

Future Challenges of Transport and Environment- Lessons learned from the OECD EST Project

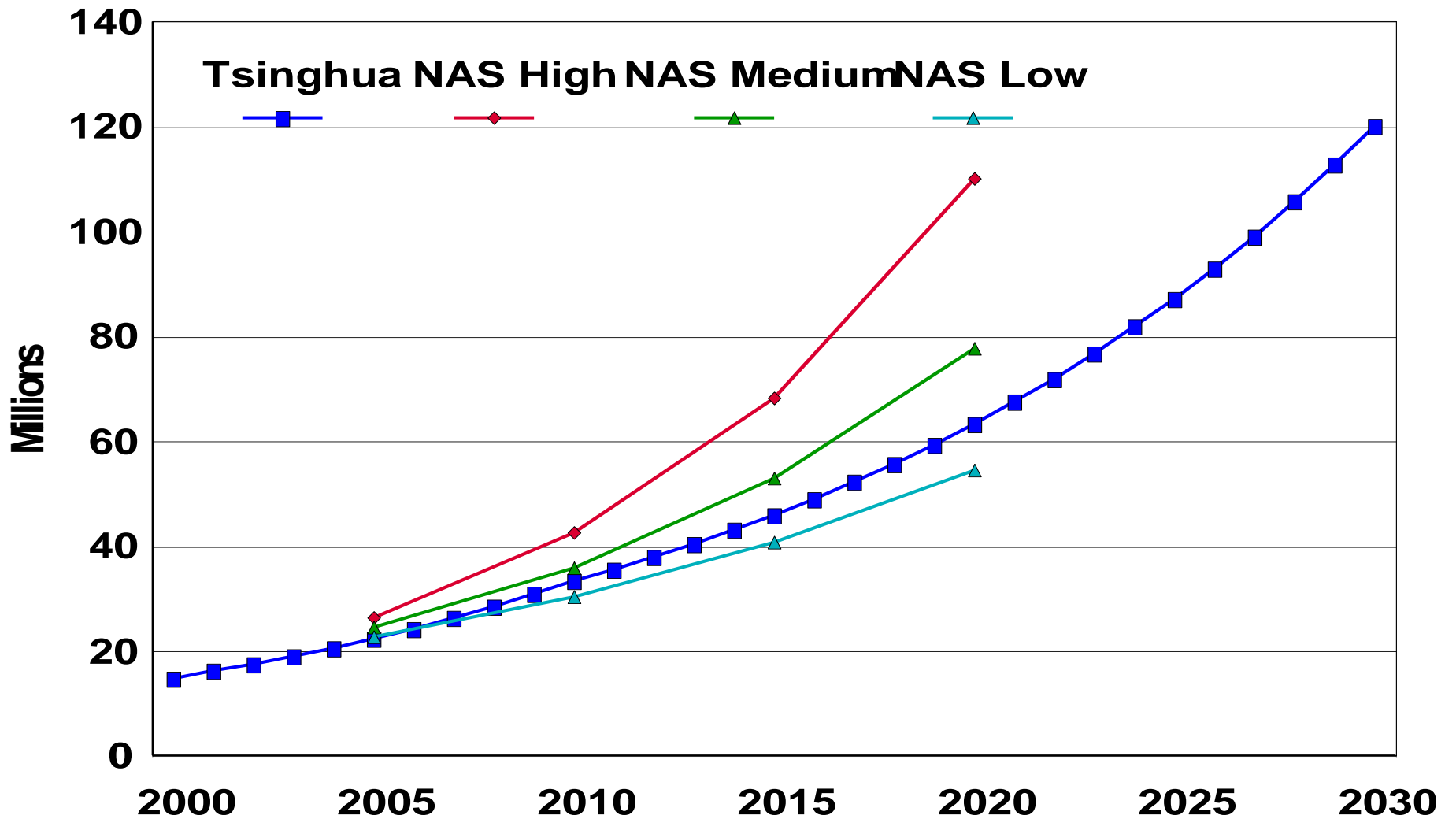
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Axel Friedrich
Germany

5th Regional Environmentally Sustainable Transport Forum in Asia
23-25 August, Bangkok, Thailand

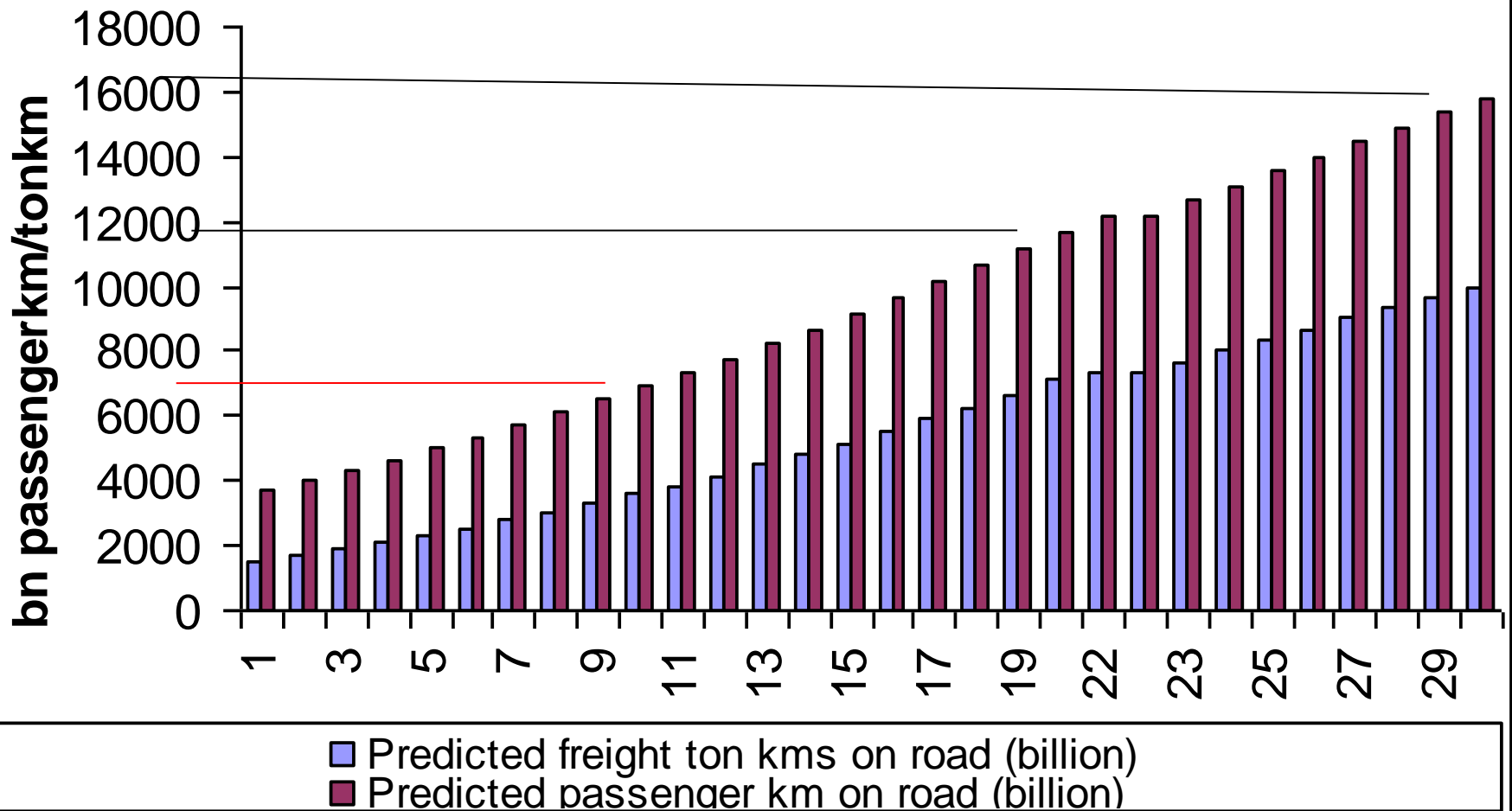
Recent Forecasts of Chinese Vehicle Population (Not Including Motorcycles)



Tsinghua Also Predicts About 200 Million MC By 2030

Intercity Road Transport and GDP in India

Intercity Transport by road 2001-2030



Passenger and freight estimated to increase by 4-5 times of 2001

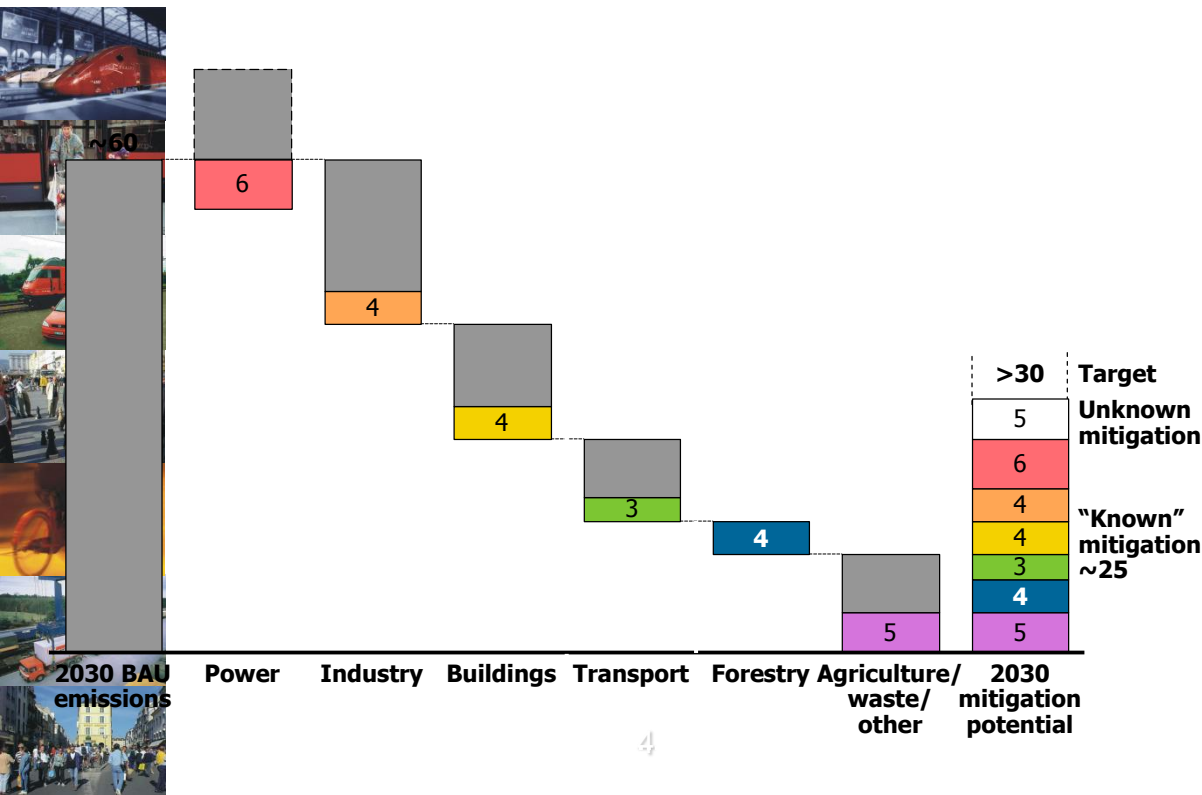
Transportation sector priorities

3 key interventions

- Low Emissions, Fuel-efficient cars
- Low-carbon fuels
- Reduced vehicle-miles traveled through congestion pricing, Bus Rapid Transit, etc.



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Global Trends and Projections

- first global outlook 1995 -

Indicator	OECD	OECD	Non - OECD
	1980 - 1995	1995 - 2010	1995 - 2010
Population	+13%	+ 8%	+ 24%
GDP	+44%	+ 35%	+123%
Vehicle Stock	+50%	+ 33%	+ 76%
VKT	+65%	+ 42%	+ 70%
Road Fuel	+37%	+ 21%	+ 55%
Aviation	+70%	+100%	+200%

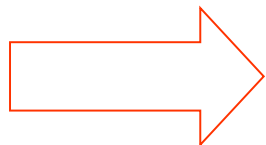
Source: OECD Environmental outlook, 2001; ICAO, 1996

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Long-term Environmental Impacts

	OECD	Non-OECD	Sources
urban: - noise - NO ₂ , PM _{2.5}	+- ↓	↗↗ ↗↗	HGV, airplanes HGV / trucks
regional: - O ₃ , acidific. - water / sea	↓ ↗	↗↗ ↗↗	Cars, trucks Ships
global: - CO ₂ , CFCs - POP, waste	↗↗ ↗↗↗	↗↗↗ ↗↗↗	Cars, trucks, airplanes cars, airplanes



Global trends are unsustainable !



Environmental Sustainability Principles

Regeneration: rate of use of *renewable resources* below rate of their regeneration

Substitutability: rate of use of *non-renewable resources* below rate of their replacement by renewable resources

Assimilation: releases to the environment should not exceed *critical thresholds* or *critical limits*

Avoiding irreversibility: avoidance of *irreversible effects*

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The EST Guidelines

- ① Develop a *long-term vision* of a desirable transport future
- ② Assess *long-term transport trends*
- ③ Define *health and environmental objectives*
- ④ Set *quantified, sector-specific targets*
- ⑤ Identify *strategies to achieve EST*

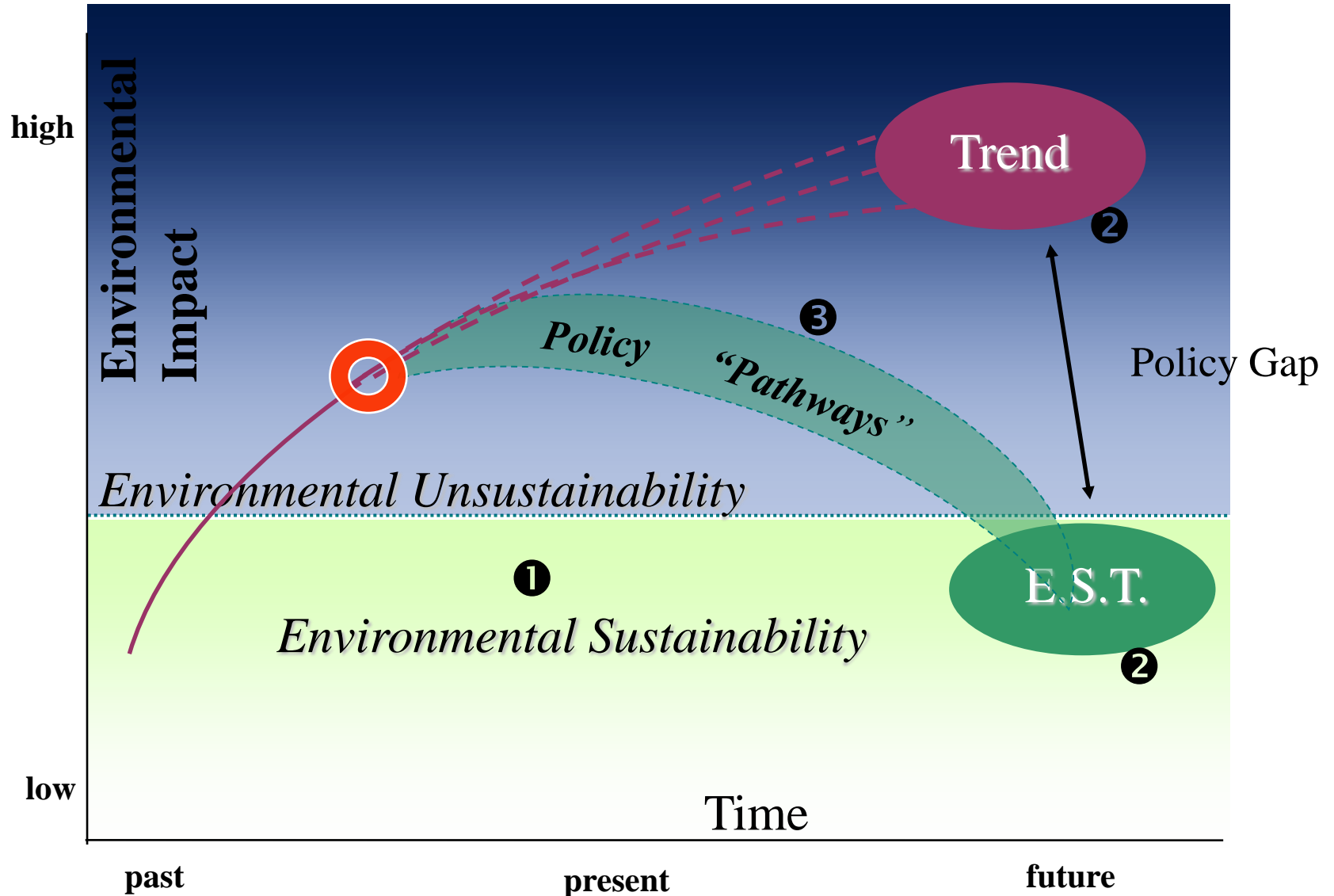
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The EST Guidelines

- ⑥ Assess the *social and economic implications* of the vision
- ⑦ Construct *packages of instruments*
- ⑧ Develop an *implementation plan*
- ⑨ Set provisions for *monitoring, implementation and public reporting on the EST strategy*
- ⑩ Build broad *support and co-operation for implementing EST*

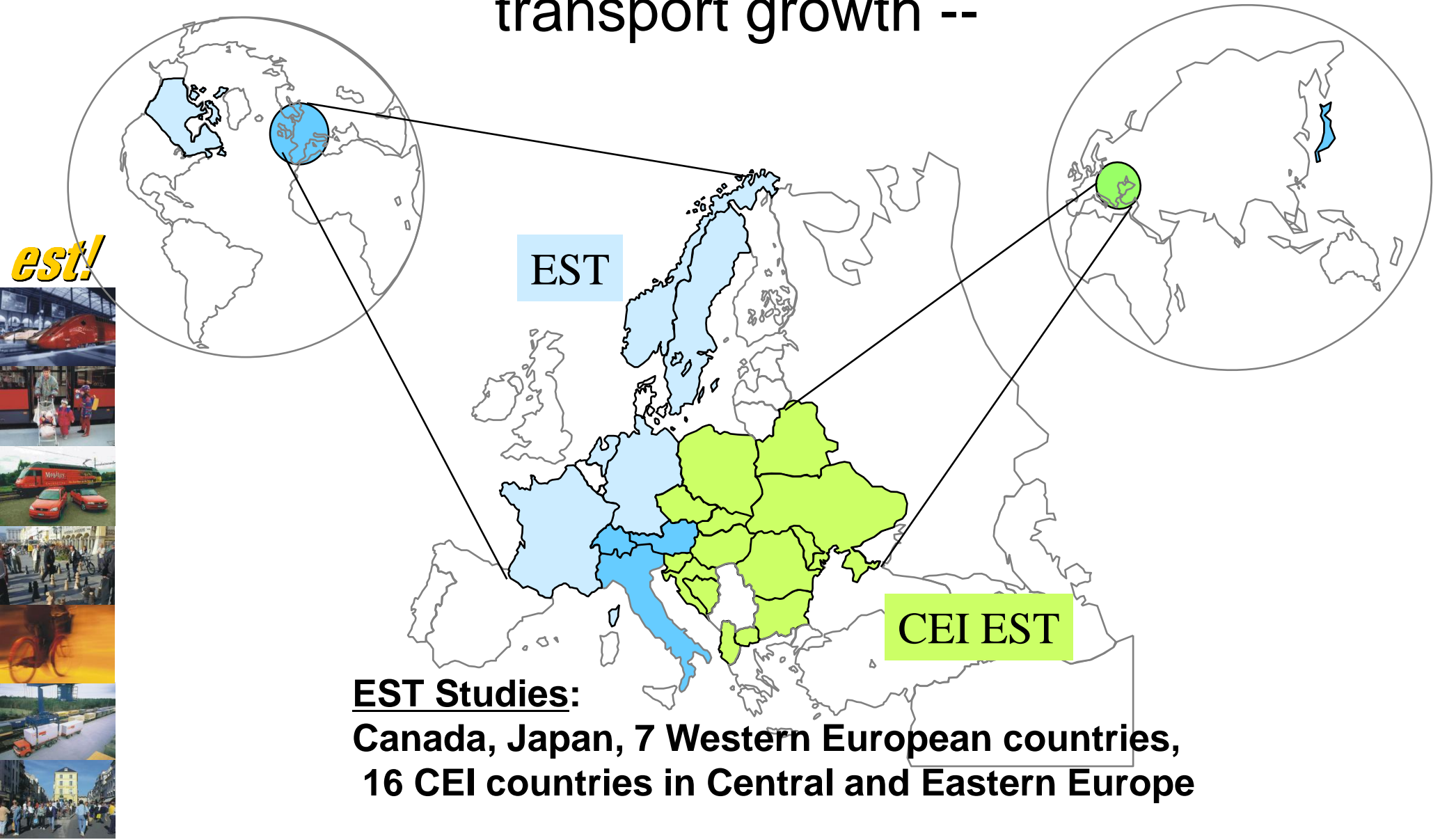
The EST Concept and Approach

- The role for proactive policy



Countries participating in the EST project 1995 – 2001

- Sustainable development vs.
transport growth -



EST Studies:

**Canada, Japan, 7 Western European countries,
16 CEI countries in Central and Eastern Europe**

Backcasting towards EST - Results

Key features to meet long-term sustainability goals, notably preventing climate change:

- Aggressive introduction of **zero-emission vehicles** (standards) and **low-carbon fuels** (FE requirements, biofuels) and
- Comprehensive policies for **demand-side management** both for passenger and freight:
 - Integrated **new mobility services** for passenger transport and multi-modal logistics for freight
 - Changing **modal share** of passenger and freight transport through transport infrastructure investment, welfare-increasing pricing and fiscal policies
 - Information and awareness raising and support of initiatives for climate friendly mobility.

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Strategies to achieve EST

Passenger Transport

Demand Management

59%

Technology

41%

Occupancy

15%

Mode shifts

7%

Efficiency gains

21%

Biofuels

20%

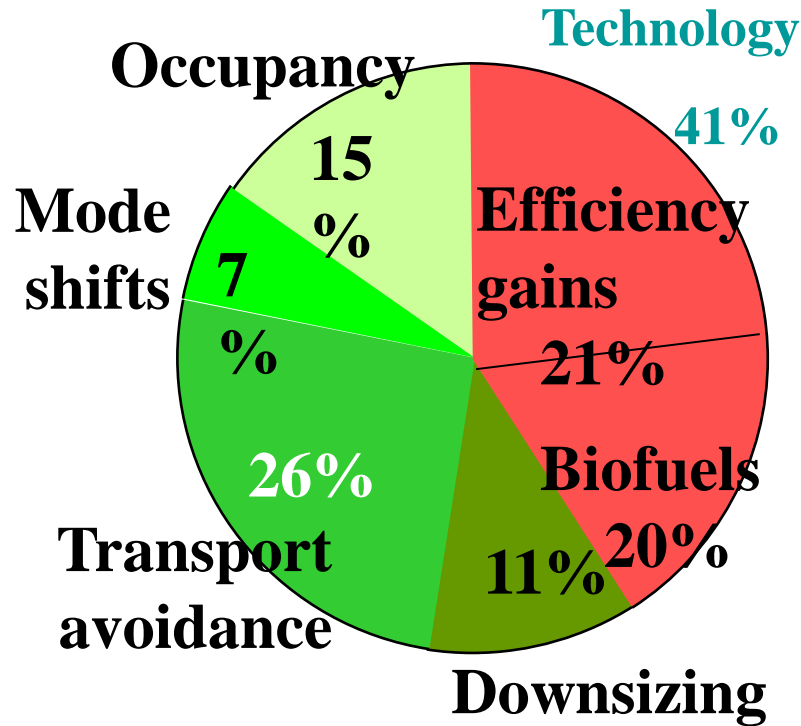
Transport avoidance

26%

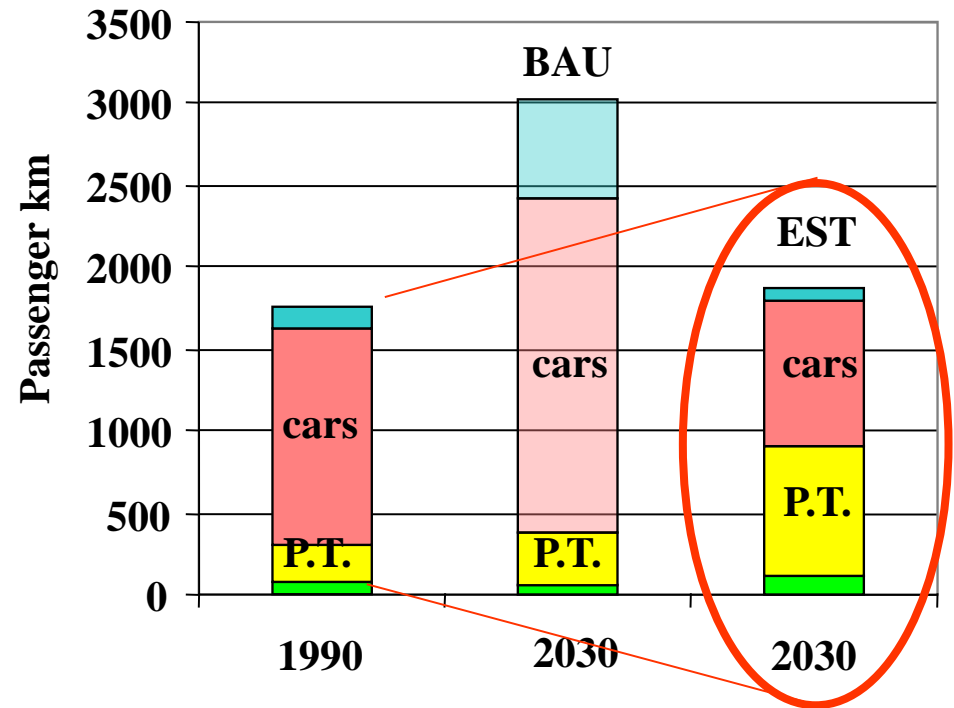
11%

Downsizing

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Modal Split



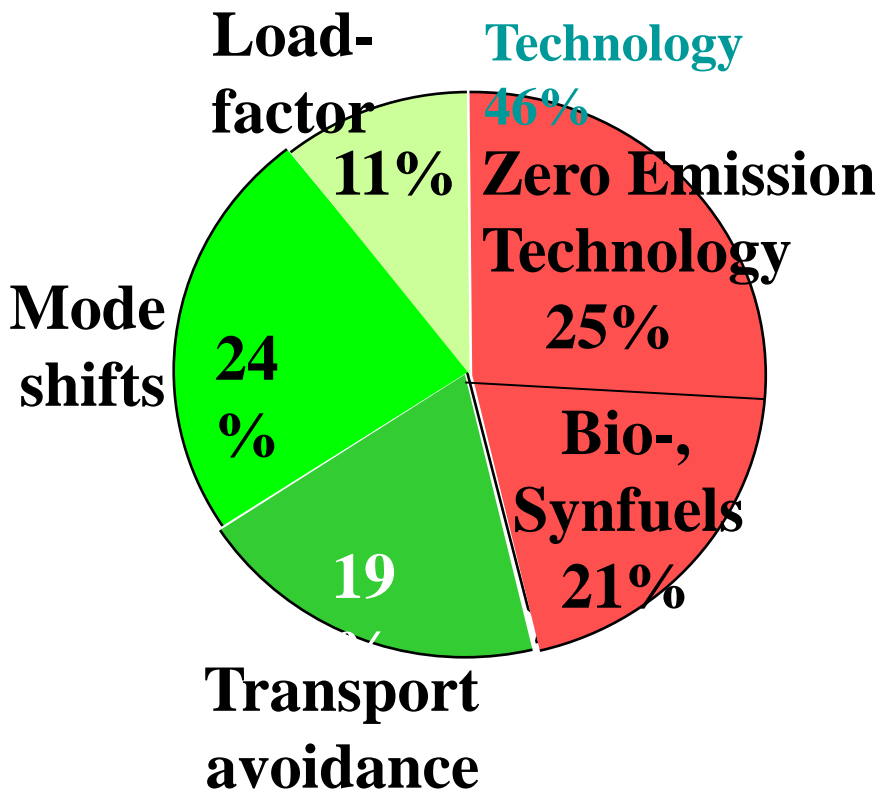
- Aircraft
- Passenger cars
- Public transport +
- non-motorised

Strategies to achieve EST

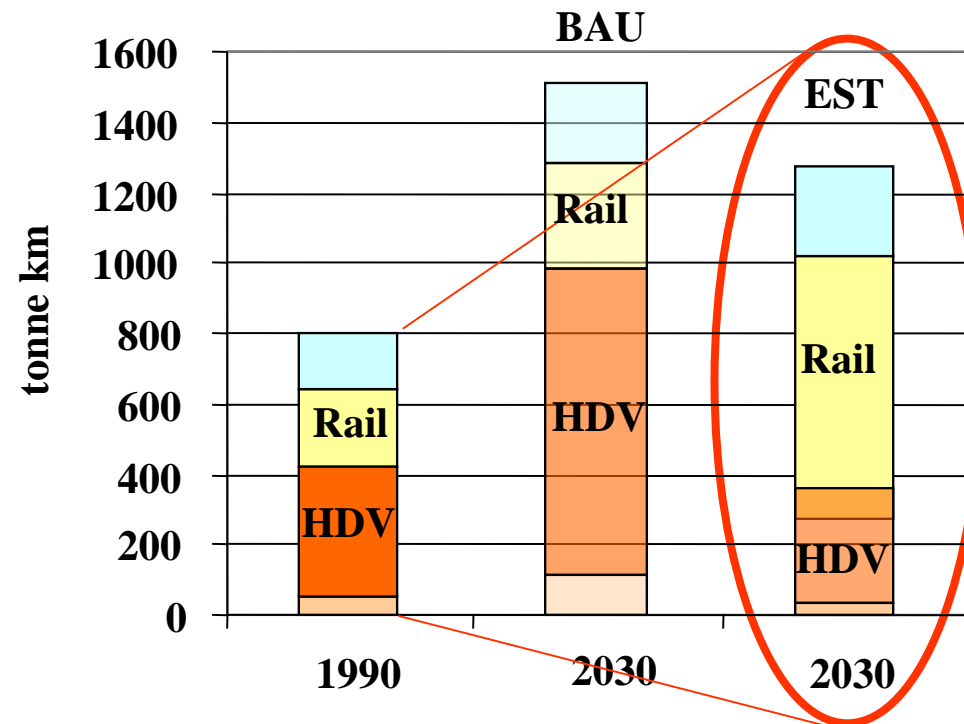
Freight Transport

Demand Management

54%



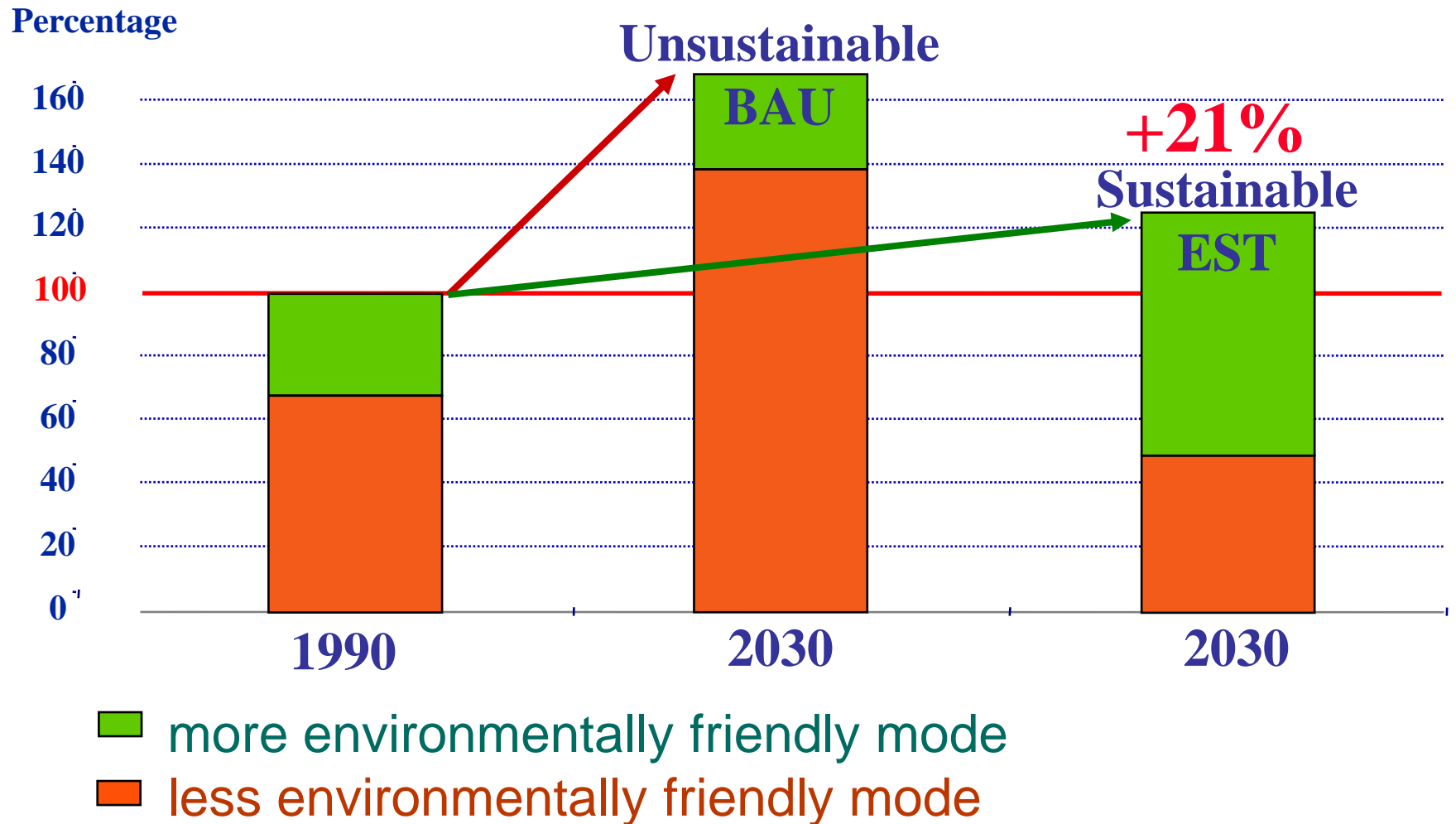
Modal split



- Waterways
- Rail freight
- Heavy trucks
- Light duty vehicles

Transport Modal Split in 2030

EST versus business-as-usual trends



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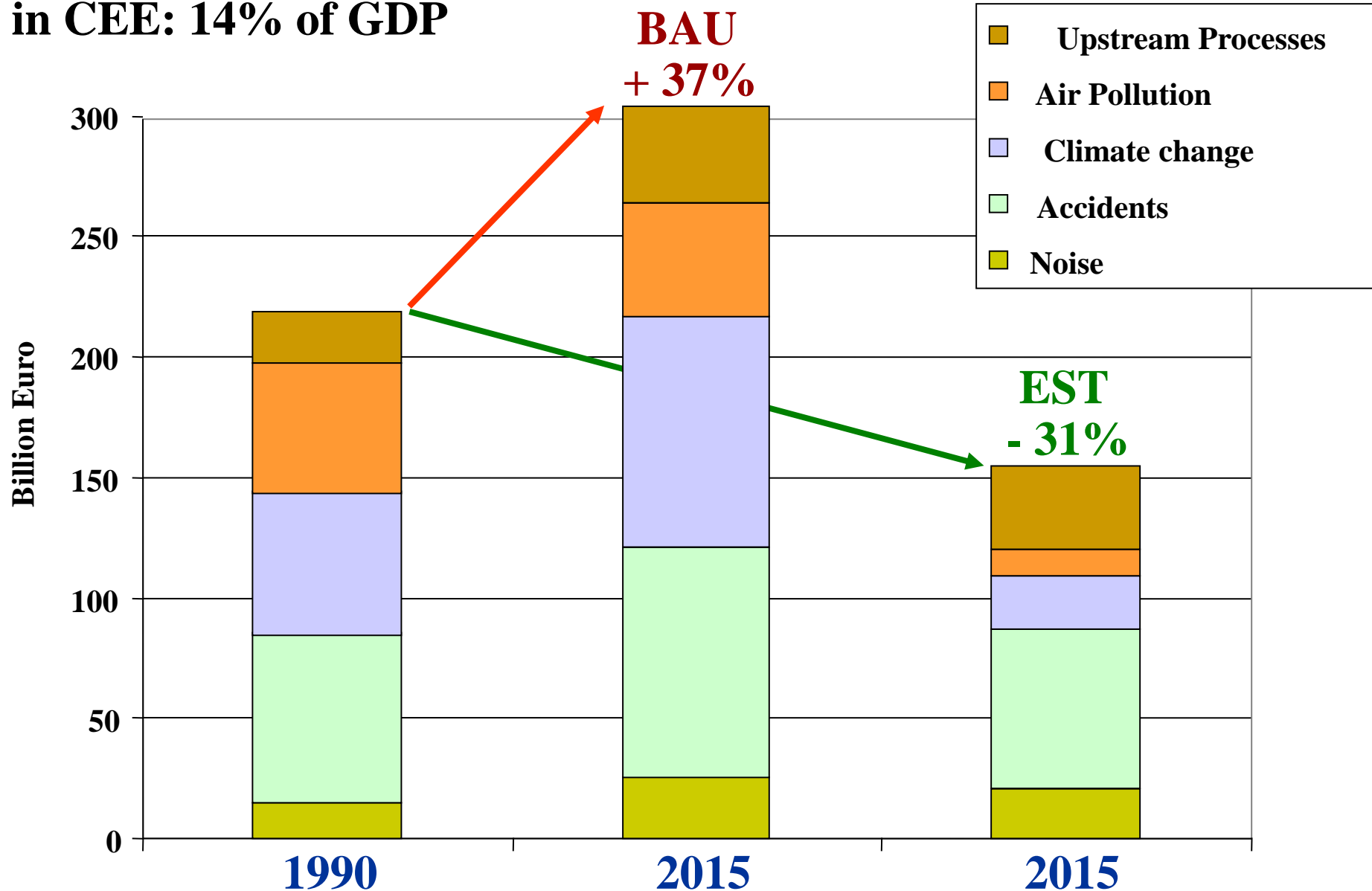


Economic and Social Implications

External costs:

in EU: 6 - 8% of GDP

in CEE: 14% of GDP



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Lessons from the EST Project

- Policy instruments and measures -

- ❖ air quality standards drive technology improvements and market penetration
- ❖ Emission control requirements and standards:
 - emission standards for vehicles: effective, but slow stock renewal
 - fuel quality standards and alternative fuels: fast effects
- ❖ Financial and fiscal instruments:
 - little impact on transport volume; price elasticity close to zero (price changes vs. transport increase)
- ❖ Planning and infrastructure expansion: “predict and provide” prevail “bigger – faster – more costly “ (maintenance!);
- ❖ Information, awareness raising:
key factor for promoting best practices, but resistance to change;
buzz word “sustainable mobility”

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EST Conclusions

- ❖ EST approach still valid: reduced externalities!
 - goals unchanged; adjustments concerning promising technologies (e.g. hydrogen fuel cells vs. EVs)
- ❖ Change towards climate friendly mobility needed:
 - despite of strong fossil fuel dependence, resistance to change very strong!
- ❖ Transport infrastructure determines mobility pattern for the next decades:
 - little concern about energy and resource use
- ❖ Mobility management has highest potential for CO2 reduction!
 - trip avoidance, modal shift to less impacting modes, increasing load factor
- ❖ Aggressive introduction of carbon-free or carbon neutral motor vehicle technology, supplemented by renewable energy

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But the EST Project failed to cover the issues of land use and noise due to differences between the participating countries

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**Special thanks to Peter Wiederkehr,
the initiator of the OECD EST- Project**

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