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INTERGOVERNMENTAL PANEL ON climate change

CLIMATE CHANGE 2014

Mitigation of Climate Change

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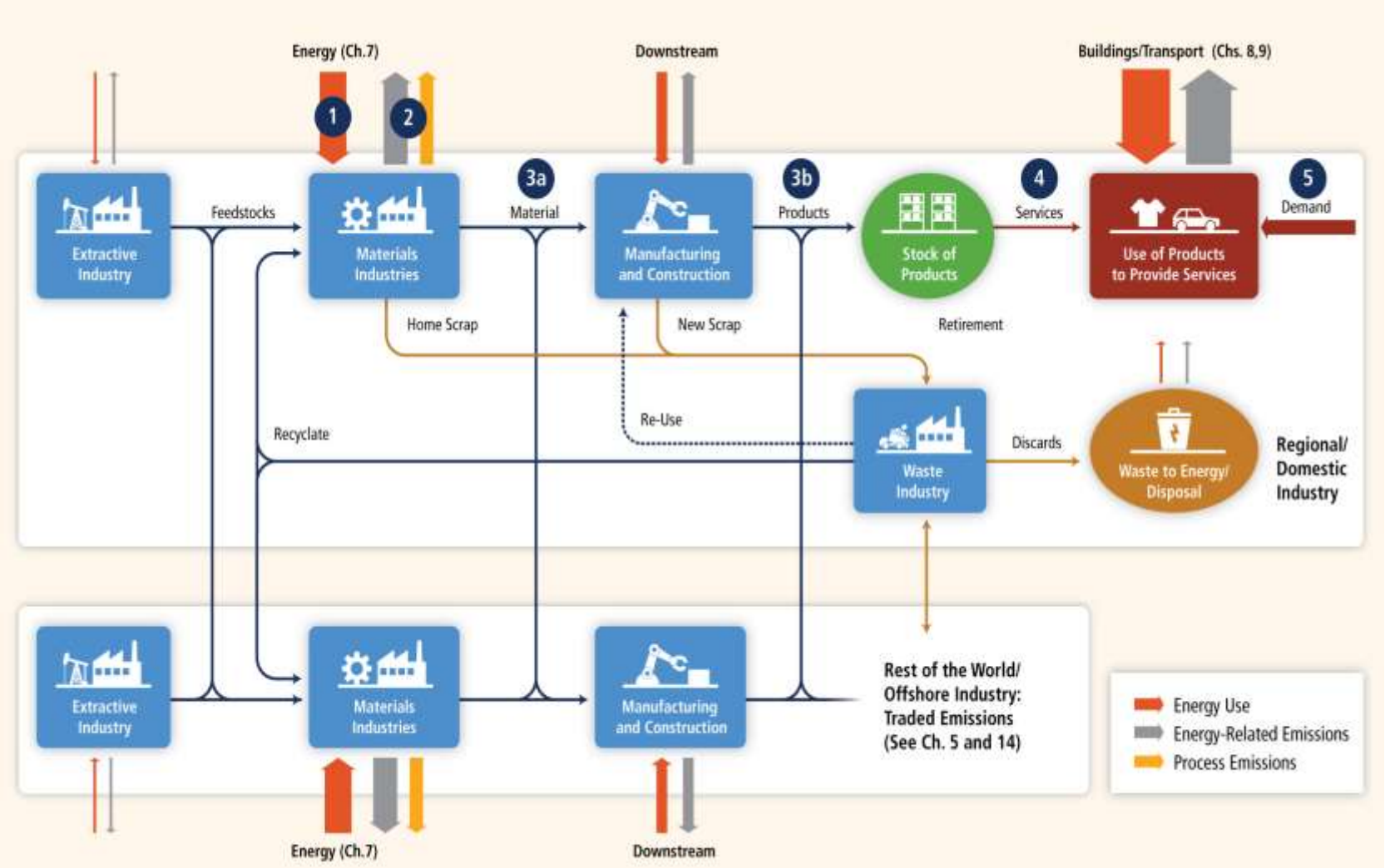
Co-CLA Chapter 10

Working Group III contribution to the
IPCC Fifth Assessment Report

WMO UNEP

Five main options for reducing GHG emissions in the industry sector (considering also traded goods)



Industry (I)

- **GHG mitigation option categories comprises**

(1) Energy efficiency (e.g., through furnace insulation, process coupling, or increased material recycling);

(2) Emissions efficiency (e.g., from switching to non-fossil fuel electricity supply, or applying CCS to cement kilns);

(3) Material efficiency

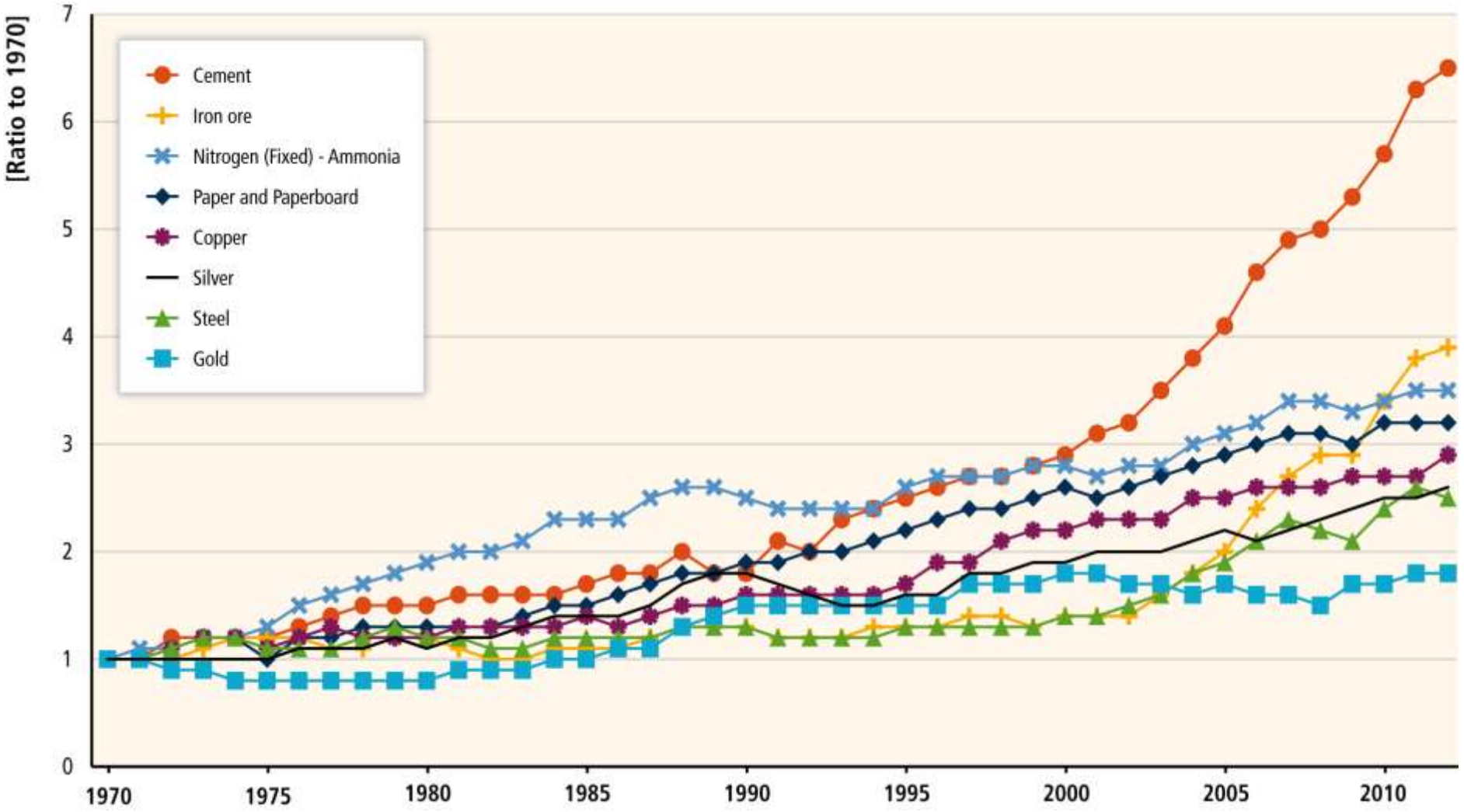
(3a) Material efficiency in manufacturing (e.g., through reducing yield losses in blanking and stamping sheet metal or re-using old structural steel without melting);

(3b) Material efficiency in product design (e.g., through extended product life, light-weight design, or de-materialization);

(4) Product-Service efficiency (e.g., through car sharing, or higher building occupancy);

(5) Service demand reduction (e.g., switching from private to public transport, new product design with longer life)

World production of minerals and manufactured products is growing steadily driving GHG emissions



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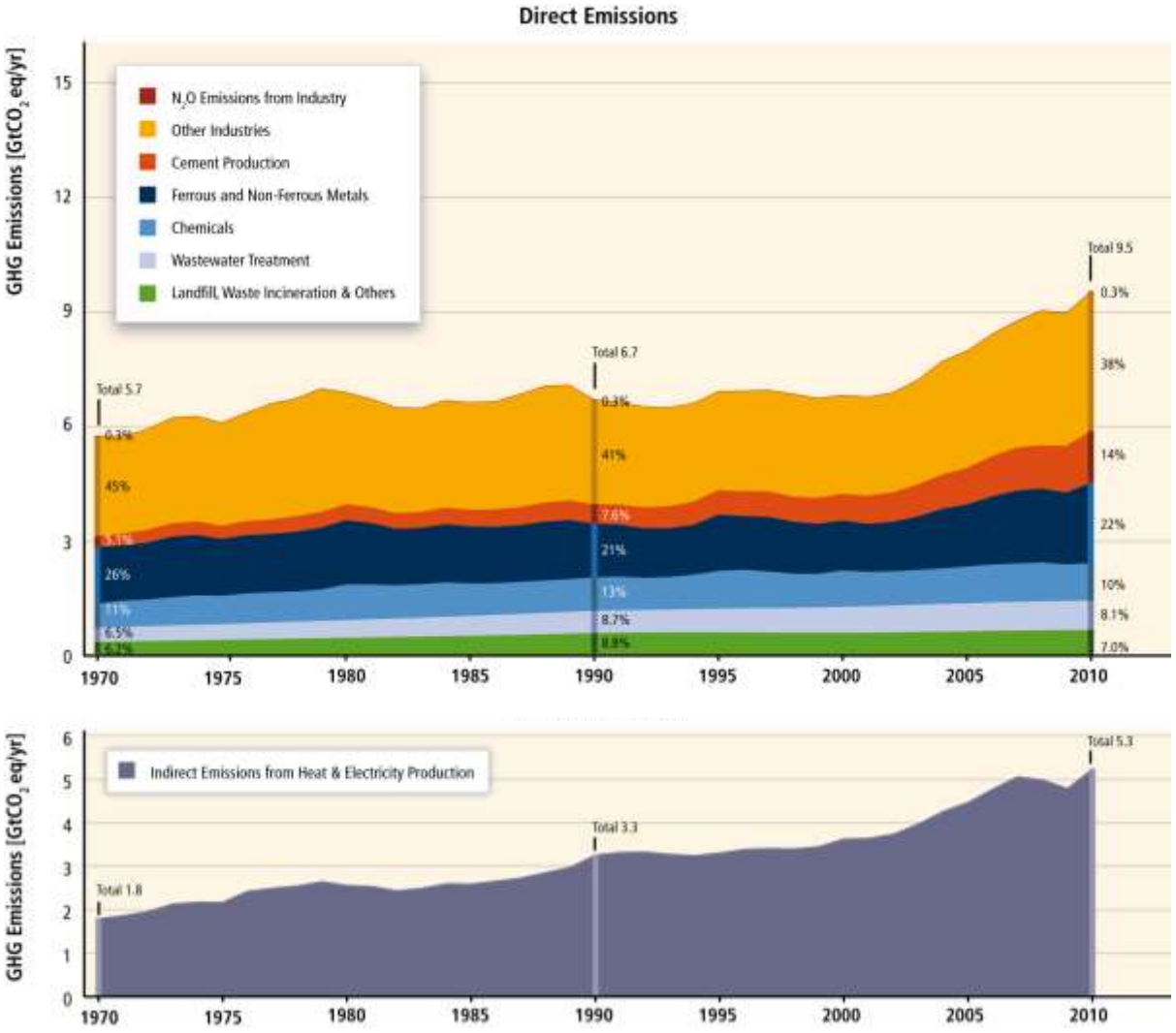
Emissions from industry sector comprises direct and indirect emissions

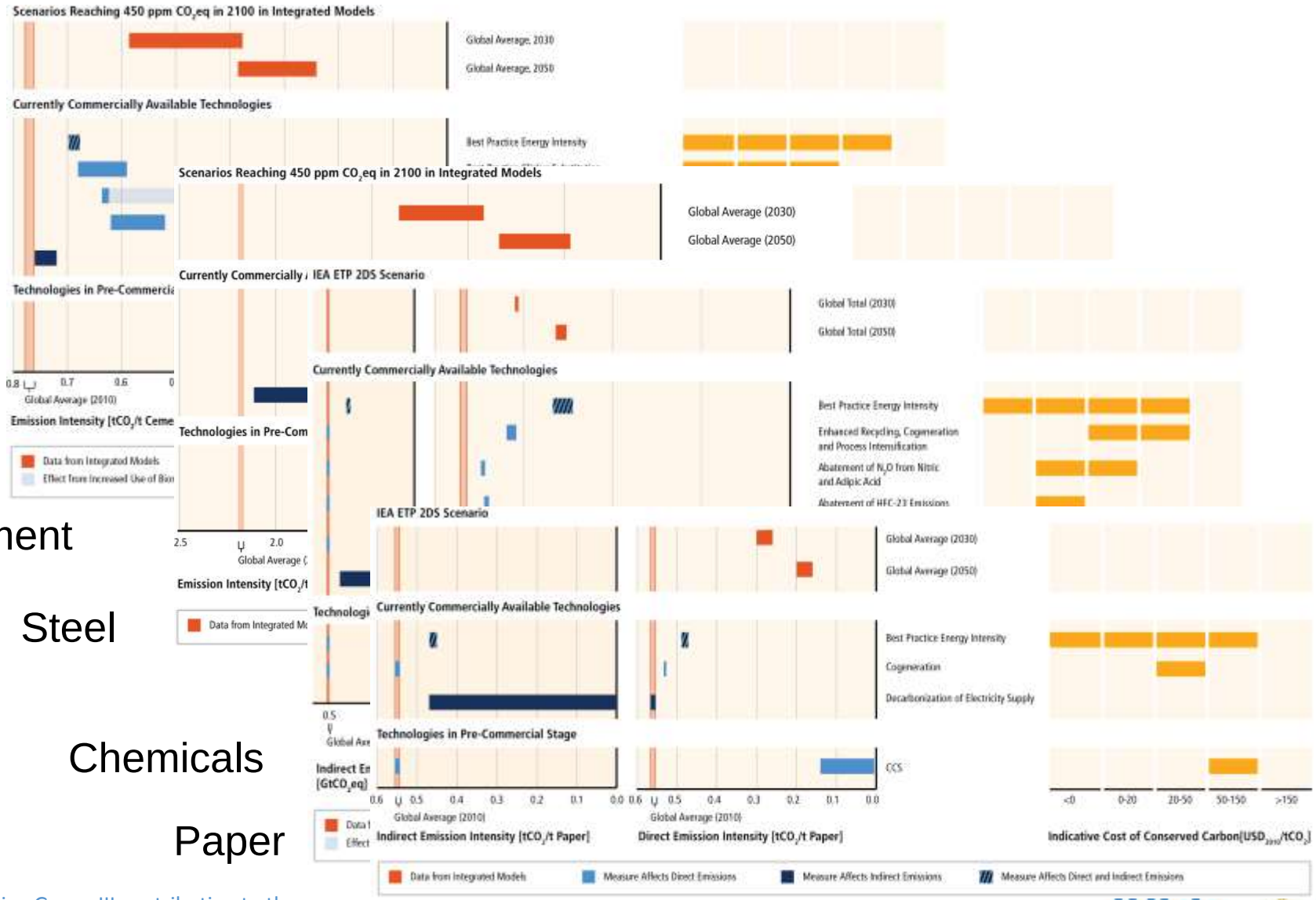


Total emissions of industry sector are 15.5 $GtCO_2eq$ in 2010 – they are larger than the emissions from either the buildings or transport sectors and represented just over 30% of global GHG emissions in 2010

Direct emissions from the sector are dominated by five main products

Significant mitigation potentials exist in various cost ranges including cost effectives measures (case study of steel)

Attractive mitigation potentials exist in all areas



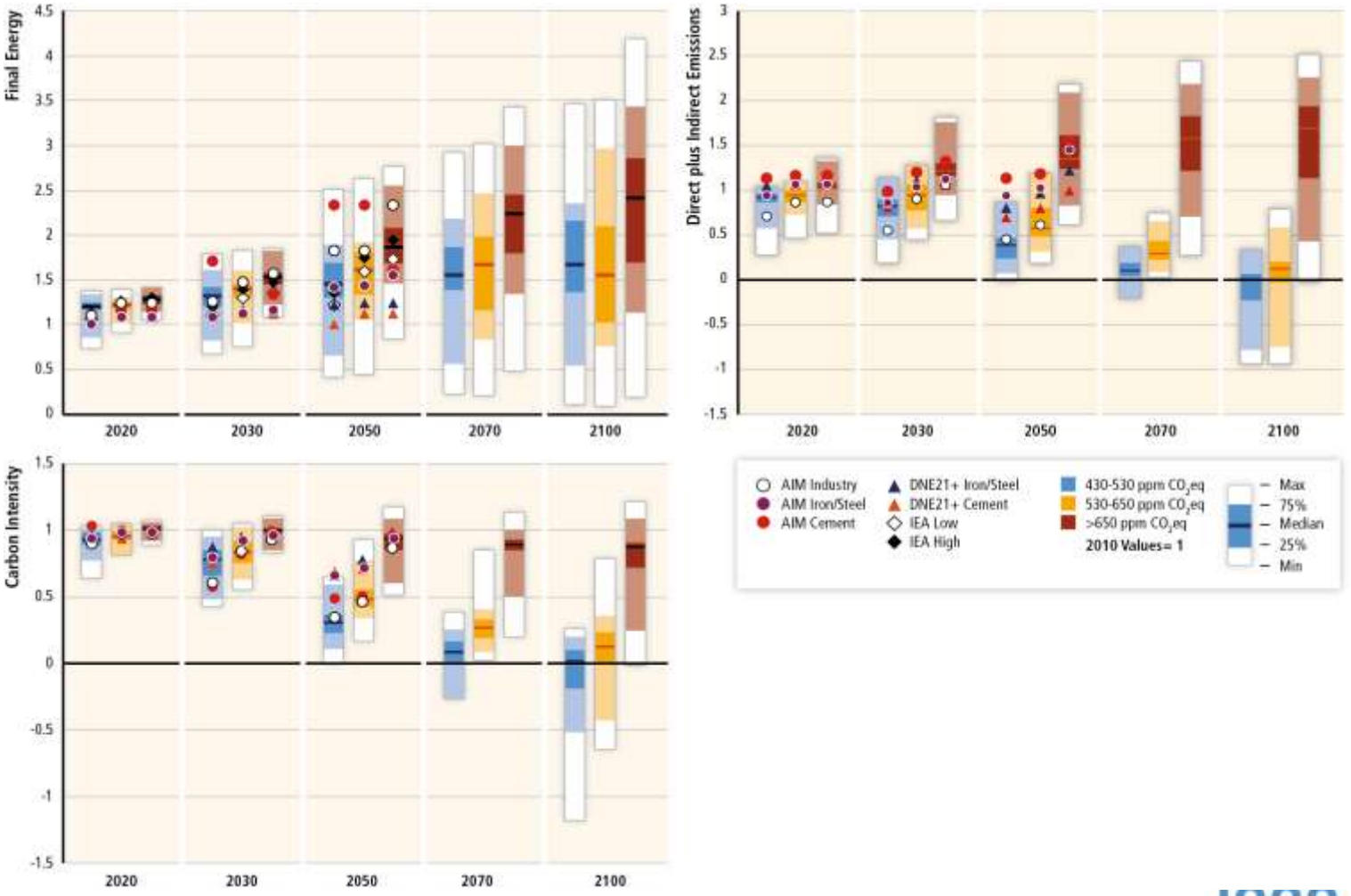
Cement

Steel

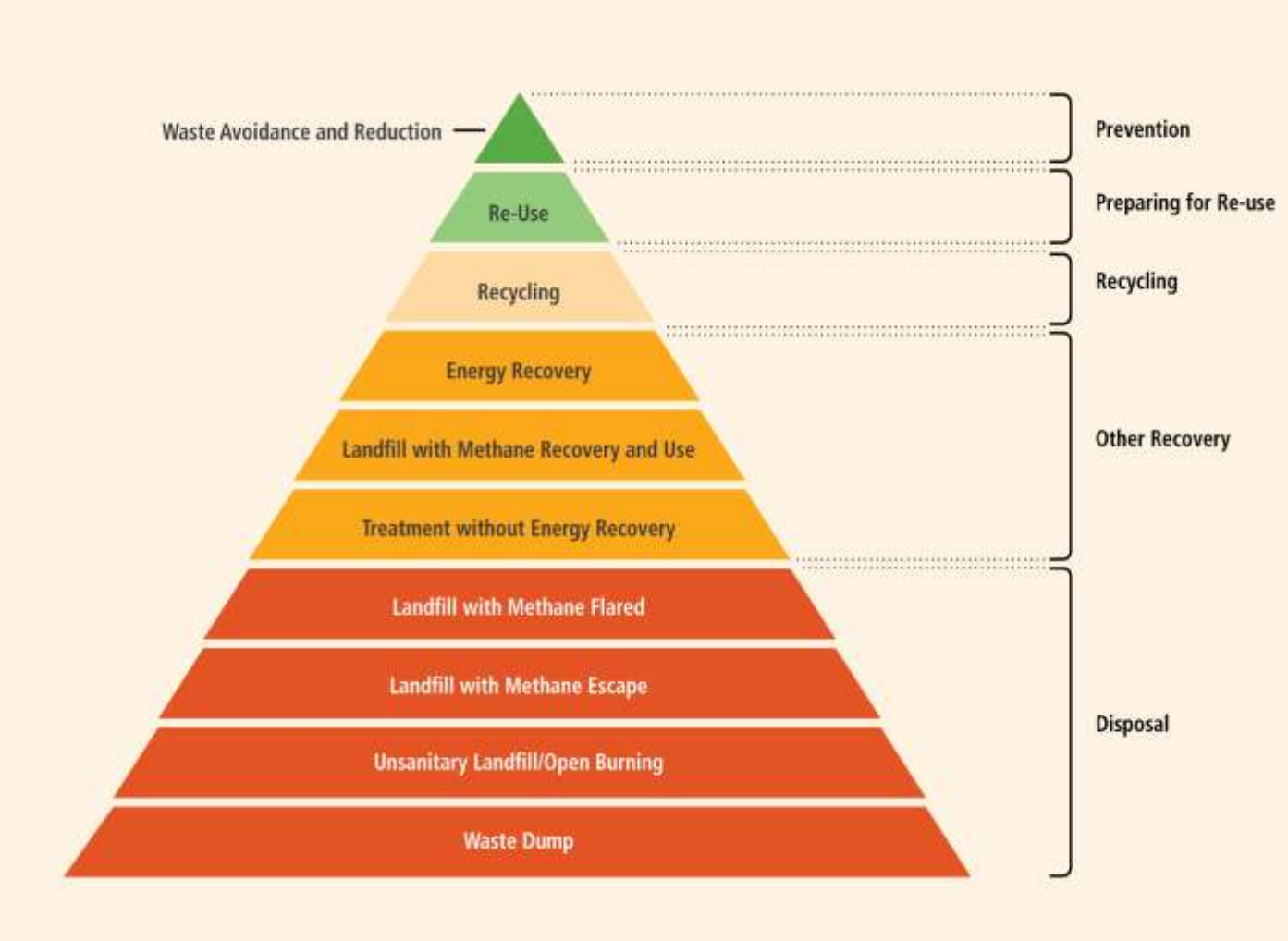
Chemicals

Paper

Long-term scenarios for industry point towards emissions efficiency as key mitigation strategy and decreasing carbon intensity through use of low carbon electricity



Emissions from the *waste sector* have doubled since 1970 – mitigation measures can follow waste hierarchy



Industry (II)

- **From a short and mid-term perspective energy efficiency and behaviour change could significantly contribute to GHG mitigation**
  - The energy intensity of the industry sector could be directly reduced by up to approximately 25% compared to the current level through the wide-scale deployment of best available technologies, upgrading/replacement, particularly in countries where these are not in practice and in non-energy intensive industries
  - Additional energy intensity reductions of up to approximately 20% may potentially be realized through innovation
- **In the long-term a shift to low-carbon electricity, radical product innovations (e.g. alternatives to cement), or CCS (for mitigating i.a. process emissions) could contribute to significant (absolute) GHG emissions reductions**
- **Systemic approaches and collaborative activities across companies and sectors and especially SMEs through clusters can reduce energy and material consumption and thus GHG emissions**
- **Important options for mitigation in waste management is waste reduction, followed by re-use, recycling and energy recovery**

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