Transport and Climate Change: International Trends and Mitigation Policies and Measures

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Essential Elements for Solving Global Tasks'

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Outline of the presentation

- UNFCCC on policies and measures
- GHG profile of transport sector
- Drivers, policy options and action patterns
  (as reported by industrialized countries to the UNFCCC)
- Success story Finland
- Emissions trading: Beyond sectoral borders
- Conclusions on transport and climate change

UNFCCC* on PaMs (*: simplified language)

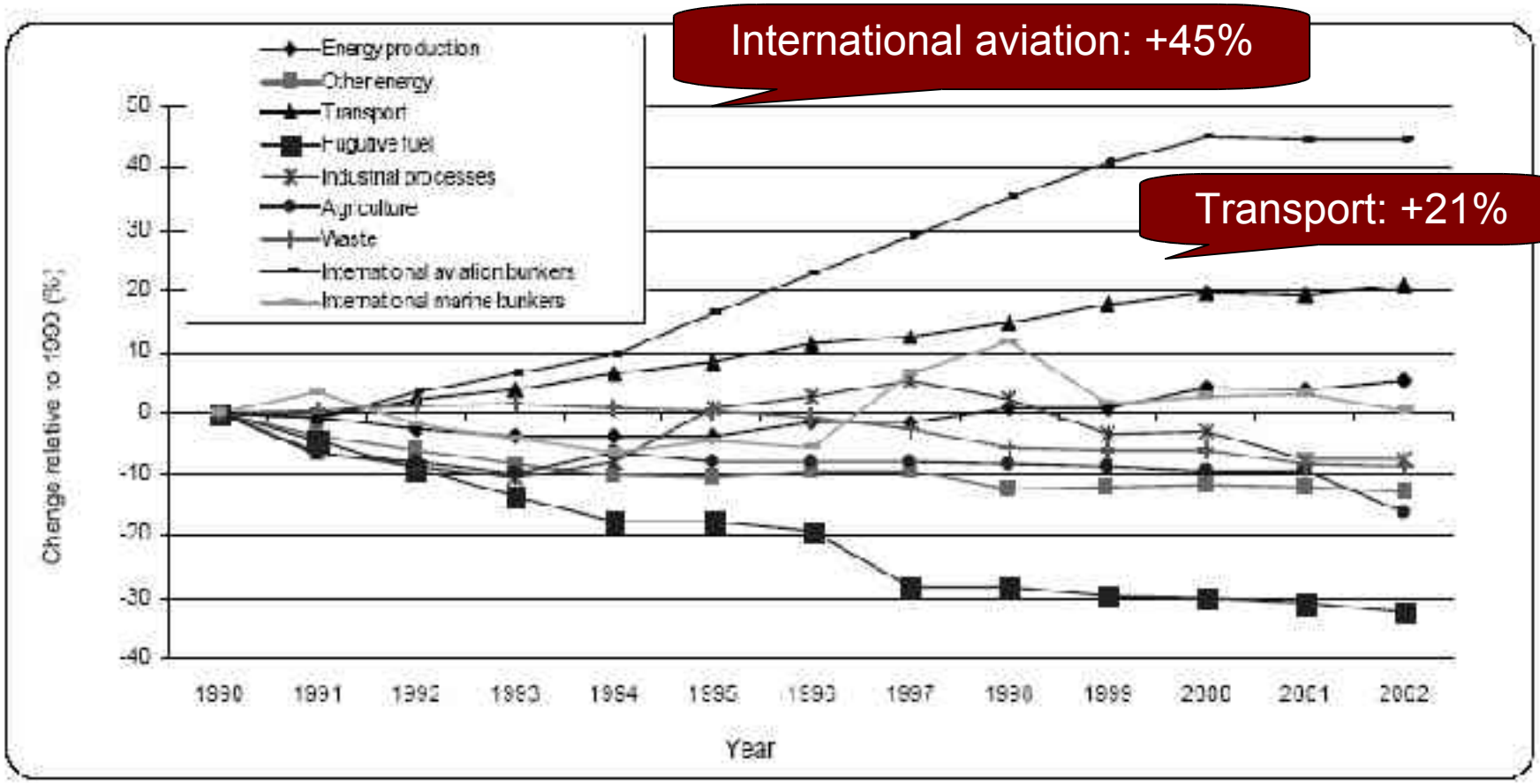
- Article 4.2 (a): Each Annex I Party shall adopt national policies and take corresponding measures on the mitigation of climate change
- Article 4.2 (b): Each Annex I Party shall report detailed information on PAMs adopted to implement its commitment under Article 4.2 (a) as well as on their resulting projected GHG emissions
- Article 4.2 (e): Each Annex I Party shall
  - Coordinate as appropriate with other such Parties, relevant economic and administrative instruments developed to achieve the Convention objectives
  - Identify and review policies and practices that may lead to greater levels of GHG emissions
- Article 12.2: Each Annex I Party shall incorporate in its national communication a detailed description of PaMs adopted to implement its commitment under Article 4.2 (a) and (b), and specific estimates of their effects on GHG emissions

GHG profile of transport sector

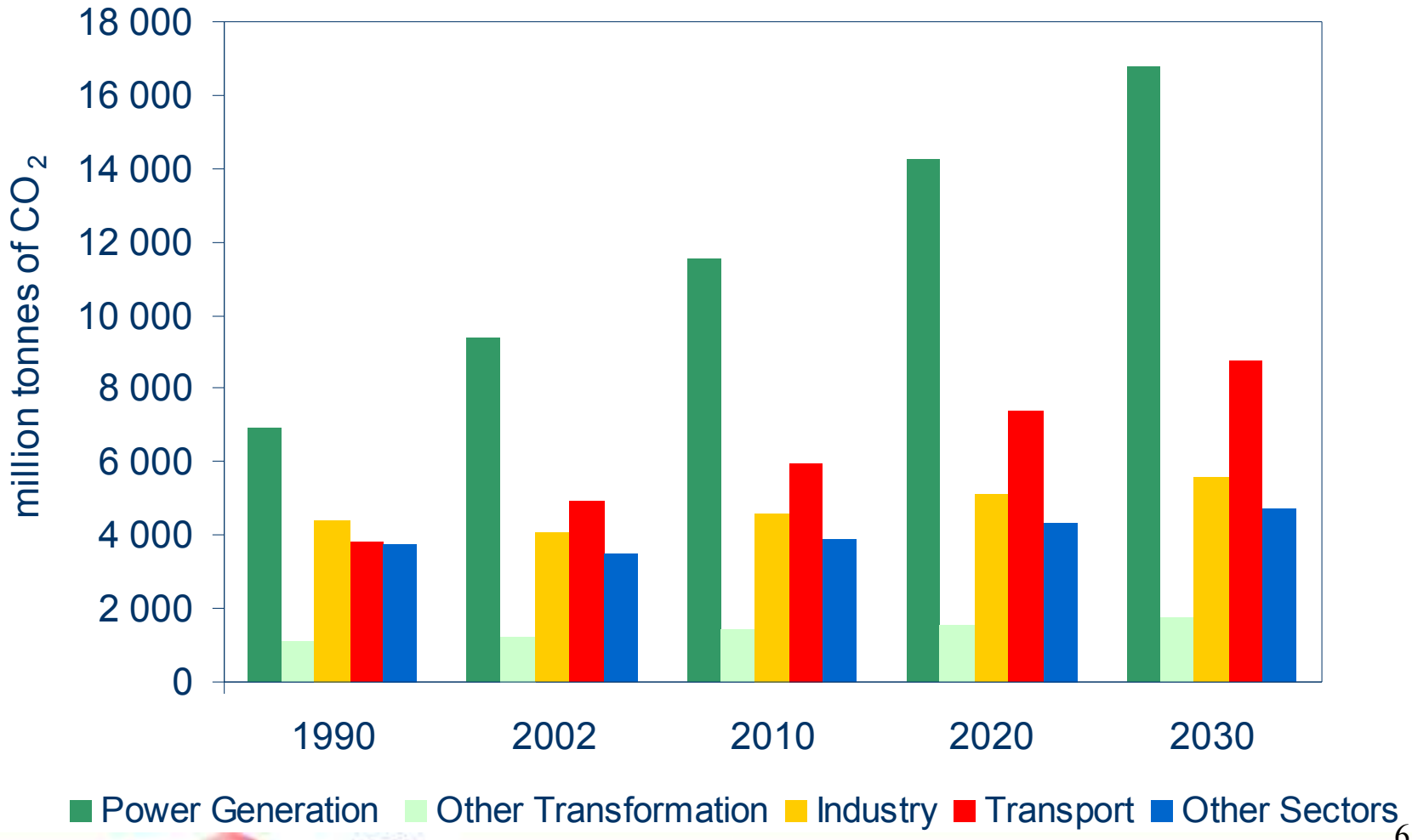
- Transportation is a major and steadily growing contributor
- Within the group of Annex I Parties, the share of the transport sector in total GHG ranged between 15.7% and 30.8%
- Growth rate between 1990 and 2002 is the highest among all sectors

Annex I GHG emission trends by sector, 1990-2002

Figure 5. Trends in Annex I Party greenhouse gas emissions by sector, 1990–2002



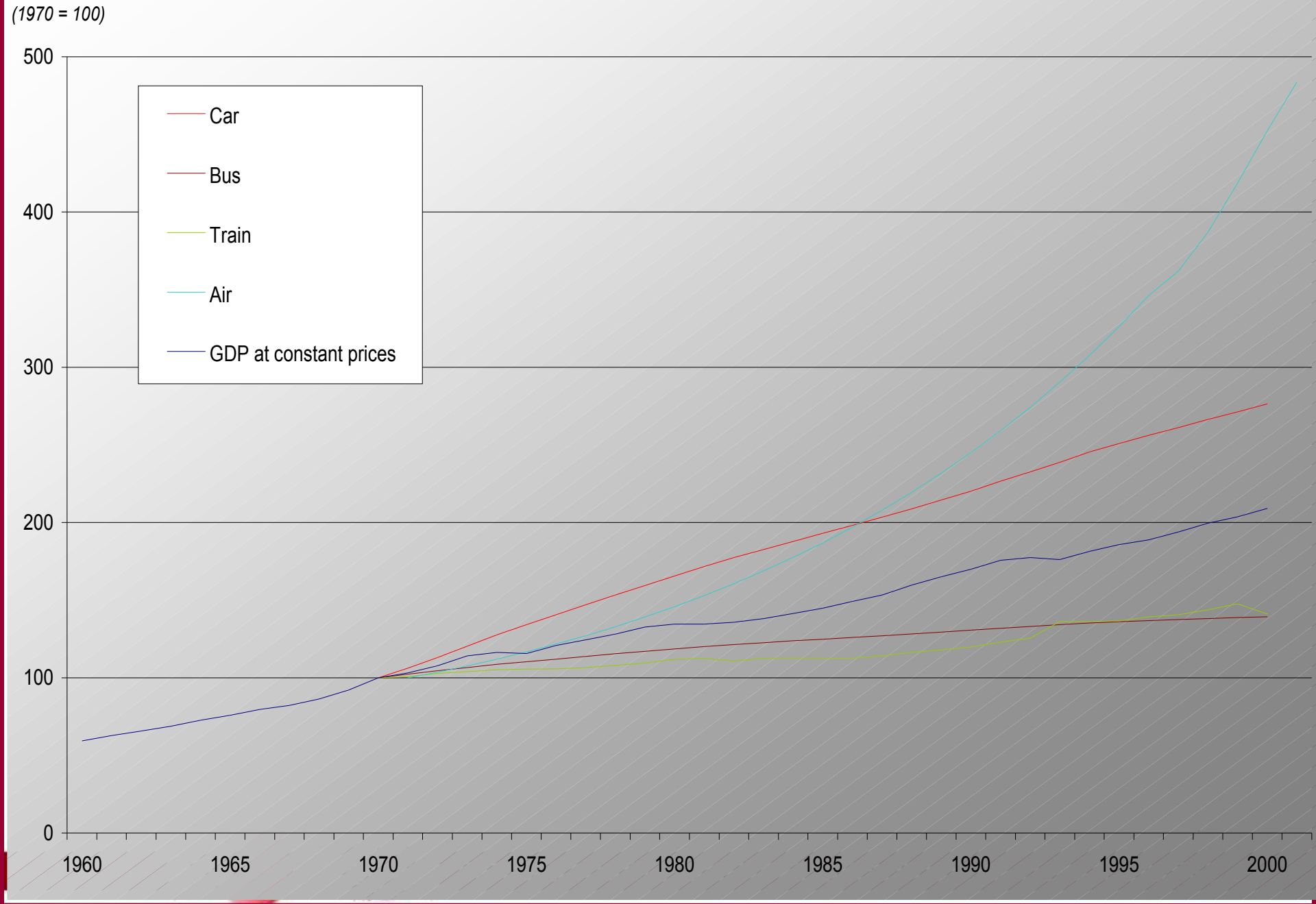
IEA projections on worldwide CO_2 emissions by sector,1990-2030



Drivers, policy options and action patterns

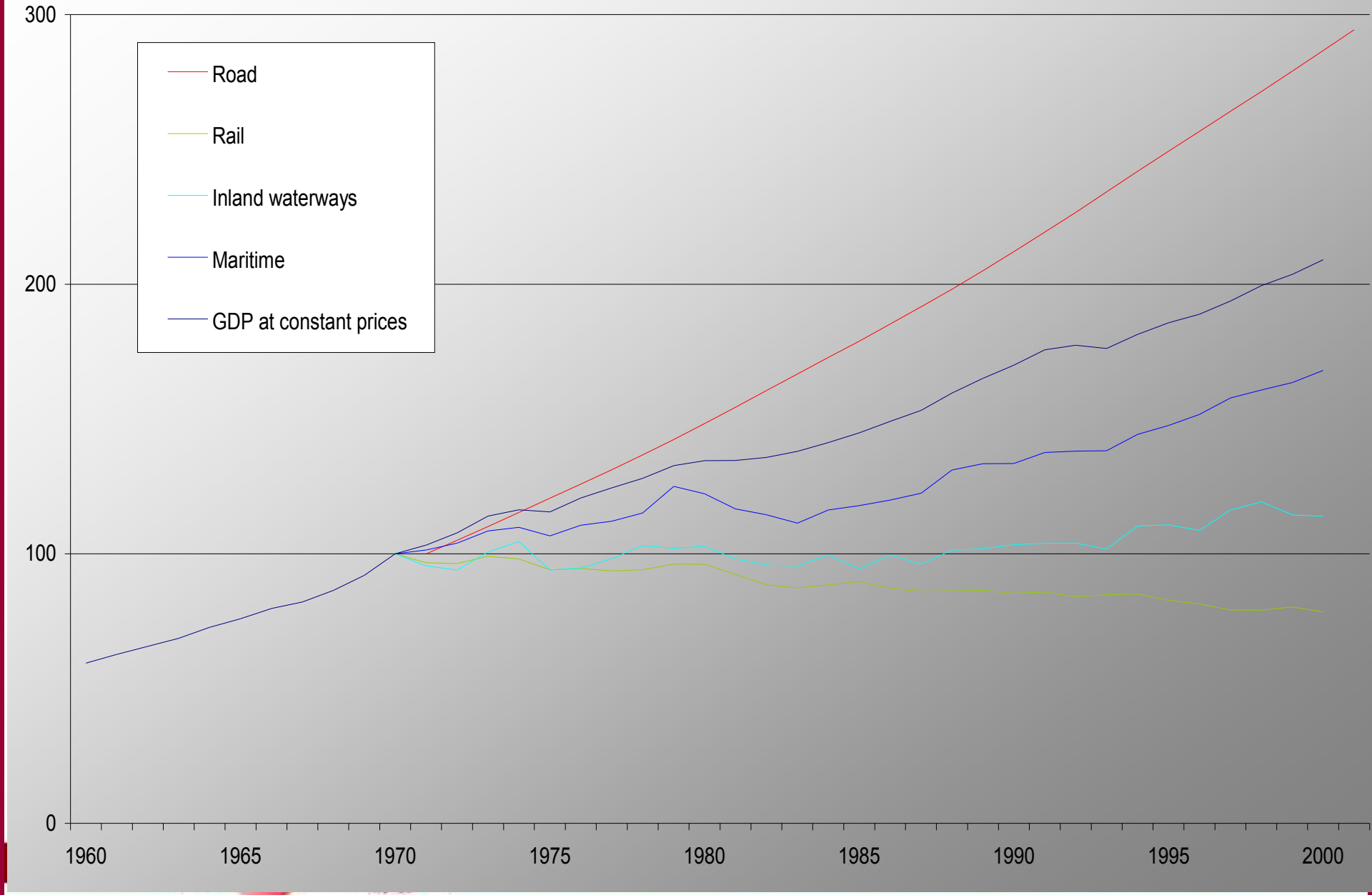
- Drivers: Mainly activity increase (CAN: 70%)
- Policy options: Energy efficiency, carbon intensity, transport demand management, modal shift, traffic flow, spatial planning
- Action patterns among Annex I Parties: Rather technical than non-technical measures, support for public ground transport
- Projections (with measures): Unbroken growth

Evolution of EU passenger traffic



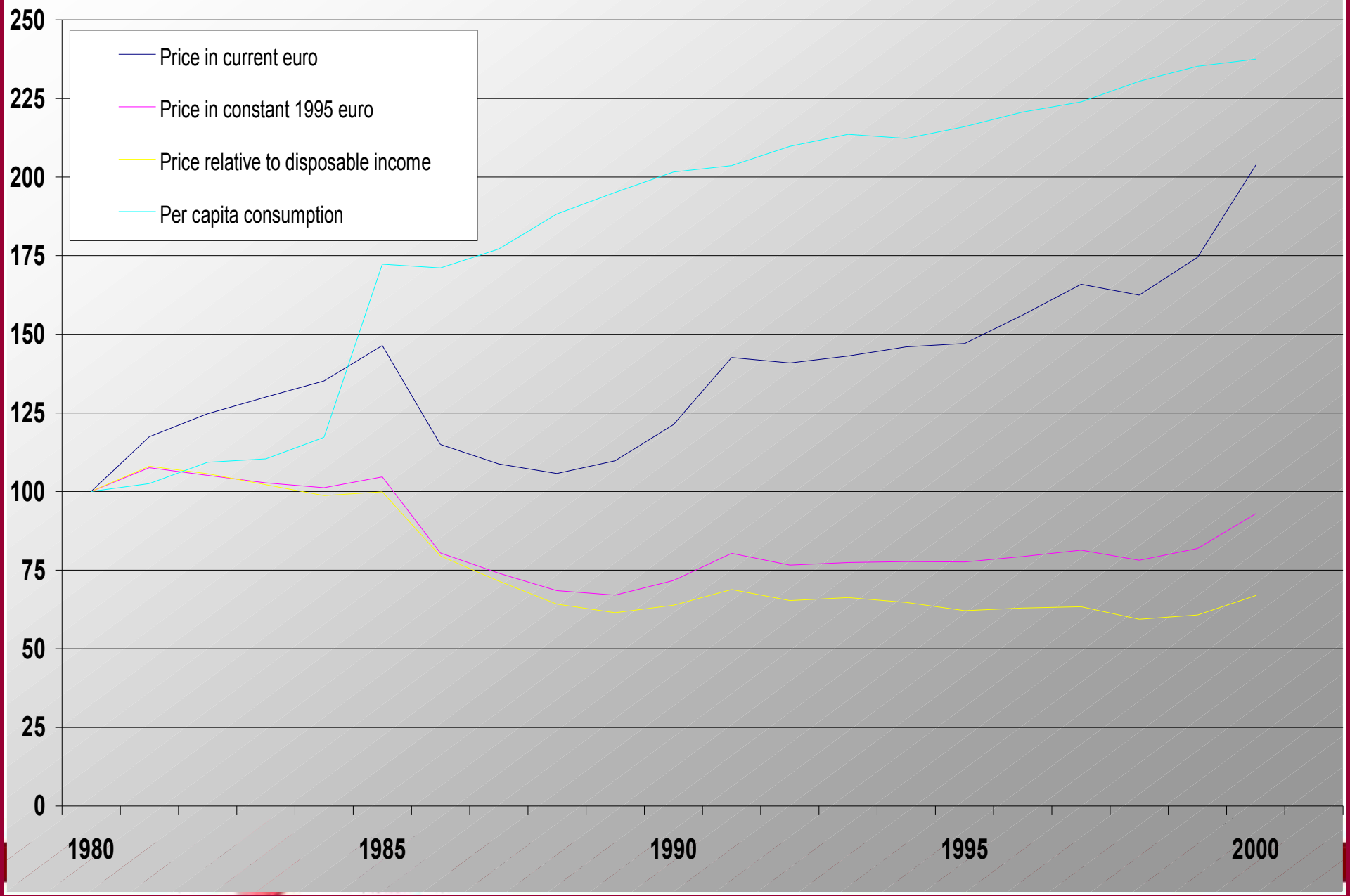
Evolution of EU freight traffic

(1970 = 100)



Road fuel price and consumption indices

(1980 = 100)



The ASIF-concept: Drivers behind emission trends

- **A**ctivity: Passenger and freight transport, expressed in vehicle-km, passenger-km or ton-km
- **S**tructure: Share of transport modes (motorized individual, public, non-motorized) in transport market
- **I**ntensity: Energy intensity of a transport mode, expressed in kJ/km or fuel use in l/100 km or g/km
- **F**uel: Carbon content of the fuel used, expressed in g/kJ, g/l or g/kg
- Total emissions = Σ A • S • I • F

Asif: Transport Activity Growth

- Growth in transport activity is the main driver for transport sector's GHG emissions increase (CAN: 70%)
- Policies and measures directed at the growth of transport activity were reported by eight Parties, and included reducing the demand for travel (AUS), road tolls (AUT), a mileage-based toll for lorries (AUT, DEU, SVN), an ecological tax reform (DEU), teleworking (JPN), tax measures to limit passenger traffic (NLD), a CO_2 tax, petrol and diesel taxes (NOR), the fuel duty escalator (GBR), and commuter options programmes (USA)
- Policies and measures relating to spatial planning reported by five Parties included strategic transport planning (AUS), improvement of spatial planning (AUT, FIN), urban sprawl control (FRA), comprehensive municipal planning (SWE), smart growth and brownfields policies (USA)

Asif: Transport Activity Growth

- Fuel taxes are most often differentiated between gasoline and diesel fuel and are further differentiated by sulphur content in some countries (DEU, FIN, NOR, SWE). Some Parties report a CO_2 tax on top of these fuel taxes (DEU, FIN, NLD, SWE)
- Vehicle purchase taxes are sometimes differentiated by vehicle's CO_2 emissions per km driven in a given test cycle
- As short-term travel patterns are seen to be fairly unresponsive to changes in the fixed or even variable cost of travel, the effects of fiscal transport measures are reported to be moderate
- However, within an integrated transport policy framework, vehicle and fuel taxes can have a much greater effect on fuel efficiency in transport given their role in providing price signals to car buyers and manufacturers (see example of Finland)

a**S**if: Transport Structure Change

- Policies and measures to shift urban transport towards less polluting modes reported by 13 Parties comprised investments in public transport (AUT, BEL), promotion of walking and cycling (AUS, AUT, BEL, DEU, LVA), promotion of public transport in urban areas (BEL, DEU, ESP, GRC, JPN, LVA, SVK, SVN), tax exemptions for public transport commuter tickets and car pooling expenditures (BEL, SWE), moving on sustainable transportation (CAN), urban transport planning (FRA), greater investments in tramway infrastructure (SWE), a commuter options programme (USA), a ground freight transport initiative (USA), and an emission reduction initiative (USA)

a**S**if: Transport Structure Change

- Policies and measures to shift long-distance transport towards less polluting modes were reported by 11 Parties, including investments in rail (AUT, BEL), promotion of ship and rail in freight transport (BEL, CHE, JPN), moving on sustainable transportation (CAN), intermodal freight transport (FRA), high-speed trains (ESP, FRA, EUR), inter-city infrastructure (FRA), construction of transport systems with minimal environmental impact (JPN), environmentally differentiated charges for shipping and air travel (SWE), road-pricing for heavy goods vehicles (AUT, CHE, DEU), sustainable distribution (GBR), a ground freight transport initiative and an emission reduction initiative (USA)

asIf: Energy Intensity

- Policies and measures to improve vehicle efficiency were reported by 14 Parties, and included average fuel consumption targets for new vehicles (AUS, SVN, NZL), vehicle tax adaptation (AUT), vehicle fuel efficiency programme (CAN), voluntary agreements with the domestic automobile industry (DEU, ITA, JPN), voluntary agreements with car manufacturers (EUR), energy efficiency improvement for railways, ships and aircraft and efficiency (top runner) standards (JPN), CO_2 differentiation in vehicle tax and car labelling (NLD), improvement of vehicle and aircraft fleet (ESP), energy efficiency in the transport sector (CHE), comprehensive transport planning (GBR), fuel duty escalator (GBR), vehicle systems research and development, and clean automotive technology (USA)

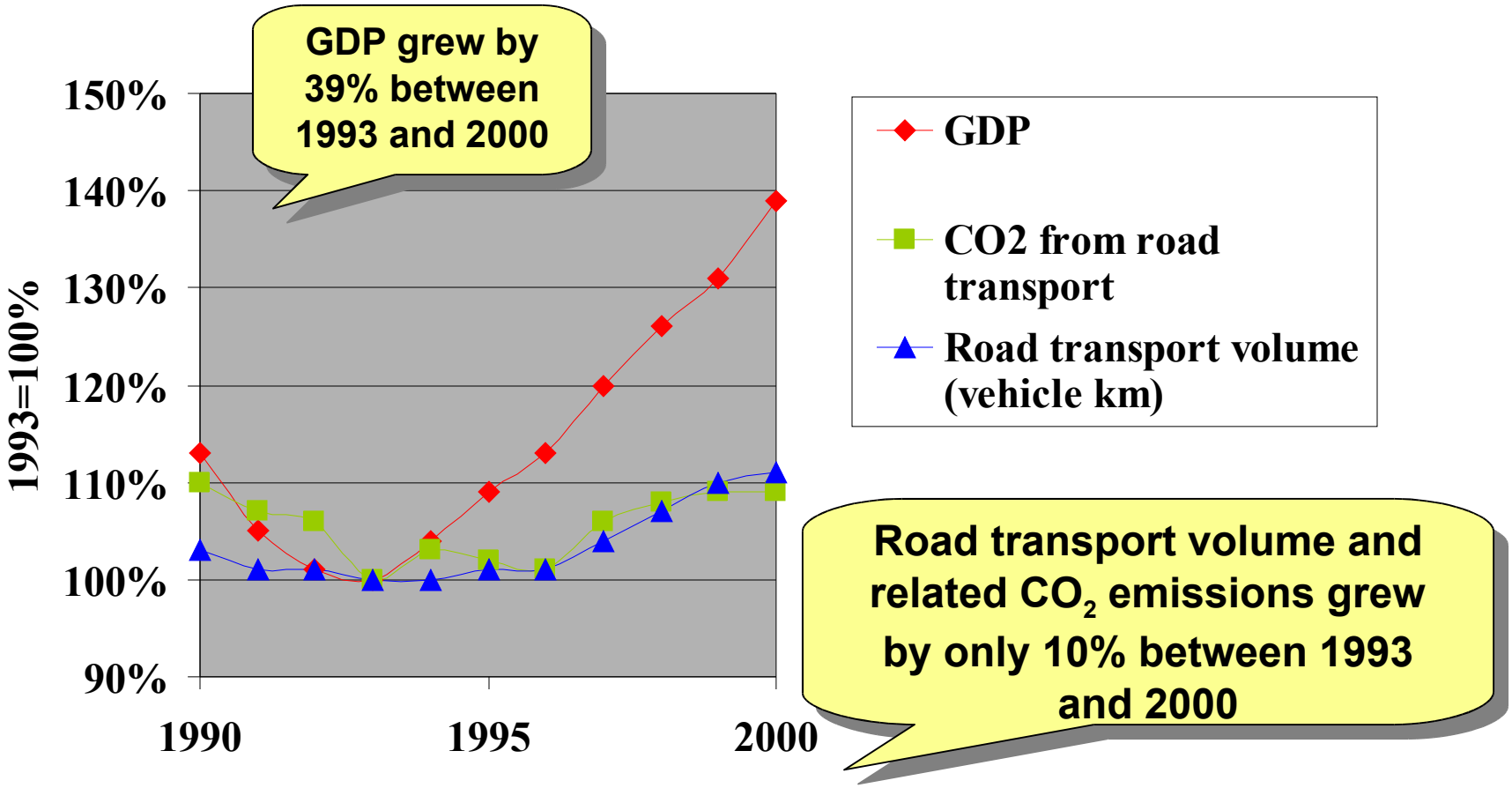
asi**F**: Carbon Intensity of Fuels

- Policies and measures to reduce the fossil carbon intensity of the fuel mix were reported by 13 Parties and included alternative fuel programs (AUS), improvement of fuel quality (AUT, DEU), promotion of 'biodiesel' (AUT, DEU, SVN), an allowance for liquefied petroleum gases (CAN, ITA), excise tax exemption for ethanol and methanol (CAN), national biomass ethanol programme (CAN), alternative motor fuel support (CZE), energy strategy for the transport sector (DEU), fuel quality standards (EST), recovery of fiscal dues on diesel fuel and gasoline (FRA), internalization of carbon costs (FRA), purchase and investment tax exemption for alternative fuels (NOR), CO_2 tax exemption for natural gas (NOR), biomass motor fuel pilot projects (SWE), renewable energy for rail (SWE) and a biofuels programme (USA). On a longer-term perspective, fuel switches to natural gas or hydrogen were envisaged (CAN, DEU, JPN, USA)

ASif: Success story Finland

- GHG mitigation has been an integral part of Finland's transport policy since 1990
- Finland's 1994 T&E Action Plan aimed at stabilizing the sectoral emissions at 1990 levels
- This was indeed achieved in 2000, by implementing a well-tuned mix of renowned transport policies including strong taxation of vehicles and fuels as its core, complemented by promotion and development of public transport, walking and cycling

Finland: Decoupling of GDP and road transport (source: MoT)



Emissions trading – beyond sectoral borders

- The transport sector shows the lowest elasticity on changes in fuel price. At the same time, a strategy to increase fuel prices to the levels at which they would cover all external costs is not an option in all industrialized countries.
- Possible way out: Offer the transportation sector to purchase GHG emission reductions from other sectors
- An emissions trading market could link the actors across sectoral boundaries and allocate financial resources to cost-effective GHG mitigation projects
- The EU-ETS will be reviewed around mid-2006 to allow fine-tuning in the light of experience gained and to consider whether it should be extended to other sectors, such as chemicals, aluminium, and transport.

Conclusions

- Transportation is a major and steadily growing source of GHG emission, recently gained more attention
- Governments try to react with technical measures mainly, although the main driver is the increase in transport activity
- Parties show little success in sectoral mitigation, the shift towards economic instruments did not bring major improvements, so far
- The case of Finland shows that an integrated transport and environment policy can be the basis for a success story in this most difficult sector
- Cross-sectoral policies, like emissions trading, might release a bit the CO_2-pressure on the transport sector, by linking it with more cost-effective mitigation potentials in the stationary sectors

For further information...

… visit the UNFCCC website: <http://unfccc.int>

Look for: National Reports> Annex I National Communications>
Compilation & Synthesis Reports> Add.2: Policies and measures

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