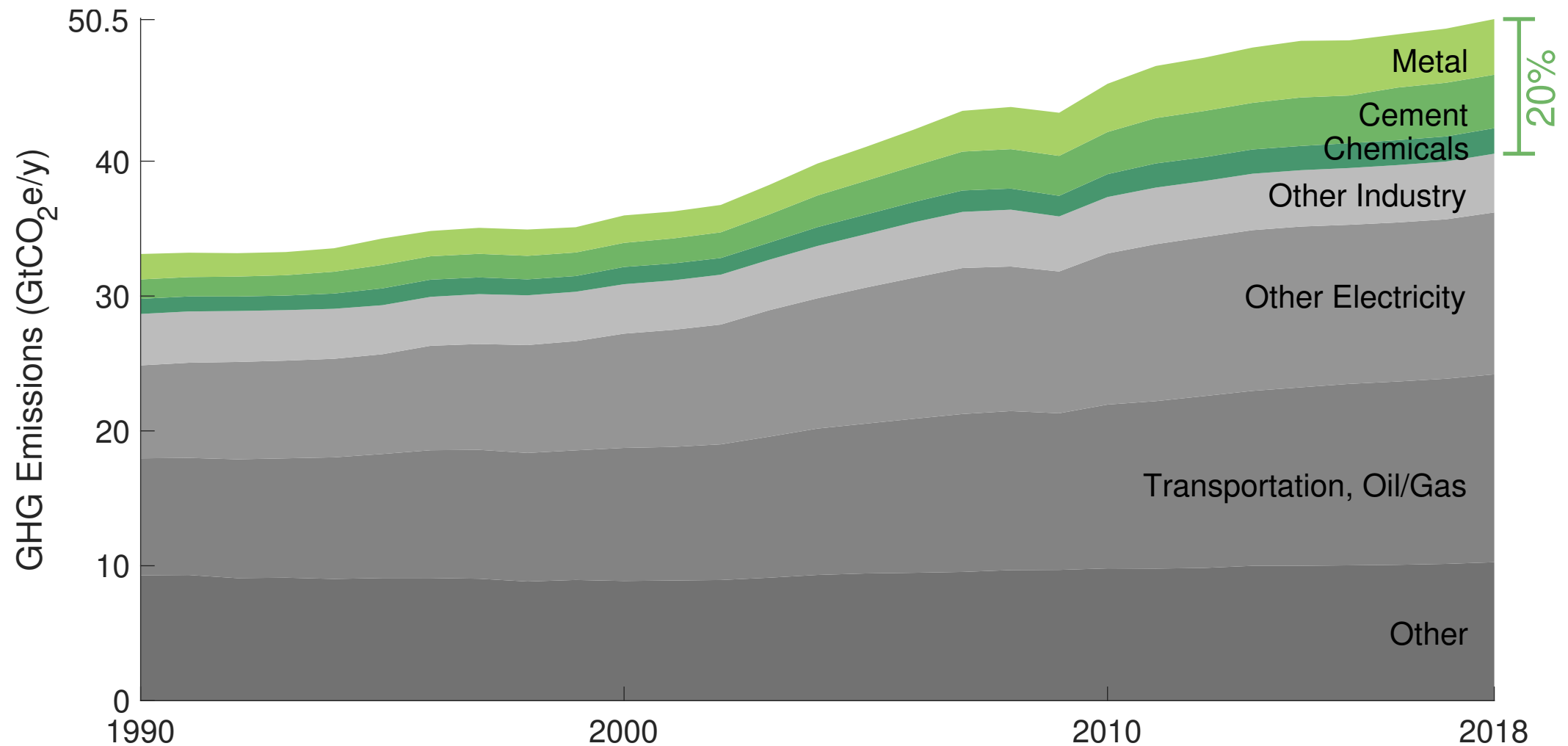


Heavy Industry Decarbonization: Steps toward Net-Zero

Rebecca Dell

20 April 2021

Heavy industry is responsible for more than 20% of all GHG emissions.

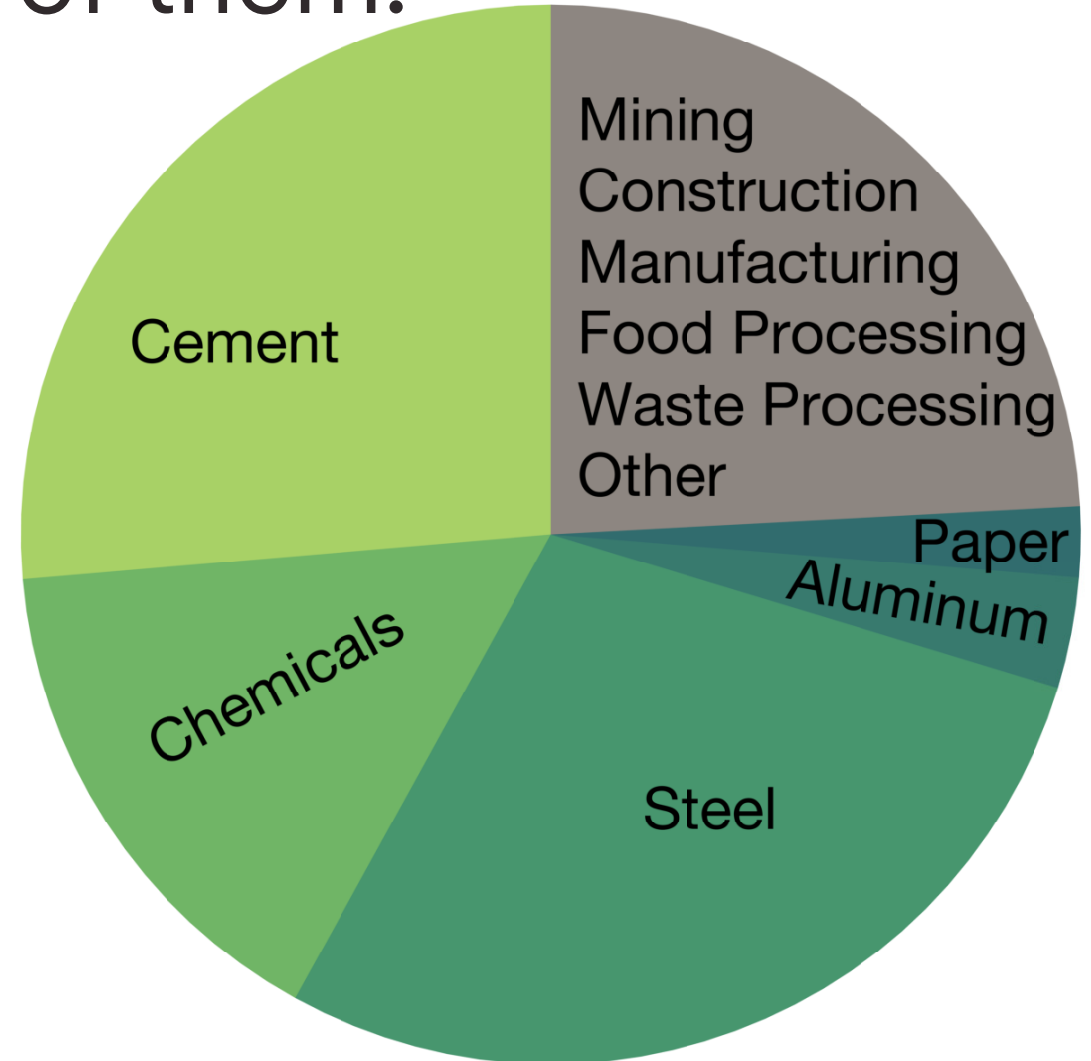


These commodities dominate emissions because we use so much of them.

Cement: 4 billion tons per year
550 kg per person per year

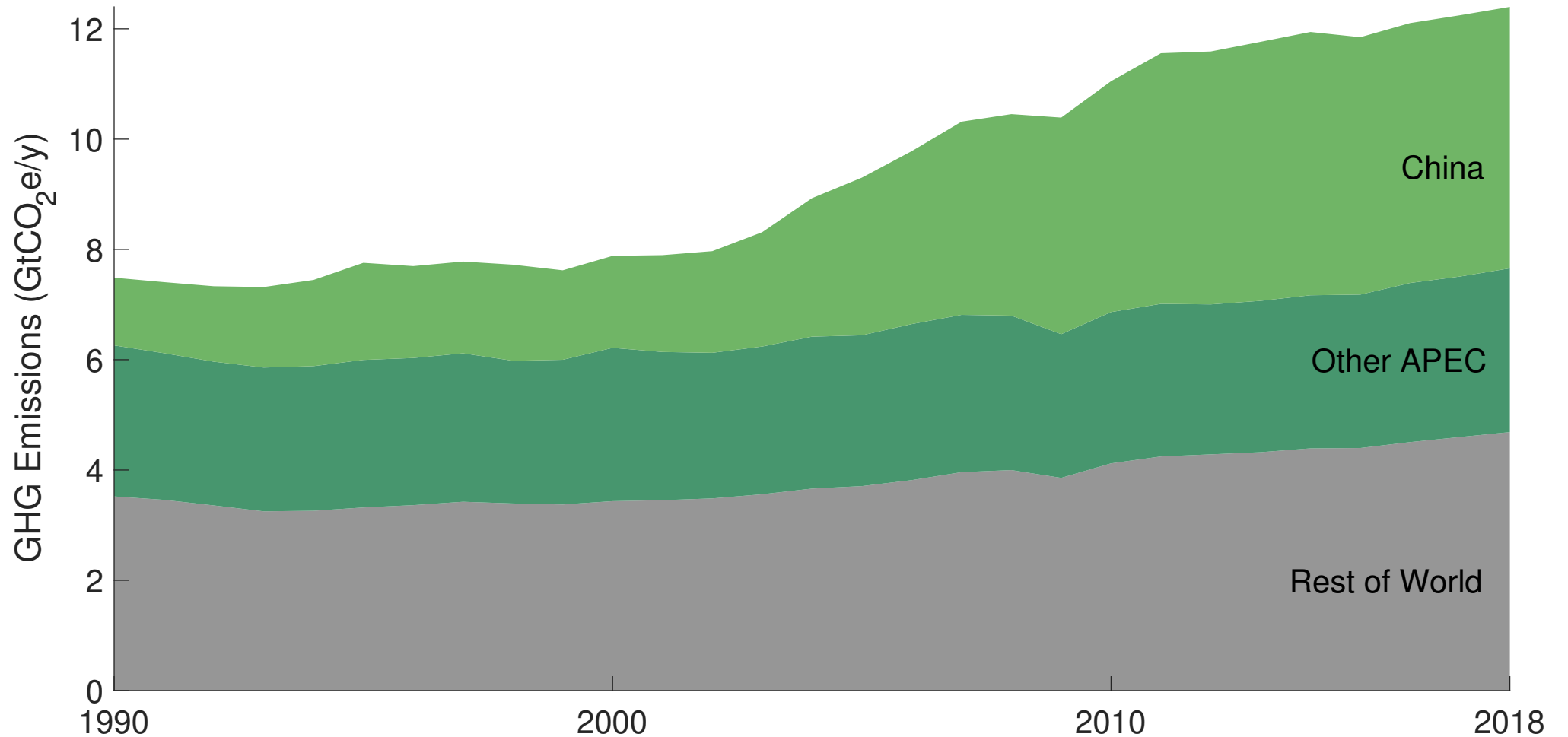
Steel: 1.9 billion tons per year
250 kg per person per year

Plastic: 0.5 billion tons per year
70 kg per person per year

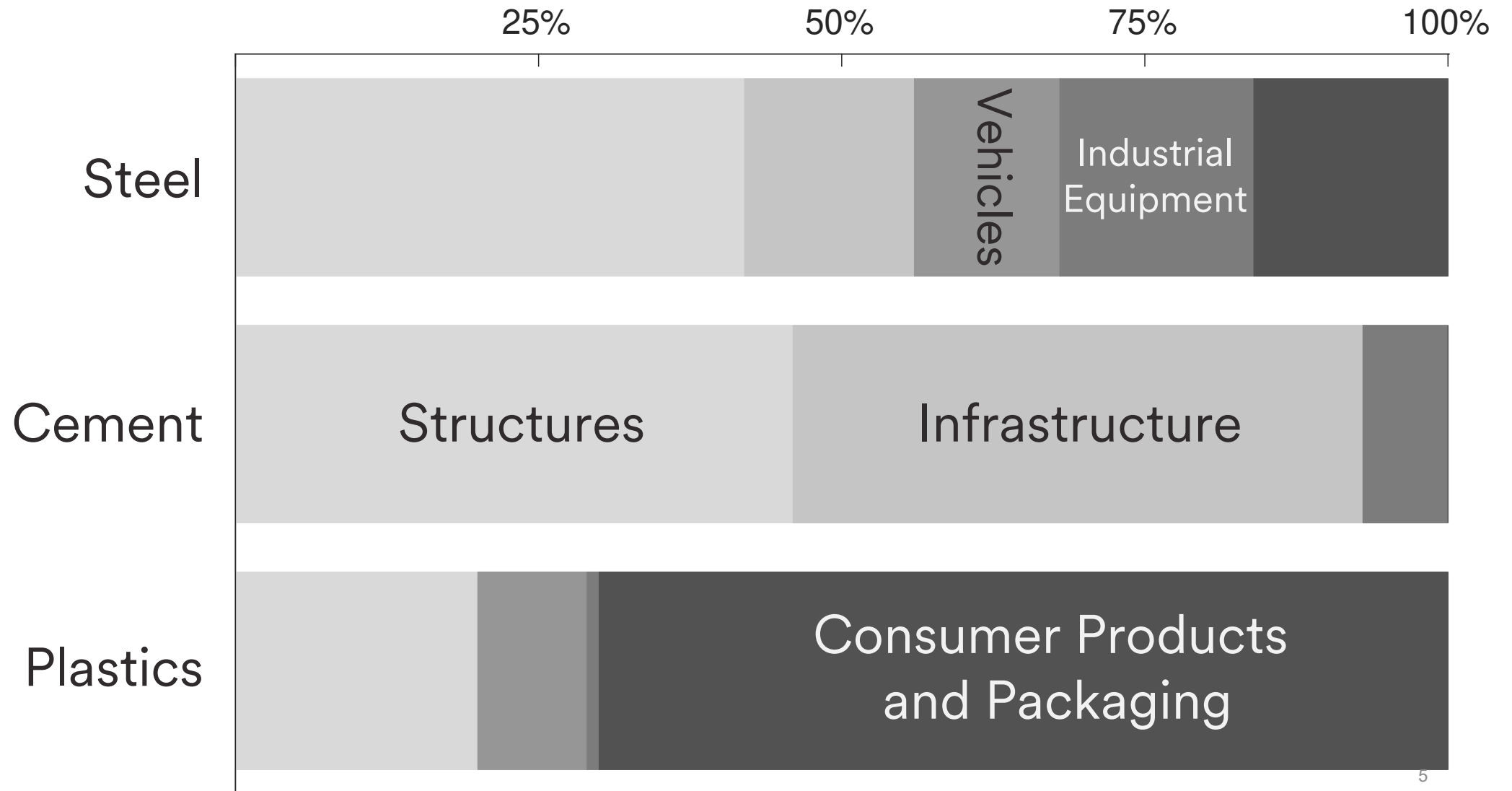


The Asia-Pacific region dominates industrial production and emissions.

Global Direct Industrial Emissions



Most heavy industry commodities end up in a few product categories.



Emissions reductions come in three basic categories.

$$\text{GHG} = S \times \frac{P}{S} \times \frac{M}{P} \times \frac{\text{GHG}}{M}$$

Product-Service Intensity

Precision application
Increased product lifetimes
Reuse
Increased Utilization

Material Intensity

Substituting low-GHG materials
Light-weighting
Process waste reduction
Recycling

Emissions Intensity

CCS
Fuel switching
Bio-energy
Energy Efficiency
Innovative processes

Heavy industry GHG emissions are large and rapidly growing, especially in the Asia-Pacific region.

Climate-safe heavy industry is **possible** and **affordable** with the right investments and approaches.

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Report: ***Build Clean – Industrial Policy for Climate and Justice***

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