

ipcc

INTERGOVERNMENTAL PANEL ON climate change

Drivers, trends and mitigation

Assessing transformation pathways

Joeri Rogelj

ETH Zurich / IIASA

CA WG1 Ch. 10 / Ch. 12 / TS / SPM & CA WG3 Ch. 6 / SPM

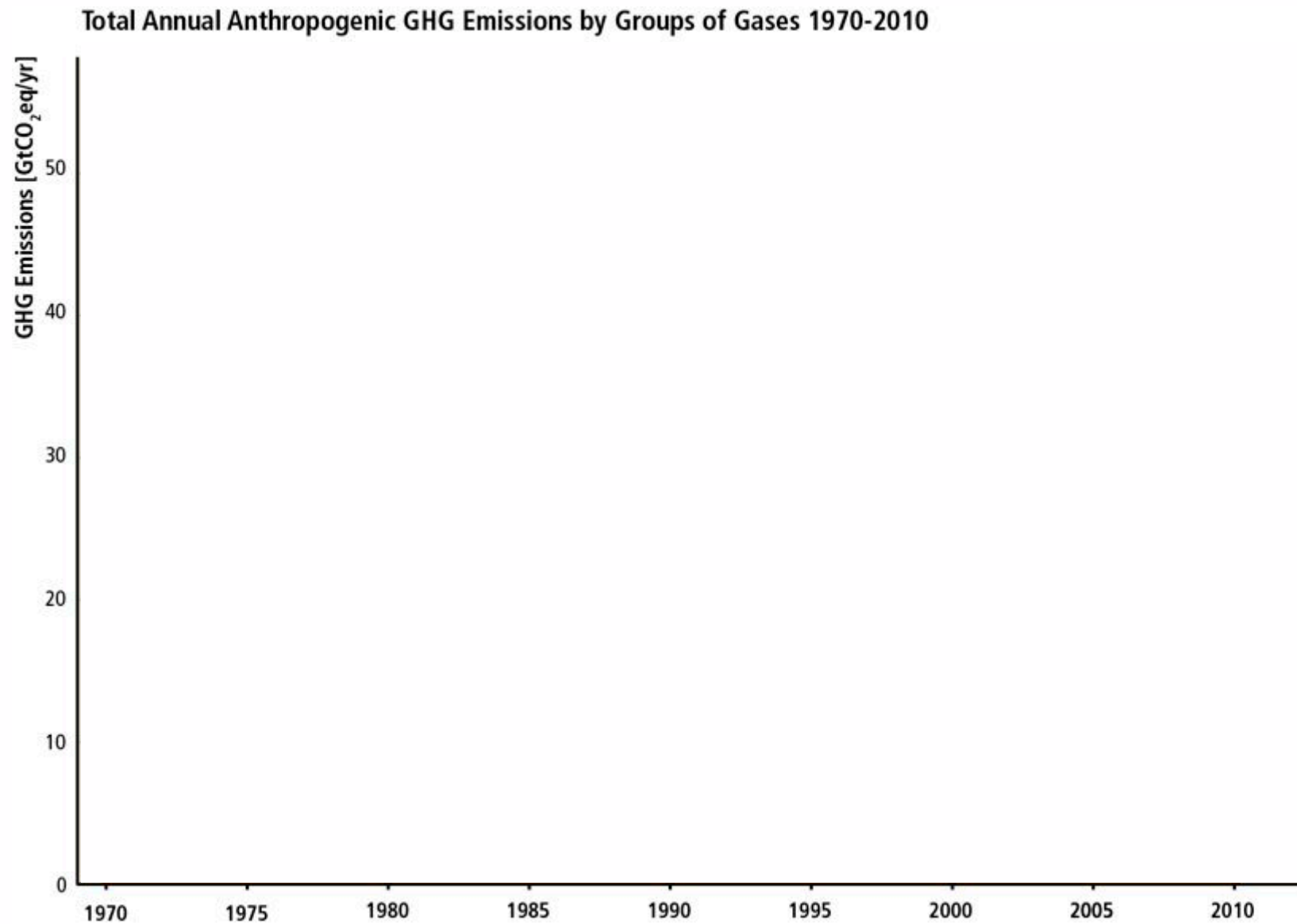
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Drivers, trends and mitigation & transformation pathways

two perspectives



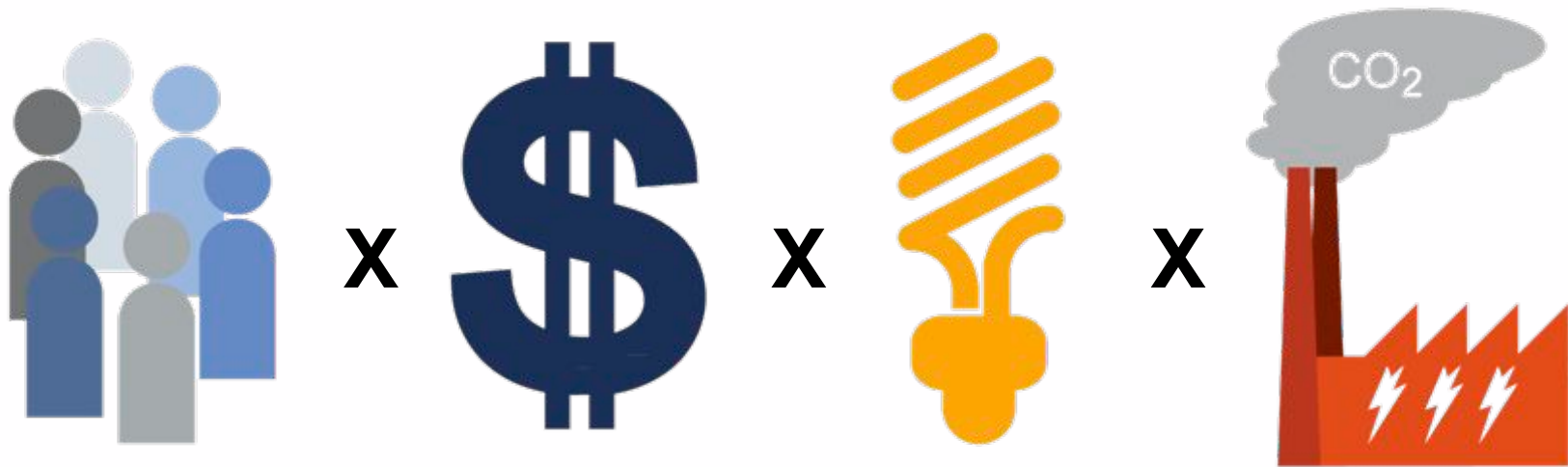
Historical trends



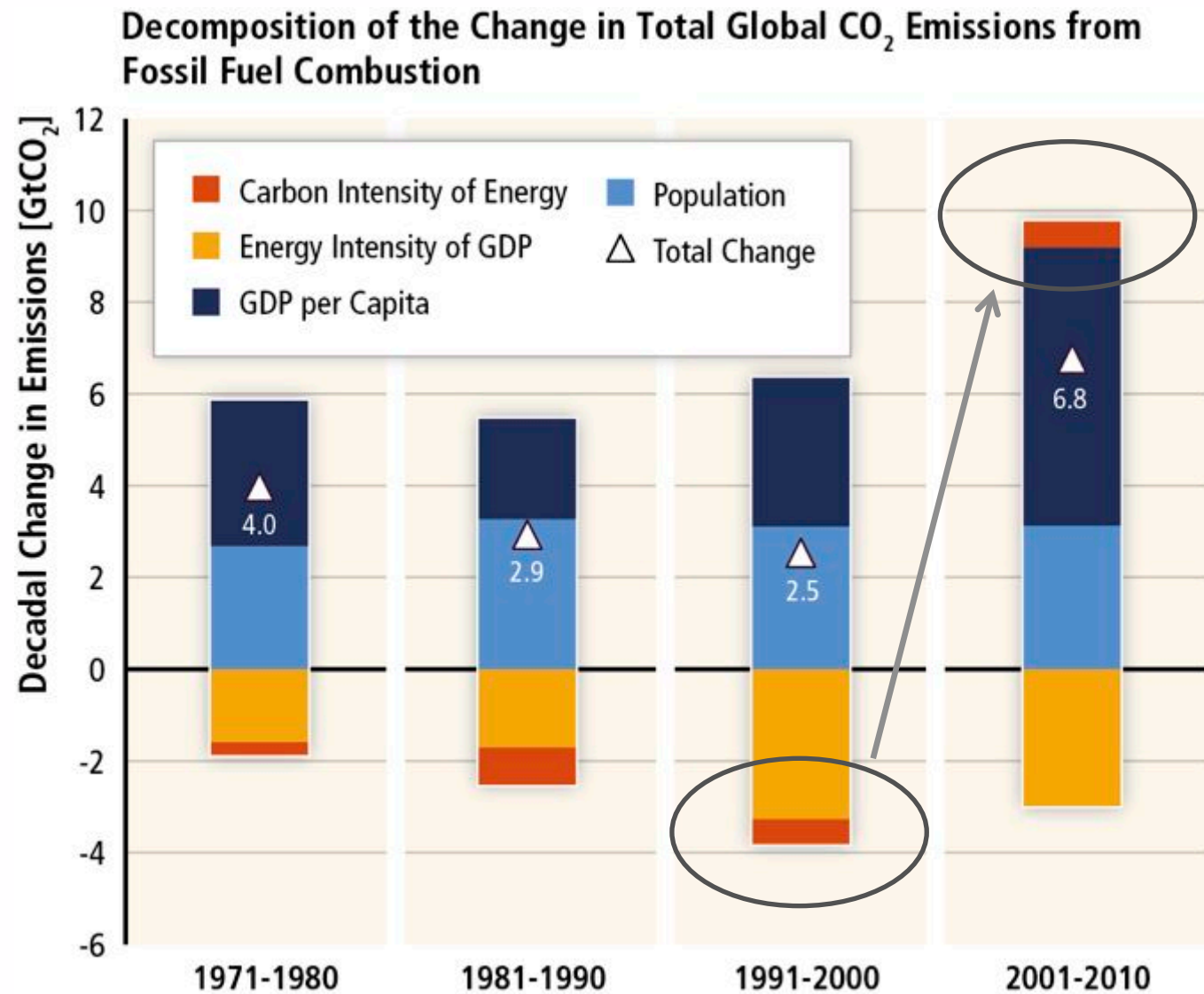
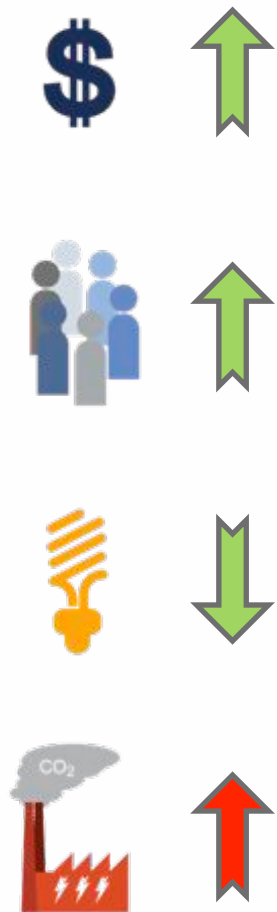
Emission drivers

what causes this increase?

CO₂ EMISSIONS = ?

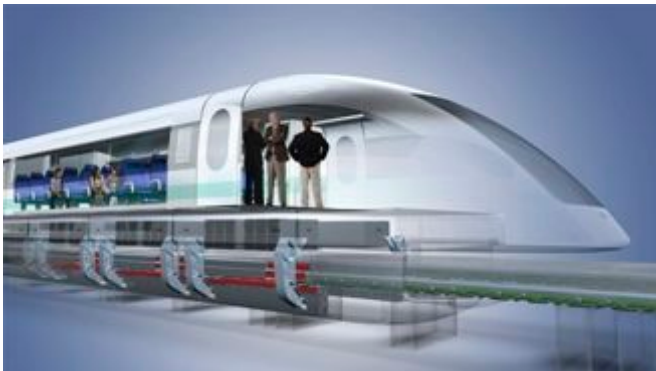


Historical emission drivers



Future scenarios

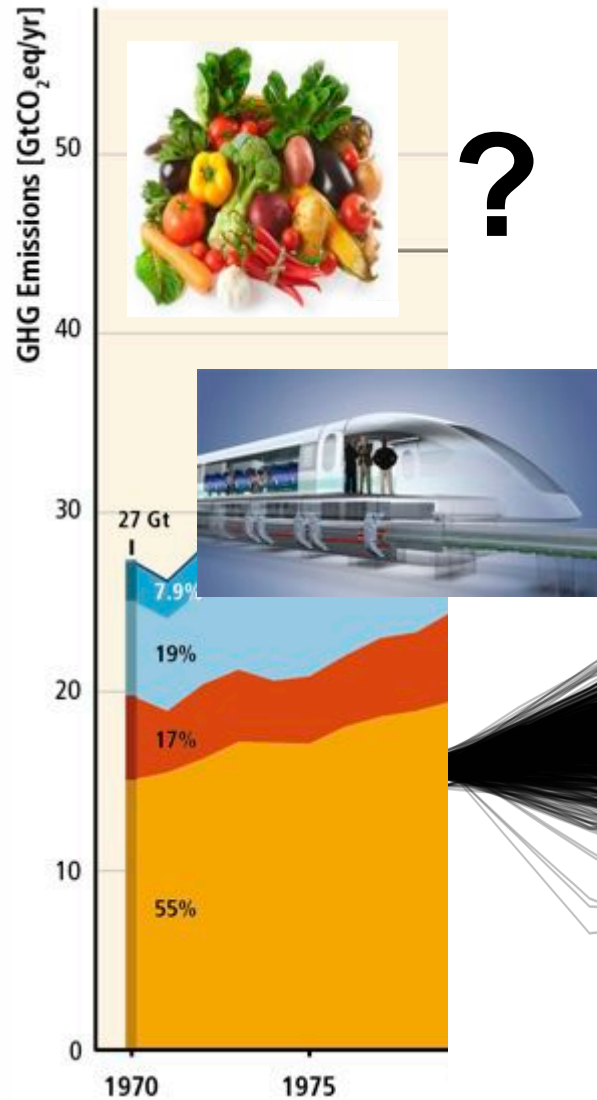
stories about what happened in the future



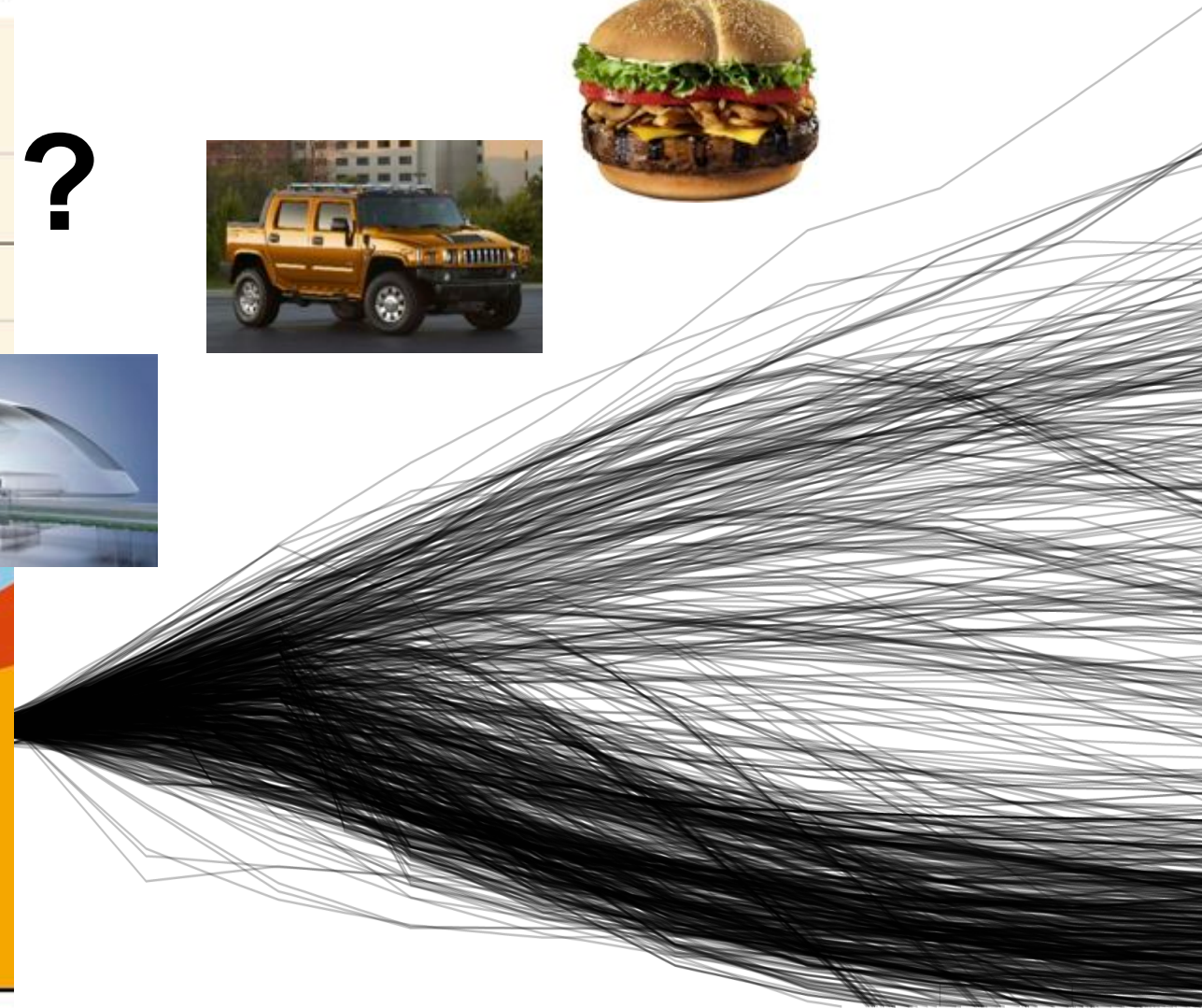
Transformation pathways

stories about what happened in the future

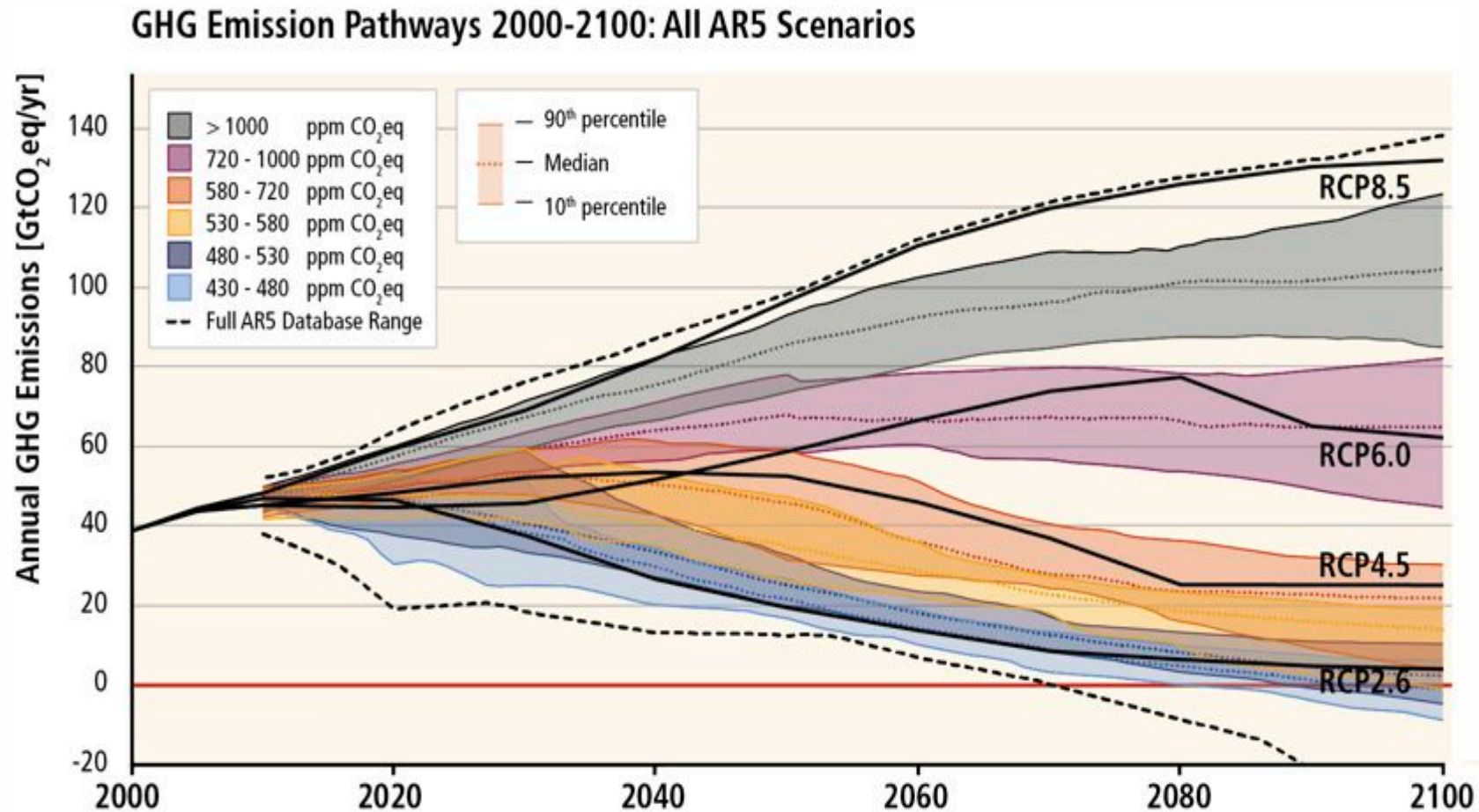
Total Annual Anthropogenic



?



Transformation pathways



Lowest scenarios: *likely* <2°C

Characteristics 2°C

the emission budget is limited

Characteristics 2°C

the emission budget is limited

ALREADY EMITTED



Characteristics

the emission budget is limited

ALREADY EMITTED



CONSISTENT WITH $<2^{\circ}\text{C}$

Characteristics

the emission budget is limited



Characteristics 2°C

important global challenge

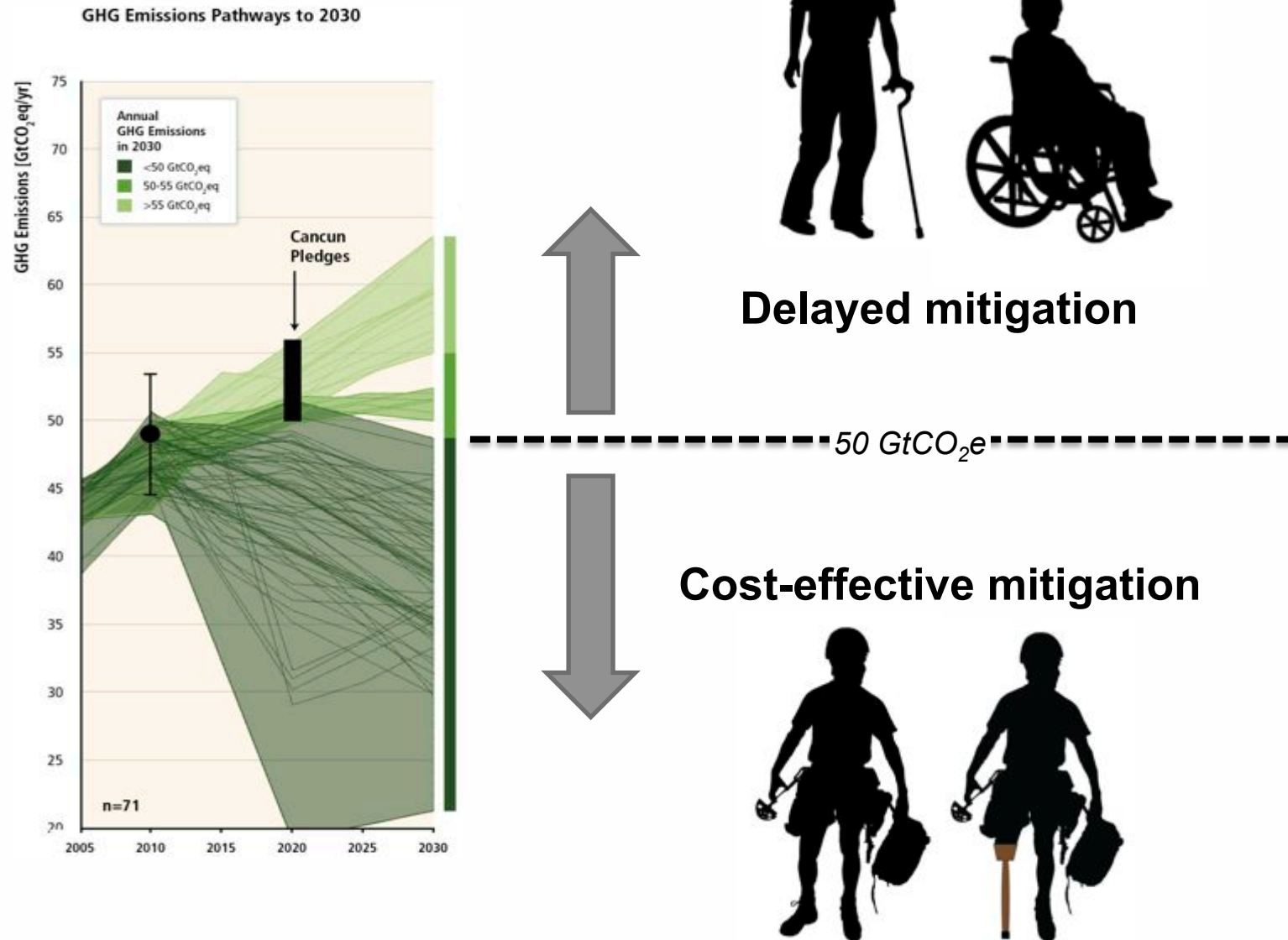


- **Global emissions reductions over time**
- **Up-scaling of zero and low-carbon energy supply**
- **Costs** (excl. co-benefits and side-effects)

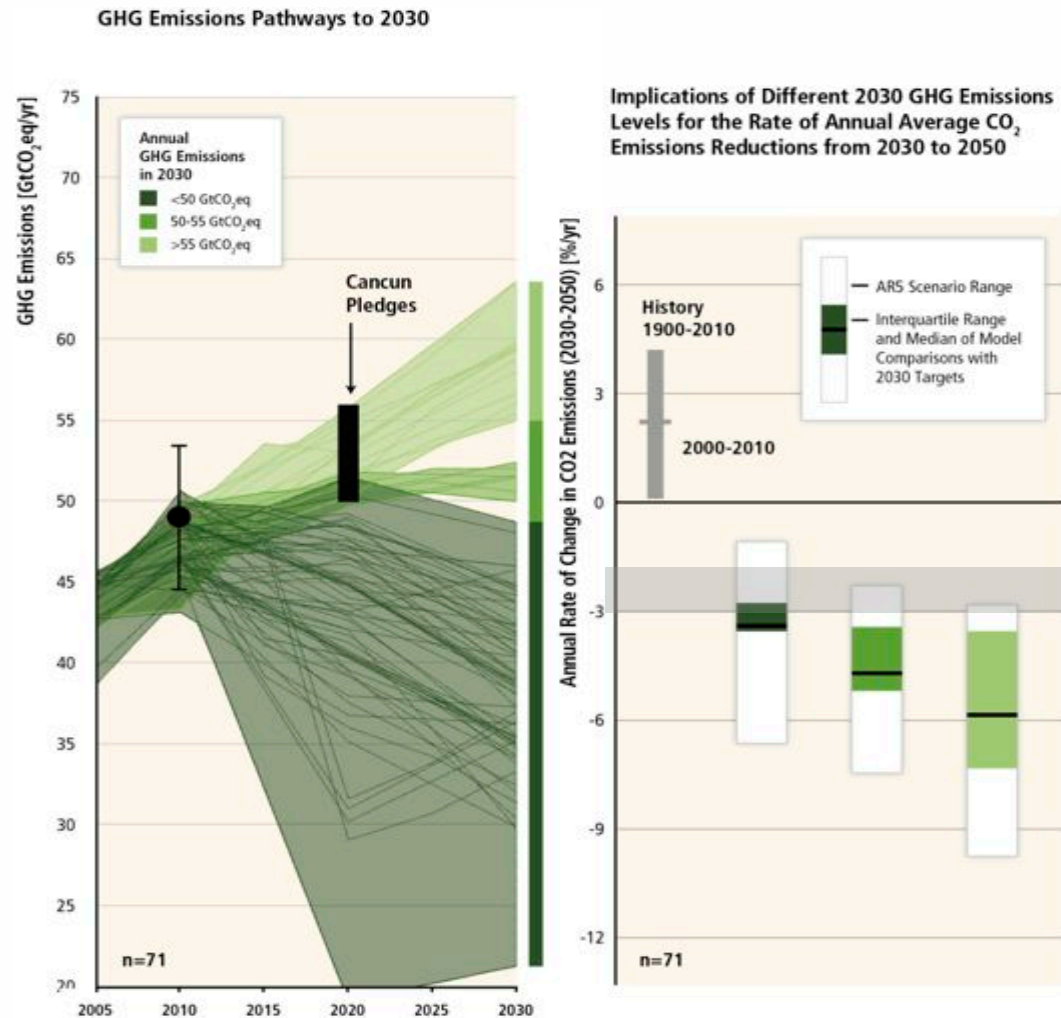
An imperfect world



Impact of delay

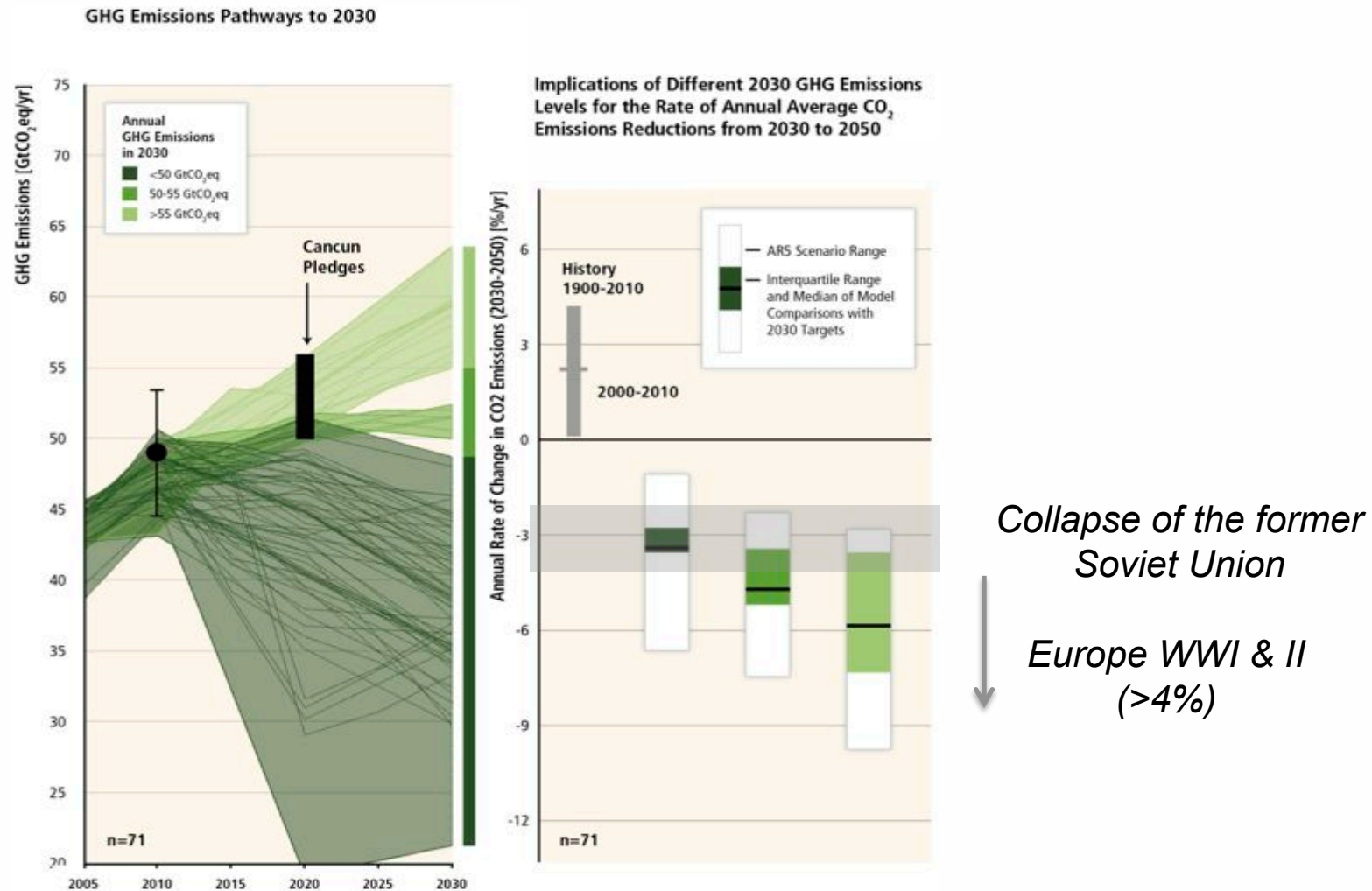


Delay significantly increases mitigation challenge

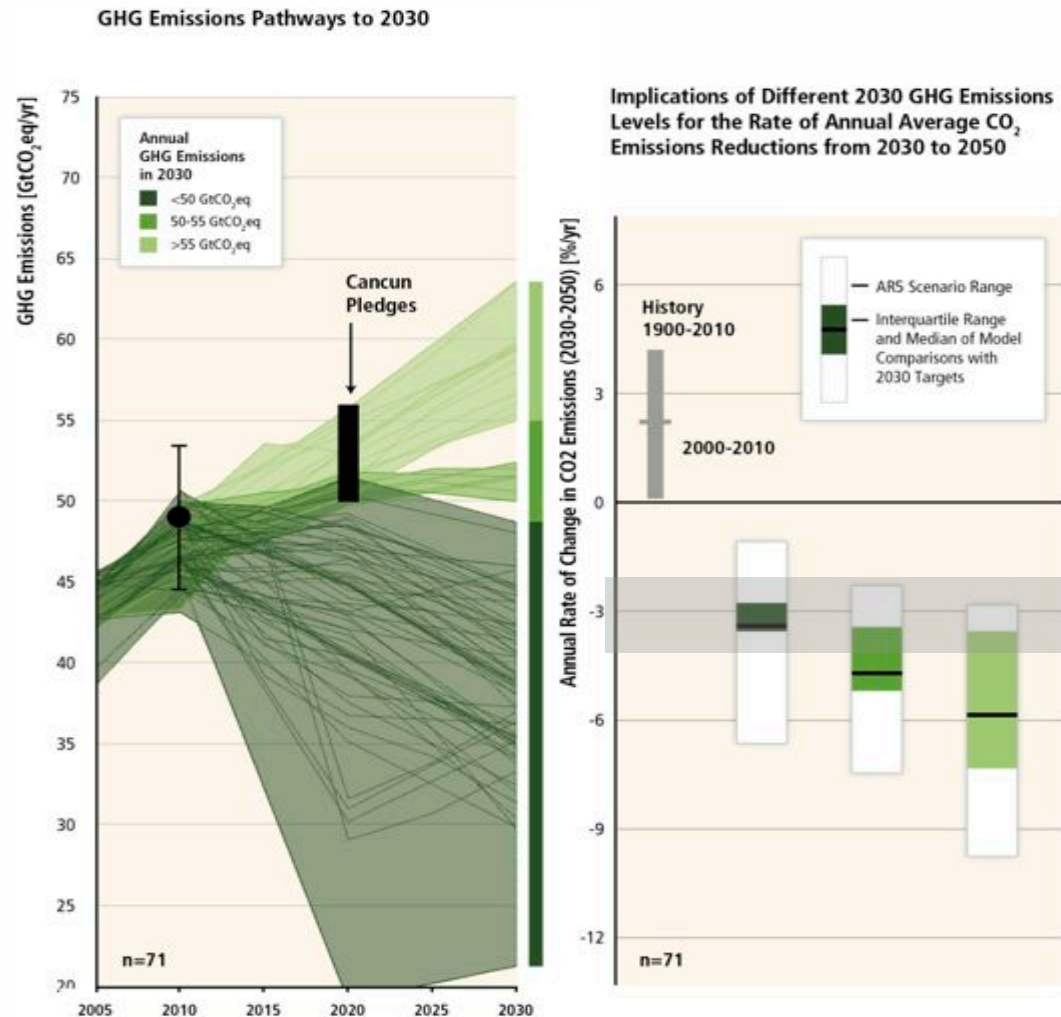


*Sweden & France after
the oil crisis*

Delay significantly increases mitigation challenge



Delay significantly increases mitigation challenge



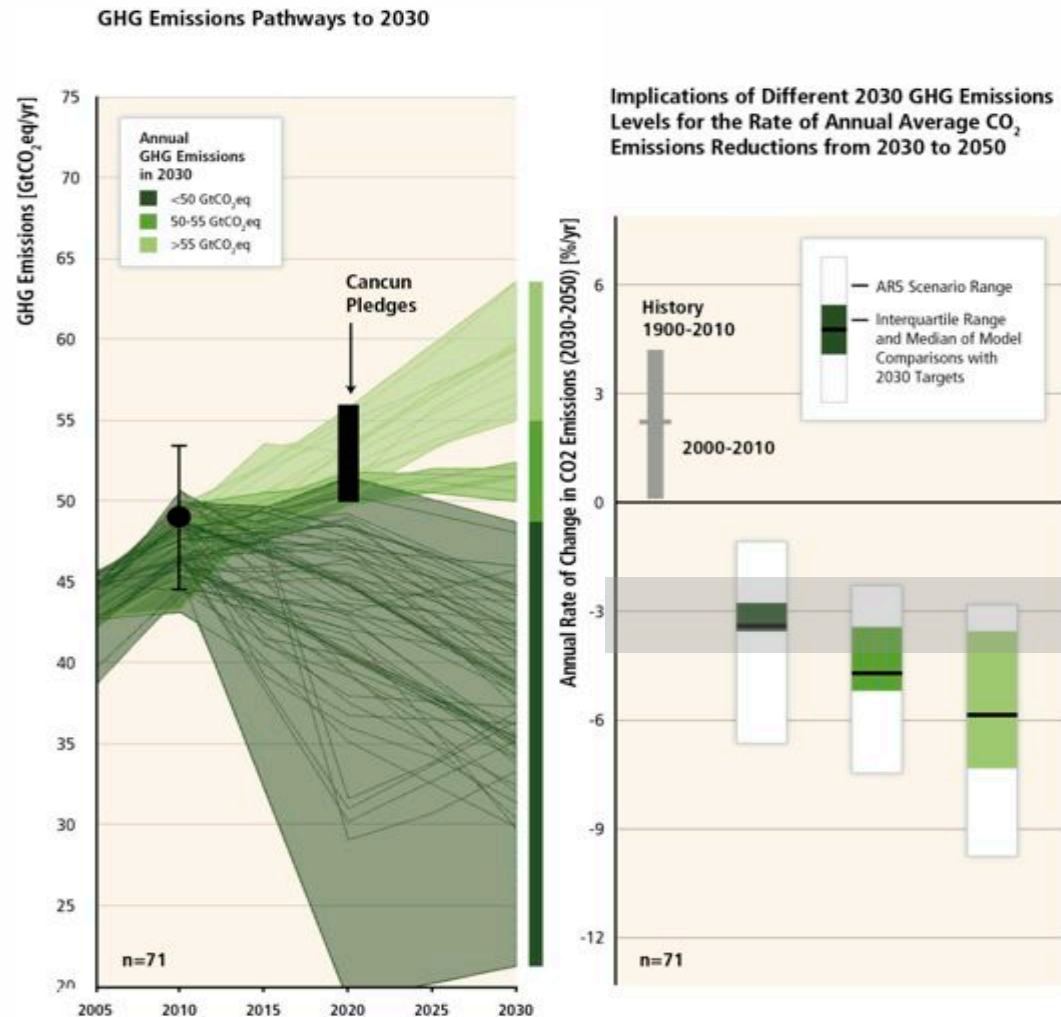
Consequences:

- Higher costs
- Higher technological dependence
- Possibly missing 2°C

Collapse of the former Soviet Union

Europe WWI & II (>4%)

Delay significantly increases mitigation challenge



Consequences:

- Higher costs
- Higher technological dependence
- Possibly missing 2°C

Collapse of the former Soviet Union

Europe WWI & II (>4%)

Cancun Pledges inconsistent with staying below 2°C

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Further Information

www.mitigation2014.org

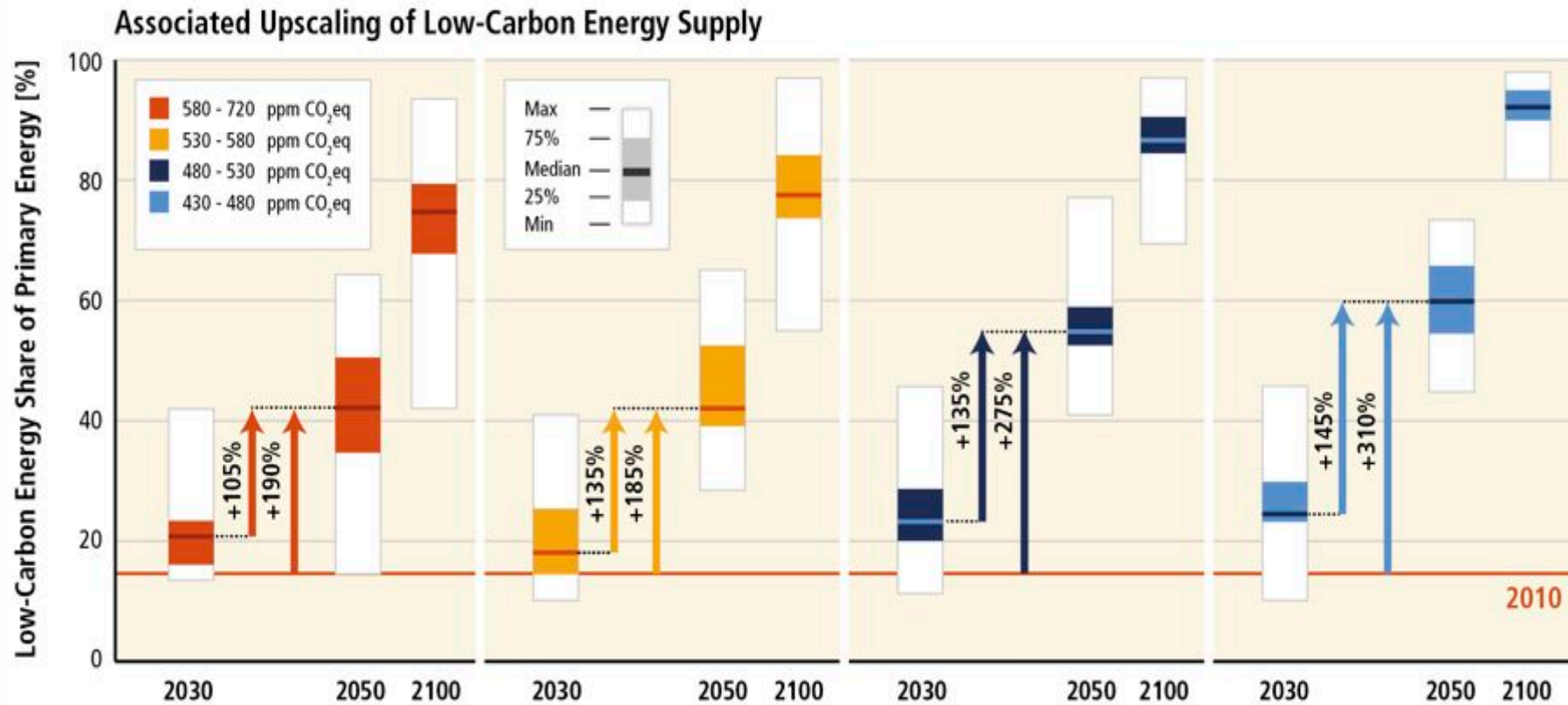
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Working Group III contribution to the
IPCC Fifth Assessment Report



Backup

Scale-up of zero and low-carbon energy supply



Characteristics

<div>Concentration levels</div>		<div>Emissions budgets</div>		<div>Emissions reductions</div>	<div>Likelihood of temperature change</div>				
<div>CO₂eq Concentrations in 2100 (CO₂eq)</div> <div>Category label (concentration range)⁹</div>	Subcategories	Cumulative CO ₂ emission ³ (GtCO ₂)	Change in CO ₂ eq emissions compared to 2010 in (%) ⁴		Temperature change (relative to 1850–1900) ^{5,6}				
		2011–2100	2050	2100	Likelihood of staying below temperature level over the 21 st century ⁸				
					1.5°C	2.0°C	3.0°C	4.0°C	
< 430	Only a limited number of individual model studies have explored levels below 430 ppm CO ₂ eq								
450 (430–480)	Total range ^{1,10}	630–1180	-72 to -41	-118 to -78	More unlikely than likely	Likely	Likely	Likely	
500 (480–530)	No overshoot of 530 ppm CO ₂ eq	960–1430	-57 to -42	-107 to -73	Unlikely	More likely than not			
	Overshoot of 530 ppm CO ₂ eq	990–1550	-55 to -25	-114 to -90		About as likely as not			
550 (530–580)	No overshoot of 580 ppm CO ₂ eq	1240–2240	-47 to -19	-81 to -59		More unlikely than likely ¹²			
	Overshoot of 580 ppm CO ₂ eq	1170–2100	-16 to 7	-183 to -86					
(580–650)	Total range	1870–2440	-38 to 24	-134 to -50		Unlikely			More likely than not
(650–720)	Total range	2570–3340	-11 to 17	-54 to -21			More unlikely than likely		
(720–1000)	Total range	3620–4990	18 to 54	-7 to 72	Unlikely ¹¹	Unlikely	More unlikely than likely		
>1000	Total range	5350–7010	52 to 95	74 to 178		Unlikely ¹¹	Unlikely	More unlikely than likely	