Low carbon scenarios for Germany - social and stakeholder acceptance

Engaging civil society in the EU roadmap process
Brussels, 25 October 2011

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Collaborative Low Carbon Energy Scenarios for Germany

Transport \ Electricity					
					
					
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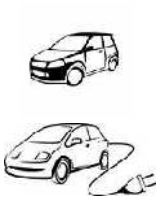
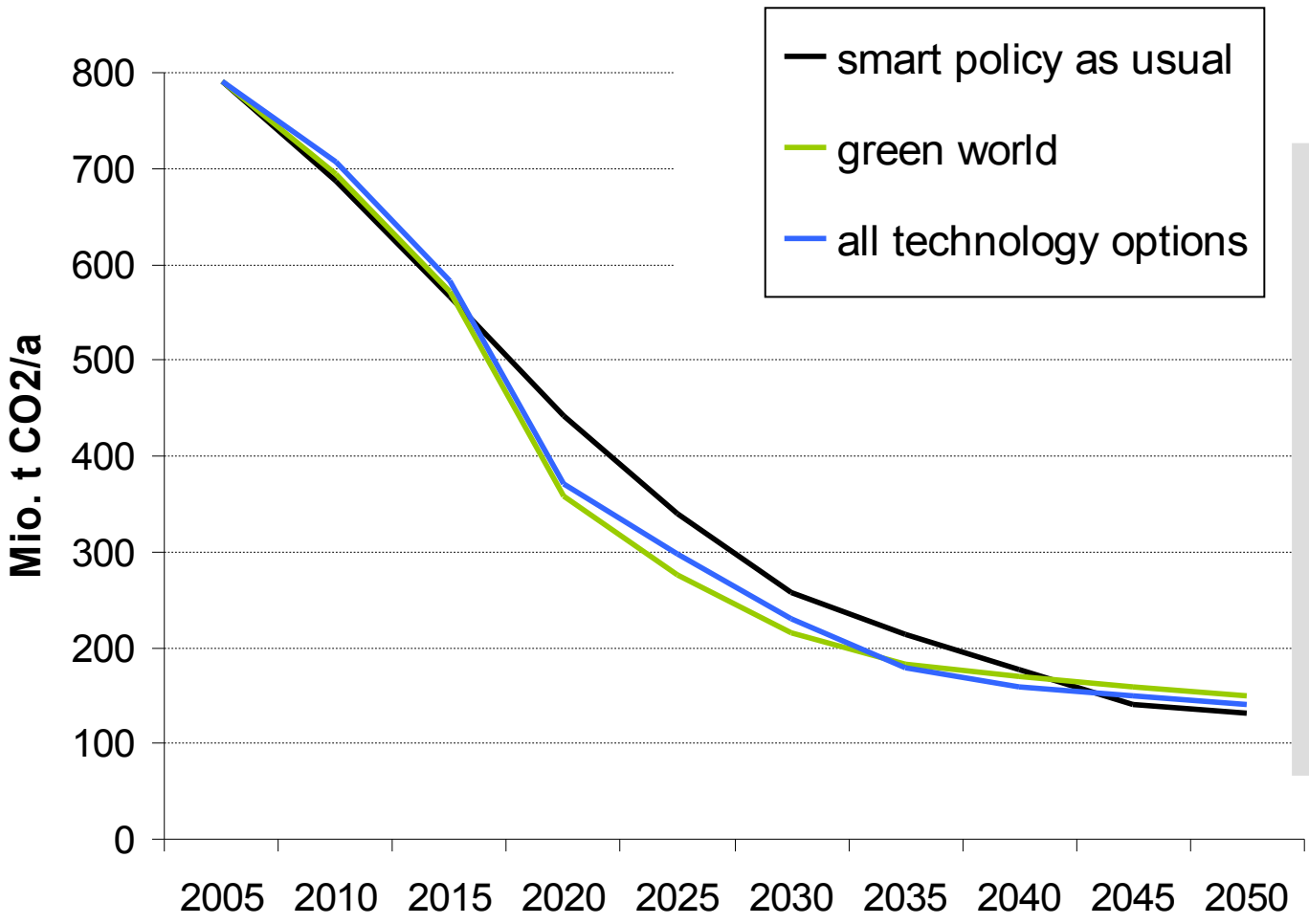
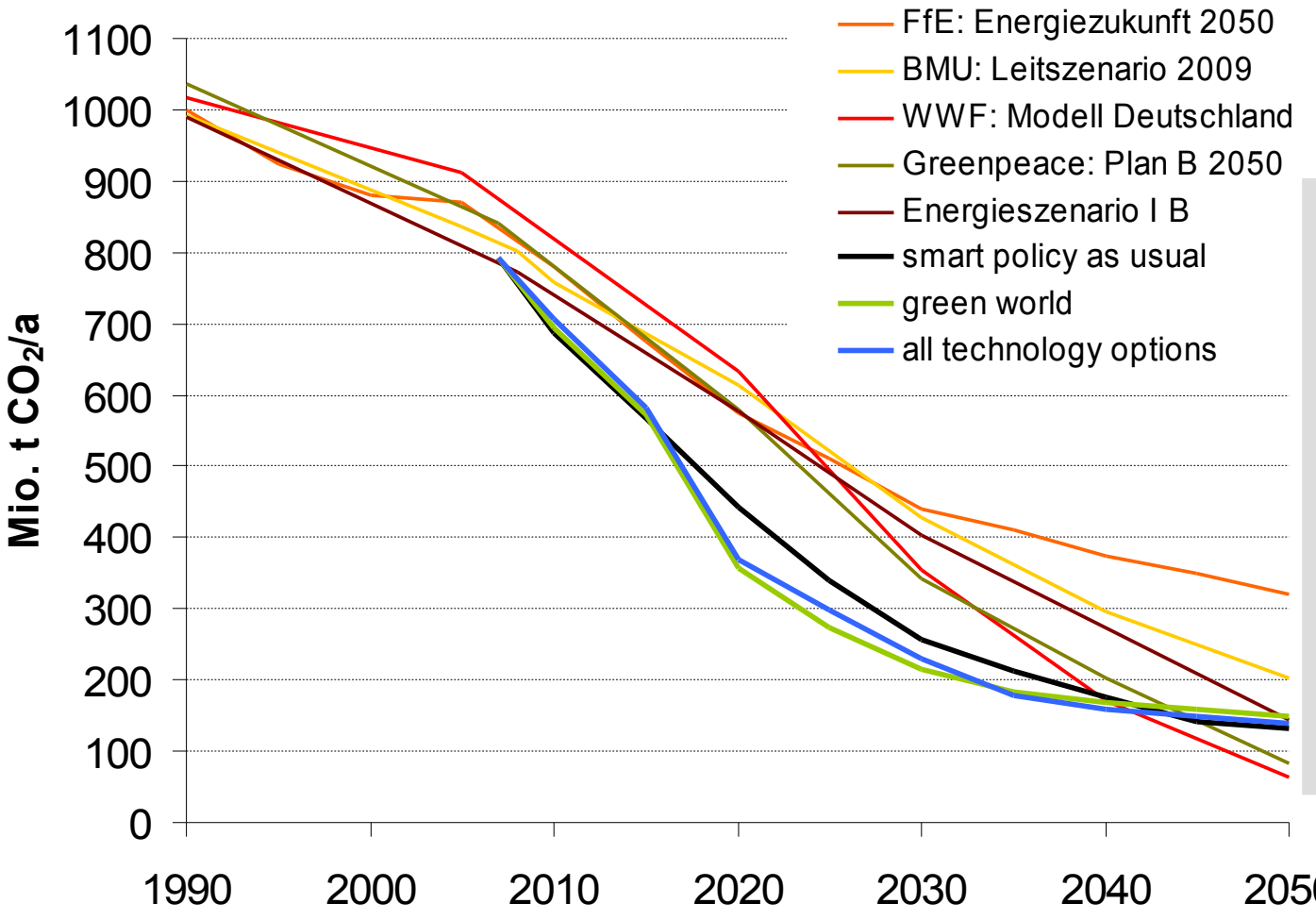
			"Smart policy as usual"		
				"Green world"	
					"All technology options"

Energy related CO_2 emissions



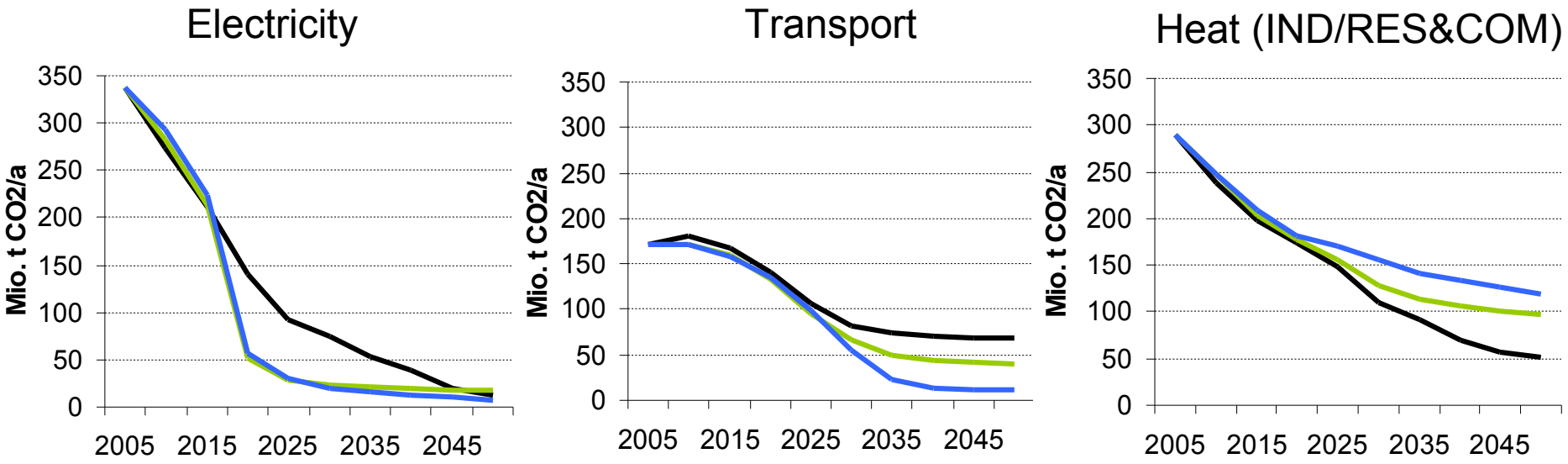
- strong decrease in all scenarios
- ~85% CO_2 emission reduction by in 2050 vs. 1990
- Small differences as model optimizes until 2100

Energy related CO_2 emissions – a comparison



- stronger and earlier decrease compared to other scenarios
- less reduction required by 2050
- Mitigation pathway valid until 2100 (but not in the other models)

CO_2 emissions by sector



- Sectoral emissions
  - Committed emissions (from coal power plants in freight transport)
  - Heat sector has to take the burden
- This leads to higher mitigation costs for less favorable political framework conditions

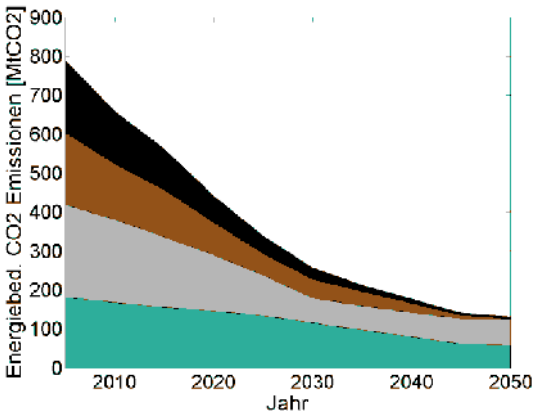
"smart policy as usual"

"green world"

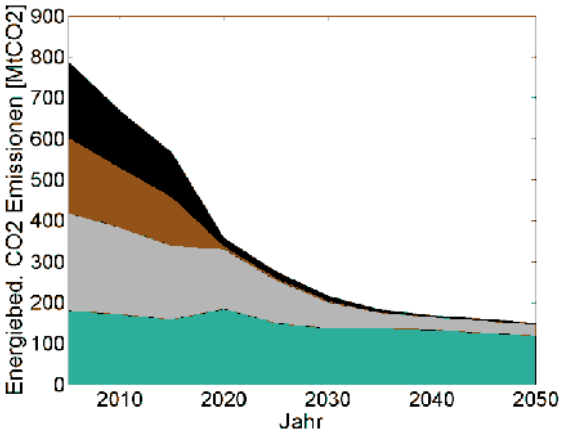
"all technology options"

CO_2 emissions by source

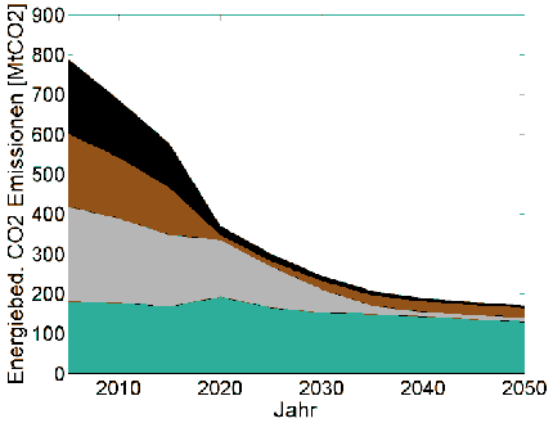
"Smart policy as usual"



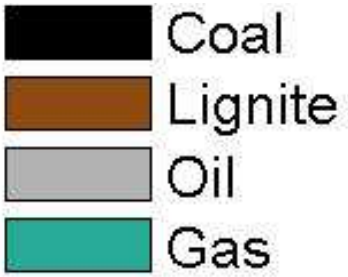
"Green World"



"All technology options"

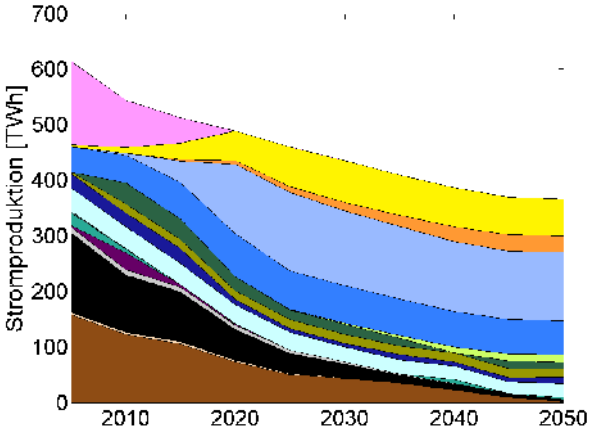


- Gas plays an important role (for balancing fluctuations)
- Fast decrease in use of coal (when coal power plants are allowed to be switched off)
- Decrease in oil use (when freight transport is not forced to increase)

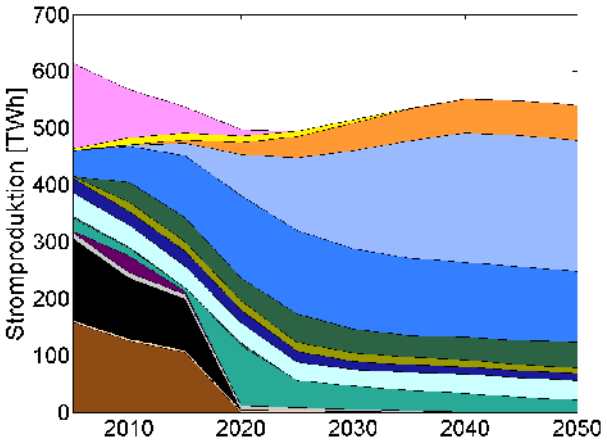


Electricity production

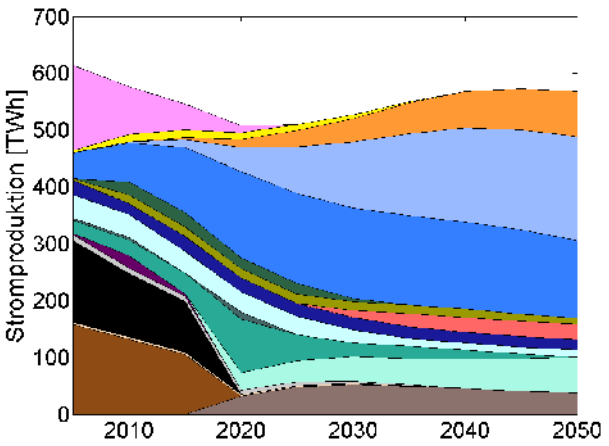
"Smart Policy as Usual"



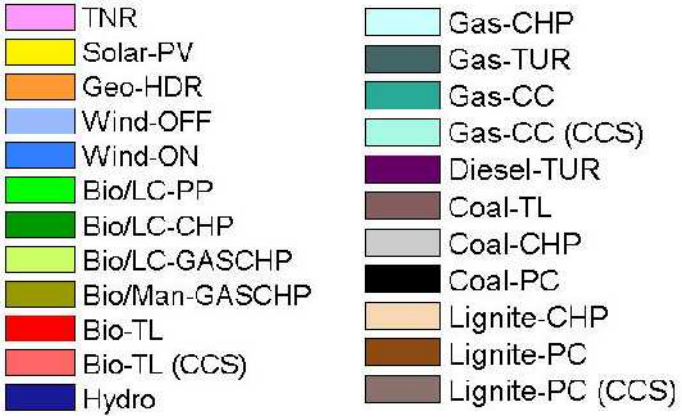
"Green World"



"All technology options"

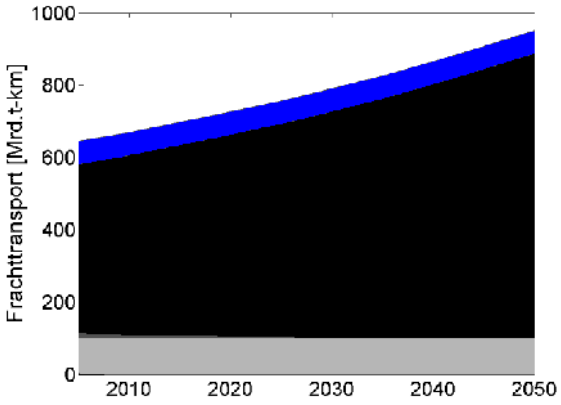


- Coal power plants determine the amount of fluctuating renewables (as they impede gas capacities)
- Wind more favorable as PV due to higher capacity credit
- CCS has only a limited additional benefit when RE potential is high

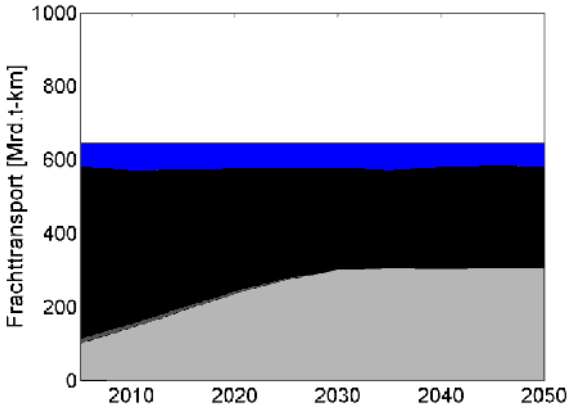


Freight transport

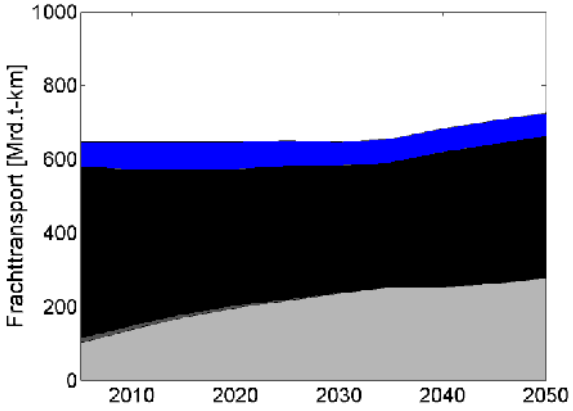
"Smart policy as usual"



"Green World"



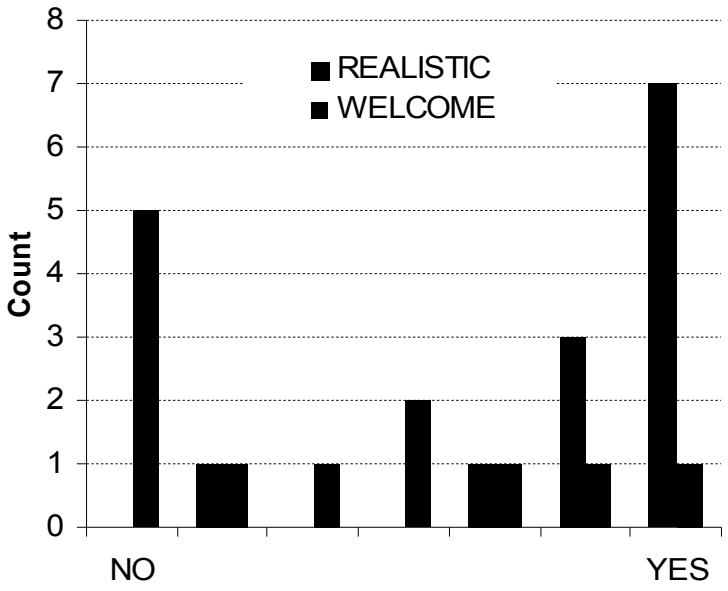
"All technology options"



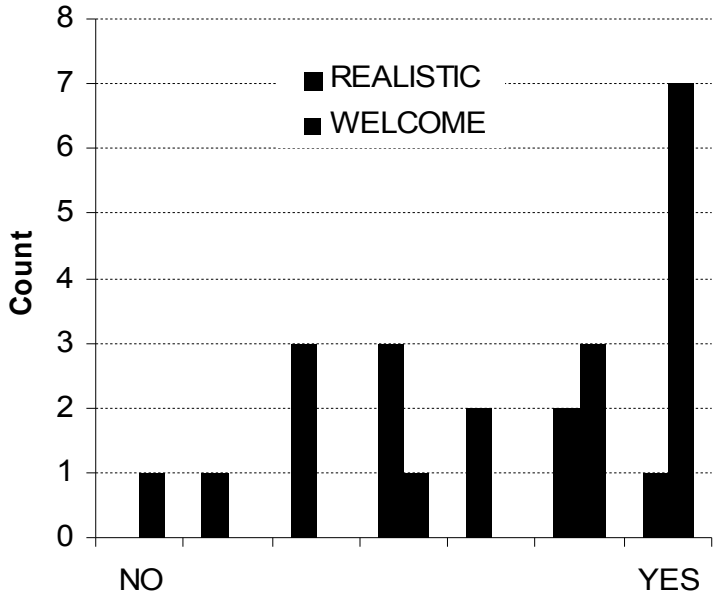
- Strong decrease in truck mileage
- Strong increase in freight train mileage
- … when not constrained by political framework conditions

Results from stakeholder workshops

The t-km mileage of freight transport will increase.

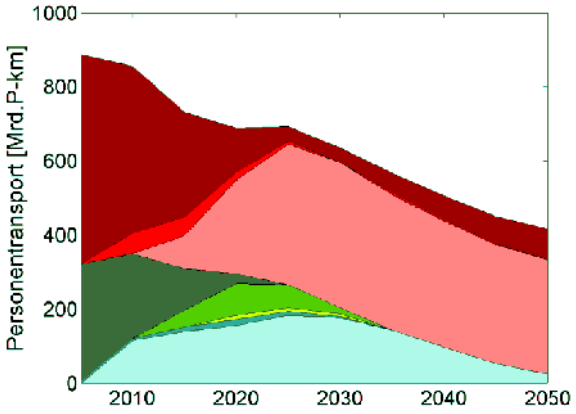


Economic growth will be decoupled from growth in freight transport

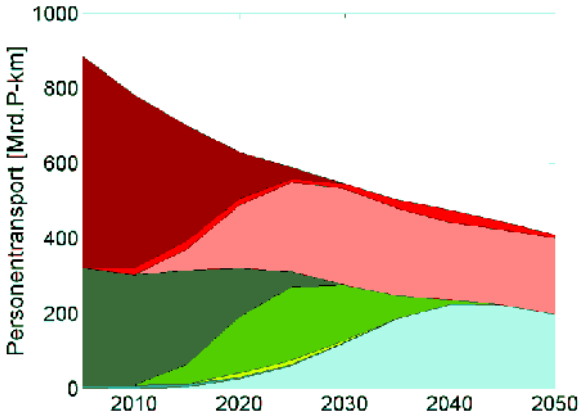


Passenger transport - individual

"Smart policy as usual"



"Green World"



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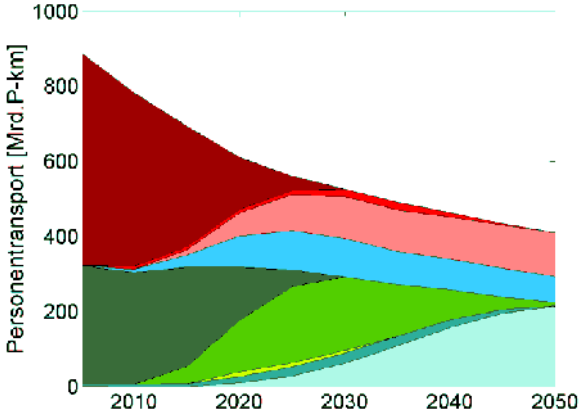
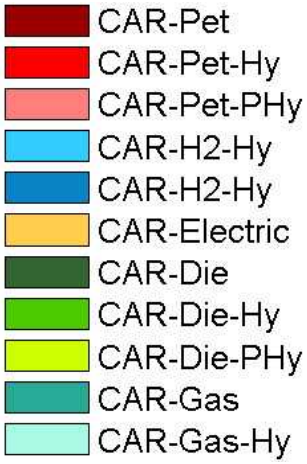
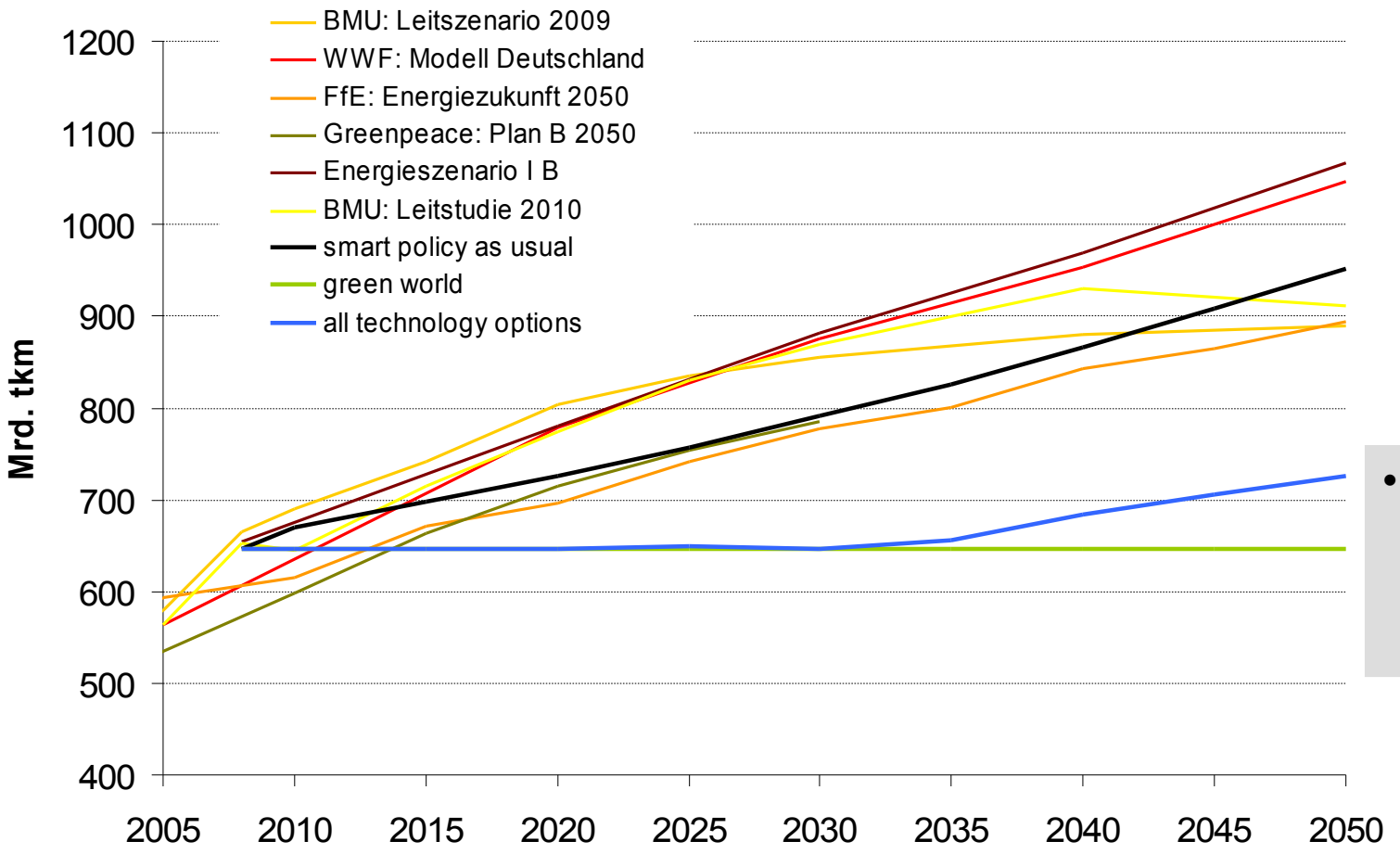


- Phase-out of conventional diesel and petrol cars
- Petrol-plugin-hybrid and gas-hybrid becomes dominant
- Purely electric cars are not used
- With all technology options: H_2 is used

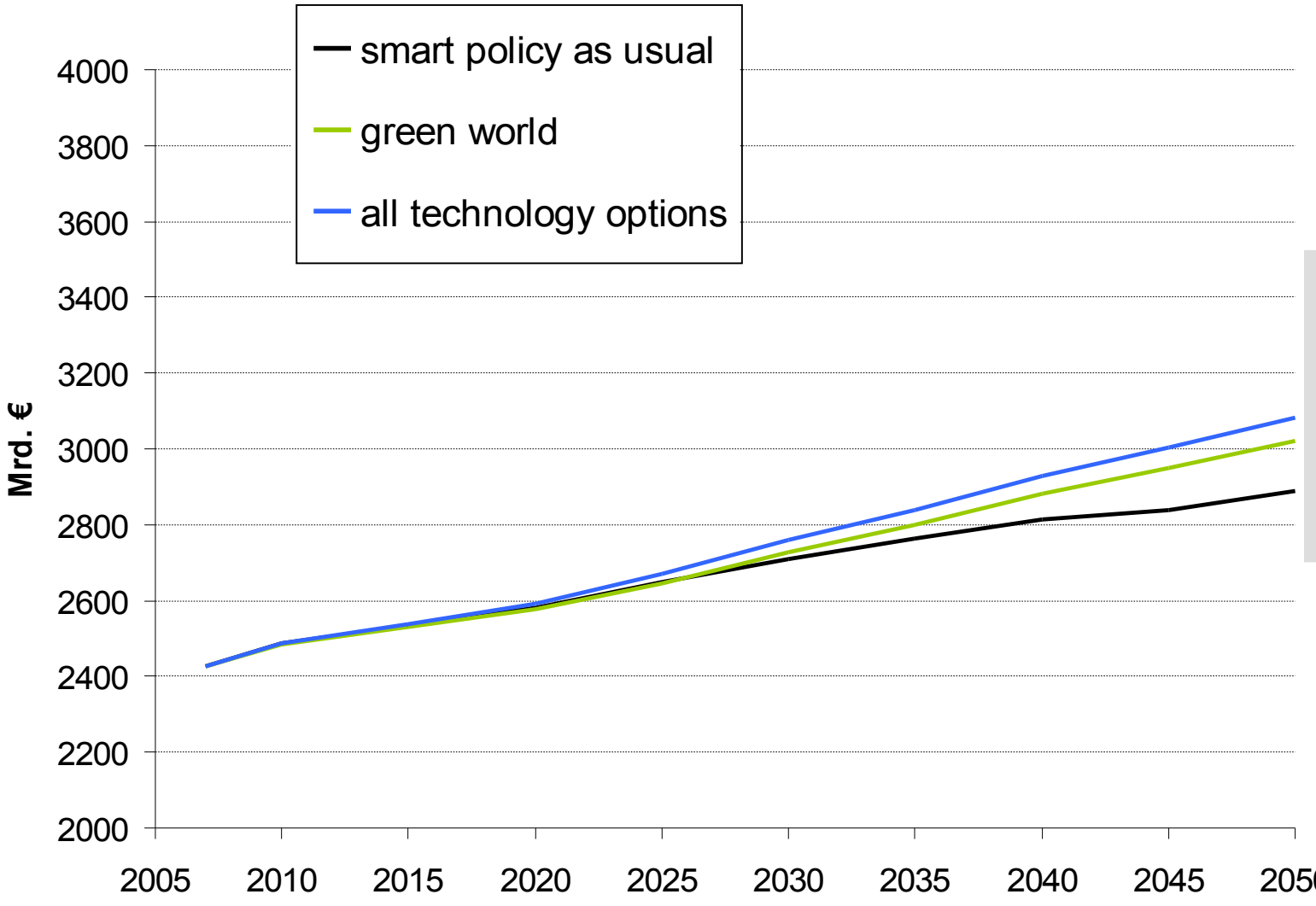


Freight transport – comparsion



- stronger decrease compared to other studies

Development of GDP

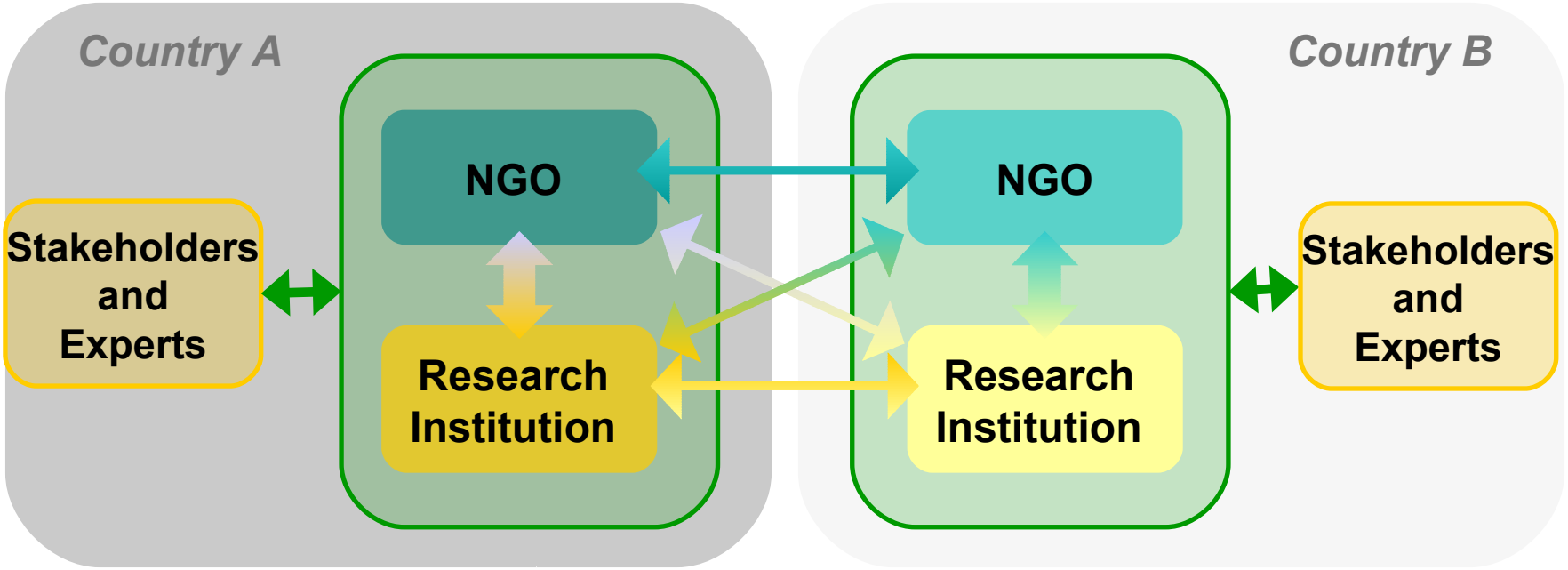


- slower growth in the “smart policy as usual” scenario

Conclusions – on the content

- Stronger decrease in CO_2 emissions can be efficient (learning rates, saving emissions for after 2050)
- Use of coal determines the share of renewables that can be integrated into the system
- Coal power plants are switched off as fast as possible
- CCS delivers only limited additional benefit (when a high renewable potential is assumed)
- Overcoming the enormous constraints in the transport sector is crucial for ambitious mitigation
- A pure national approach in Germany will limit the feasibility and acceptability of *ambitious* mitigation targets
- The transformation is not a Sunday afternoon walk

Conclusions – on the process



Schmid et al. 2011

- Very valuable experience with
  - Expert workshops to underpin the technical framing conditions
  - Stakeholder workshops to create a mutual understanding
  - the cooperation with NGOs in the “translation process”
- This process could form a blueprint for scenario creation
- But: social acceptance is a much wider field