Industry Decarbonization

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NAVIGATE Online Webinar

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NAVIGATE

Next generation of advanced integrated assessment modelling to support climate policy making

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NAVIGATE Future of Global Industry Sector Emissions

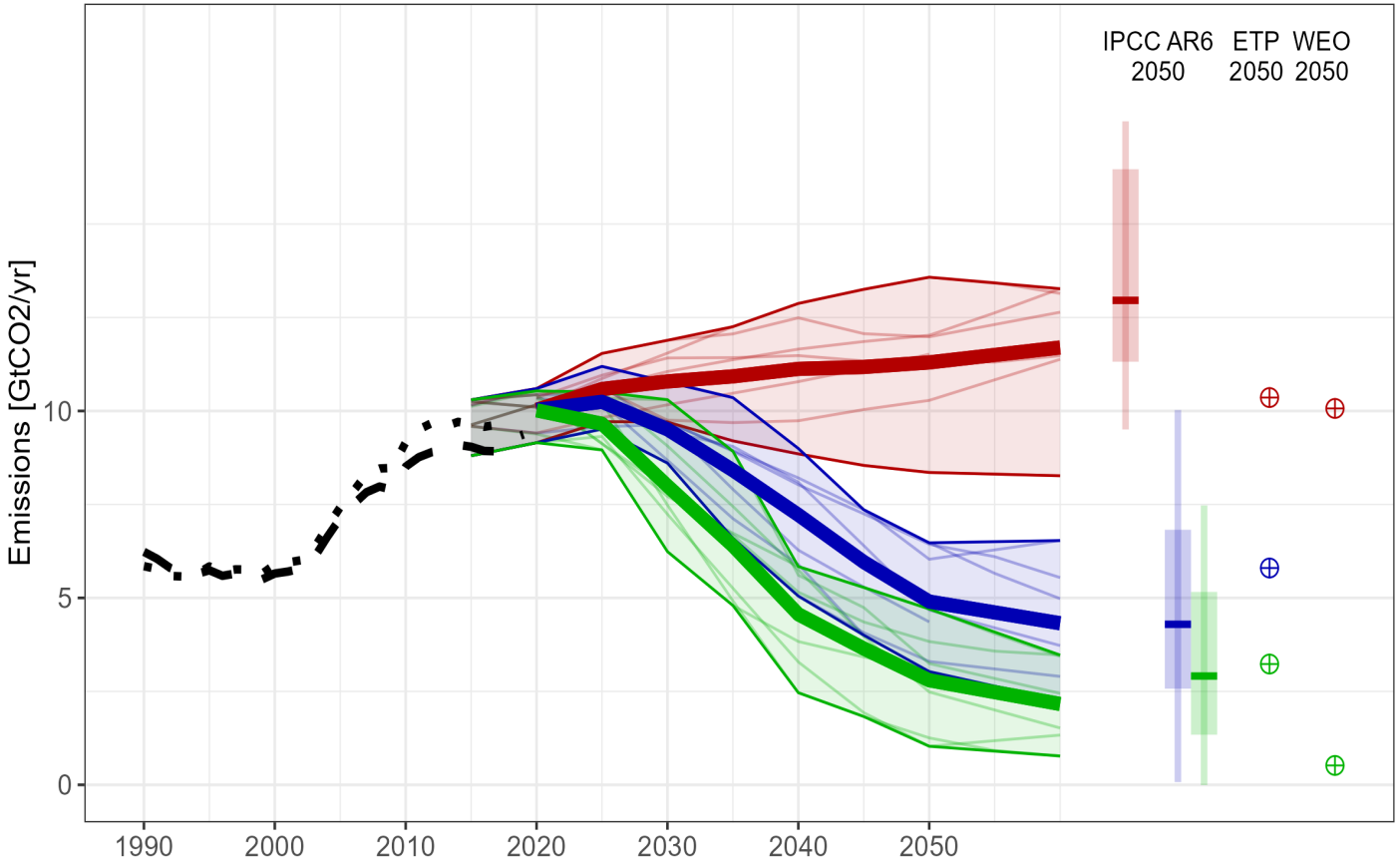

Figure shows global direct emissions from industry.
Upstream emissions from electricity production etc. not included

- **Current national policies: Industry emissions** only slight increase and lower than IPCC AR6 due to more baseline decarbonzation
- **Well below 2°C: 4.9GtCO_2/yr (3.0-6.5) in 2050** Reduction rates in industry are similar to total CO_2 Emissions
- **1.5°C by 2100: 2.8 GtCO_2/yr (1.0-4.7) in 2050** Risk that industry sector emissions do not decline as fast as total CO_2 emissions

  Due to bottlenecks to decarbonization

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NAVIGATE Key technology and transformation challenges until 2050

	Total	Iron&Steel	Cement	Chemicals	Other
Electrification	Phase-out fossils and ramp-up green electricity	Secondary steel production	High potential (with CCS); not mature	High for process heat	Very high for process heat
Hydrogen & E-Fuels	Limited due to tight electricity markets	H2-DRI	Small	Potential for feedstock	High potential for heat
Bioenergy	Versatile fossil fuel substitute, limited supply	Small	High	Important feedstock input	Important heat source
CCS		Small potential, mostly transitory	Very high potential for process emissions espec. electric kilns (>2 $GtCO_2$/yr)	Potentially high	Limited
Material reduction	Regulation intensive	Potential nearly 30% reduction	Potential nearly 20% reduction		
Recycling	Regulation and governance intensive	High potential (up to 1,600 Mt/yr)			
Residual fossil fuel use		Small (coal phase-out)	Small (coal phase-out)	Wb-2°C: 20 bbl/dy 1.5°C: 15 bbl/d	Highly uncertain

"Other" includes aluminum, manufacturing, food processing, wood processing, pulp&paper

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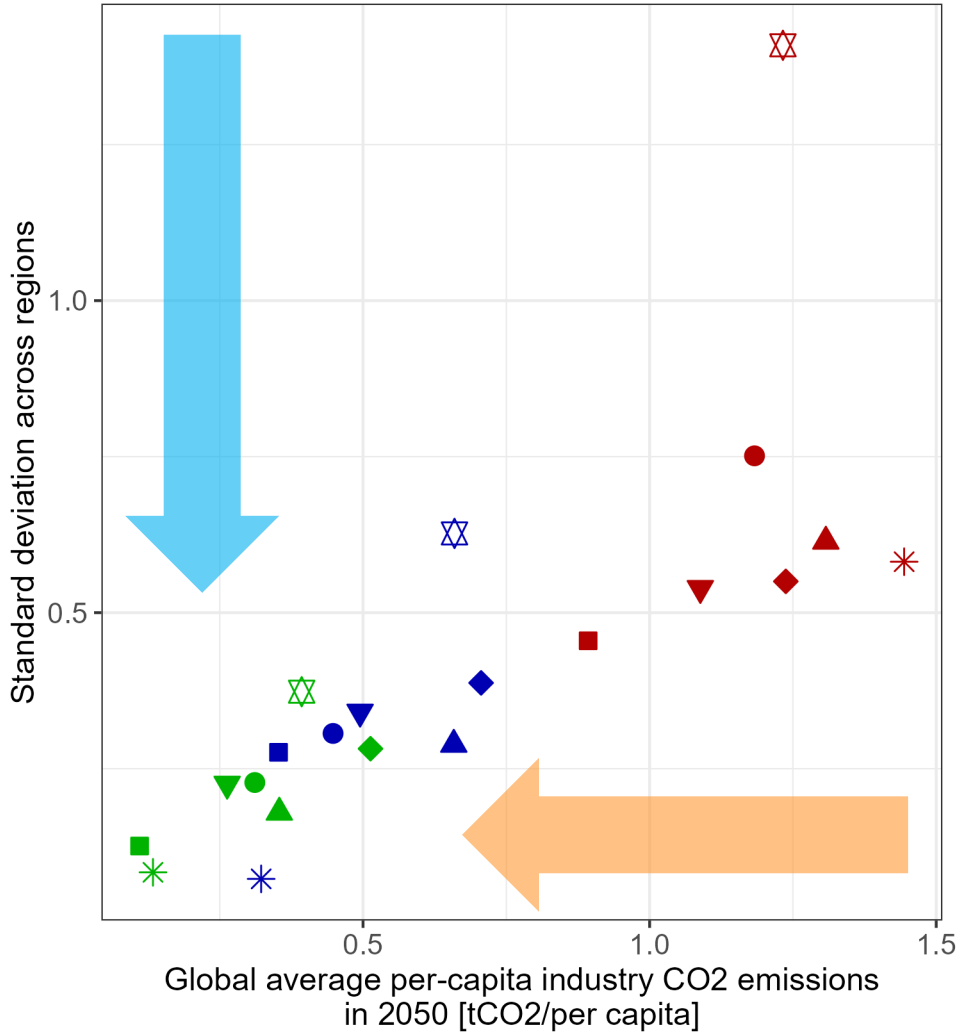
NAVIGATE Deep & rapid industry decarbonization important, b/c …

- Lowers distributional conflicts between regions
  - **Low global per-capita capita emissions** imply
  - **smaller differences of per-capita emissions across regions**
- Avoids CO_2 price inflation (<250 $US/$tCO_2$)
- Reduces need for carbon removals
- Overcoming residual emissions keep door to 1.5°C target open



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