



# The overall picture

## Transportation fuels as part of the energy system

*SAE 2004 Fuels & Lubricants Meeting  
June 2004, Toulouse, France*

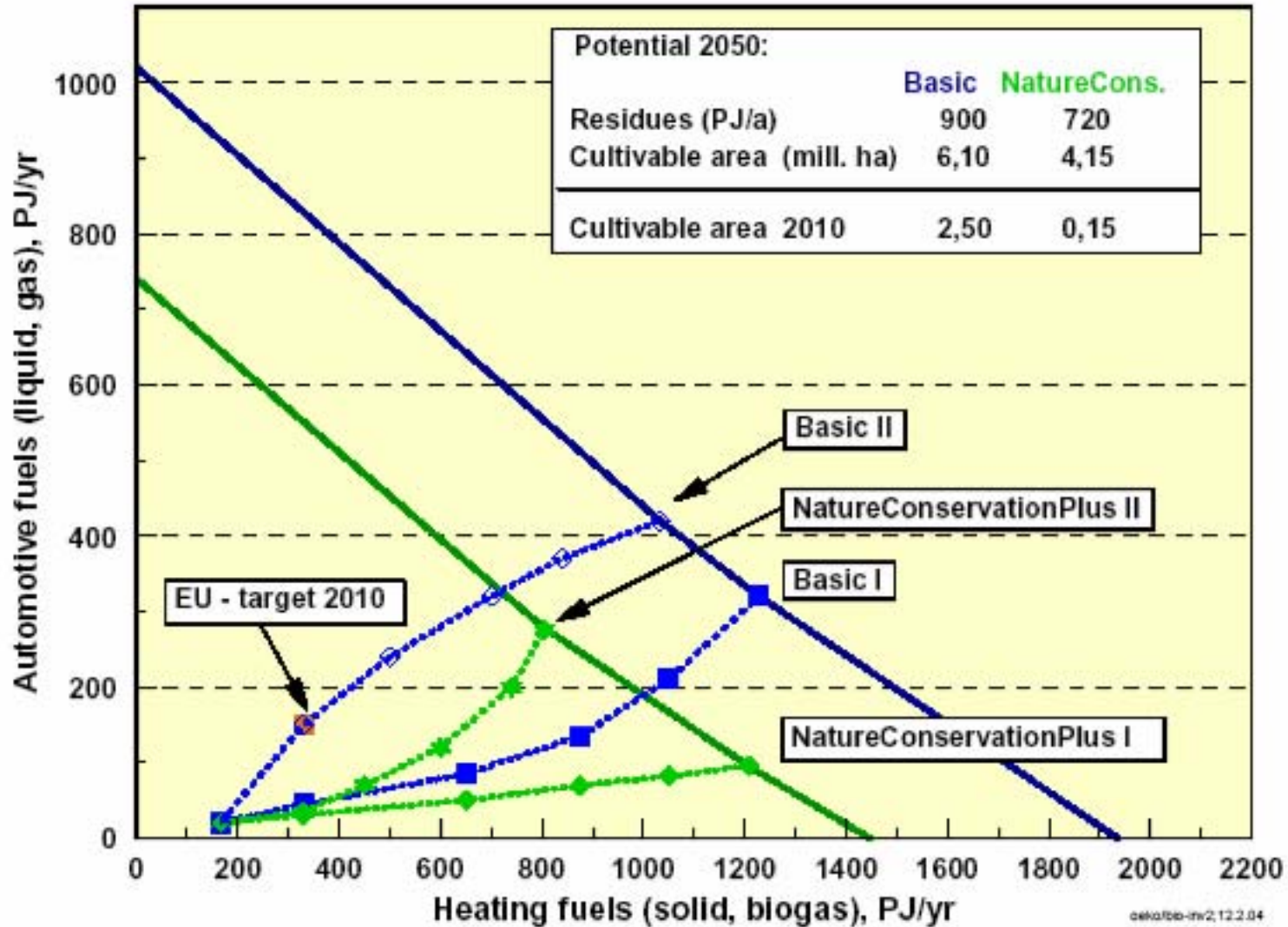
*Session SFL40 Future Automotive Fuel Directions: Alternatives and Renewables*

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**Wuppertal Institute for Climate Environment Energy**  
***Research Group "Future Energy and Transport Structures"***

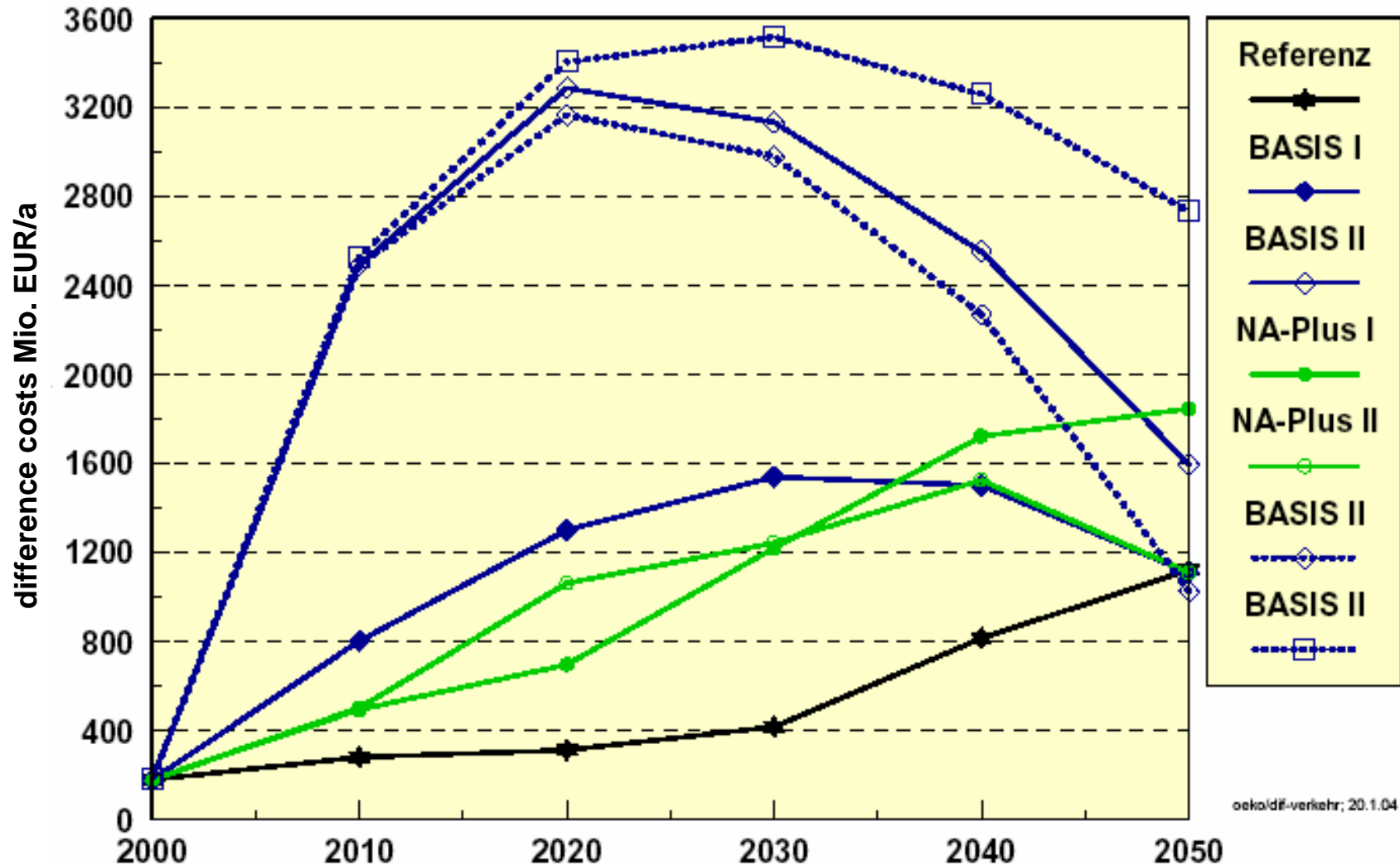
# There is a strong competition for the allocation of RES

## The case of biomass



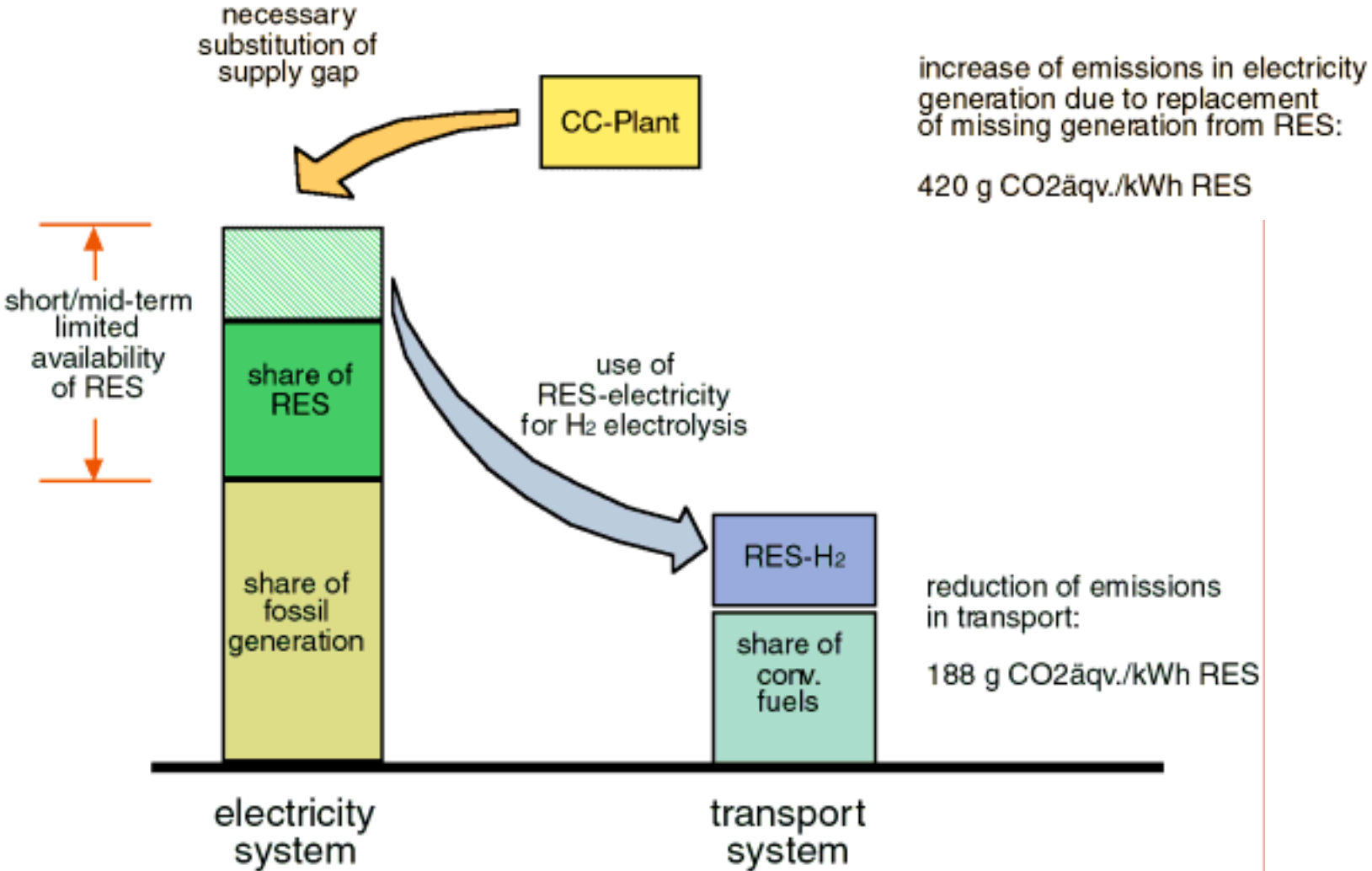
# Enforcing biofuel strategies increase system costs

## Giving priority to stationary biomass uses is more efficient

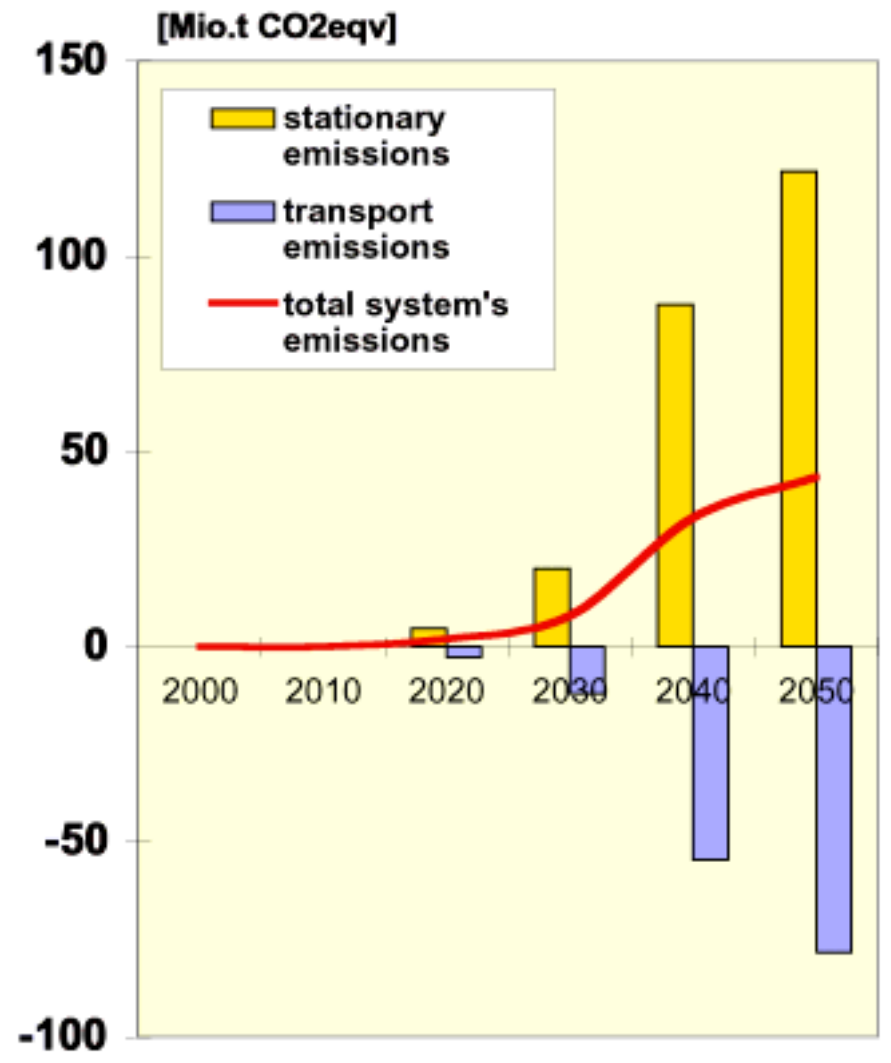
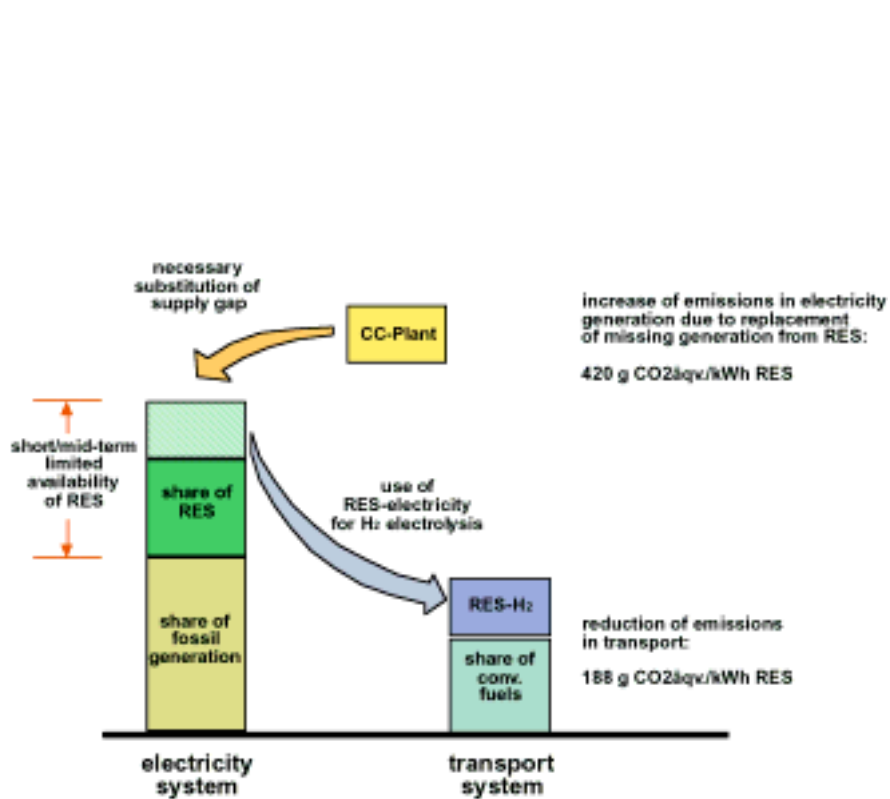


oeko/dif-verkehr; 20.1.04

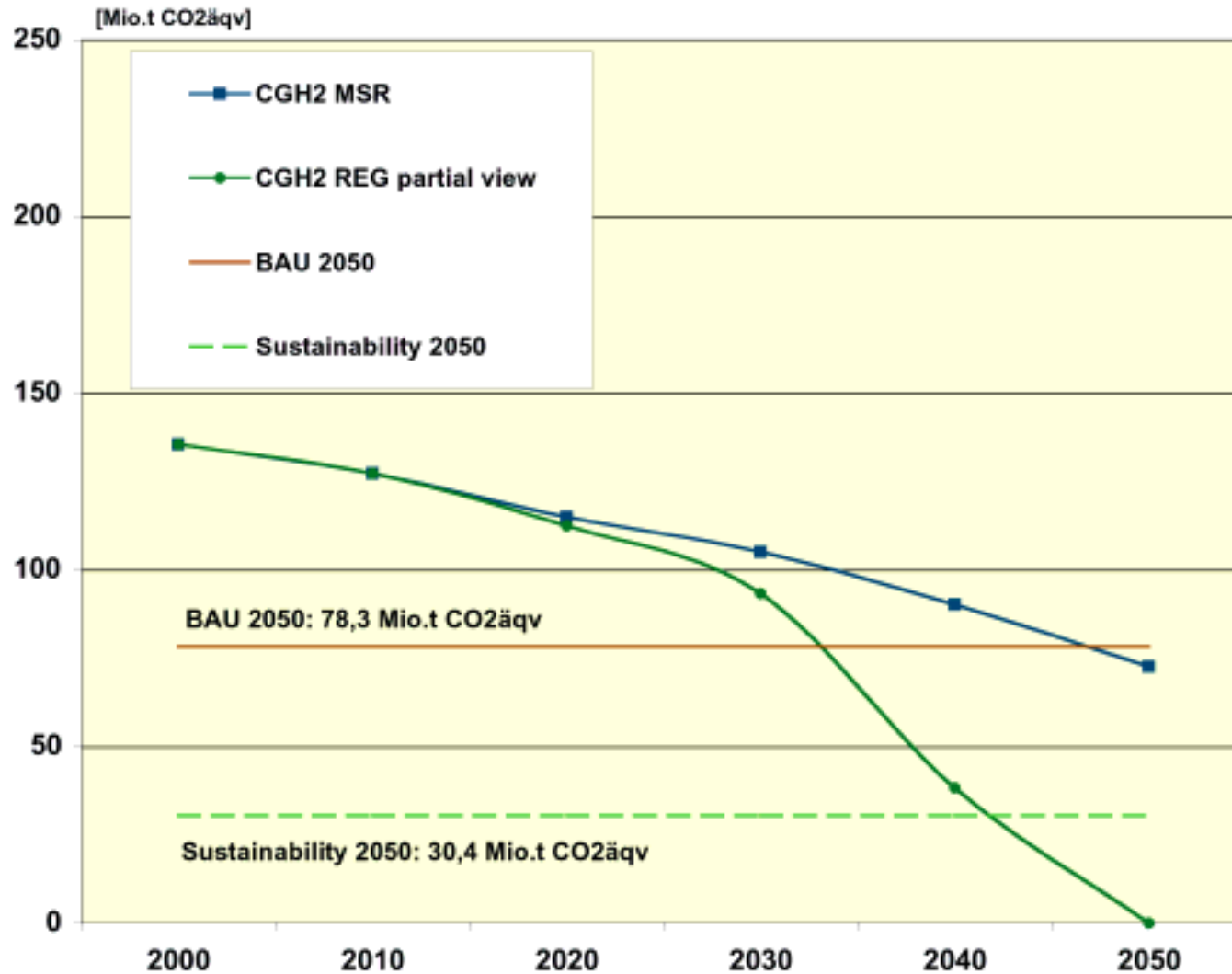
# Assessment of RES technology options requires a holistic analysis of interdependencies within the energy system



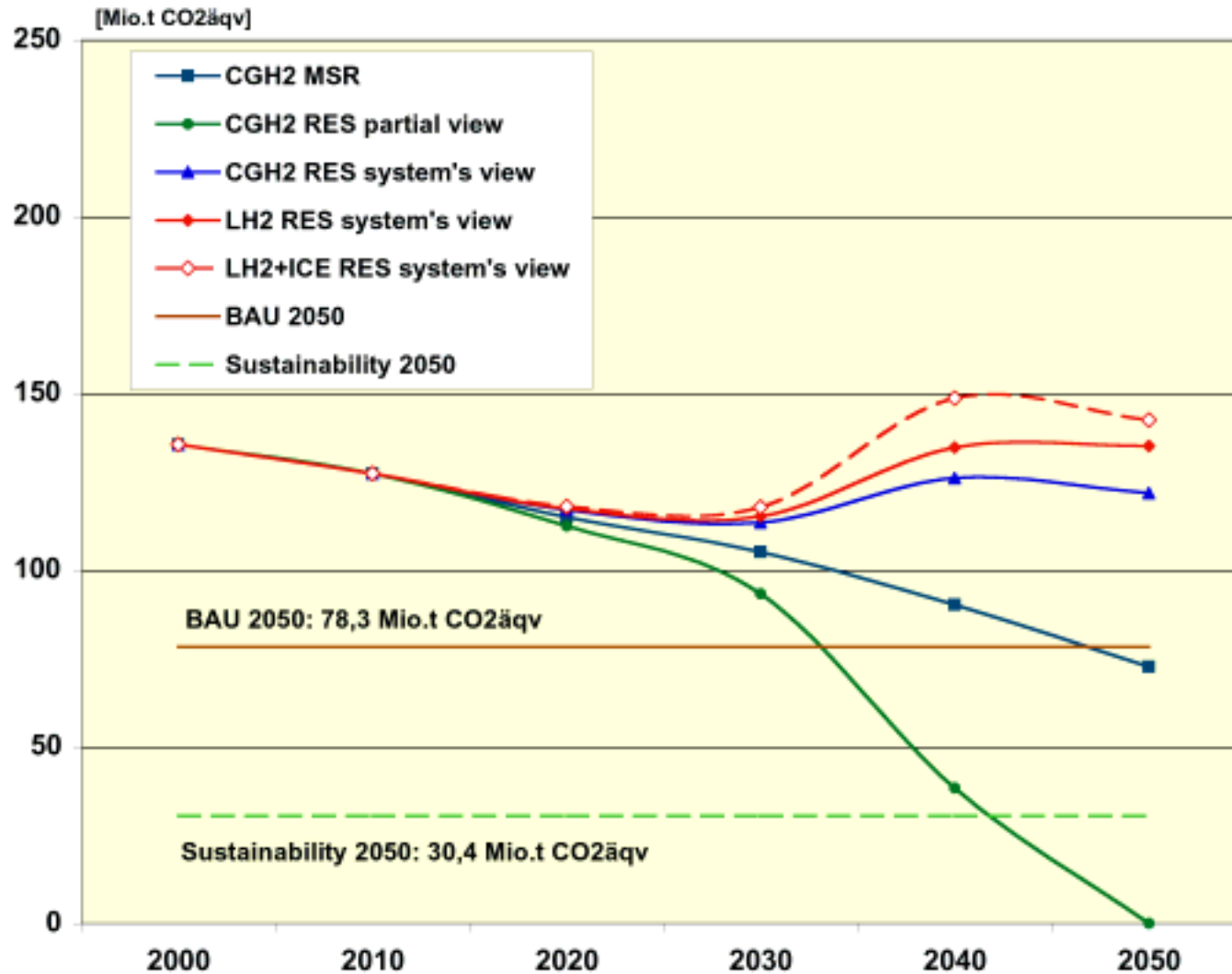
# A partial view on benefits of hydrogen may lead to misguided results - an energy system's perspective is needed



# Emissions of hydrogen paths from a **partial** perspective on the allocation of RES electricity

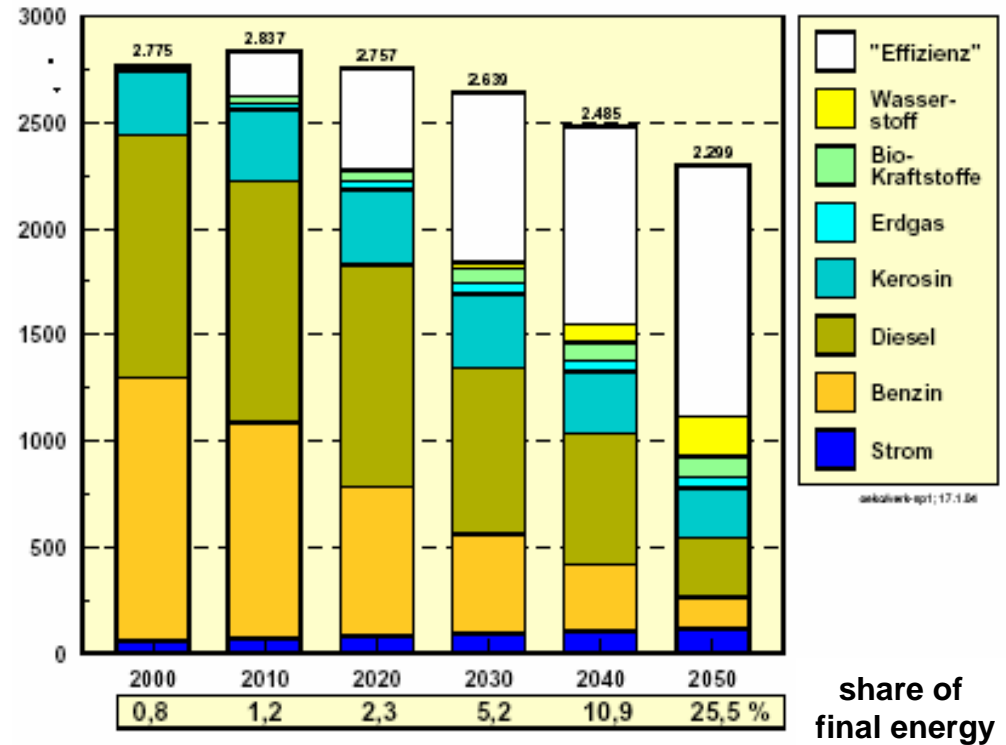
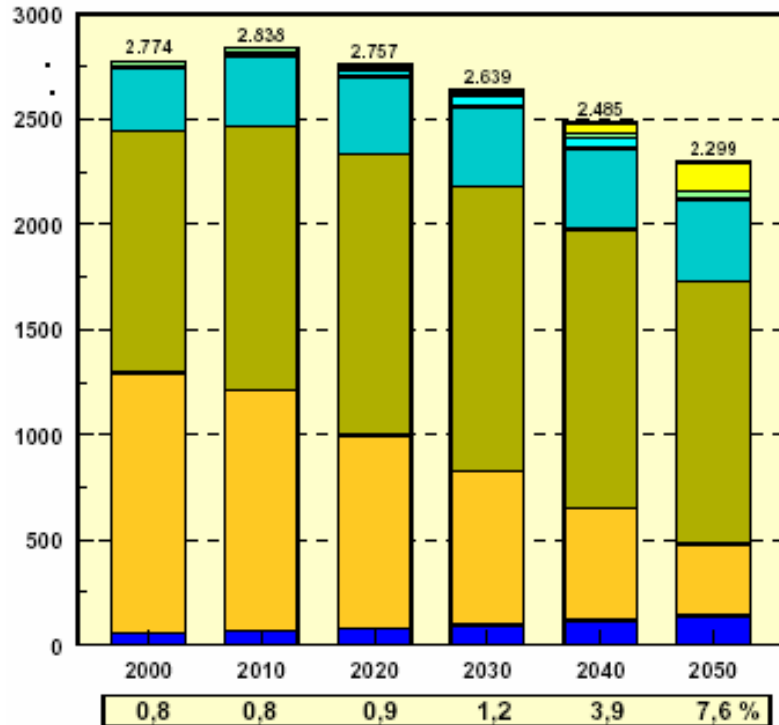


# Emissions of hydrogen paths from a **holistic** perspective on the allocation of RES electricity



# Energy efficiency is the key to a considerable share of alternative motor fuels in the future

final energy (PJ)





# Conclusions from a systems analysis for Germany

- A complete analysis of sustainable transport schemes requires the holistic assessment of interactions between stationary and mobile applications
- Ecological constraints reduce the domestic potential esp. for biomass and wind power
- Stationary use of biomass resources and renewable electricity remains superior to mobile applications both in terms of GHG emissions and costs
- There is no realistic, efficient and ecologically benign pathway to large shares of more than 50% H<sub>2</sub> in road transport before 2050
- The priority task in transport is to reduce road transport volumes and specific energy consumption drastically - alternative fuels policies are not an alternative to energy efficiency but strongly depend on prior reduction achievements

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**Thank you for your attention**

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