

What role does decarbonisation in industry play in the UNFCCC negotiation process

Introduction to the conference



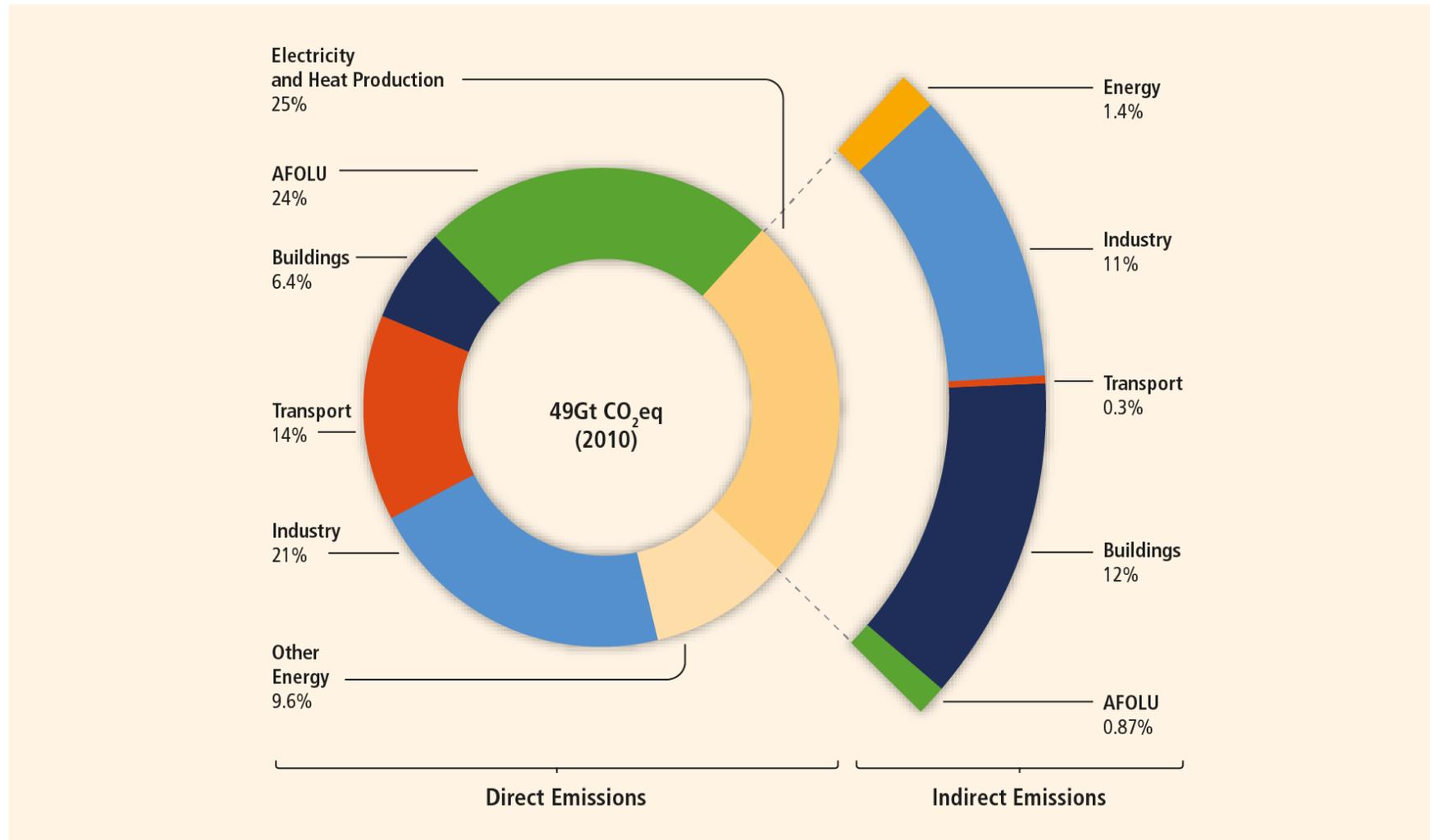
Presentation:

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Wuppertal Institut

November, 10th 2017

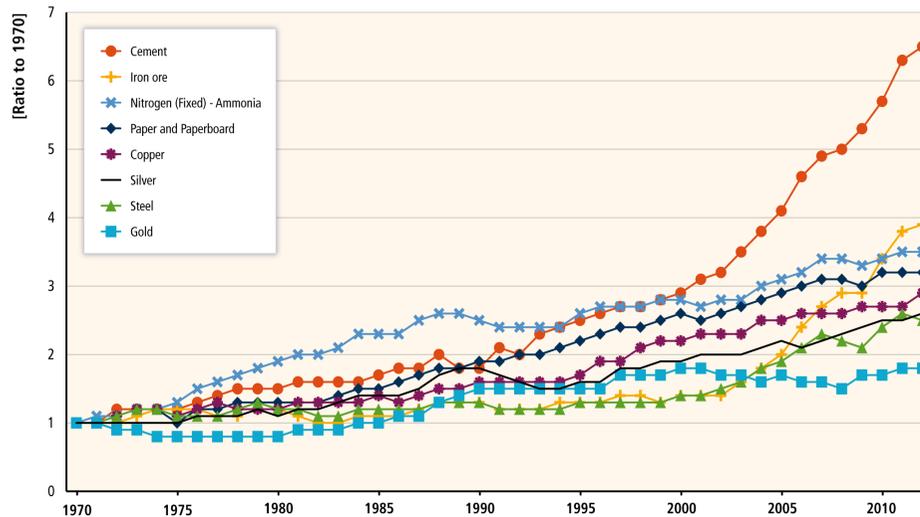
Contribution of the industry sector to global greenhouse gas emissions and related targets to achieve Paris Agreement

Sector contribution to greenhouse gas emissions – industry sector responsible for around 32% of global GHG emissions
Consideration of direct and indirect CO₂ emissions necessary



Source IPCC 2014

Sector contribution to greenhouse gas emissions

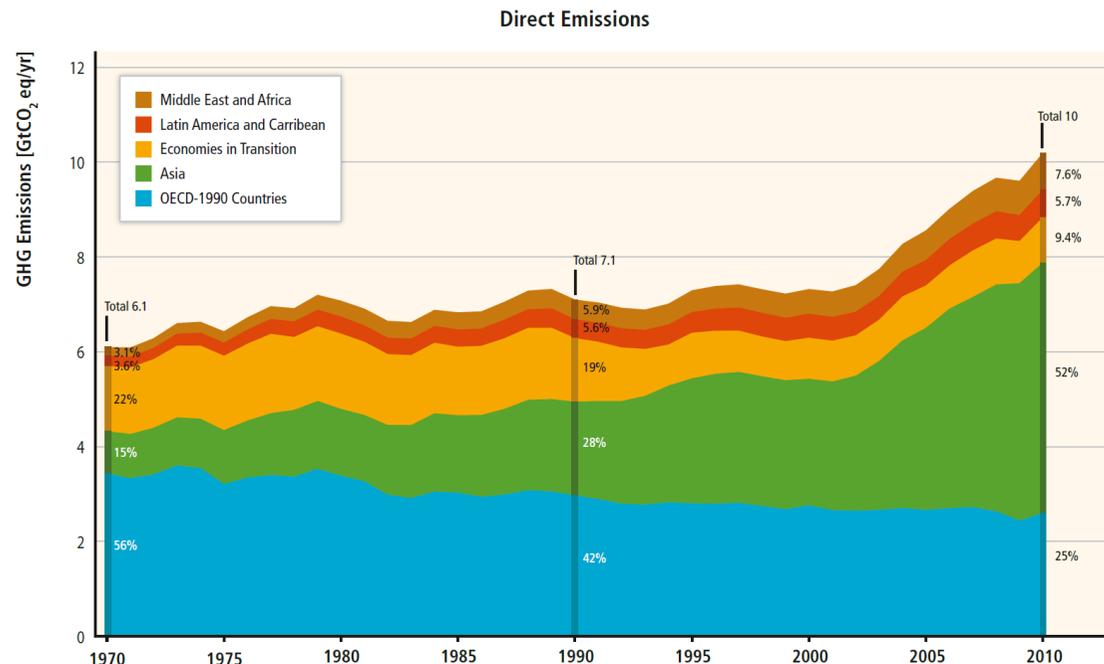


GHG emissions are driven by economic growth and related product demand

World production of minerals and manufactured products (particularly cement and iron ore) grew steadily and caused increase of GHG emissions

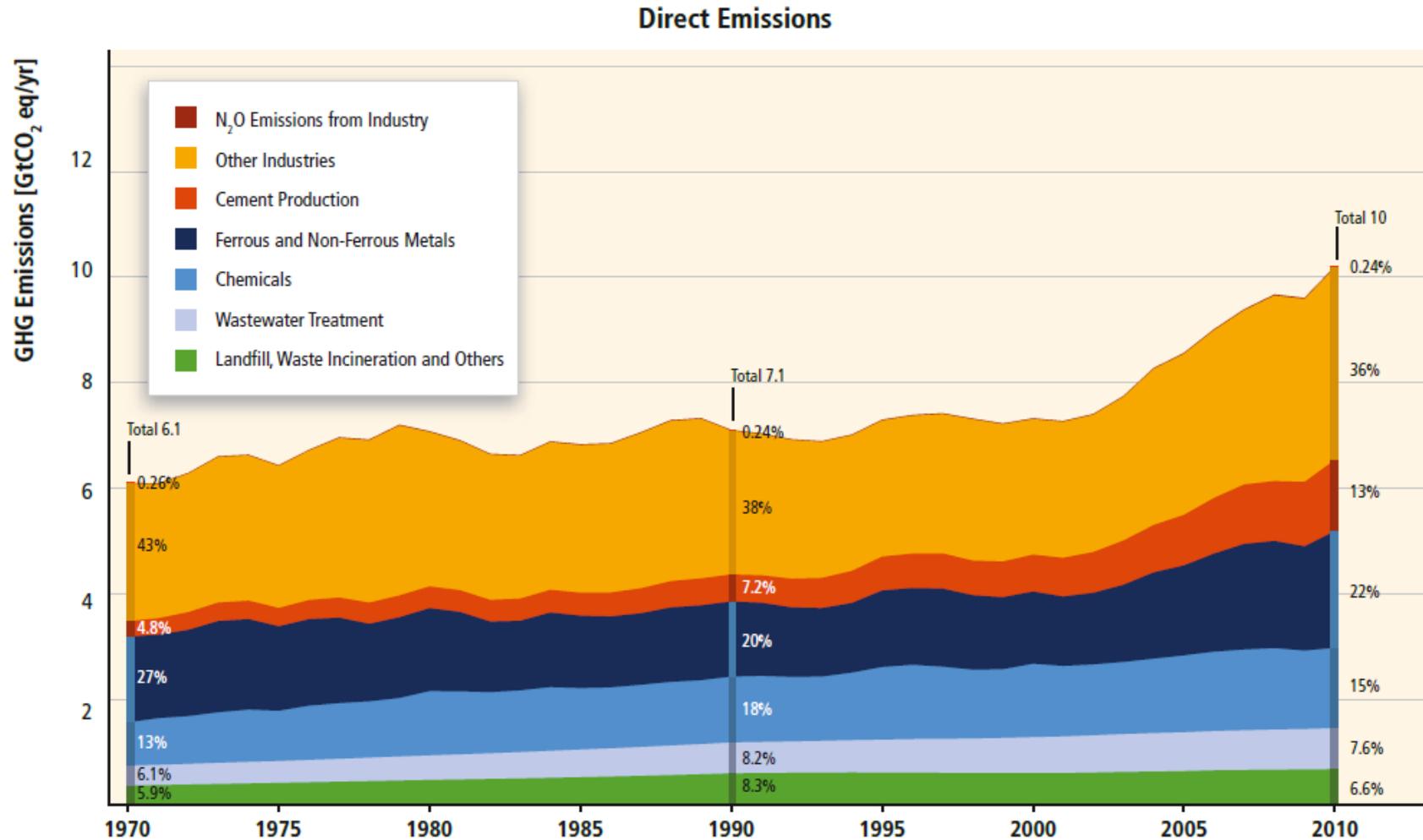
Industry direct emission trends by region

Increasing emissions in Asia and decreasing in OECD triggered by increasing local product demand and (!) trade of products (China/Asia developed more and more as work bench for OECD countries)



Industry direct emission trends by sub-sector

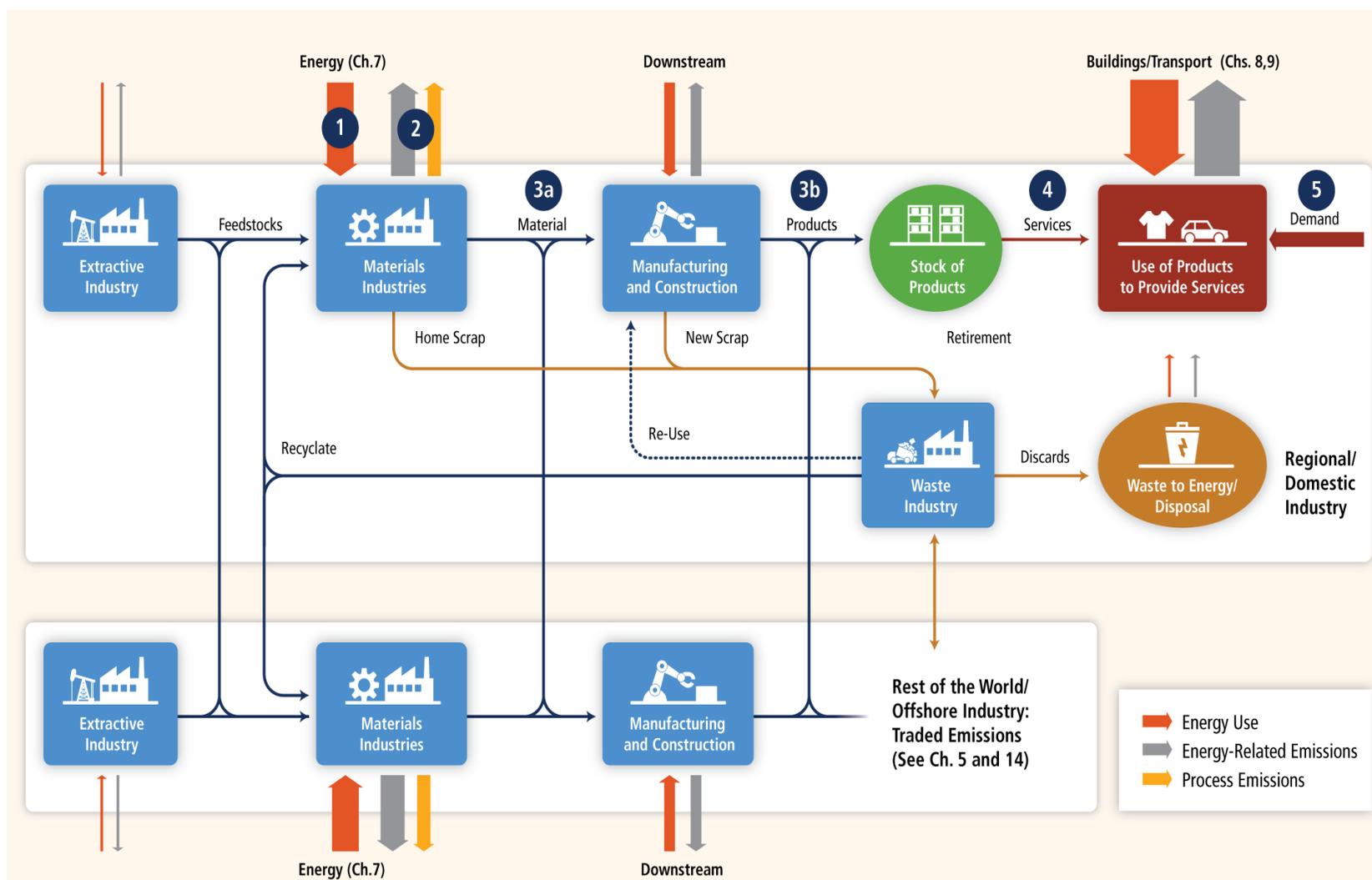
Industry sector emissions dominated by three sub-sectors: Metals + chemicals + cement industries responsible for ~50% of industry emissions



Five main options for reducing GHG emissions in the industry sector – its more than pure technological options

GHG mitigation options in the industry sector exist along the whole value chain and comprise more than pure technological options

From energy – emissions – material and product-service efficiency to SCP

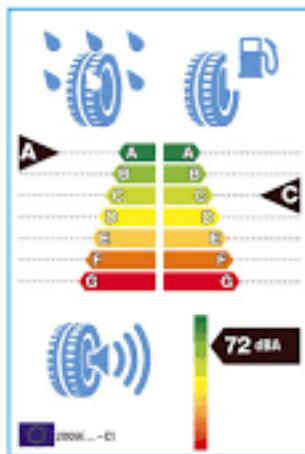


Industry can also contribute to GHG mitigation based on their products

Products from material processing industries lead to reduction of GHG emissions in the end-use sectors (selected examples for scope 4 emission bonus)



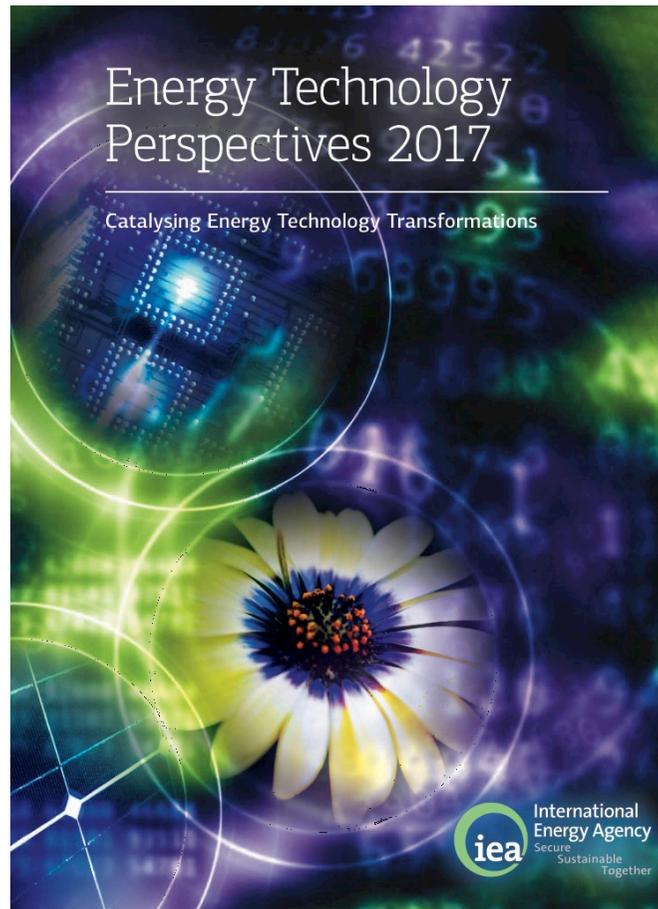
- (Green) Tyres with reduced rolling resistance based on modern components from the chemical industry
- Insulation materials to reduce heating and cooling demand
- Low weight materials out of fibre composite or aluminium to reduce fuel consumption of vehicles
- Steel as basic component for wind mills
- etc.



What role the different GHG mitigation options could play in the future on the way to achieve 2°C target

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Beyond 2°C Scenario from the International Energy Agency (B2DS)



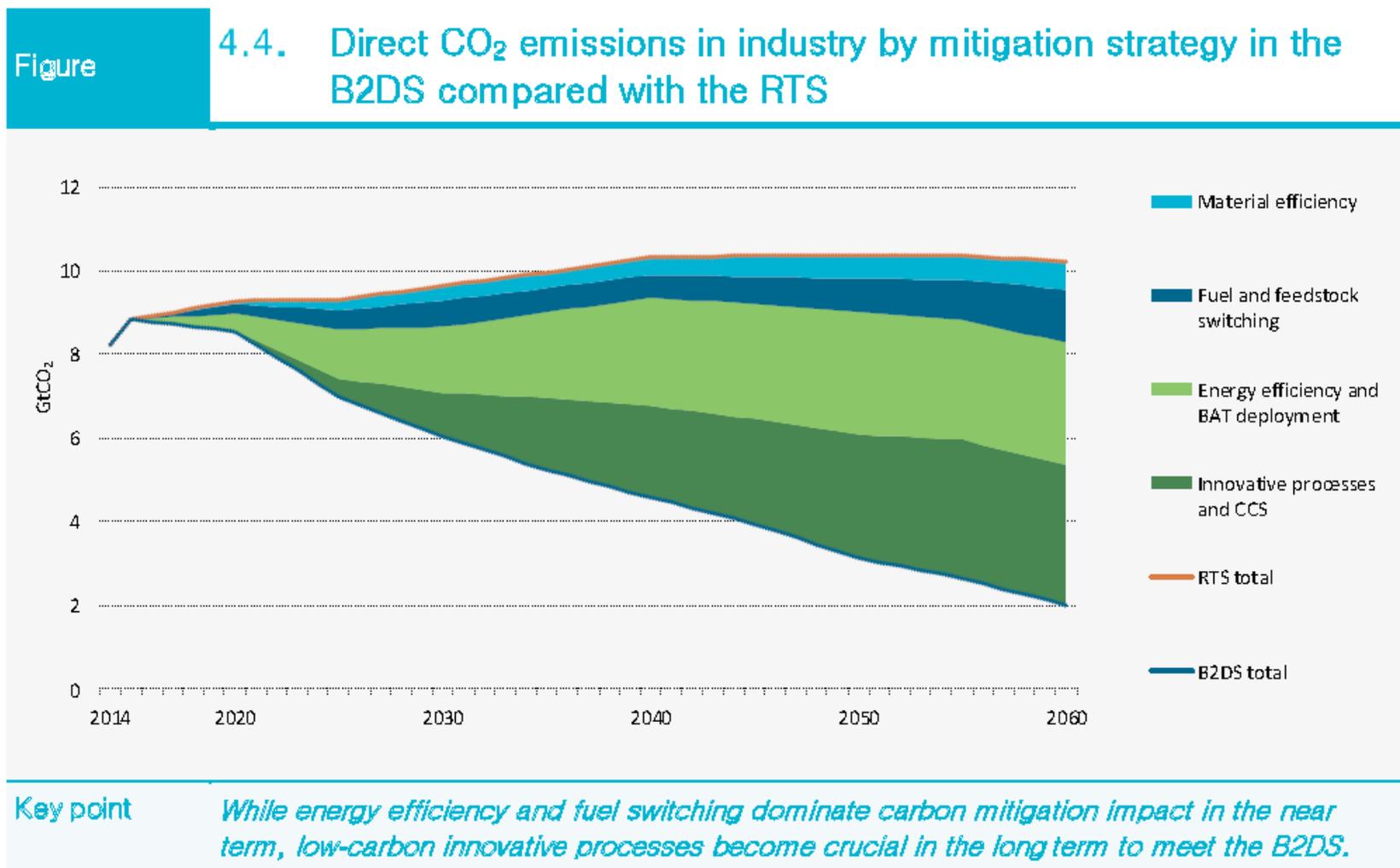
The **2°C Scenario (2DS)** and the **Beyond 2°C Scenario (B2DS)** each sets out a rapid decarbonisation pathway in line with international policy goals.

The **2DS** has been the main climate scenario in the ETP series for many years, and it has been widely used by policy makers and business stakeholders to assess their climate strategies.

For the first time, the **B2DS** looks at how far known clean energy technologies could go if pushed to their practical limits, in line with countries' more ambitious aspirations in the Paris Agreement.

What role the different GHG mitigation options could play in the future on the way to achieve 2°C target

Beyond 2°C Scenario (B2DS) requires implementation of full range of mitigation options (as 2DS does)



Due to intensive past efforts remaining energy efficiency potential is rather limited in the industry sector (e.g. steel industry)

Decarbonization entails new approaches and more radical innovations

- **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) and process innovation (e.g. hydrogen based steel making), or CCS (for mitigating i.a. process emissions) could contribute to significant (absolute) GHG emissions reductions**

 **Innovation is absolutely essential to achieve global targets**

Conclusion: To achieve global GHG mitigation targets severe innovation efforts as well as international cooperation and appropriate policy framework are necessary

Conclusion - major challenges for the future

- (1) Identification of major innovation needs to close the technology gap (including identification and multi-criteria assessment of potential break through technologies/processes) – complementation of traditional technology push approach by market pull approach (long term needs)
- (2) Identification of adequate economic, infrastructural, institutional, social and political conditions for implementation of innovations, questions include
 - how to finance huge pilot & demonstration projects (mutual efforts from industry and governments)?
 - how to organize technological cooperation across industry sectors (industrial symbiosis) and country borders (international cooperation): sharing risks, responsibilities and benefits
 - how to deal with complexity of energy system and interdependencies between economic sectors as well as uncertainties about major future variables (how to avoid path dependencies)?
- (3) Identification of adequate market structures to create investment dynamics while guaranteeing fair competition between companies and across countries (how to avoid carbon leakage)

Conclusion - major challenges for the future

- (4) Strengthen cooperation between industry and universities to provide sufficient knowledge (qualification) for implementation of an ambitious transformation pathway - impulses for appropriate curricula necessary
- (5) Intensify debate and exchange with civil society to get sufficient backing for necessary investments and infrastructure measures



overall a consistent (integrative) industrial policy is needed that supports step by step implementation of a decarbonization (GHG neutrality) pathway while respecting traditional goals of the sector (e.g. competitiveness, safeguarding jobs) as well as other mega trends (e.g. globalization, urbanization, digitalization)





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