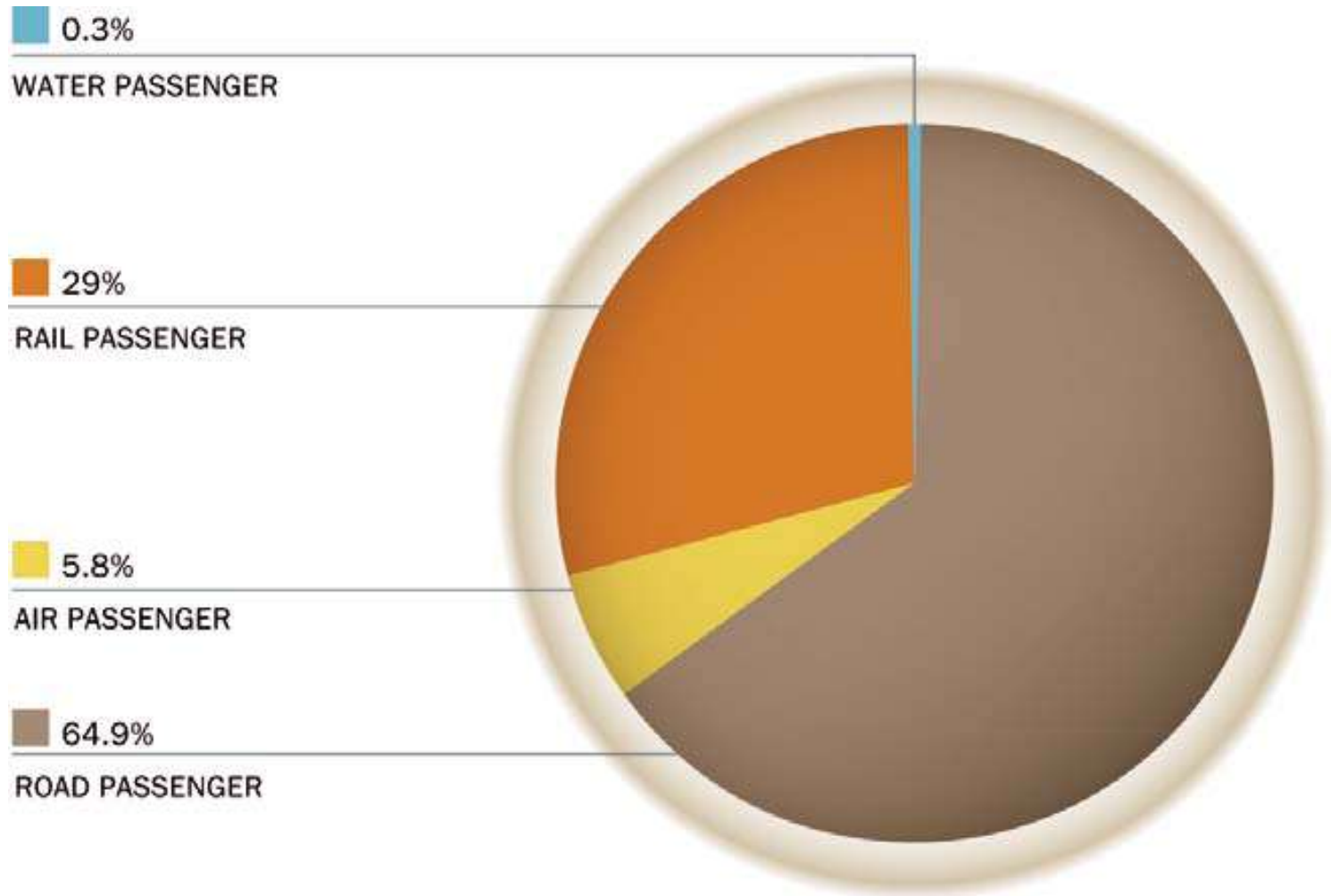
China



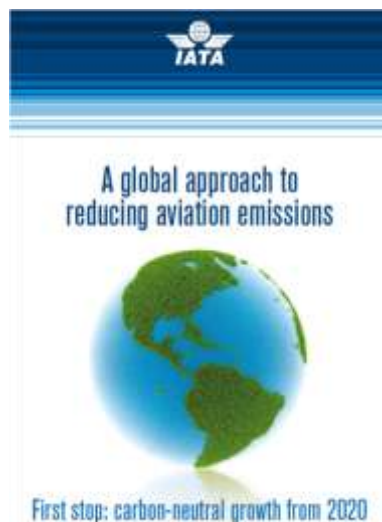
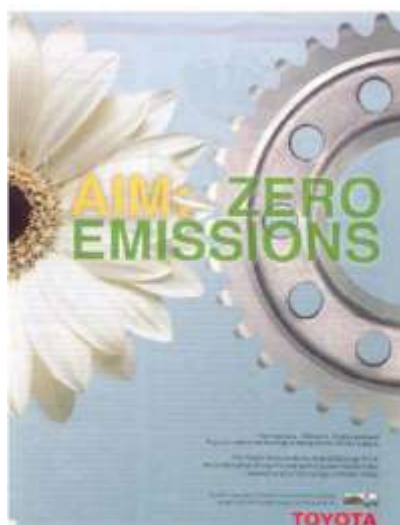
Canada: Freight transport modal split, 2009 (% tkm)



Japan: Passenger transport modal split, 2008 (% pkm)



There is a real battle of data and communication going on today...



...that we need to face!

Rio + 20: Voluntary commitments

- The most important commitment for transport was a coalition of developmental banks committing \$175 billion, over ten years, toward sustainable transport projects worldwide.



■ ■ ■ Thank you for your kind attention 😊

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