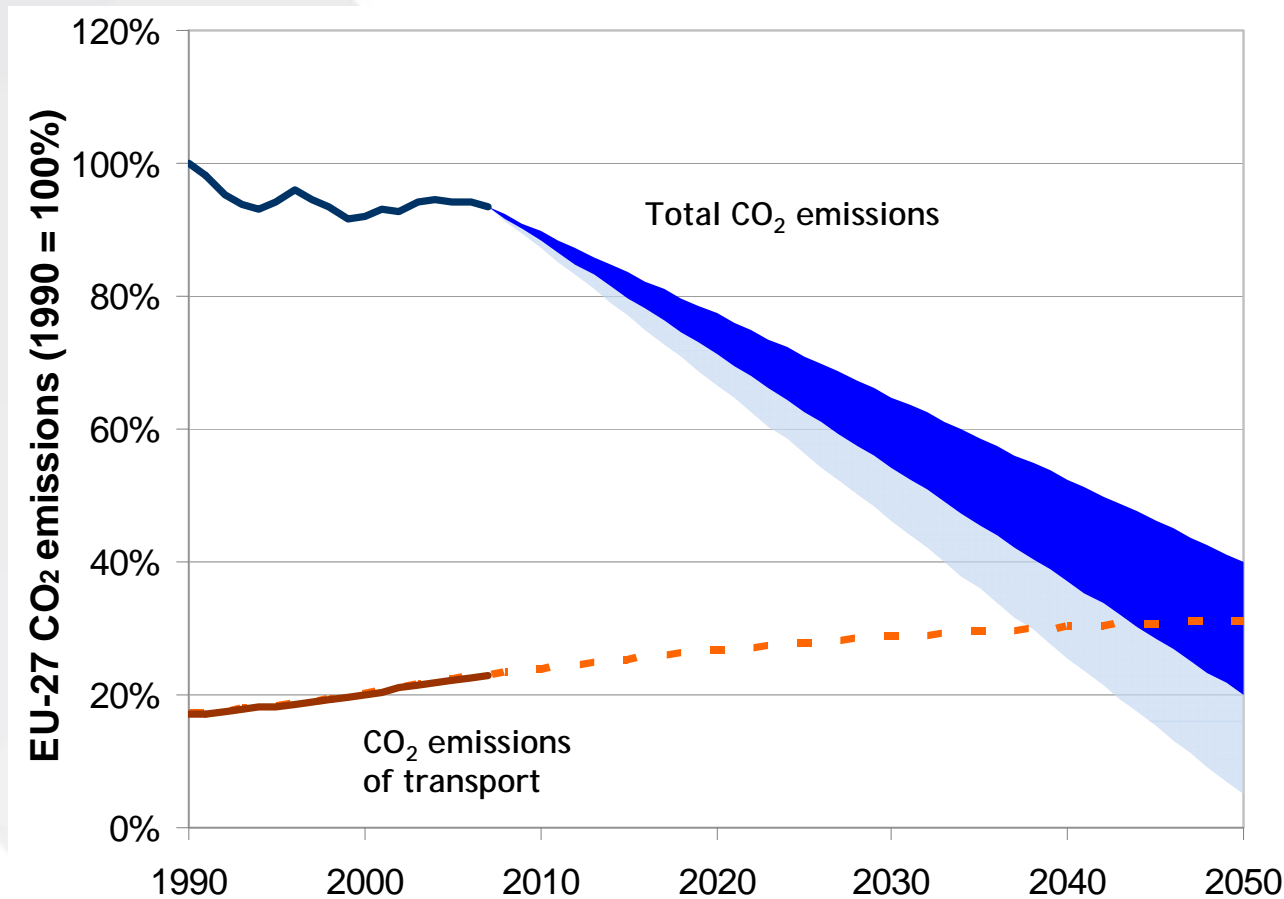


Bus and coach transport for greening mobility

Contribution to the
European Bus and Coach Forum 2011

Huib van Essen, 20 October 2011

- ▶ The great challenge of decarbonizing transport requires low-carbon technology *and* decoupling

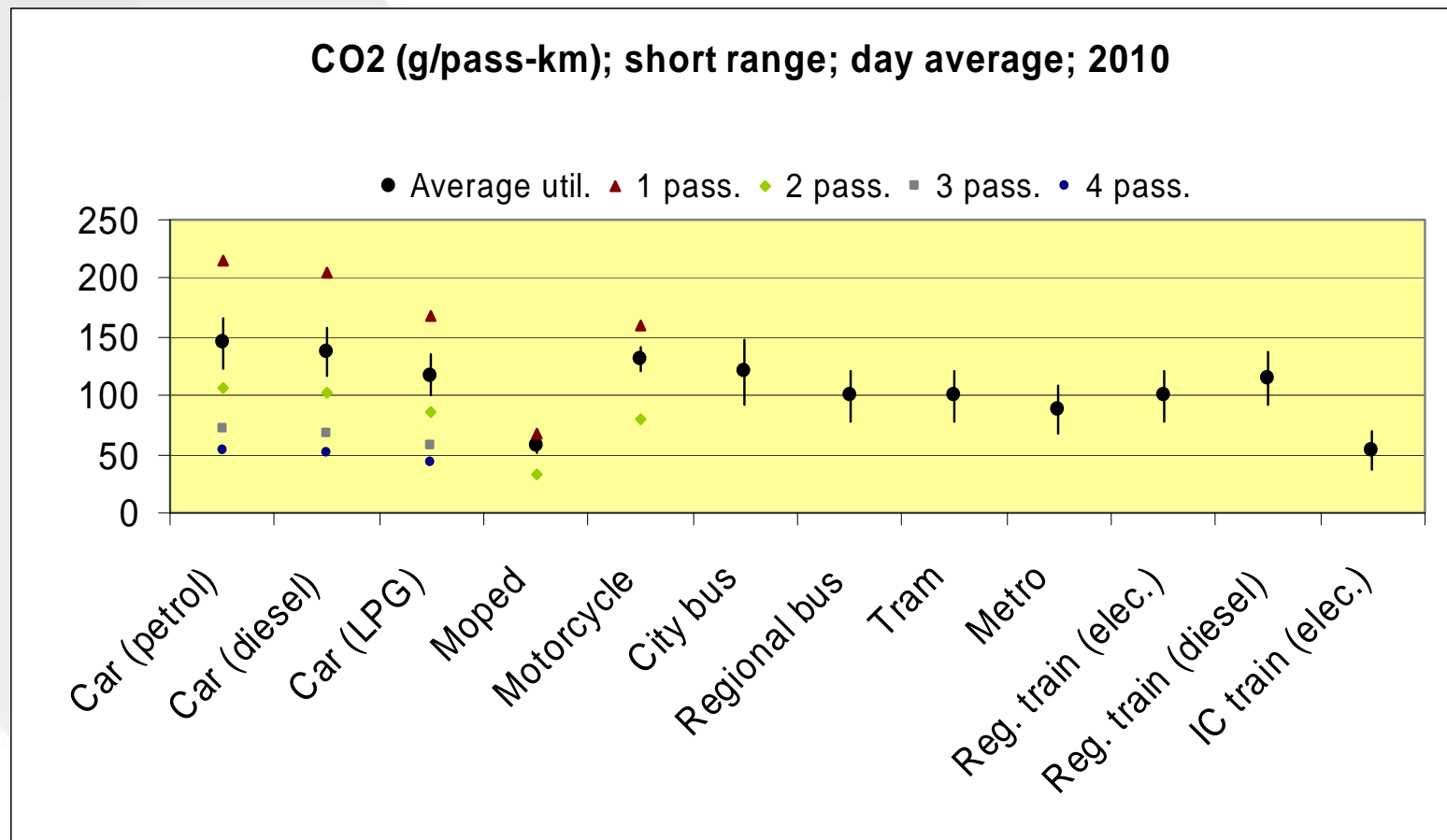


▶ Environmental performance of transport modes: how to compare?

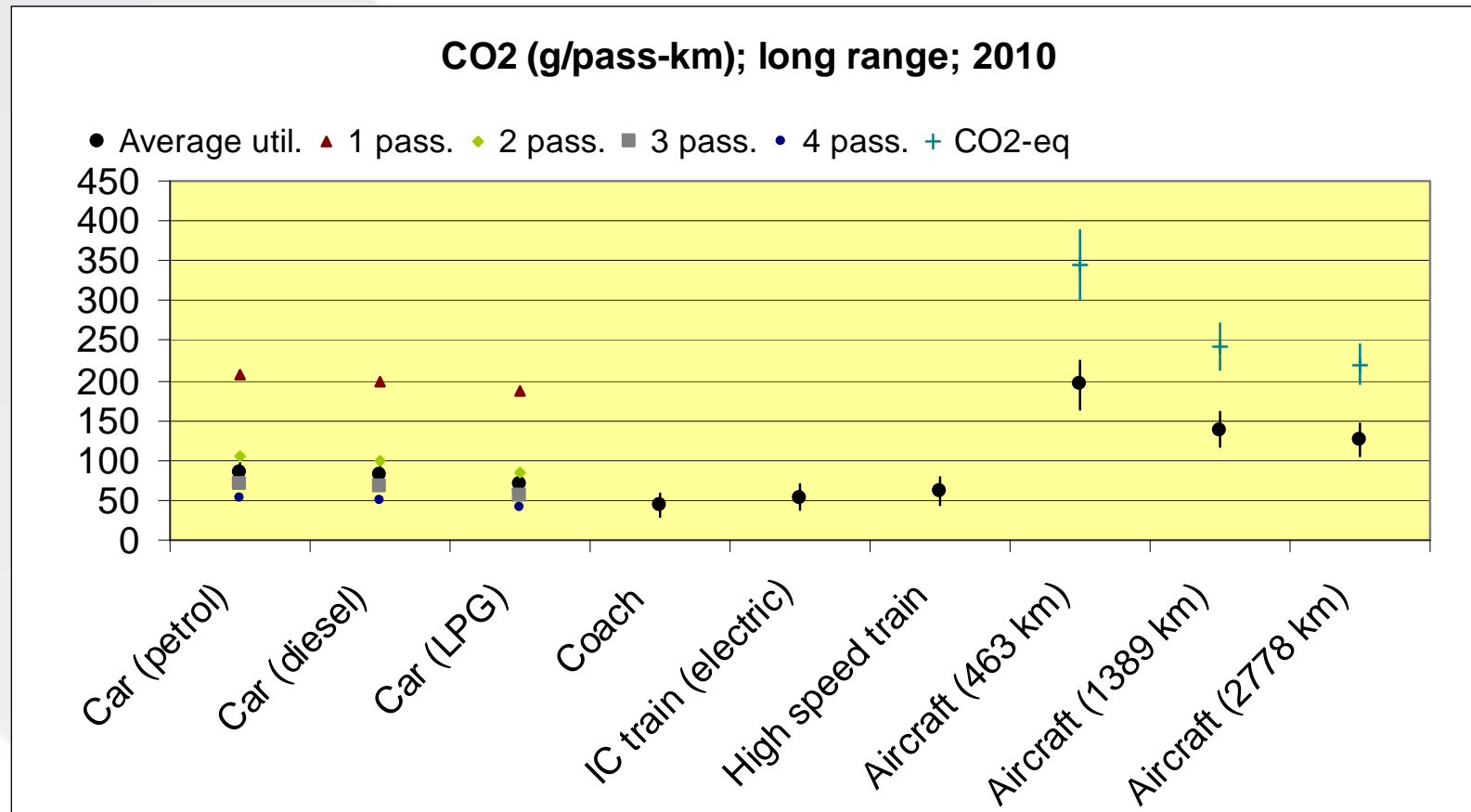
- Types of impacts:
 - Emissions: CO₂ (climate change), NO_x, PM (air quality)
 - Other environmental impacts: noise, upstream emissions
 - Other socio-economic impacts: accidents and congestion
- Fair comparisons require:
 - Well-to-wheel approach
 - Real life emission factors
 - Door-to-door
 - Detour factors
 - Realistic occupancy rates and empty driving



▶ GHG emissions - short distance transport



▶ GHG emissions - long distance transport



▶ Comparison of modes and future trends

- Occupancy rates decisive
- CO₂ reduction for bus & coach:
 - Short term limited, but coaches still among best-in-class
 - Longer term options: fuel efficiency, low carbon energy, logistics
- Air pollutant emission relatively high; will improve with Euro-VI
- Competing modes improve their emission performance:
 - Euro standards
 - CO₂ standards for cars
 - Decarbonization of electricity

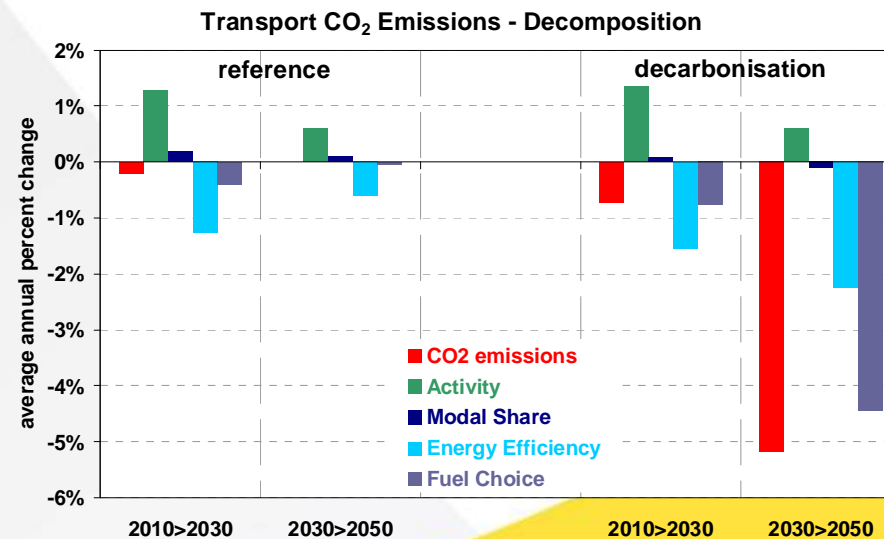
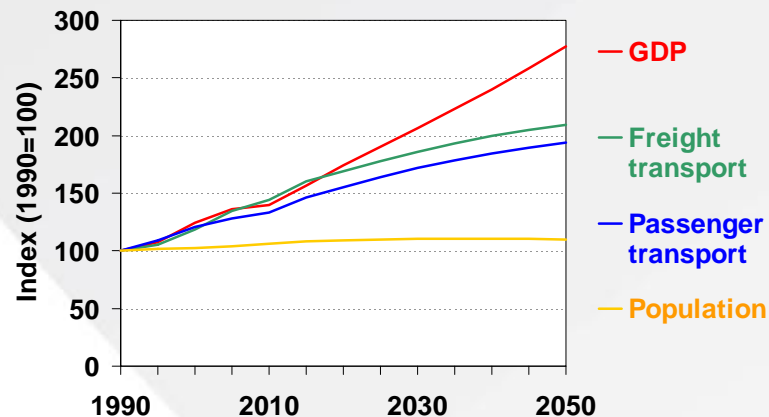


▶ White Paper on Transport 2011: objectives

- 60% GHG reduction in 2050 compared to 1990 (overall: 80-95%)
- No conventional cars in urban areas in 2050; -/-50% in 2030
- Passenger transport over medium distance (<1000 km) mainly by rail
- 40% sustainable low-carbon fuels for aviation in 2050
- Road accident fatalities to zero in 2050
- Full application of user/polluter pays principles (internalisation of external costs)

▶ White Paper on Transport 2011: assessment

- Modal shift is a target but not significant in impact assessment
- Decoupling transport growth from GDP: not a target but assumed in impact assessment
- Not much attention for bus and coach
- No clear vision on their contribution to long-term objectives (in contrast to rail transport)



▶ Potential of bus and coach transport for greening transport

Bus and particularly coach transport have important advantages:

- Flexible modes of transport; door-to-door
- Low external and infrastructure costs (2 to 4 times lower than cars per passenger)

Main challenges:

- Many practical improvements, e.g. infrastructure, ticketing, marketing, ICT, service levels, etc.
- Increase of load factors (particularly for public transport buses)
- Further decarbonization required to stay among best-in-class
- Not much attention from policy makers: no long-term vision

▶ Elements of a policy framework



Generic instruments:

- Harmonized fuel and carbon taxes, ETS, road pricing

Stimulation of bus and coach transport:

- Infrastructure such as bus/coach lanes, P+R, terminals
- Opening of intercity coach markets
- Improving regulation regarding driving times and rest periods
- Harmonization of VAT rates across all modes
- Promotion of collective transport modes

Policy instruments aimed at passenger cars:

- Parking policies, congestion pricing and taxation
- Harmonization of speed policy (e.g. motorway speeds of 90-100 km/h)
- Car-free and environmental zones

Policies for improving the environmental performance of bus and coach

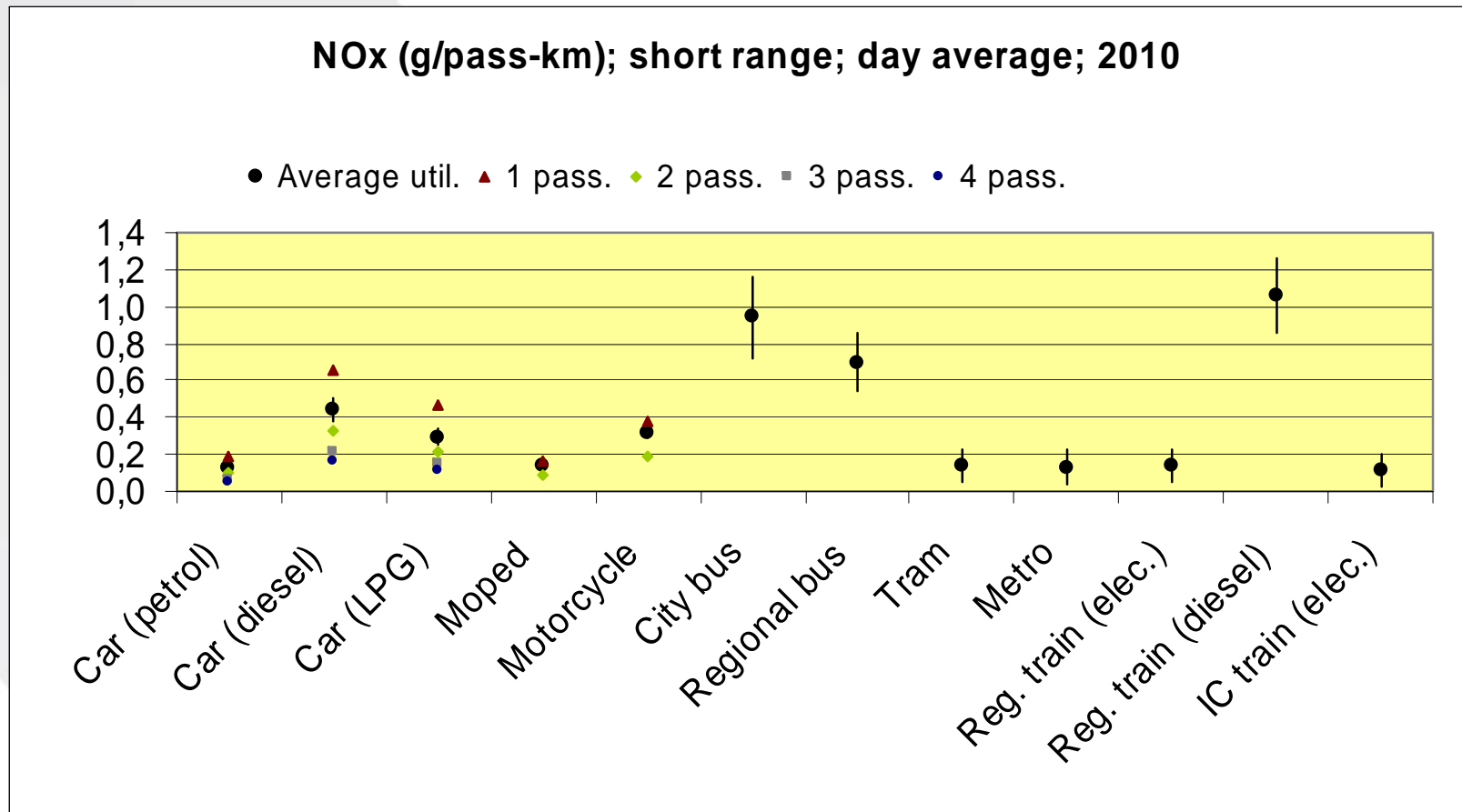
▶ Main conclusions and recommendations

- Coach:
 - Lowest CO₂ emissions of all long distance modes (with E-trains)
 - Competitive pollutant emissions
 - Public transport buses:
 - CO₂ emissions lower than cars
 - Relatively high pollutant emissions
 - Further decarbonization and emission reductions needed
 - Bus and coach have potential to contribute to White Paper targets
 - No clear vision on collective bus and coach transport in White Paper
- ▶ Development of a clear ambitious realistic vision on the role of bus and coach in the future of transport Europe needed

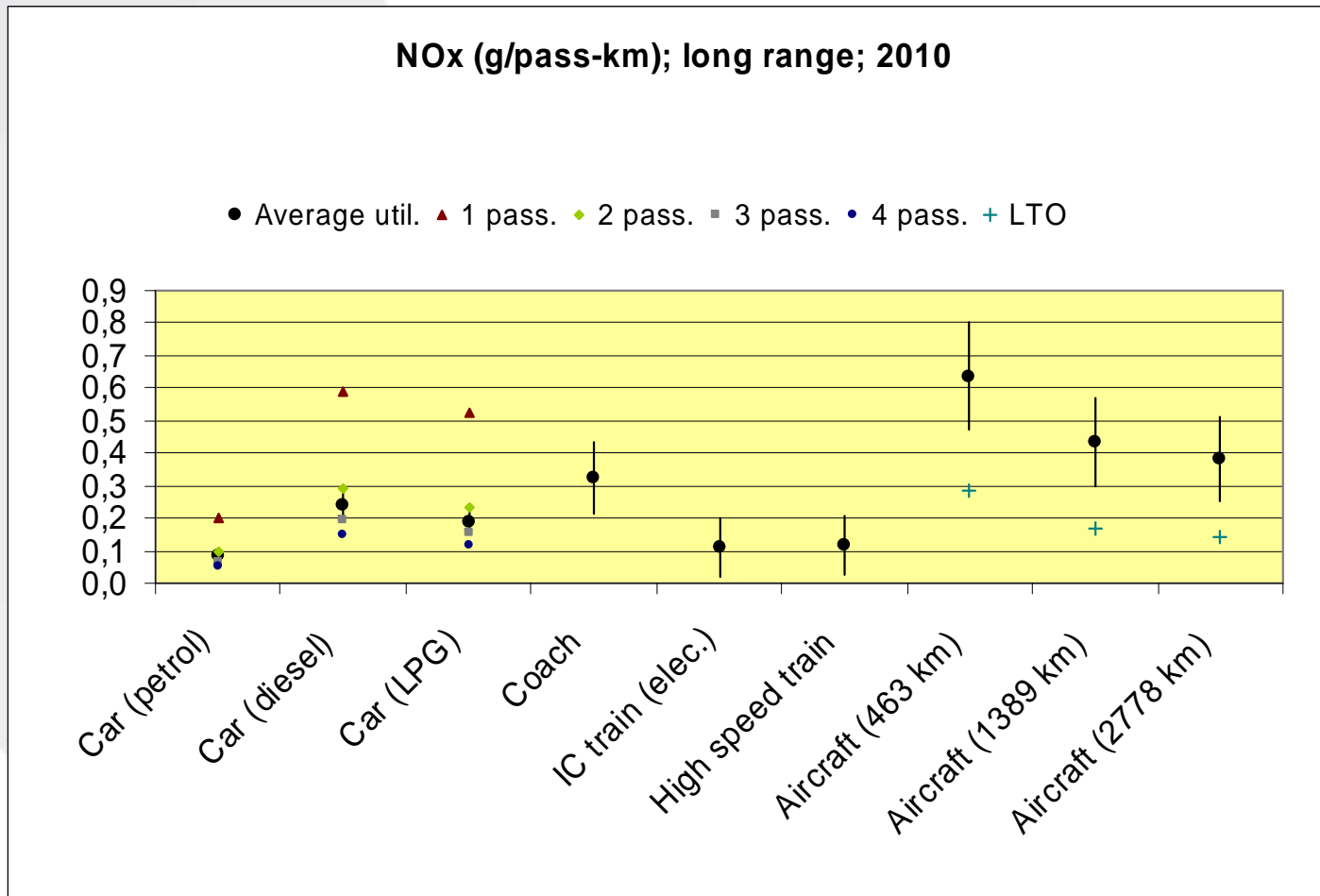
▶ Questions?



► Pollutant (NO_x) emissions - short distance



▶ Pollutant (NO_x) emissions - long distance



▶ Options for decarbonizing buses and coaches

Improving energy efficiency of conventional vehicles:

- Engine and transmission, including hybridization (city buses)
- Aerodynamics and Rolling resistance of tyres
- Eco-driving

Shift to alternative energy carriers:

- Gas (LNG, CNG, Bio-gas)
- Bio-fuels
- Electricity
- Hydrogen



Logistic optimizations (higher occupancy rates)