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EU Transport GHG: Routes to 2050?

Carbon price, carbon tax and emission trading

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Partners

www.eutransportghg2050.eu



Overview of presentation

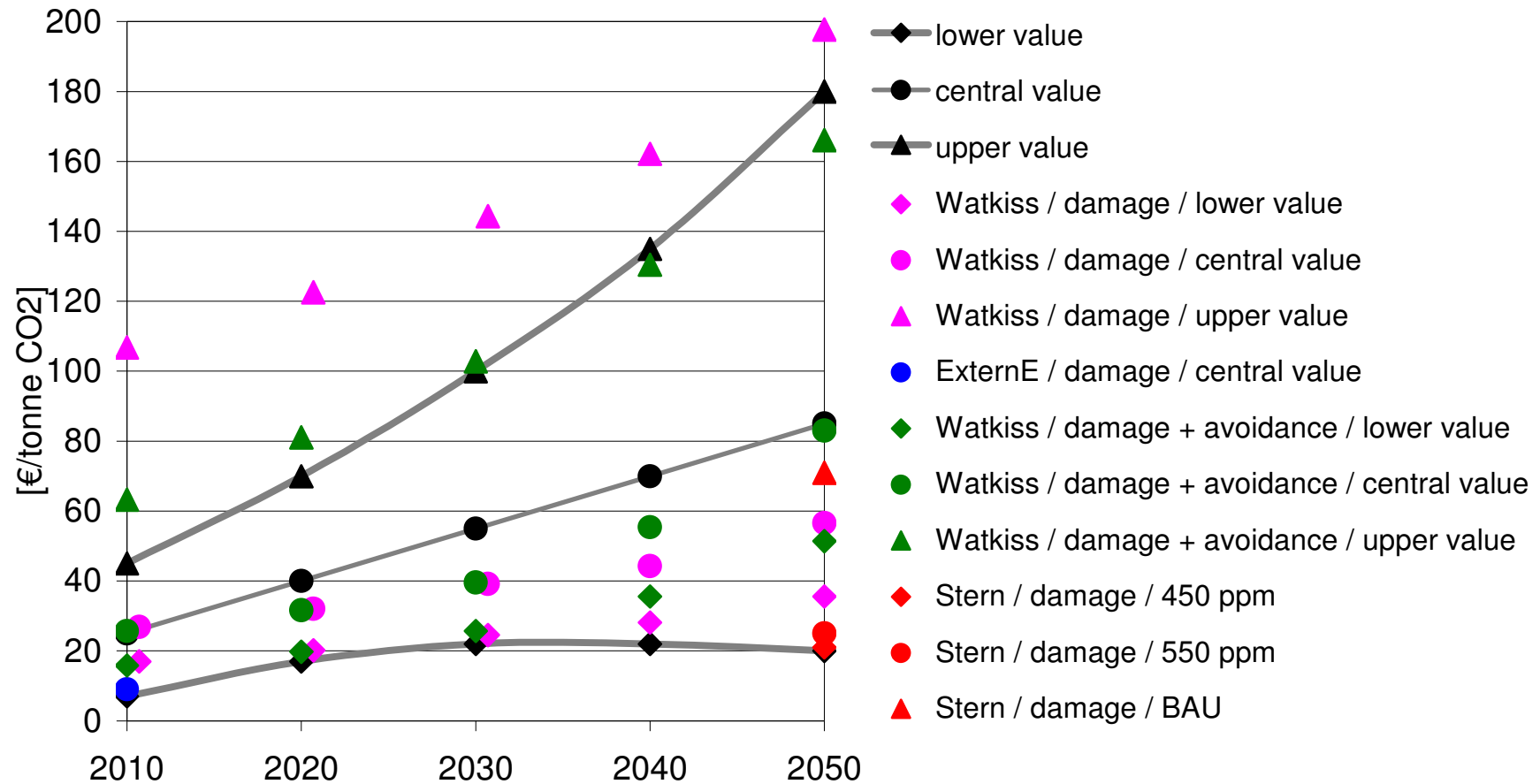
1. External cost of CO₂ - Damage cost and Mitigation cost
2. Carbon tax
3. Design options for emission trading
4. Transport in ETS
5. Separate emission trading scheme
6. Discussion on carbon tax and emission trading
7. Conclusions
8. Discussion/questions

External cost of CO₂

- **Damage cost**
 - Valuation of damages of climate change
 - Various studies available
 - Results differ widely
 - Not all possible damages included in the available estimates
- **Mitigation or avoidance cost**
 - Marginal social cost of meeting certain reduction targets
 - Depend on assumptions
 - For the whole economy or differentiate between sectors, particularly between ETS and non-ETS sectors (competition with non-EU countries)
 - Preferred approach when targets have been agreed upon
 - Huge variation in cost estimates (depending on target, fuel price, etc.)
 - Easier to estimate for technical reduction options than for options such as volume reduction
- **Both increase over time because of**
 - Increasing reduction targets
 - Increasing damage because of rising CO₂ levels

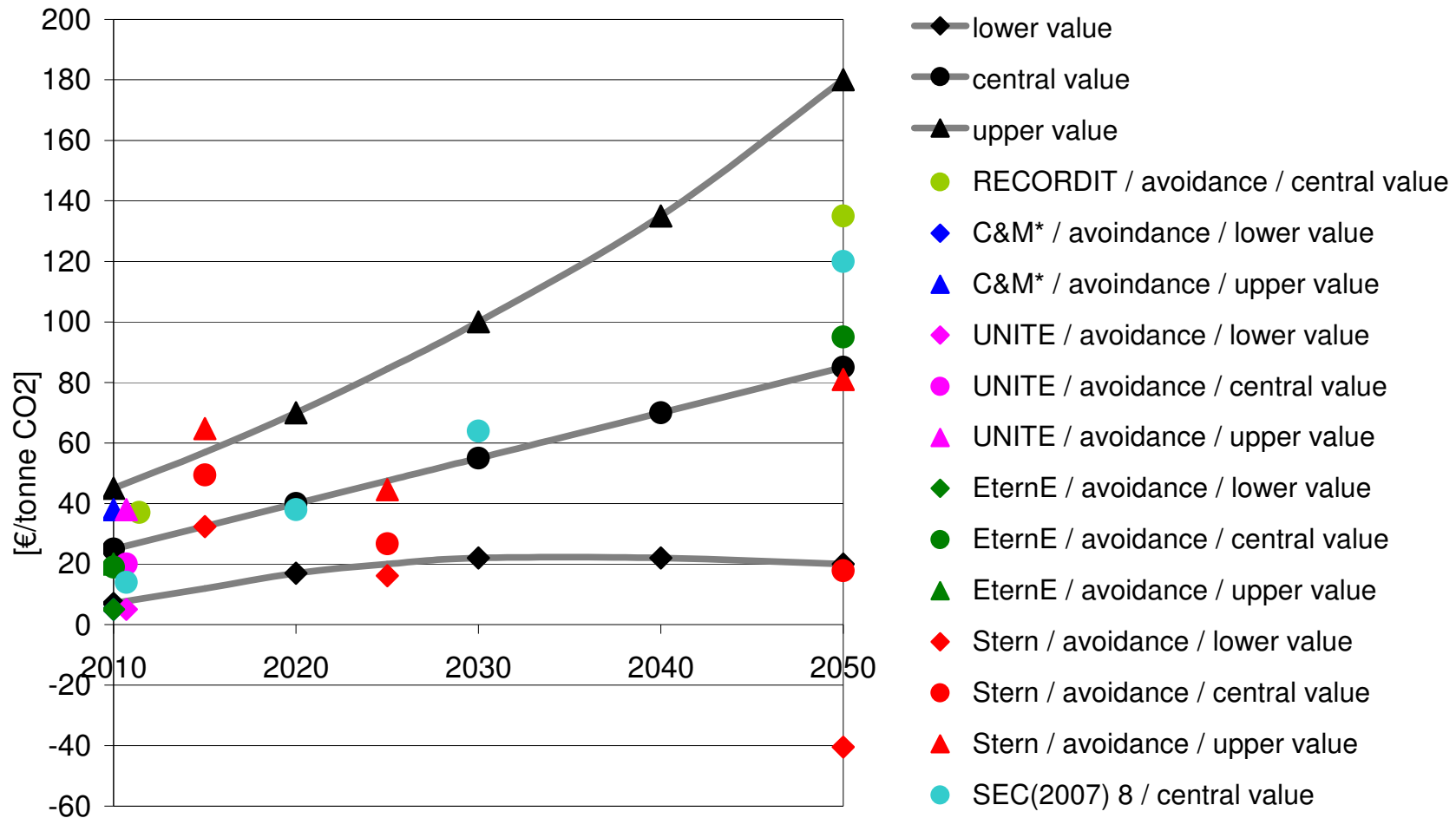
Damage cost estimates

External costs of climate change (damage costs)



Avoidance cost estimates

External costs of climate change (avoidance costs)



*) C&M = Capros and Matzos 2000

Carbon tax on fuel

- Gives incentives for all possible reduction options
- Easy to implement
- Low transaction cost
- Exists in Sweden, Finland and announced in France
- EU proposal on the way?
- Main barriers:
 - Higher fuel taxation always controversial
 - Overall social cost might be high
 - Impact may be small compared to impact of oil price variations (depending on tax level)

Emission trading – design options

- Combination of regulation and economic instrument:
 - Certainty about reaching a certain target
 - Price is left to the market
 - Optimal cost-effectiveness guaranteed within the scheme
- Main options:
 - Inclusion in EU ETS (cap&trade)
 - Separate cap&trade system for transport (overall fuel use)
 - Baseline & credit (fuel efficiency vehicles) = advanced vehicle regulation
- Focus on first two options

Cap&trade systems

- Provide same type of incentives as carbon tax on fuel: all CO₂ reduction options
- When cap is fixed, certainty on CO₂ reduction
- Makes fuel price (even) less predictable
- Could include various transport modes
- Downstream cap&trade (fuel consumers):
 - May be very complex for road transport: many traders
 - Transparent: may raise awareness of consumers
- Upstream cap&trade (fuel sellers):
 - Less complex than downstream, more complex than carbon tax on fuel
 - Results in higher fuel prices
 - In contrast to fuel taxation, no additional state revenues (higher public acceptance?)

Transport in existing ETS

- Gives incentives for all possible reduction options
- Electric transport already included
- Aviation to be included in 2012
- Inclusion of maritime shipping and inland transport modes investigated, no concrete proposals
- Has impacts on GHG emissions, trade price, transport cost and EU economy

Transport in existing ETS – impacts (1)

- Impact on transport cost depends on:
 - Trade price
 - Way of allocation (grand fathering vs auctioning)
- Impact on trade price of CO₂-allowances depends on
 - Mitigation cost compared to other sectors
 - Emission cap and way of allocation
 - Volume/GDP growth rates
 - *Trade prices often expected to increase when transport is included*
- Economic impacts of higher trade prices:
 - Industry can save money by implementing relatively cheap reduction options
 - Higher marginal energy cost has negative impact on investments (new plants etc.)
 - Competitive position of some industries may worsen, possibly negative impacts on employment and economic growth
 - Drawbacks disappear with a global system

Transport in existing ETS – impact on GHG emissions

- Reduction in EU depends on the emission cap and amount CDM and JI allowed
- Overall cheapest reduction options are implemented
- Risk of carbon leakage when prices of allowances increase
- Additional GHG reduction in transport may be limited:
 - When mitigation cost are higher than in other sectors
 - Because of split incentives
- Cap may be subject to discussion when fuel/energy price levels increase and to protect competitive industries
- Drawbacks disappear with a global system
- Able to cover both fossil fuels and alternative energy carriers (e.g. electricity)

Separate cap&trade trading scheme for transport

- Gives incentives for all possible reduction options
- Guarantee of GHG reduction within the transport sector
- Therefore higher overall reduction potential
- Possibly higher abatement cost
- Less adverse economic effects:
 - Inland transport modes do not compete outside EU
 - Higher prices than in ETS may be appropriate from economic point of view
 - Much less risk of carbon leakage
- Transaction cost possibly higher

Discussion on carbon tax and emission trading (1)

- Advantages of both fuel taxation and emission trading:
 - Most cost effective mitigation
 - Give incentives for all possible reduction options (including efficient vehicles and limiting transport growth)
 - Can be combined with other instruments, e.g. to give additional incentives to demand side for meeting vehicle fuel efficiency standards
- Disadvantages of both fuel taxation and emission trading:
 - No solution for split incentives
 - Direct and possibly strong impact on prices when effective in reducing GHG emissions

Discussion on carbon tax and emission trading (2)

- **Advantages carbon-based fuel taxation**
 - Technically easier to implement and lower transaction cost
 - Predictable price incentive
 - Extra state revenues (with the possibility to lower labour taxes)
- **Advantages emission trading**
 - Guaranteed GHG reduction (when cap fixed)
 - Possibly higher user acceptance
 - Solves problem of uncertainty in mitigation cost because market sets the price
 - Legal and parcticle for some modes (e.g. aviation, maritime shipping)
 - May be easier for covering both fossil fuels and alternative energy carriers (e.g. electricity)

Main conclusions

- High uncertainty in both damage and mitigation cost
- Both carbon tax and emission trading give incentives for all (and most cost effective) GHG reduction options
- They may result in high prices when effective
- Without stringent global GHG policy, a separate cap&trade system (upstream) could be suitable for inland transport modes
- Carbon tax much easier to implement, but may have some drawbacks compared to trading schemes
- Fear for adverse economic effects main barrier

Questions for the discussion

- How to deal with high uncertainty in damage and mitigation cost?
- Do agree with the pros and cons of carbon taxes?
- Do agree with the pros and cons of the various emission trading schemes?
- Should a long-term GHG policy for transport include one of these instruments? If so:
 - which instrument for which mode?
 - what are the main barriers?
 - how could these be taken?