EU climate policy developments

the role of modeling in ex-ante climate policy evaluation

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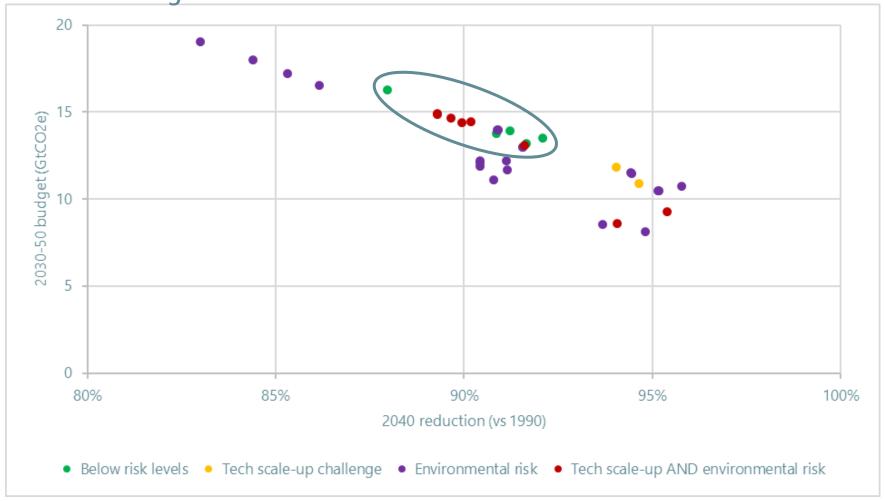


Reccomending 2040 targets: Scenario + Feasibility



5 scenarios out of 1000 from IPCC with EU focus and limited risks



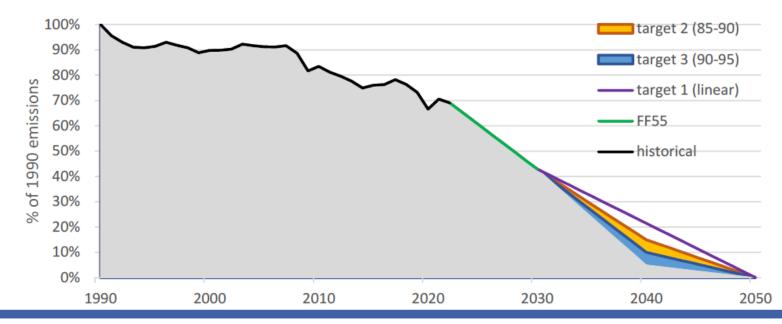


European Commission impact assessment of 2040

Table 3: GHG budget and annual reduction of GHG emissions of each target option

	GHG budget	Yearly reductions (% 1990 levels)						
	2030-2050 (GtCO2-eq)	1991-2010	2011- 2030	2021- 2030	2031- 2040	2041- 2050		
Target level								
below 75%	More than 23				-1.8%	-2.5%		
1 (linear, 78%)	21	-0.9%	-2.0%	-2.8%	-2.2%	-2.2%		
2 (at least 85%)	Up to 18				-2.8%	-1.5%		
3 (at least 90%)	Up to 16				-3.3%	-1.0%		

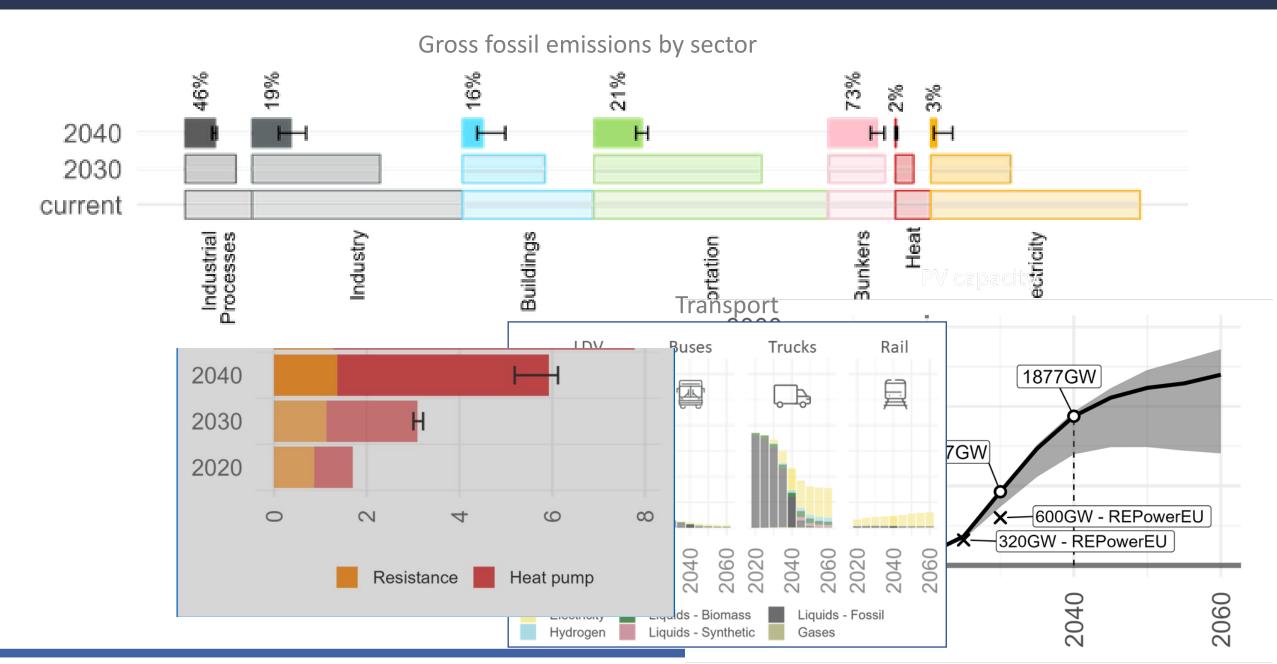
Figure 4. Profile of the net GHG emissions over 1990-2050



- EC decision for 90% target
- Almost triple
 historical emission
 reduction rates
 needed



Decarbonization strategies



Investments

Table 16: Average annual energy system investment needs (billion EUR 1

	51			52			S3		
	2031- 2040	2041- 2050	2031- 2050	2031- 2040	2041- 2050	2031- 2050	2031- 2040	2041- 2050	2031- 2050
Supply	<u>236</u>	<u>377</u>	<u>306</u>	<u>289</u>	328	<u>308</u>	<u>341</u>	281	<u>311</u>
Power grid	79	88	84	88	81	85	96	75	85
Power plants	97	187	142	128	157	142	151	133	142
Other	59	102	81	72	90	81	94	73	83
Demand excl. transport	<u>332</u>	<u>377</u>	<u>354</u>	<u>355</u>	<u>357</u>	<u>356</u>	<u>372</u>	<u>338</u>	<u>355</u>
Industry	38	31	35	46	24	35	48	22	35
Residential	225	250	237	237	242	239	248	230	239
Services	49	78	63	53	73	63	57	67	62
Agriculture	19	19	19	19	19	19	20	18	19
<u>Transport</u>	<u>866</u>	<u>875</u>	<u>870</u>	<u>861</u>	<u>885</u>	<u>873</u>	<u>856</u>	<u>882</u>	<u>869</u>
<u>Total</u>	<u>1433</u>	<u>1629</u>	<u>1531</u>	<u>1505</u>	<u>1570</u>	<u>1537</u>	<u>1570</u>	<u>1501</u>	<u>1535</u>
Total excl. transport	567	754	661	644	685	664	713	619	666
Memo:									
Real GDP (period average)	19444	22369	20906	19444	22369	20906	19444	22369	20906

- Frontloaded investments
- Largest in transportation (private)
- Transport + residential =2/3
 of investments, mostly from
 households



Energy system costs

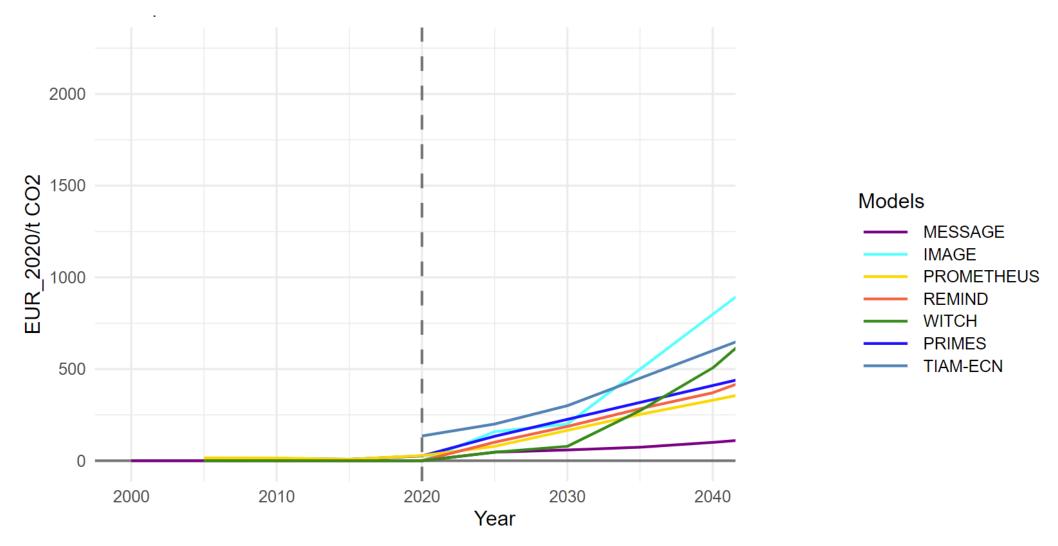
Table 25: Average annual energy system costs as % of private consumption and average final price of electricity for households in the residential sector

	Avera	ge Annual	Energy :	System Co	ost				
EU27 - Average across all	2031-2040				2041-2050				
income categories	S1	S2	S3	ΔLIFE	S1	S2	S3	ΔLIFE	
Total (% of private consumption)	<u>8.0%</u>	8.1%	<u>8.2%</u>	-0.12pp	7.1%	7.1%	7.1%	-0.14pp	
Capital related costs*	4.5%	4.6%	4.7%	-0.08pp	4.1%	4.1%	4.1%	-0.01pp	
Energy purchases	3.4%	3.5%	3.5%	-0.04pp	3.0%	3.0%	3.0%	-0.13pp	
EU27 - Low Income Categories	S1	S2	S3	ΔLIFE	S1	S2	S3	ΔLIFE	
Total (% of private consumption)	14.0%	14.3%	14.4%	<u>-0.20рр</u>	12.0%	12.0%	12.1%	<u>-0.25pp</u>	
Capital related costs	7.8%	7.9%	8.1%	-0.13pp	6.5%	6.5%	6.6%	-0.01pp	
Energy purchases	6.3%	6.3%	6.3%	-0.07pp	5.5%	5.5%	5.4%	-0.25pp	
Electricity Price (EUR/MWh)**									
Residential	288	288	288	-0	289	290	290	-0	

No mention of the expected price in the ETS



Carbon prices

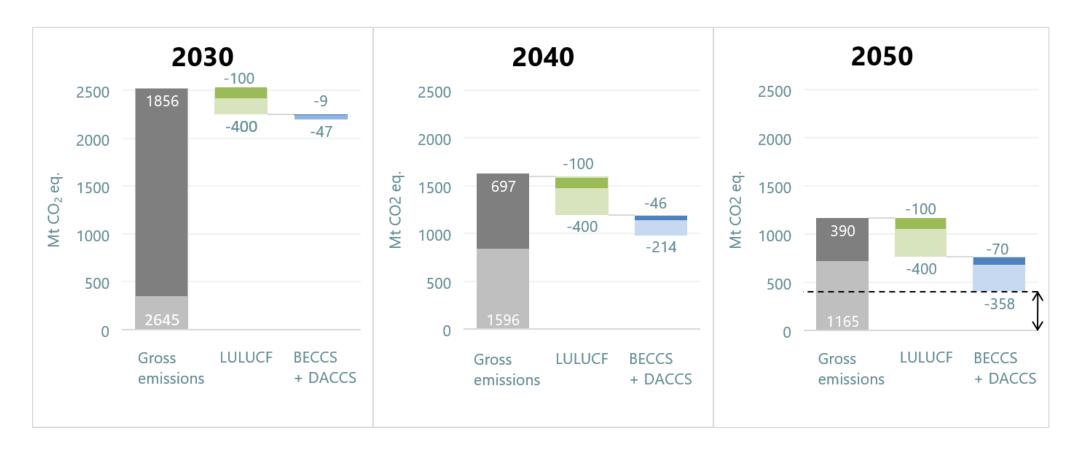


- All models except one have carbon prices above 250 Euro/tCO2 (median 400)
- Implicit marginal costs, not the ETS price. Still above expectations.



Carbon removals





EU impact assessment

- Significant carbon management (hundreds of MtCO2)
- Uncertainty around the type of carbon removal and e-fuels

Net Zero Industry Act



Examples of strategic net-zero technologies



- Provisional deal between council and parliament
- Manufacturing benchmark of 40% by 2030
- Technology list: renewables, biogas, CCS, (nuclear)
- Permitting and auctioning rules
- Financing? ETS, member states



Conclusions

EU climate policies

- Developments from the Commission on 2040 (-90%) and industrial policy, now in discussion with member states
- Ambition continuity to counter growing public concerns
- Expectation uncertainty (e.g. carbon price)
- New parliament after summer
- Risks of fragmentation (e.g. national subsidies)

Coupled climate-economy-energy modeling

- Relevant in ex ante policy assessments also at national level
- Needed to understand international repercussion of fragmented policy architectures (international model comparisons)
- Developments in need: carbon management, economic-financial, social
- Ex post and ex ante policy assessments need to inform each other



ご清聴ありがとうございました。

