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EU Transport GHG: Routes to 2050?

Freight trends and forecasts

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AEA CE Delft TNO ISIS milieu

This presentation

- Introduction to the freight forecasts
- Global trends:
  - By mode (road, rail, maritime, IWW, air)
  - In general
- Conclusions: freight transport visions to 2050
  - Where
  - What
  - How

Introduction to the freight forecasts

Drivers of transport demand discussed in the First Stakeholder Conference on March 27, 2009:

1.SOCIETY

1. Population growth and ageing
2. Migration
3. Urbanization
4. Work-time regimes (tele-working)
5. Tourism and leisure
6. Lifestyle
7. Safety
8. Security

2.ECONOMY

9. Growth and productivity
10. Trade
11. Employment
12. Public budget constraints

3.ENERGY

13. Energy supply
14. Energy demand
15. Energy prices

4.TECHNOLOGY

16. New energy infrastructure
17. New transport infrastructure
18. New fuels and vehicles
19. ICT development

5.ENVIRONMENT

20. Pollution
21. Waste
22. Greenhouse gas emissions
23. Climate change
24. Natural resource consumption

6.POLICY

25. EU enlargement
26. EU integration
27. EU territorial cohesion
28. EU taxation policy
29. Global trade governance
30. Global Climate Change governance
31. Global security governance

Introduction to the freight forecasts

Concerning freight transport : three main **drivers** have been identified:

1. **GDP growth rates**, due to the strong correlation with the movement of raw materials, intermediary products and final consumer goods

2. **Energy prices**, in particular oil price, due the relevance of fossil fuels in transport energy consumption and transport operating costs

3. **Globalization**, due to the importance of international trade and the organization of production processes at global scale

The key assumption is to consider these drivers under a BAU perspective: the TRANS-TOOLS output

Introduction to the freight forecasts

REFERENCE SCENARIO IN TRANS-TOOLS

projections concerning the population (which is a relevant element for the generation of passengers trips);

projections concerning the GDP (which is a relevant element for the generation of freight trips);

autonomous changes in transport costs (i.e. due to more expensive oil price);

transport network changes due to completed TEN projects.

Introduction to the freight forecasts

1. **GDP growth rates**, due to the strong correlation with the movement of raw materials, intermediary products and final consumer goods

	AVERAGE 2004-2050			
	EU25	**EU15**	**Euro area**	**EU10**
GDP growth	1.7	1.6	1.5	2.4

DG ECFIN calculations, 2006

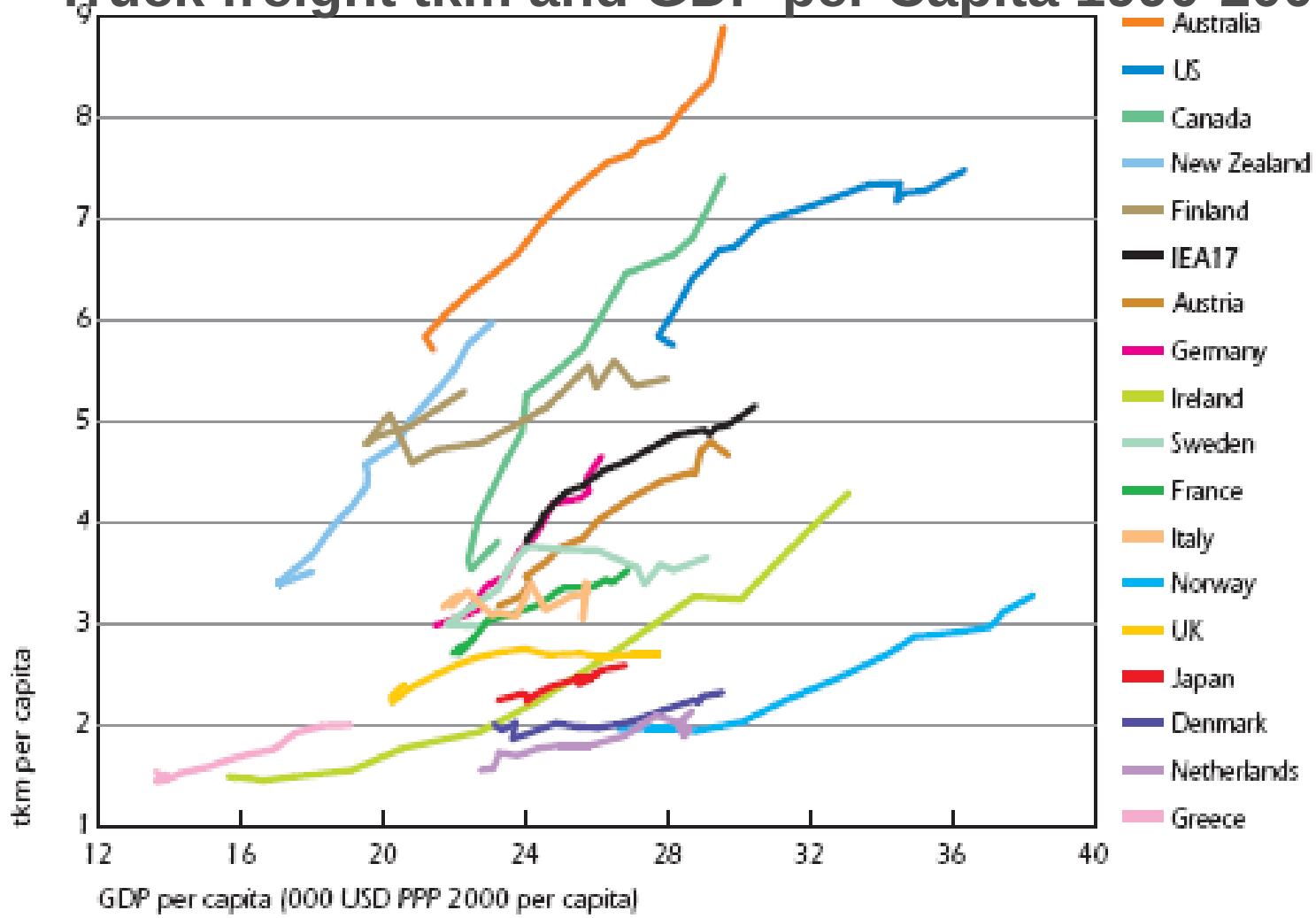
2007-2035			2035-2050		
EU27	EU15 + CH, NO	EU12 + HR	EU27	EU15 + CH, NO	EU12 + HR
1,7	**1,6**	**3,0**	**1,7**	**1,7**	**2,3**

AMECO, Prognos, Progtrans from FREIGHTVISIONS, 2009

Over the whole year 2009, GDP fell by 4.0% in the euro area and by 4.1% in the EU27.

Introduction to the freight forecasts

Truck freight tkm and GDP per Capita 1990-2004



IEA, Energy Use in the New Millennium, 2007

Introduction to the freight forecasts

GDP trends implications

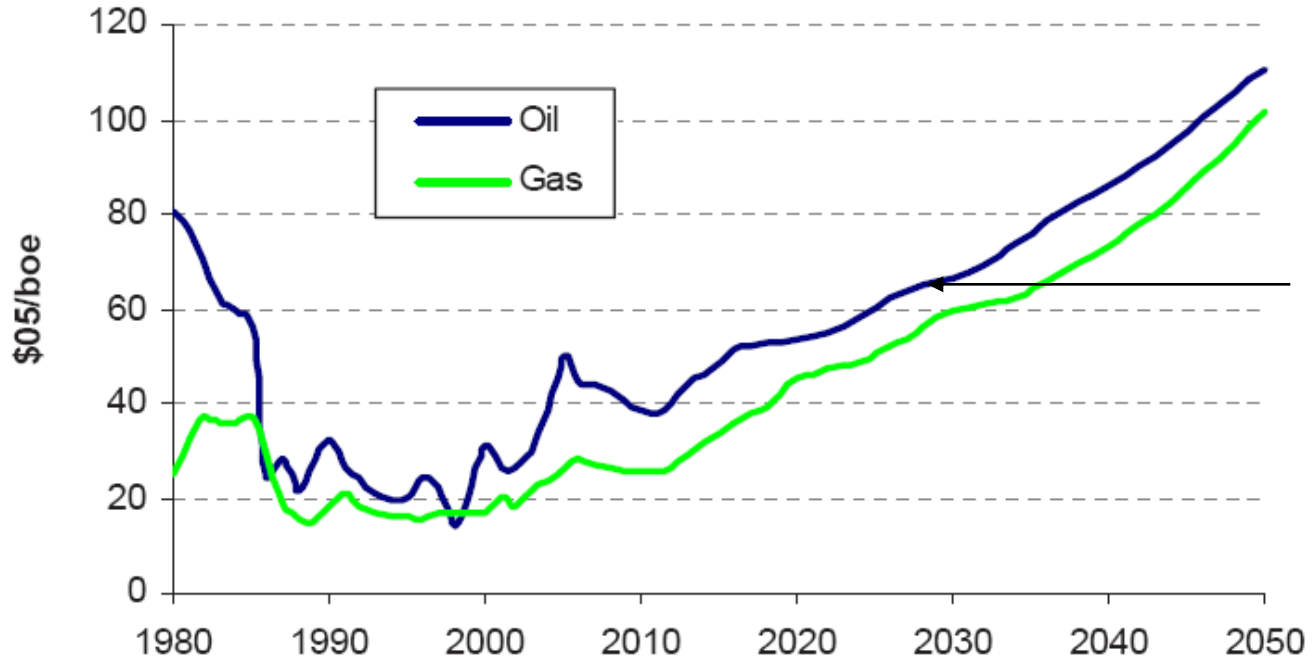
- The pattern suggests a fastest growth in the eastern part of Europe compared to the western part

- This pattern is going to continue up to 2050, but a general reduction is expected during the period 2030 to 2050.

- Road freight growth is higher in the Eastern part of Europe (more domestic traffic)

Introduction to the freight forecasts

2. Energy prices, in particular oil price, due the likely relevance of fossil fuels in transport energy consumption and transport operating costs



Oil peak ?

Source: WETO-H_2 (2006)

Introduction to the freight forecasts

Oil prices implications

- Road: an increase in operating costs (4-7%), but no dramatic impacts on transport demand are expected
- Air: the sector is more sensitive to energy prices. Higher prices may have a negative impact on transport demand.
- Maritime: it only uses 5% of the oil consumed by transport sector, no significant impact on transport demand is expected
- IWW: no significant impacts are expected

Introduction to the freight forecasts

Oil prices implications

The offsetting role of technology:

- **Improving loading factors (air, sea, road)**
- **Reduction of consumptions**
- **New fuel types**
- **Better management of supply chain**

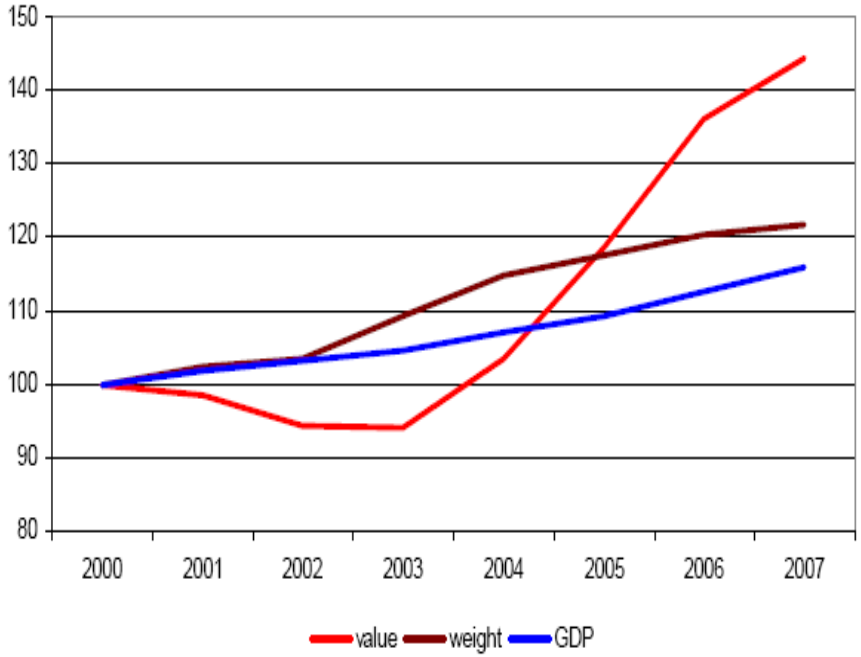
=

Air and road : higher sensitivity to fuel price

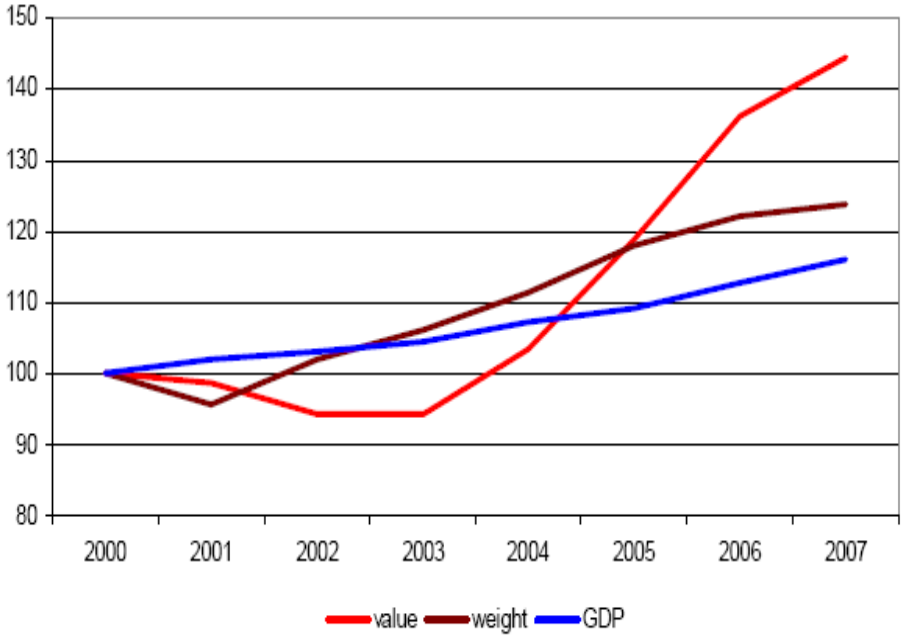
Introduction to the freight forecasts

3. Globalization, due to the importance of international trade and the organization of production processes at global scale

Value to Weight evolution for EU27 import external trade
(2000=100)



Value to Weight evolution for EU27 export external trade
(2000=100)



Source: TRANSvisions (2009)

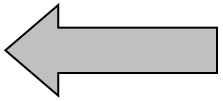
Introduction to the freight forecasts

Globalization implications

- The growing value-to-weight ratio in freight transport leads to the consequence of a reduced importance of transport costs of the delivered price of good (low price elasticity)
- Today,75% of FIAT components are produced abroad; 80% (RENAULT), even more for DELL
- This pattern may lead to increasing switching to air cargo and maritime transport in a long term perspective.

Global trends by mode: road

	% tkm 2005	% tkm 2050
% Road	46,5%	40,3%
% Rail	12,1%	17,5%
% Maritime	41,4%	42,2%
	100,0%	100,0%

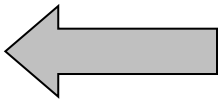


Source: TRANSvisions (2009)

- In 2050, road freight transport will be still important
- The higher truck transport growth is projected in the Eastern European countries: Romania, Latvia, Poland, Bulgaria and the Slovak republic.

Global trends by mode: rail

	% tkm 2005	% tkm 2050
% Road	46,5%	40,3%
% Rail	12,1%	17,5%
% Maritime	41,4%	42,2%
	100,0%	100,0%



Source: TRANSvisions (2009)

- In 2050, rail freight increases its share
- By 2030 the rail freight transport to and from Russia is expected to growth by 135%. Similar high growth rates are expected in the Baltic countries.

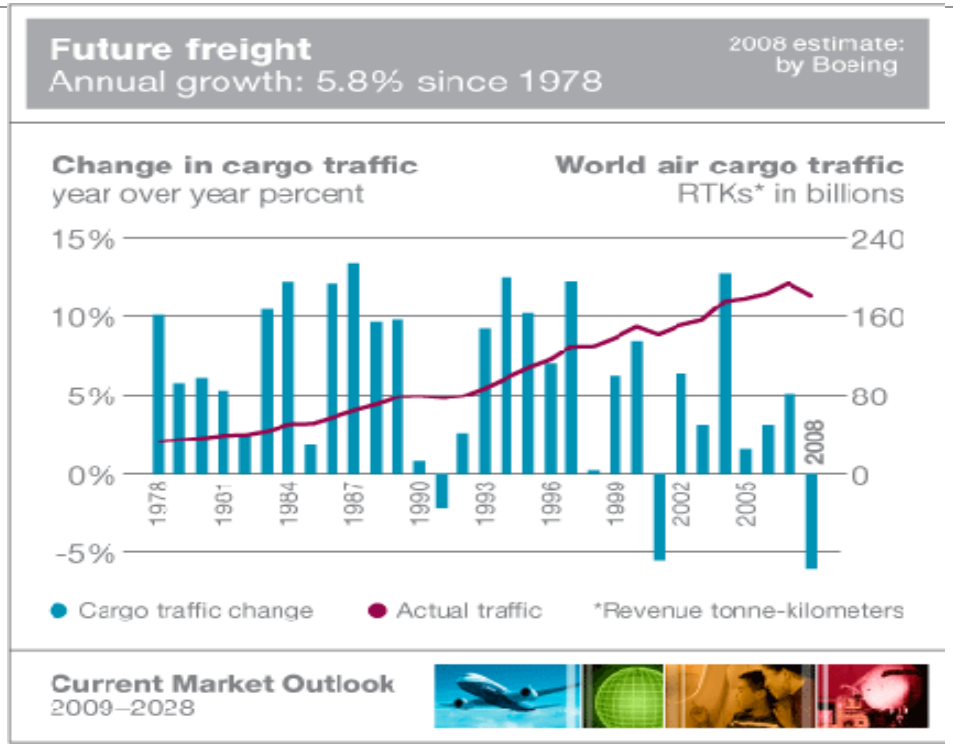
Global trends by mode: maritime

	2005	2020	2030	2050
Sea freight including SSS	1525	2223	2645	2949
% var.	**100**	**45,8%**	**73,4%**	**93,4%**
Sea freight outside Europe	52022	75309	91820	129104
% var	**100**	**44,8%**	**76,5%**	**148,2%**

Source: TRANSvisions (2009)

- In 2050, maritime transport is expected to growth at higher rates
- In Centre-North Europe, the increase of the average distance against the domestic traffic (the opposite will happen in the European South –East countries) may increase overseas transport.

Global trends by mode: air



Source: Boeing, "Current Market outlook 2007-2028"

- Air freight transport demand at world level has been growing at an average annual rate by 5.8% since 1978. This would imply that air traffic will double in 15 years, and more than triple in 25 years

Definitions (1)

Regional: intra-NUTS2 trips.

Domestic: rest of trips with origin and destination inside the same country.

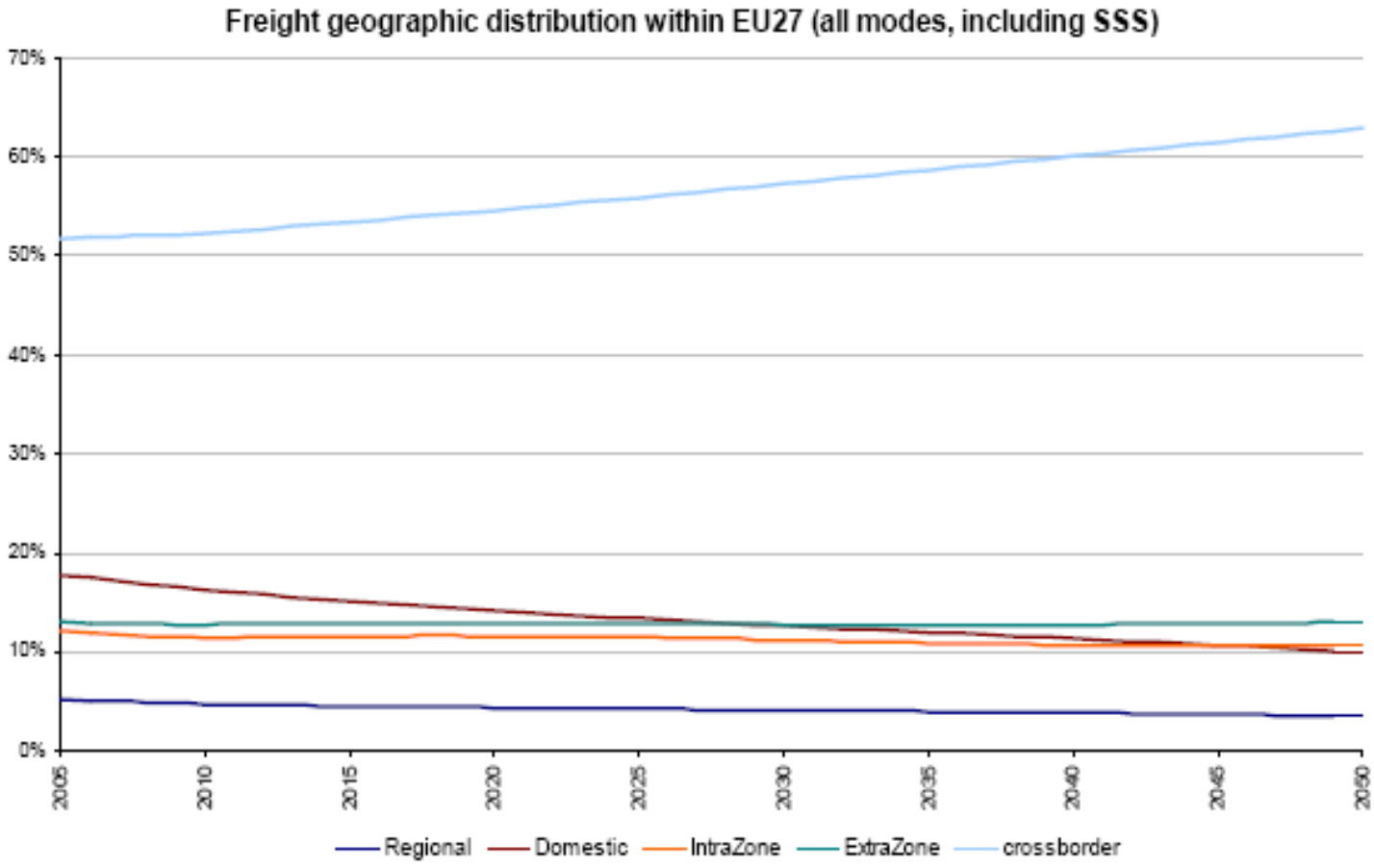
Intra-Zone: trips with origin and destination inside the same macrozone: South (Portugal, Italy, Greece, Spain), North/Centre (rest of the EU-15), East (rest of the EU-27).

Definitions (2)

Extra-Zone: trips with origin or destination in different macrozones

Cross-border: trips with origin or destination outside the EU-27, in one of the neighbouring countries

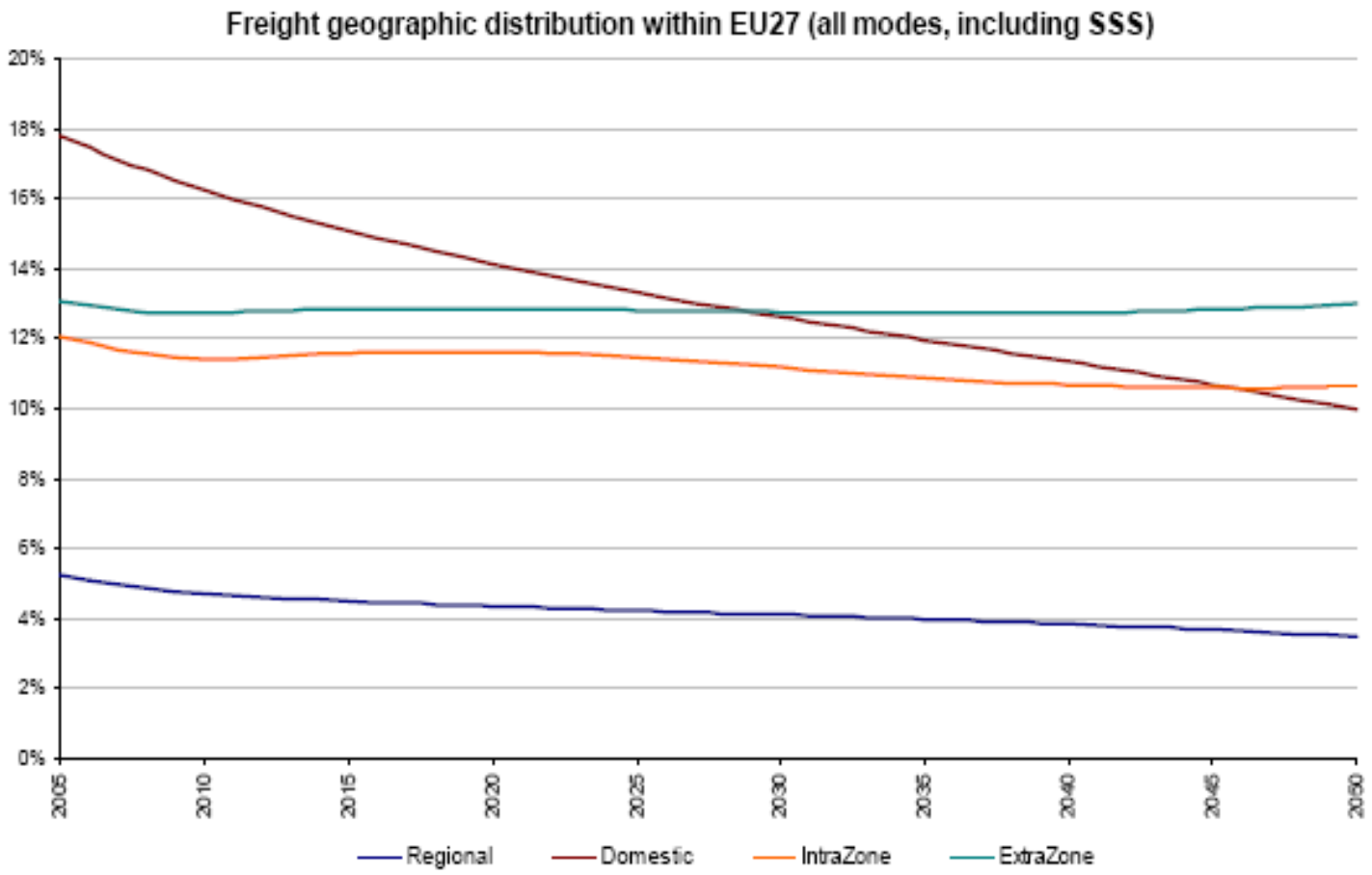
Freight transport visions to 2050: where



EFTA,
Balkans,
Russia,
Byelorussia,
Ukraine
Turkey.

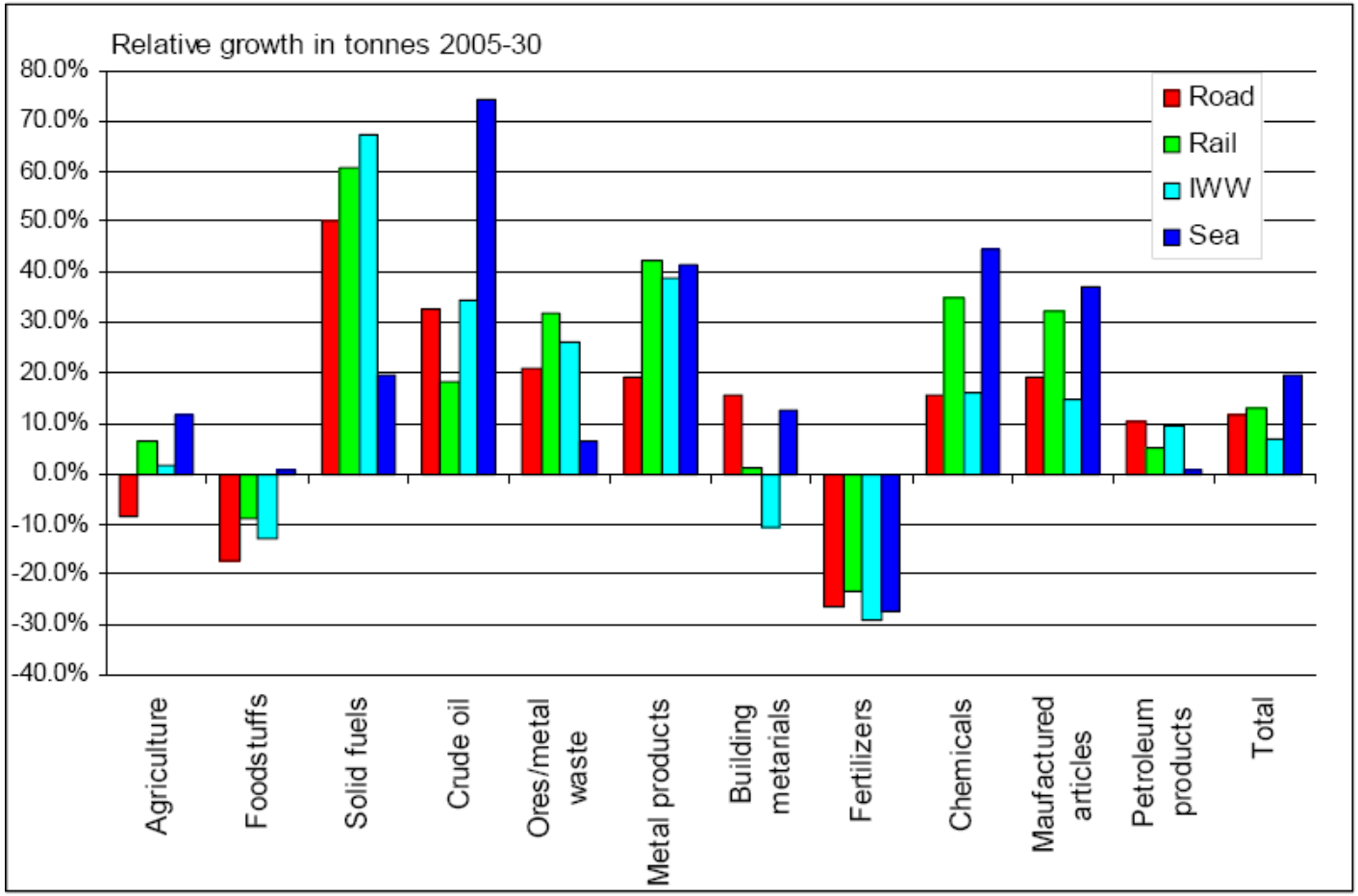
Source: TRANSvisions (2009)

Freight transport visions to 2050: where



Source: TRANSvisions (2009)

Freight transport visions to 2050: what and how



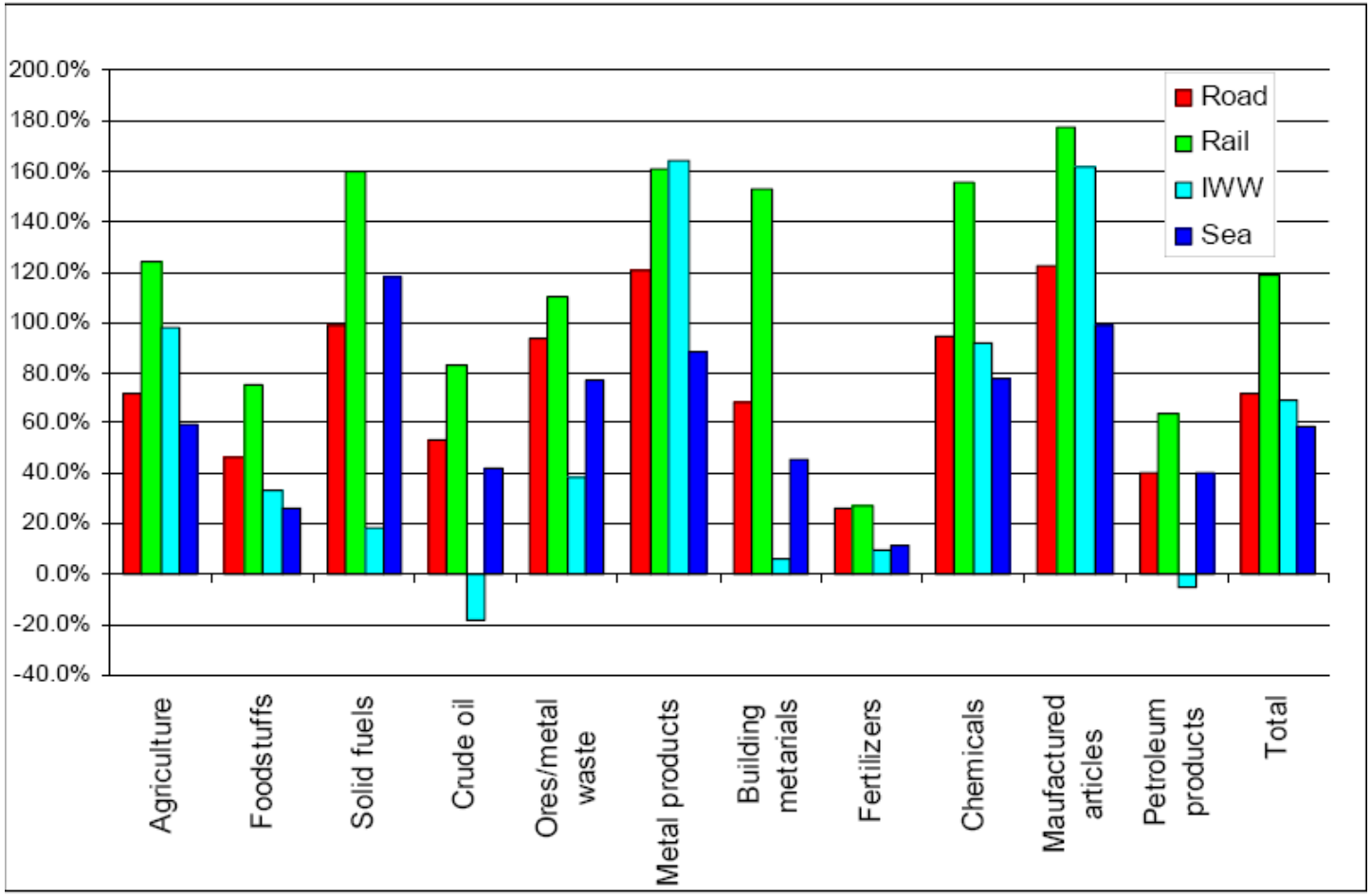
2030 horizon

Higher relative growth of SSS

Solid fuels,
Crude oil
Metal product
Chemicals

Source: TEN CONNECT (2009) – domestic tonnes

Freight transport visions to 2050: what and how



2030 horizon

Higher relative growth of rail

Manufactured products

Metal products

Solid fuels

Building material

Higher relative growth of int. traffic

Source: TEN CONNECT (2009) – international tonnes

Conclusions

- Considering freight with origin and destination within EU-27 territory, the growth rate could be very low in average for all products, less than 1.2% per year.
- The addition of freight with origin or destination in EU-27 neighbour countries (except northern Africa) increases the growth rate to 2.25% per year.

Conclusions

- In the EU central and northern regions, domestic freight traffic will remain stable, decoupled from economic growth, while traffic originating or having a destination outside the EU-27 will grow faster than the economy (rail, SSS, air)
- The European Eastern countries are expected to have the biggest increase of freight transport (4.3% ton-km per year) (road, rail)

Thank you for your attention