

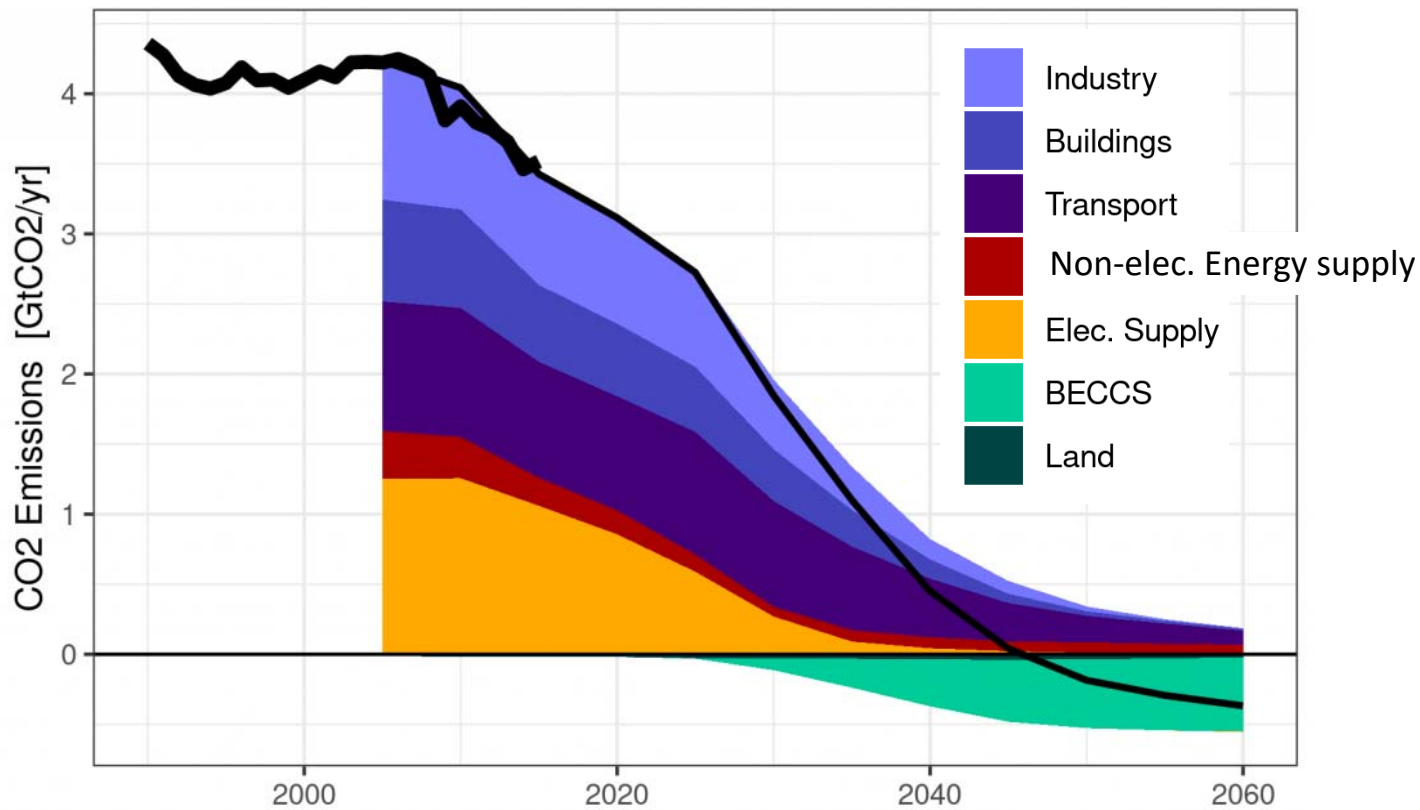
Dr. Jessica Strefler, EMP-E, 06 Oct 2020

Pathways to emission neutrality



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 821124.

Pathways to carbon neutrality



Uncertainties:

- 1. Carbon Dioxide Removal (CDR)** – potential, options, policies?
→ Limit dependency; research & development needed
- 2. Energy demand** – Efficiency, electrification, lifestyle changes?
- 3. Emission reductions in single sectors**

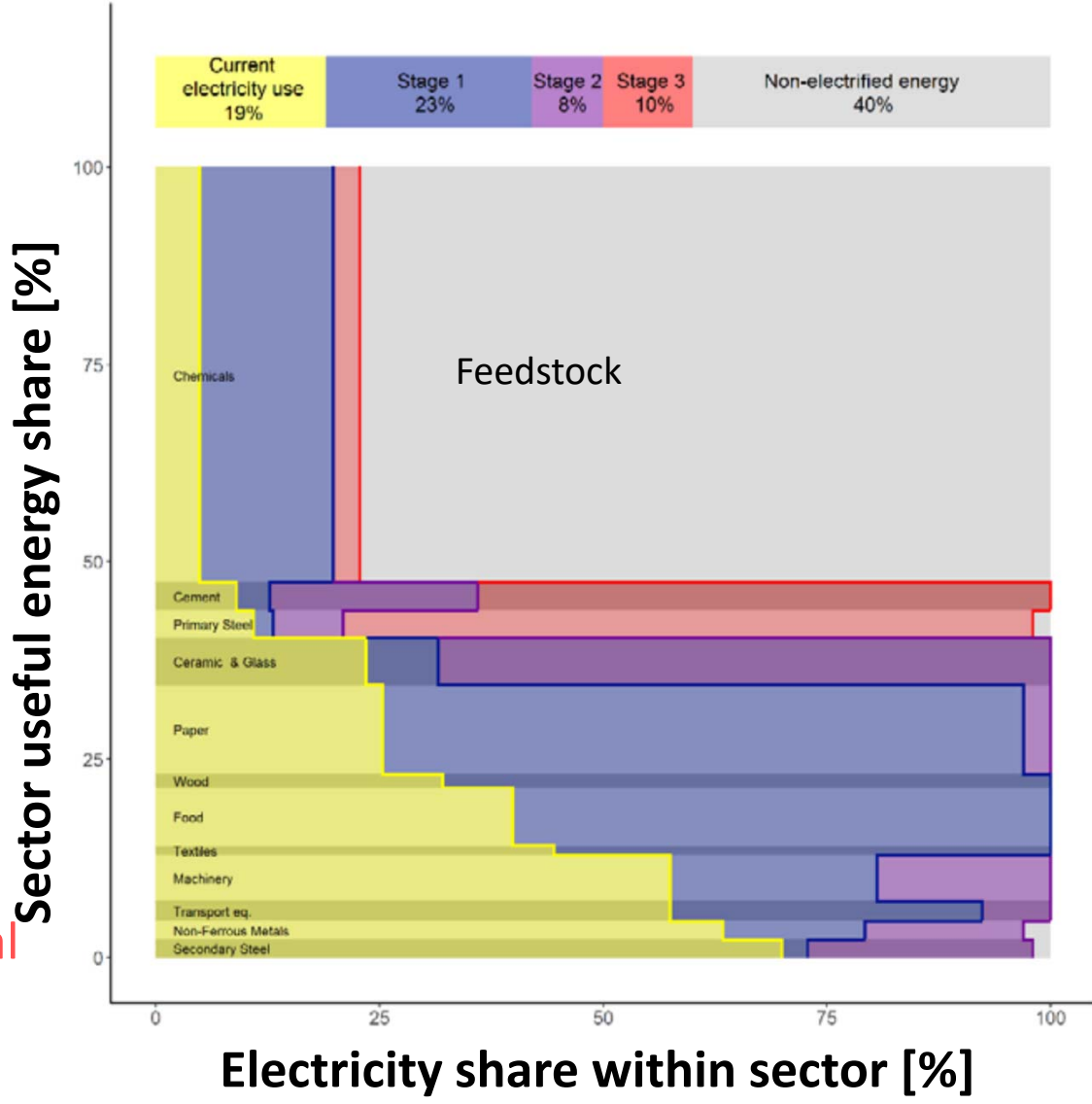


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Industry electrification

- **Current electricity use: 19%**
- **Stage 1: + 23%**
Entry points, e.g. thermal processes
- **Stage 2: + 8%**
Diverse range of processes and sector-specific technologies, all already fully developed and established in the industry
- **Stage 3: + 10%**
Maximum achievable electrification potential

→ **Electrification could almost entirely abate energy-related CO₂ emissions**

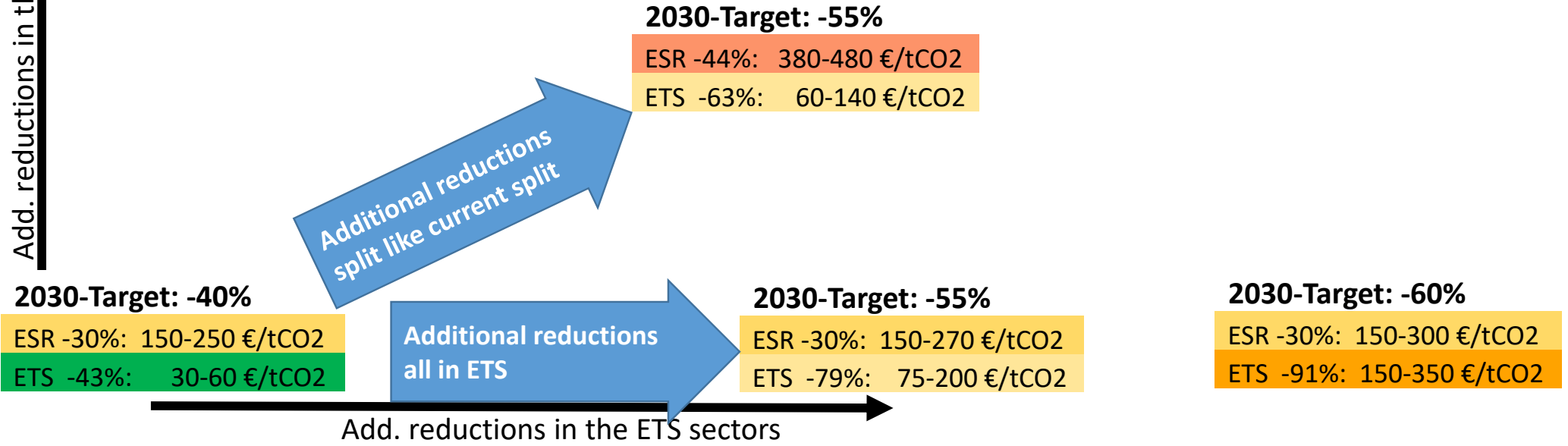


Marginal mitigation costs in 2030 – NO additional policy instruments (preliminary results)

Comments:

- Color represents the pressure in the relevant system (here represented by the CO2 price)
- ESR-target reached in EU-wide cooperation

Add. reductions in the ESR sectors



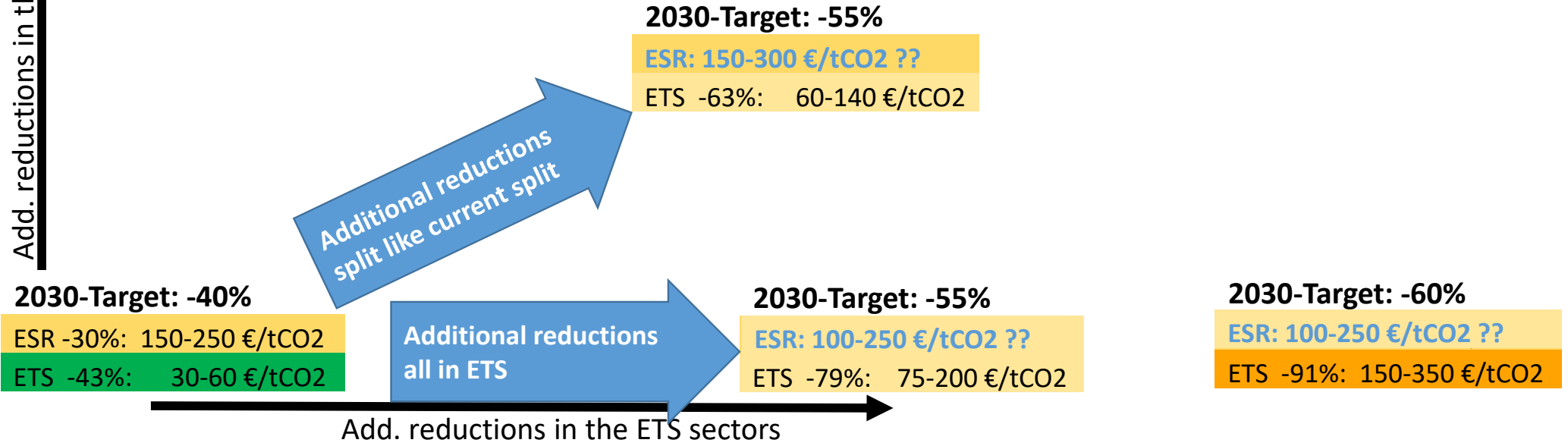
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Marginal mitigation costs in 2030 – WITH additional policy instruments (preliminary results)

Comments:

- Color represents the pressure in the relevant system (here represented by the CO2 price)
- ESR-target reached in EU-wide cooperation

Add. reductions in the ESR sectors



Key messages

- **Emission reduction determines CDR requirements – still large uncertainties regarding potential, options, policies**
- **Reduction potentials in all sectors need to be exploited – electrification could almost entirely abate energy related CO₂ emissions in the industry**
- **Sufficient carbon price crucial to leverage potential of ETS and avoid overburdening of ESR sectors – additional policies can significantly reduce CO₂ price in ESR**

