



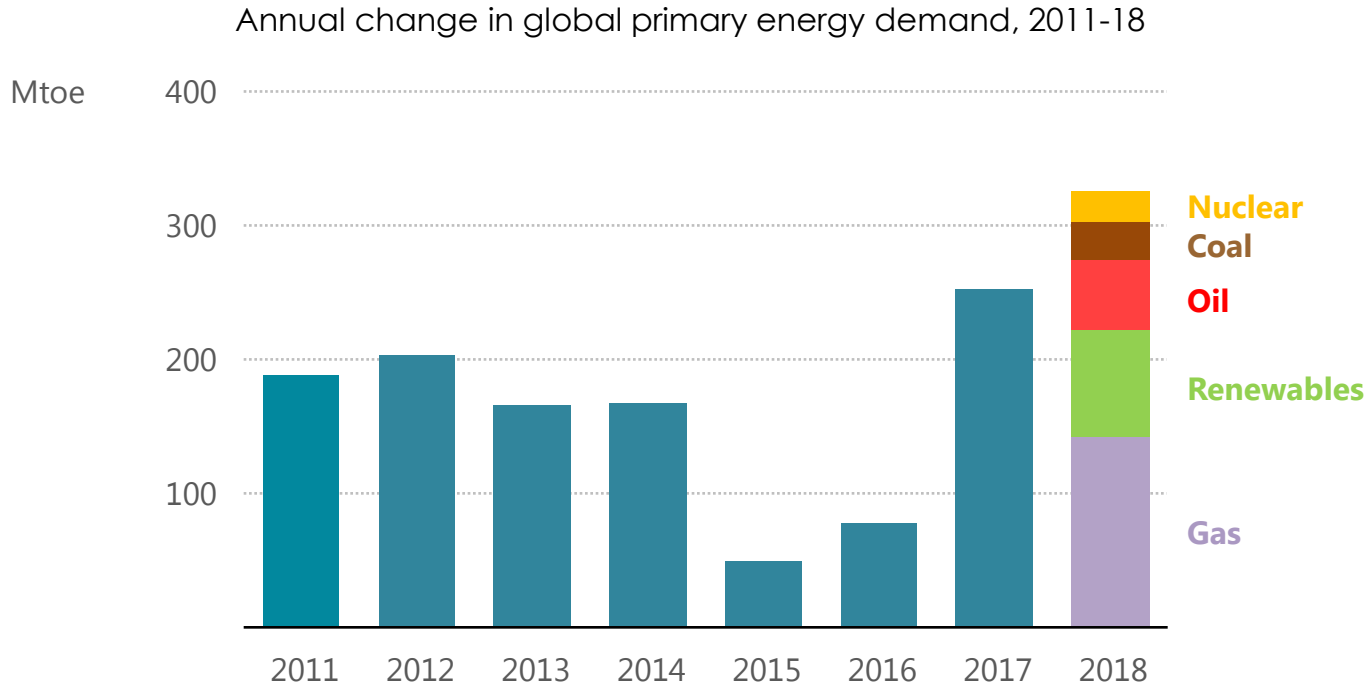
Transforming industry: a focus on CCUS

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Innovation for Cool Earth Forum, Tokyo 9 October 2019

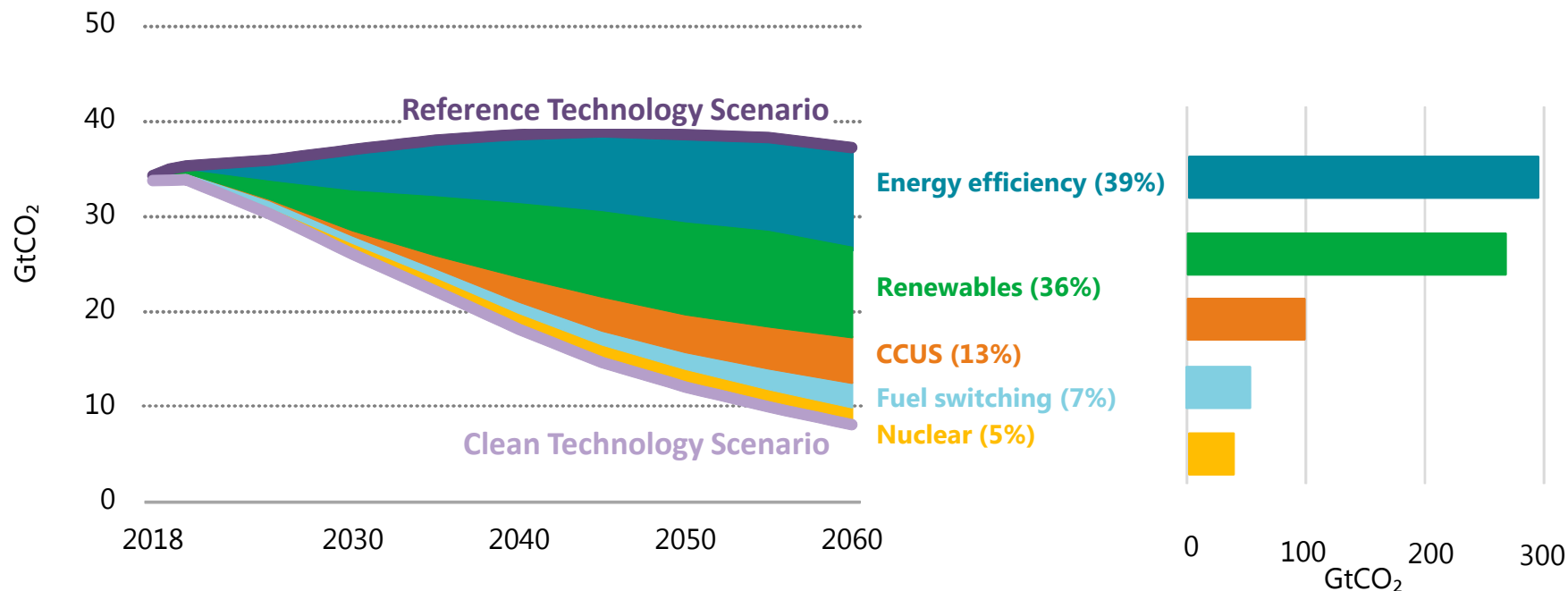
2018 – a remarkable year for energy



Global energy demand last year grew by 2.3%, the fastest pace this decade, an exceptional performance driven by a robust global economy, weather conditions and moderate energy prices.

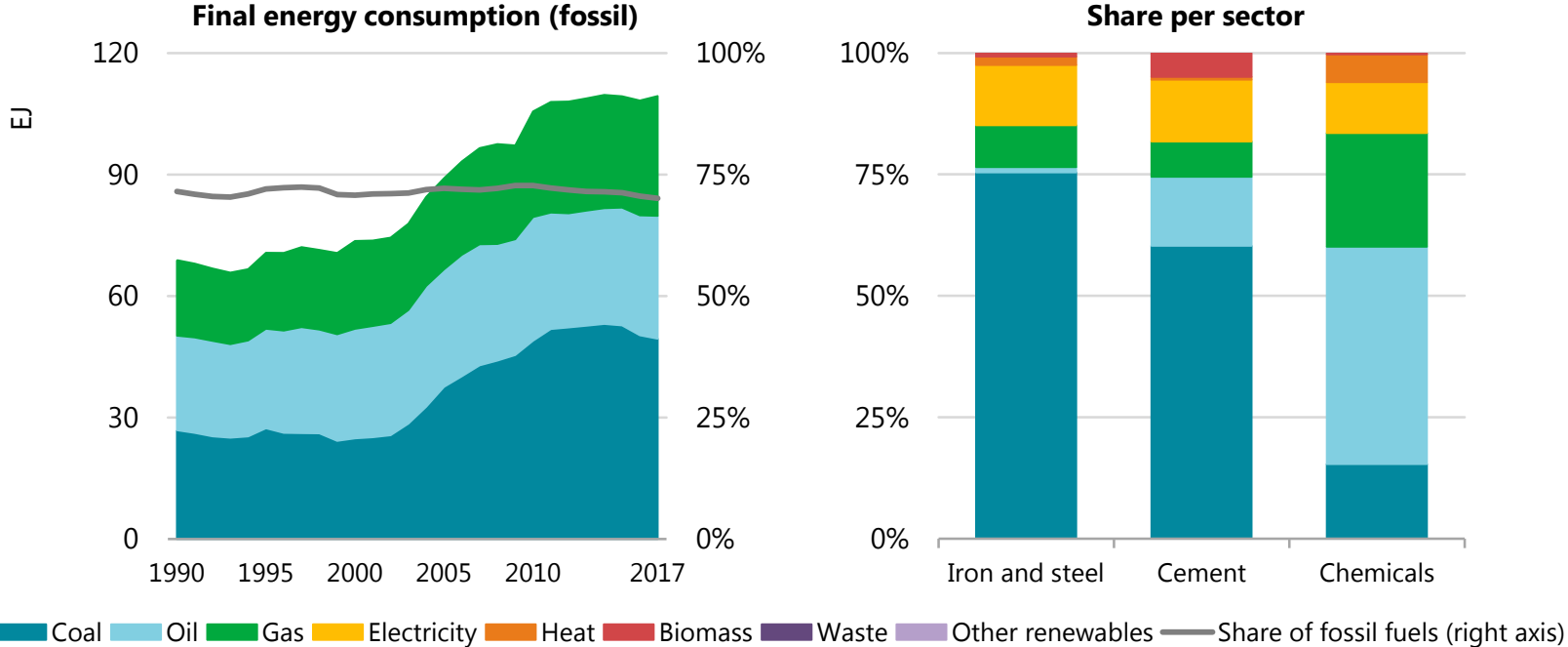
CCUS plays a critical role in achieving climate ambitions

Global CO₂ reductions by technology area (left) and cumulative reductions 2018-2060 (right)



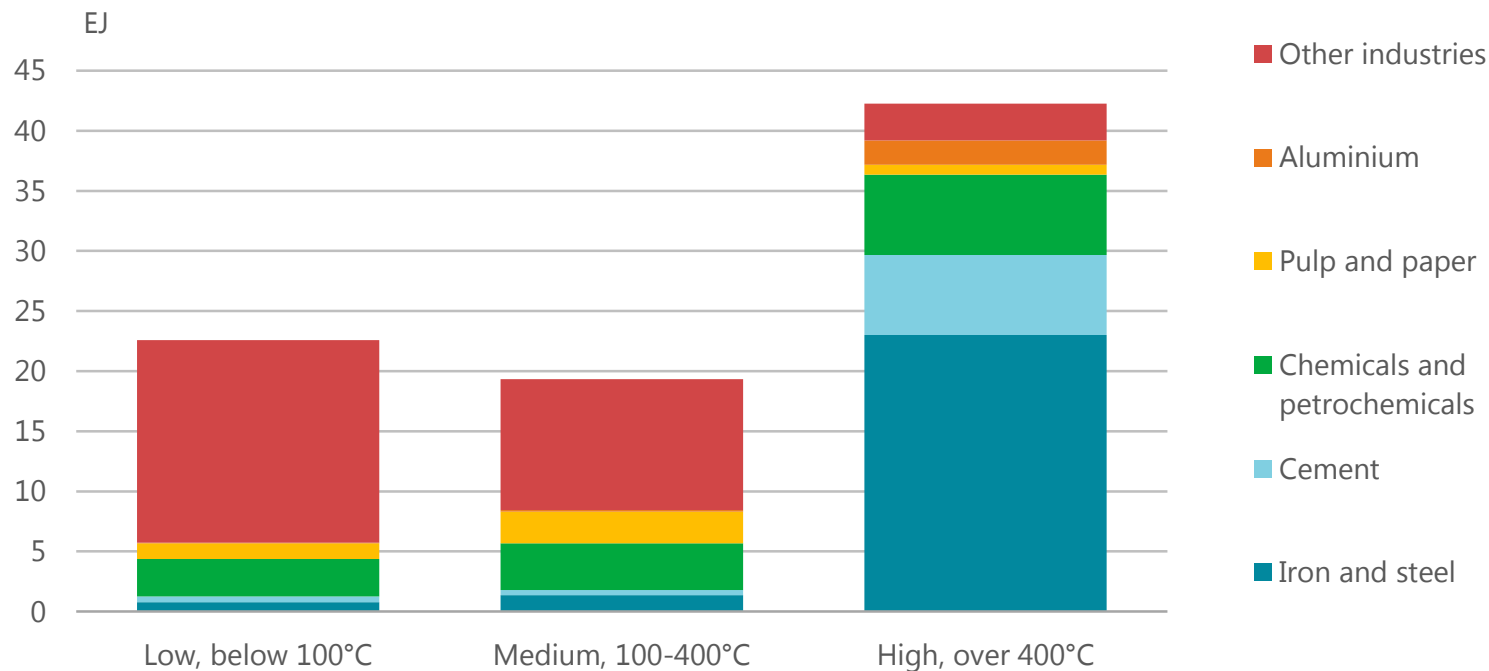
CCUS makes the third largest contribution to cumulative CO₂ reductions in the IEA Clean Technology Scenario

Role of fossil fuels in global industrial final energy demand



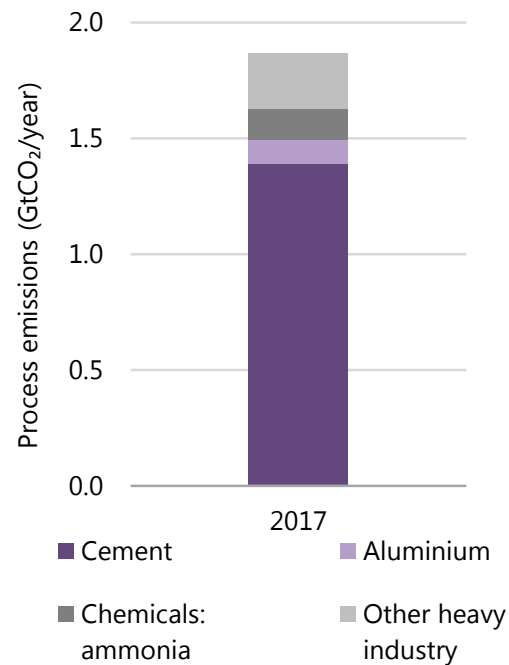
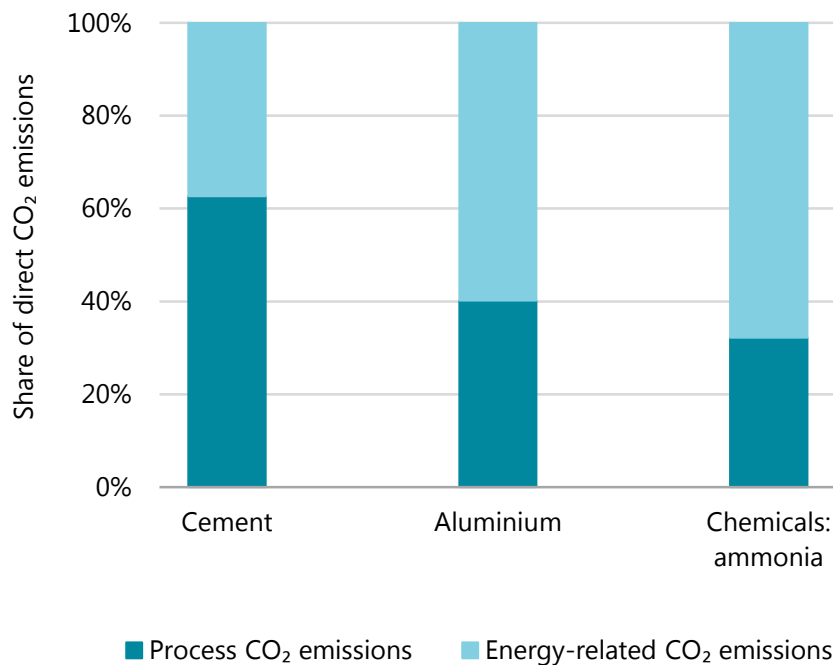
70% of industrial energy needs are met by fossil fuels, with coal the dominant fuel in iron and steel and cement production

Industrial emissions challenge: High temperature heat



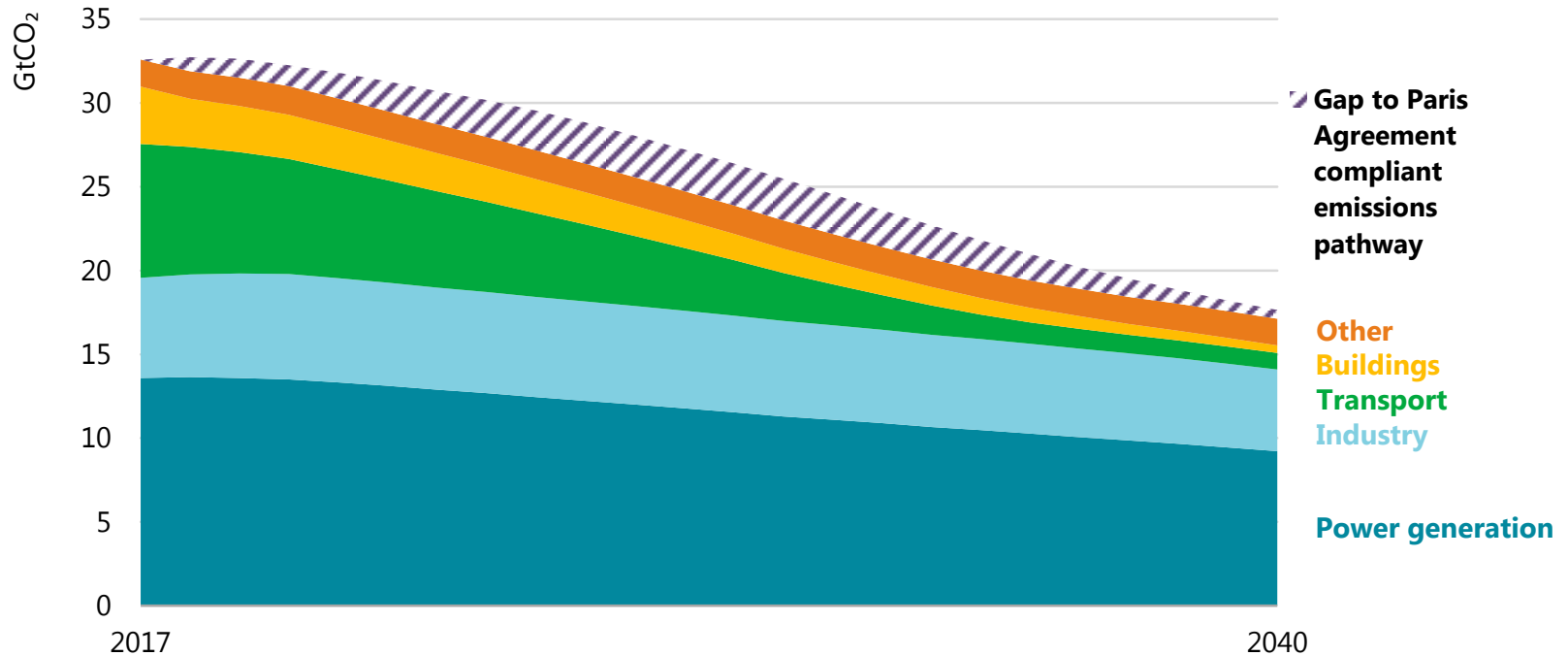
Industry sectors such as iron and steel and cement require high-temperature heat, which is a major cause of fossil-fuel reliance.

Industrial emissions challenge: Process emissions



Process emissions account for about two-thirds of cement and one-quarter of total industrial emissions.

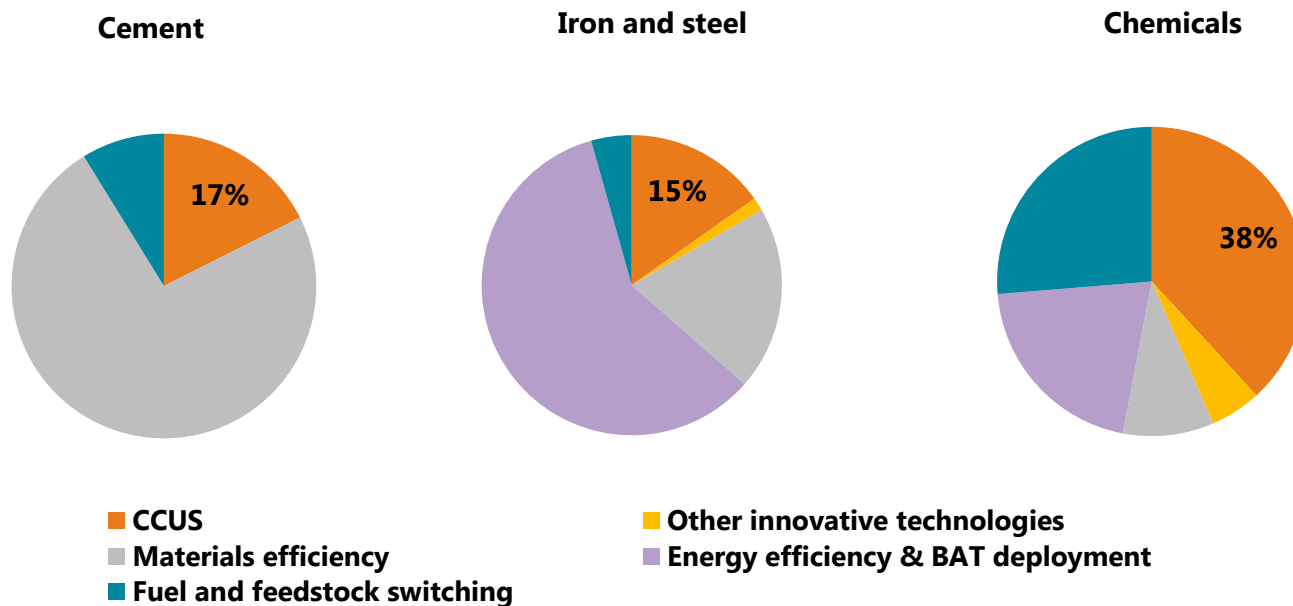
Industrial emissions challenge: Infrastructure lock-in



Industrial infrastructure already in place and currently being built will lock in one-quarter of the CO₂ emissions allowable in a pathway consistent with the Paris Agreement.

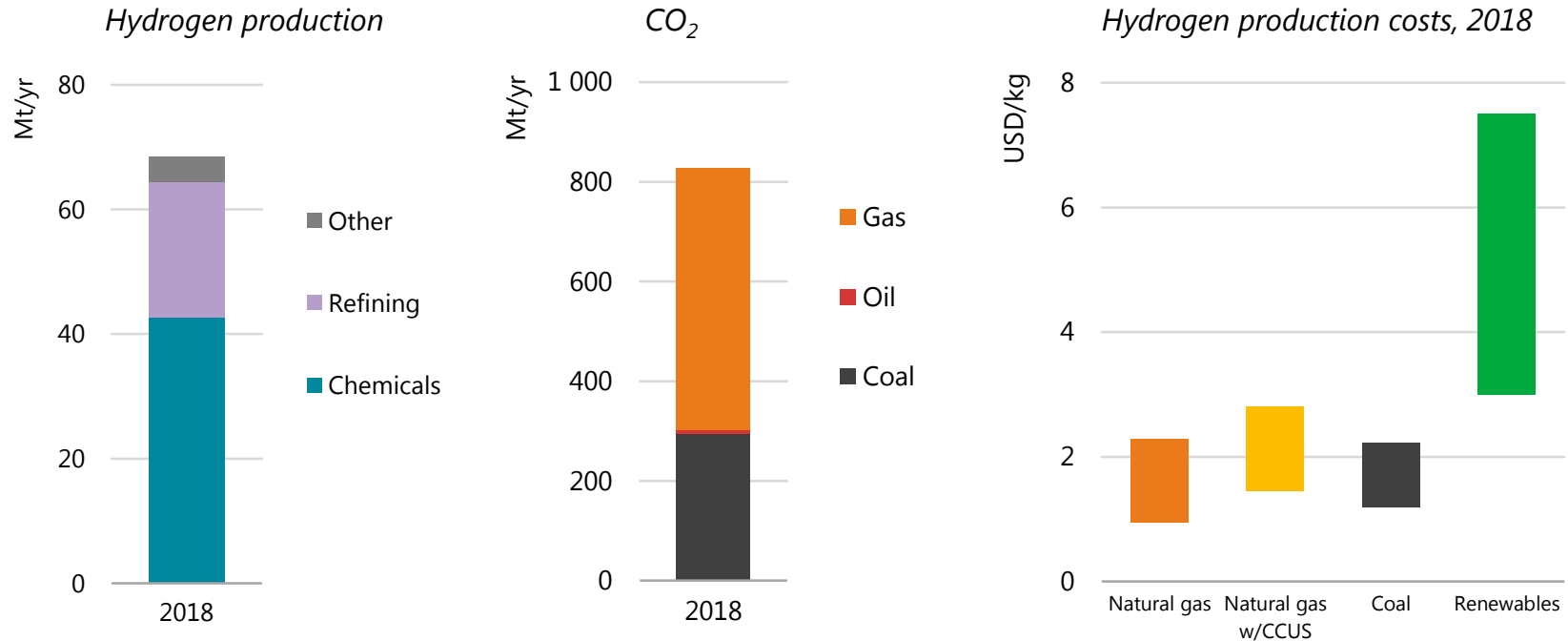
Emissions reductions for cement, iron and steel, and chemicals

Cumulative emissions reductions for key sectors, to 2060



CCUS is the most important lever in chemical production and third-largest in the cement and iron and steel subsectors in the IEA Clean Technology Scenario

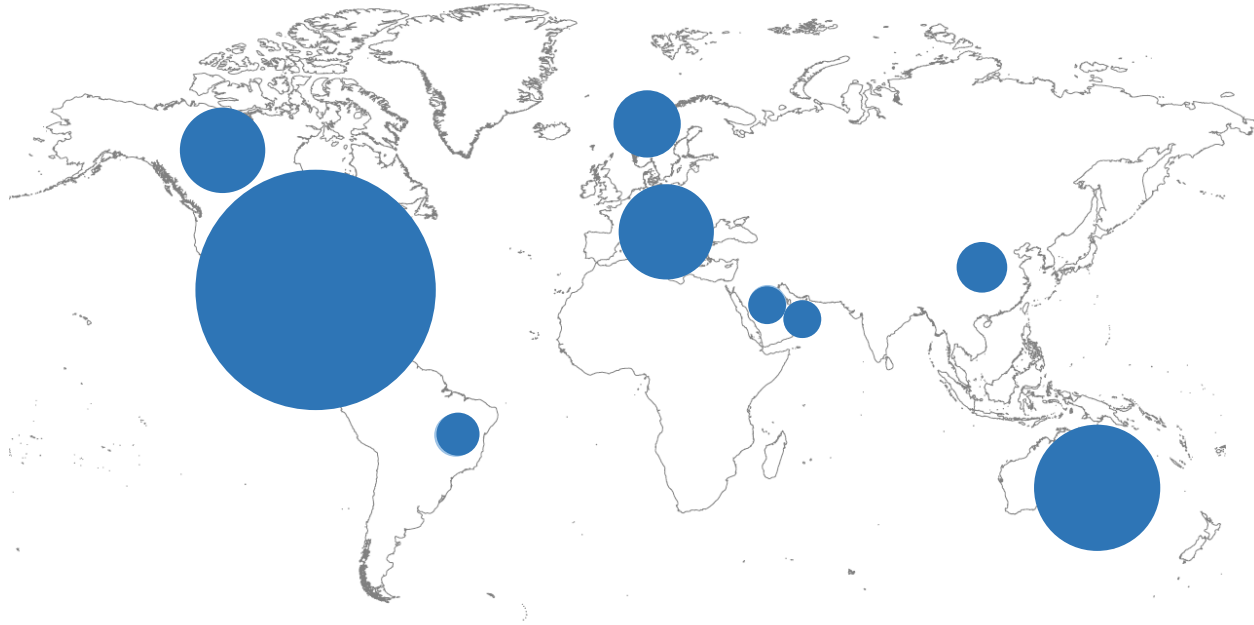
Hydrogen is another key solution for industry



Dedicated hydrogen production is concentrated in very few sectors today, and virtually all of it is produced using fossil fuels. CCUS is an important option for low-carbon hydrogen alongside renewables.

Momentum behind CCUS is growing

CO₂ capture by country (Mtpa)



The pipeline of CCUS investments is growing in response to new policies and climate commitments

Key messages

- Support CCUS deployment in industry as part of a least-cost portfolio of technologies needed to achieve climate and energy goals
- Prioritise competitive and lower-cost CCUS investment opportunities in industry to provide learnings and support infrastructure development
- Develop shared CO₂ transport and storage infrastructure and CCUS hubs to attract investment and reduce costs
- Implement policy frameworks that support significant emissions reductions across industrial facilities while addressing possible competitiveness impacts
- Establish a market for low-carbon materials, including steel and cement, through public and private procurement measures.

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