

# The role of industry in meeting the GHG mitigation targets:

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Chair of IEA, IETS

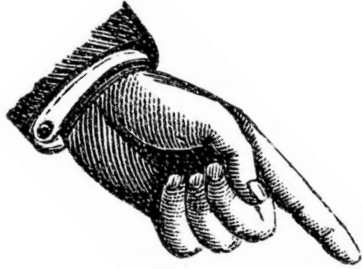
*What does the Paris agreement mean in practice ? How much CO<sub>2</sub> can be emitted?*

**Carbon budget for max 1.5°C and 2°C :**

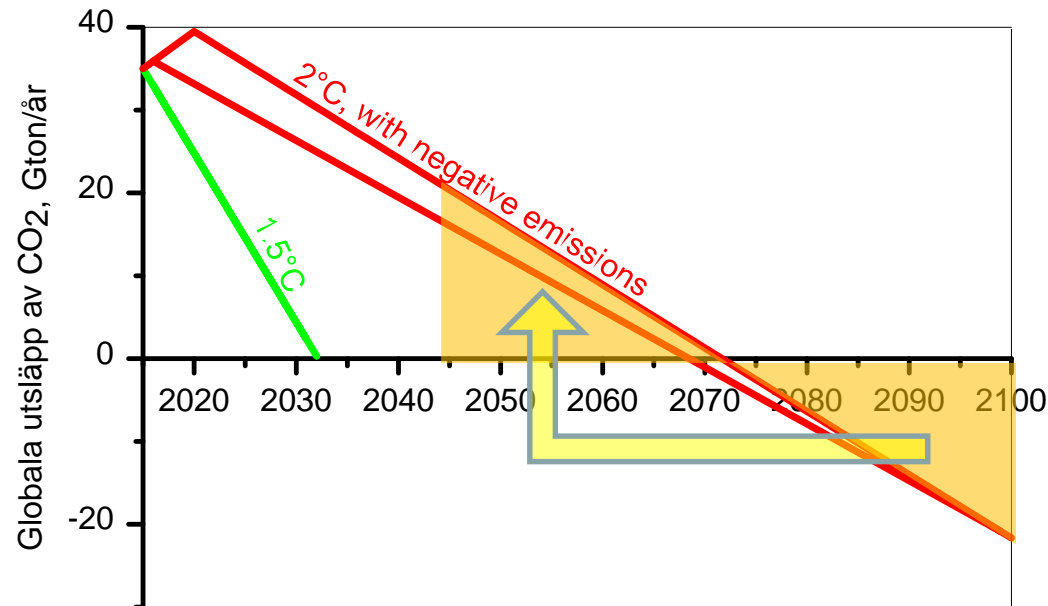
**200 and 800 Gton CO<sub>2</sub>**

**Emissions today >35 Gton/yr :**

**→ 6 - 25 years left of today's emissions**



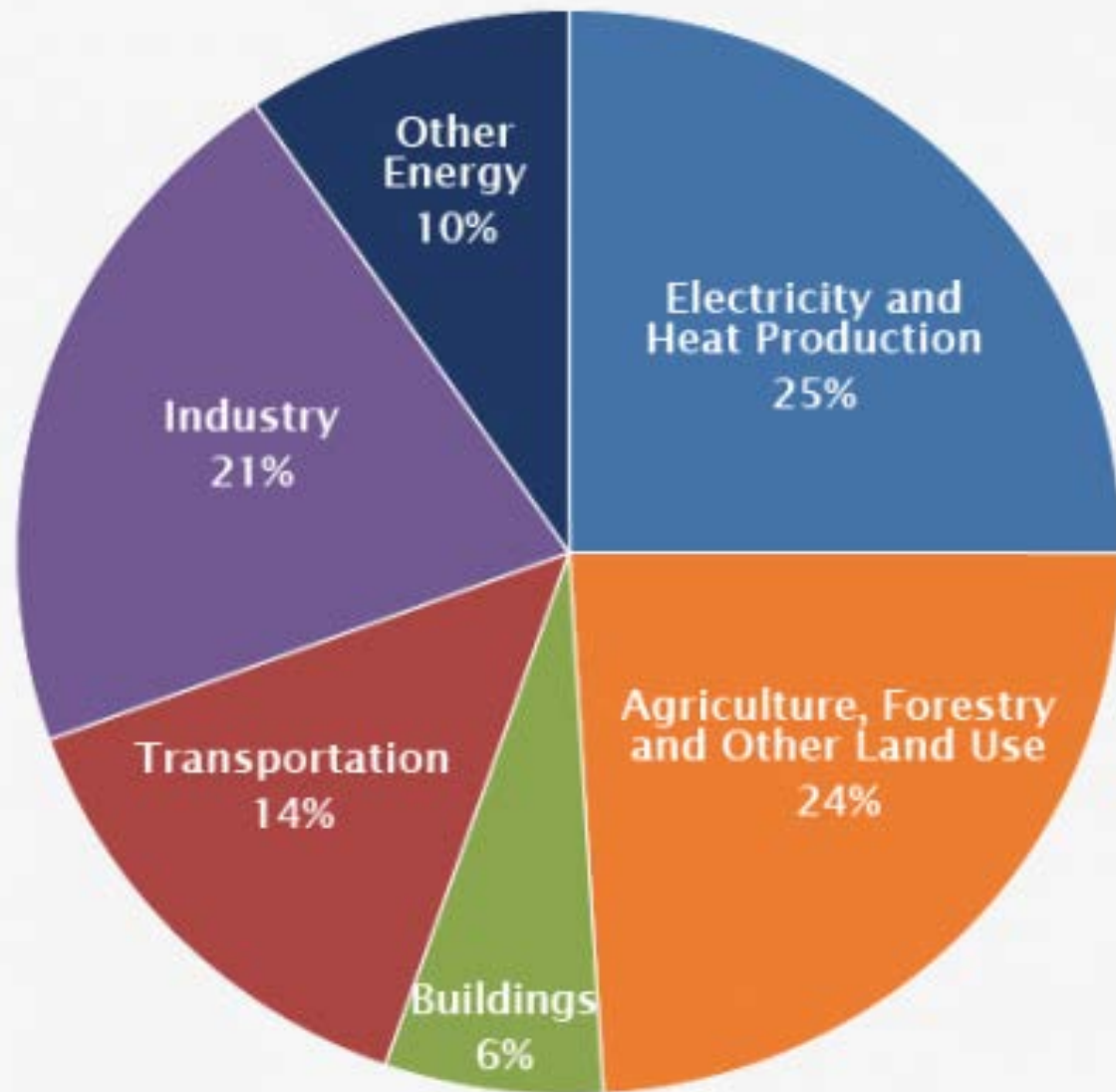
**Negative emissions will be needed to meet climate targets**



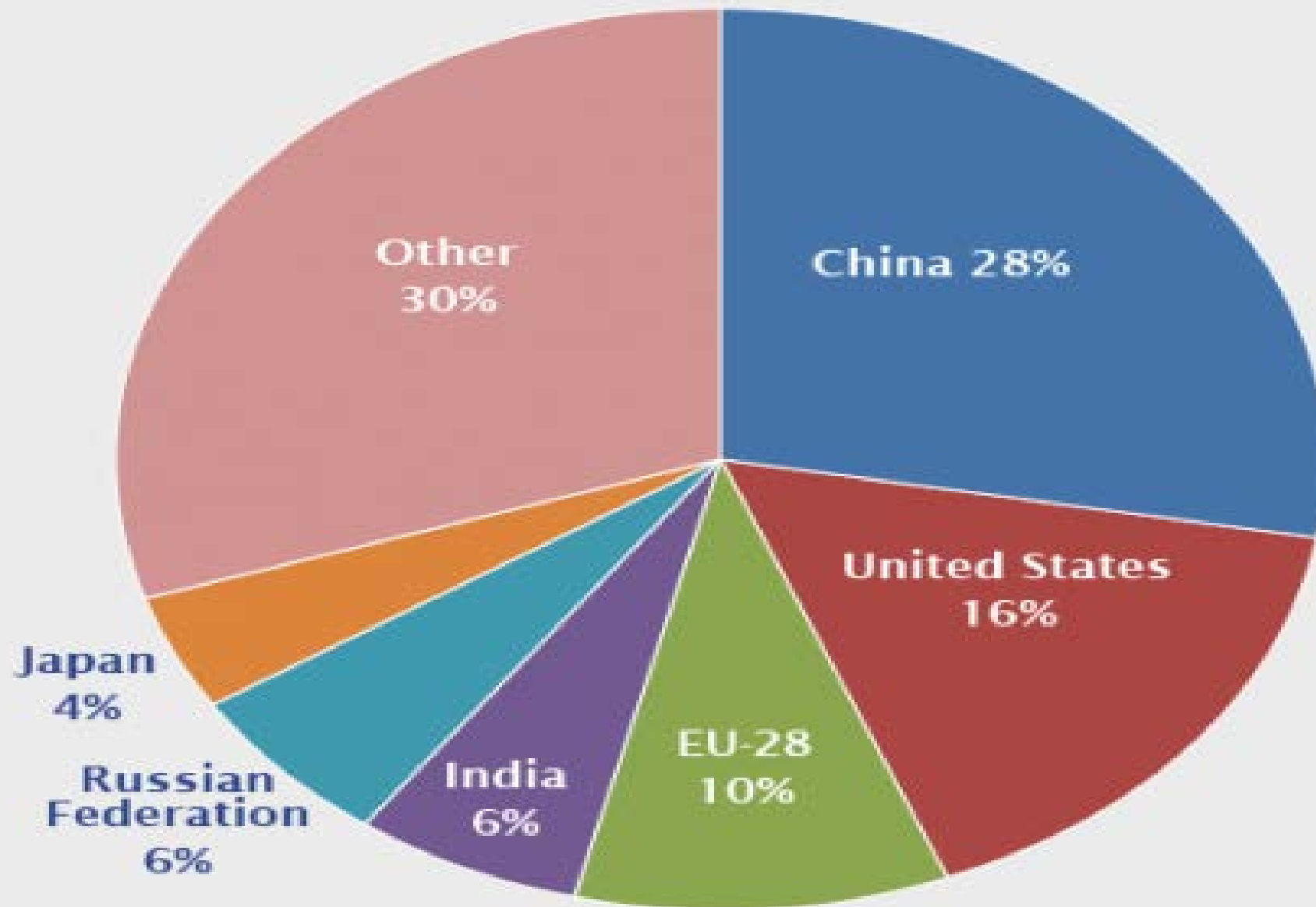
**New Swedish climate law  
underway:**

**Zero emissions reached by  
2045, and thereafter net  
negative emissions**

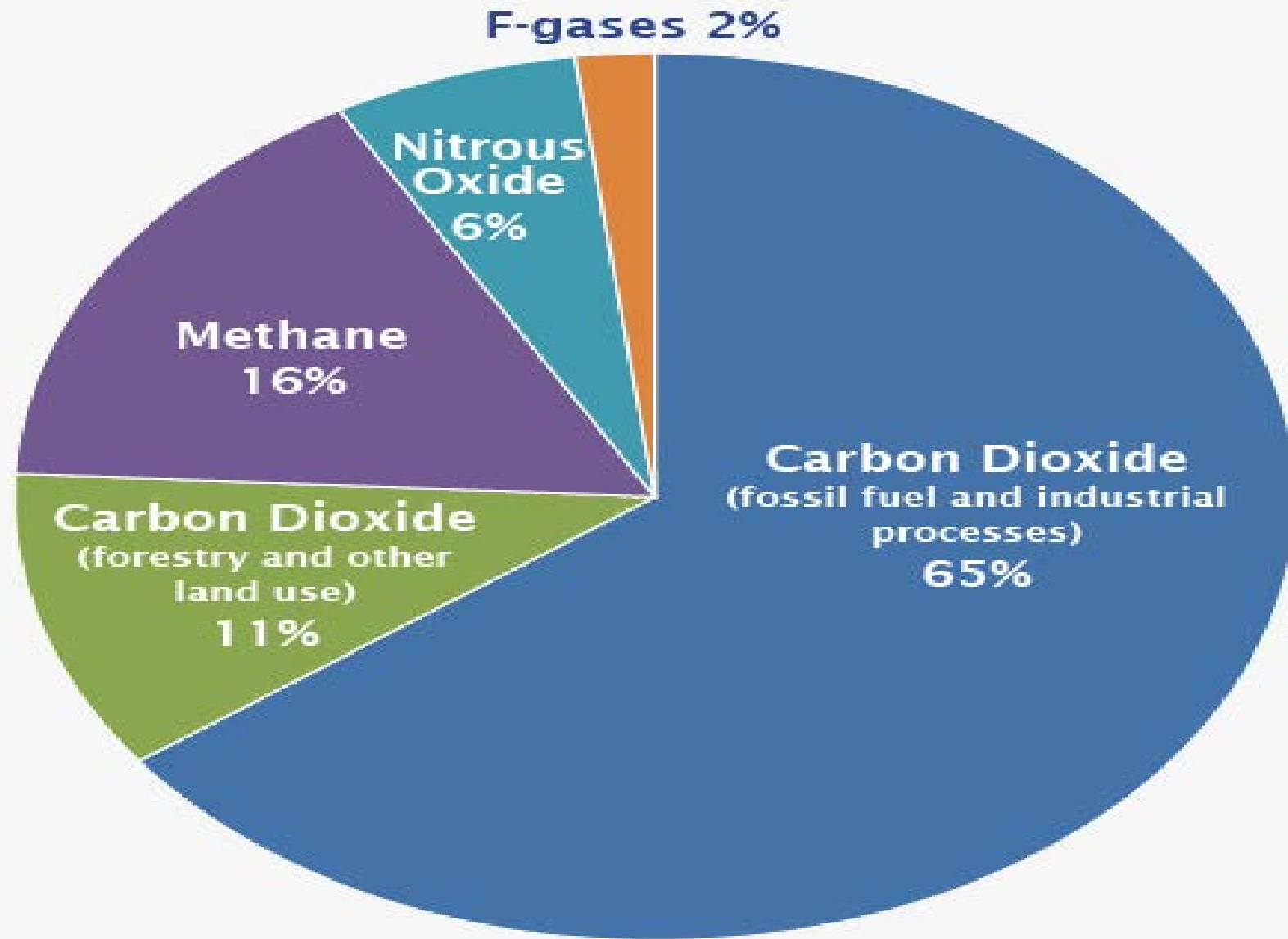
## Global Greenhouse Gas Emissions by Economic Sector



## 2011 Global CO<sub>2</sub> Emissions from Fossil Fuel Combustion and Some Industrial Processes



## Global Greenhouse Gas Emissions by Gas



Where will proposals from the climate negotiations lead?

# The Climate Scoreboard

business as usual

proposals

goals



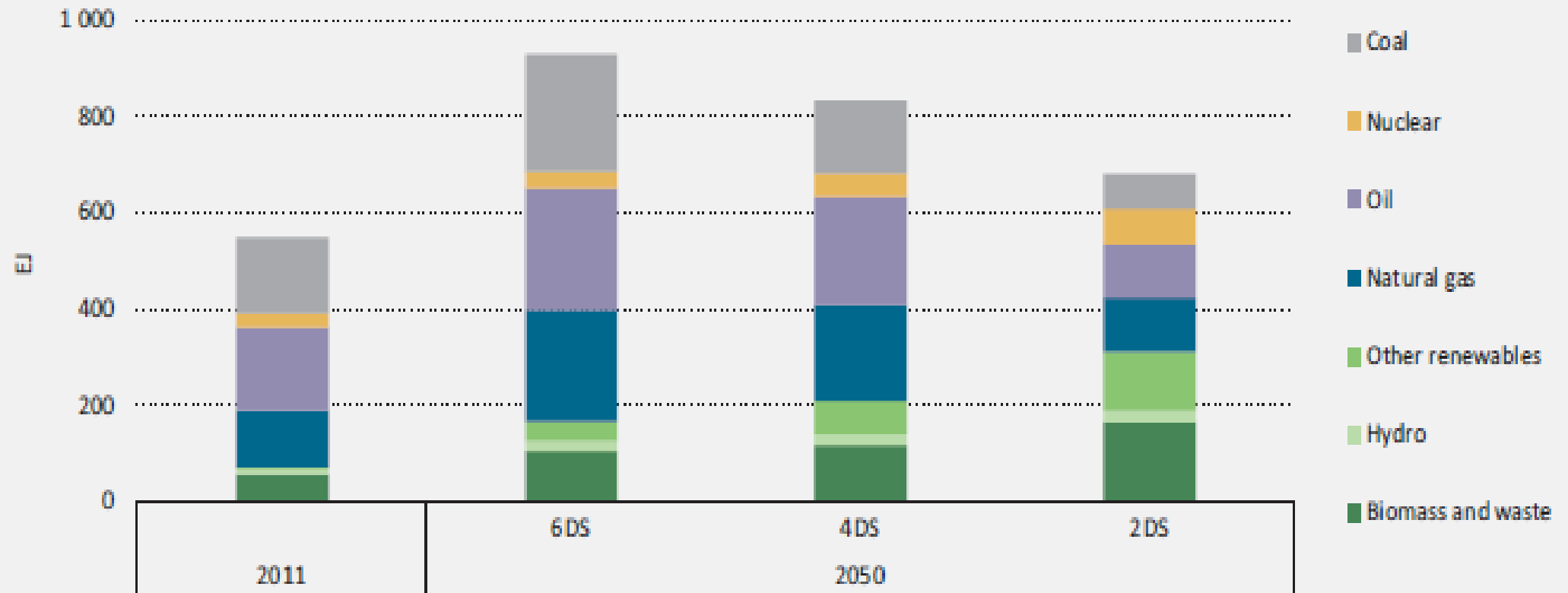
**4.5°C** 8.1°F

**3.5°C** 6.3°F

**2.0°C** 3.6°F

Figure 1.2

## Total primary energy supply



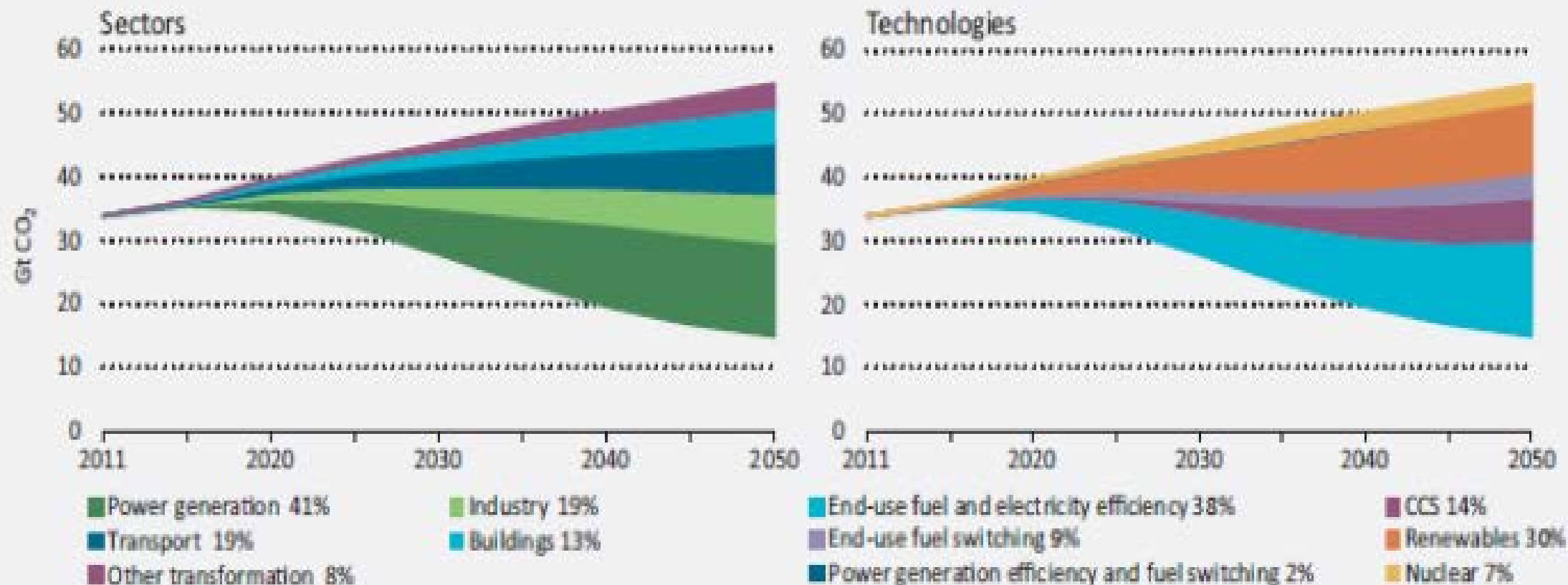
Note: EJ = exajoules.

### Key point

*The 2DS reflects a concerted effort to drastically reduce current dependency on fossil fuels, primarily through energy efficiency, renewables and nuclear energy.*

Figure 1.3

# Contributions to annual emissions reductions between the 6DS and 2DS



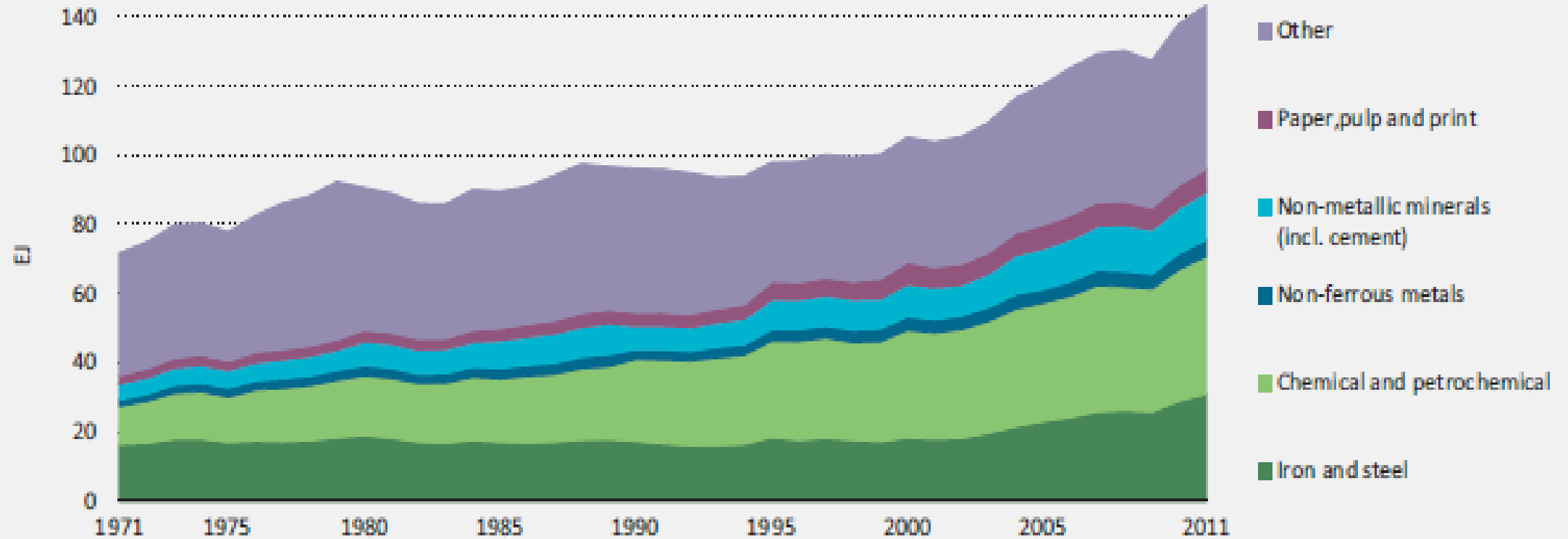
## Key point

*Achieving the 2DS will require contributions from all sectors and application of a portfolio of technologies.*



Figure 1.15

## Global industrial energy consumption by sector

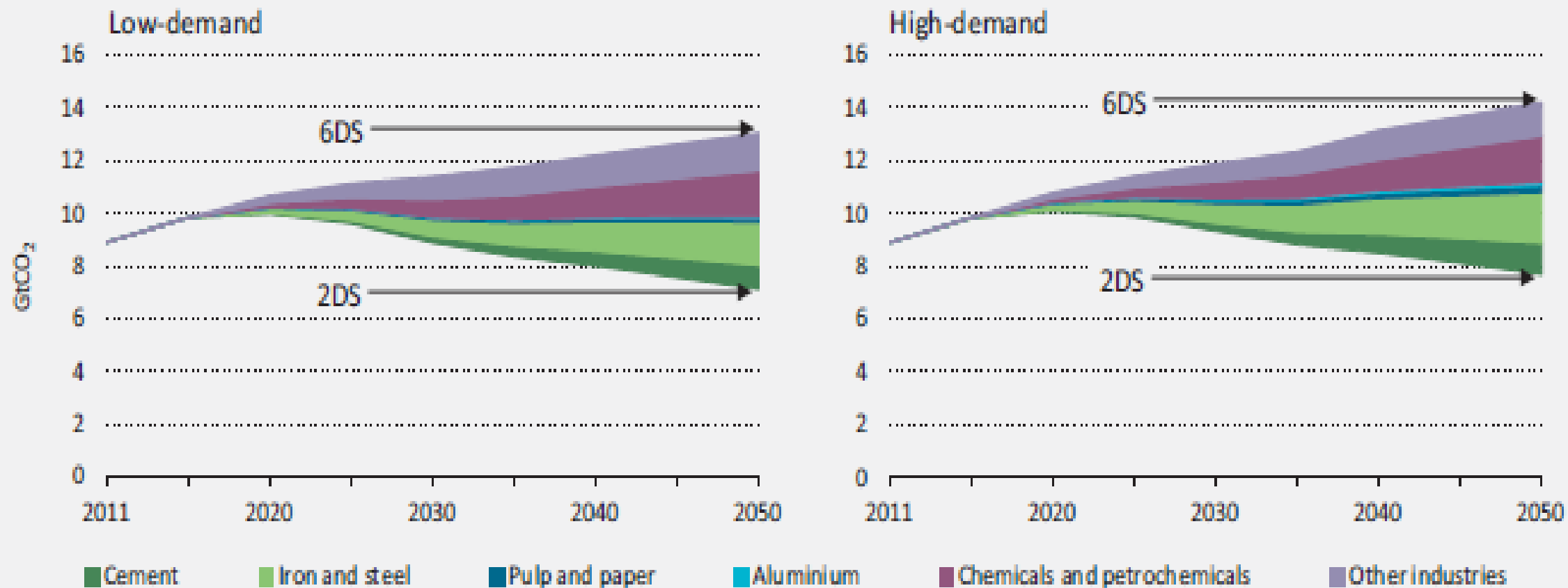


### Key point

*The five most energy-intensive industrial sectors are gaining share in the overall industrial energy use.*

Figure 1.16

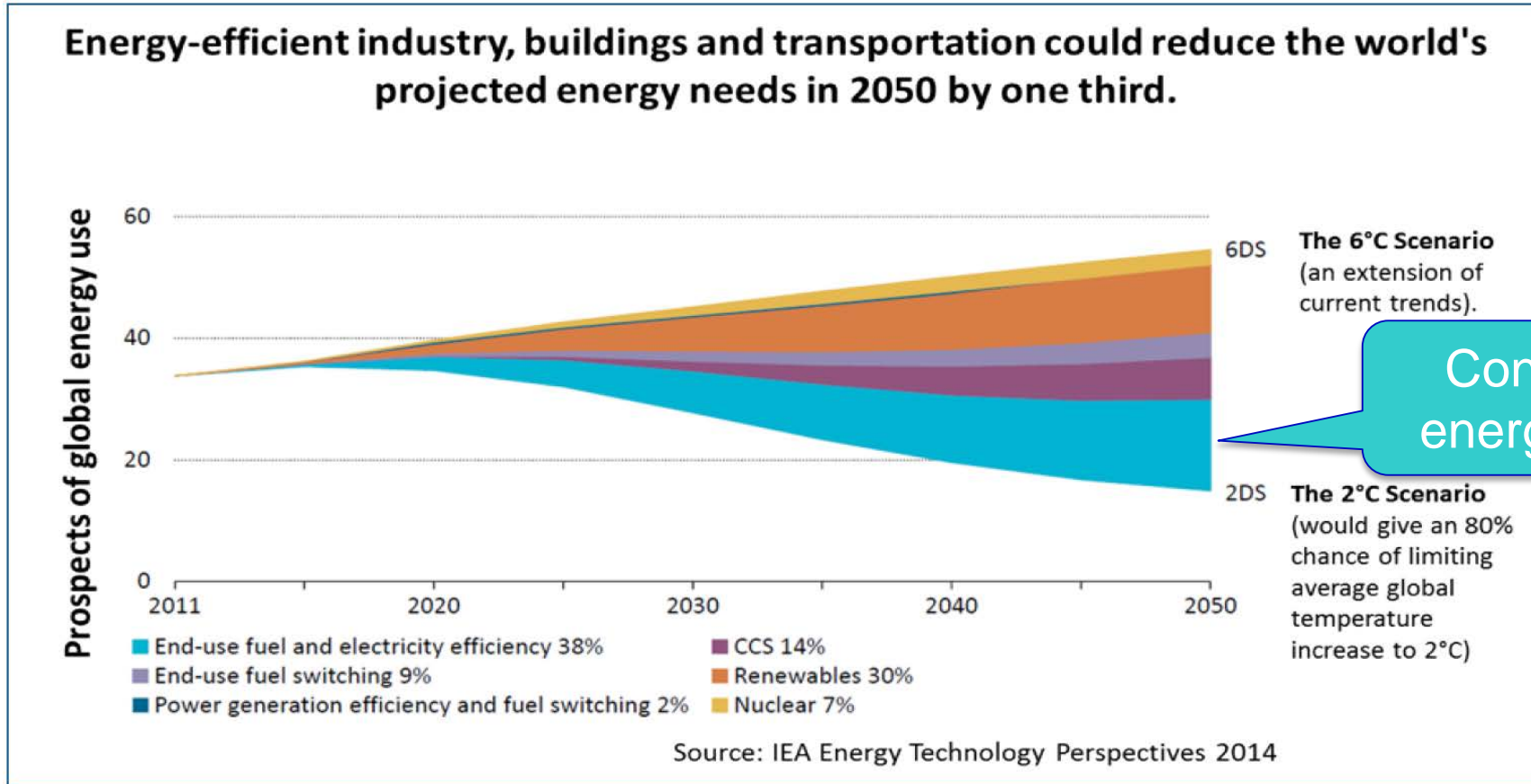
## Direct industrial emissions reductions between 6DS and 2DS



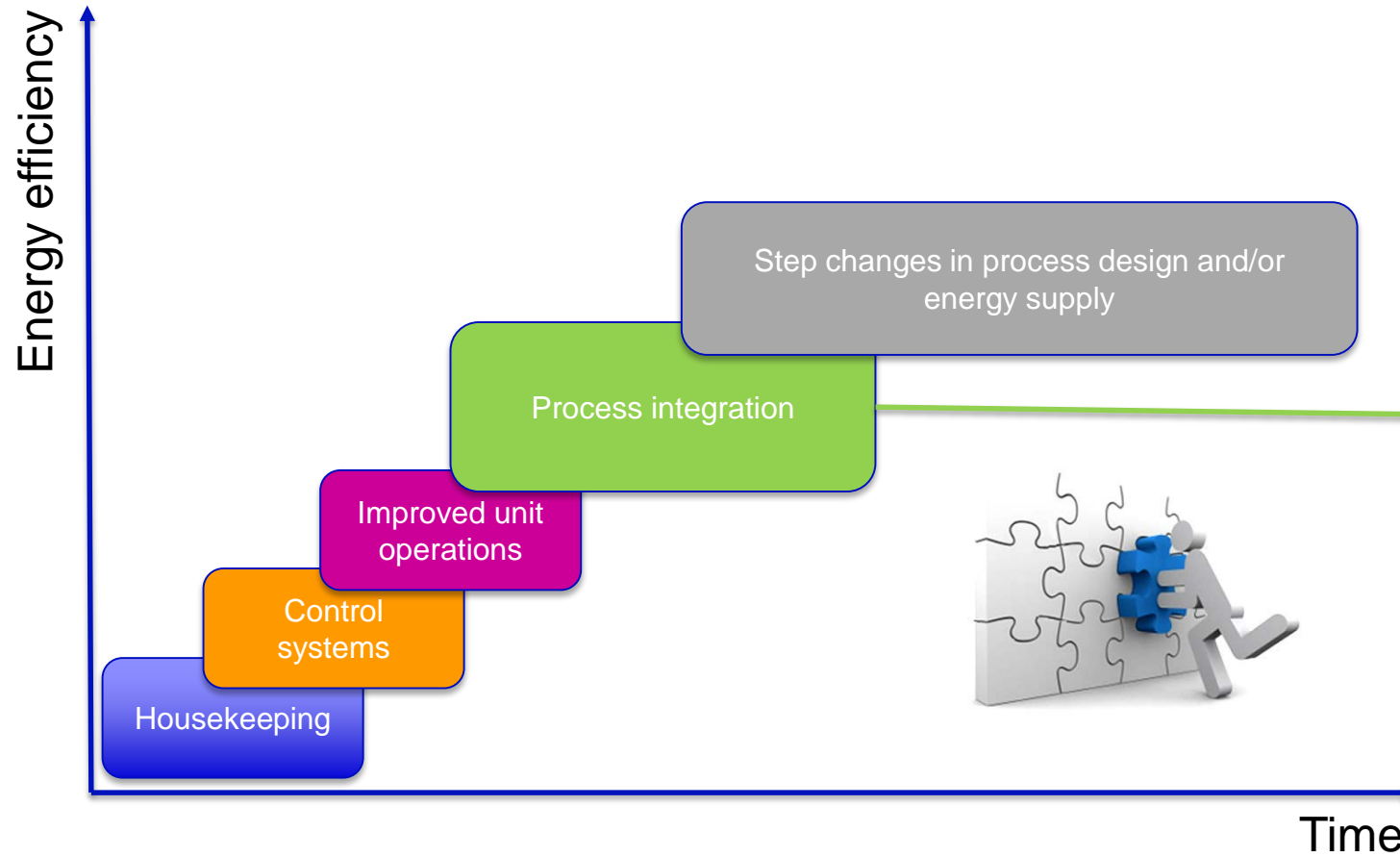
### Key point

*CO<sub>2</sub> emissions peak in 2020 in the 2DS but continue to rise in the 6DS.*

# The potential of energy efficiency



Contribution of energy efficiency

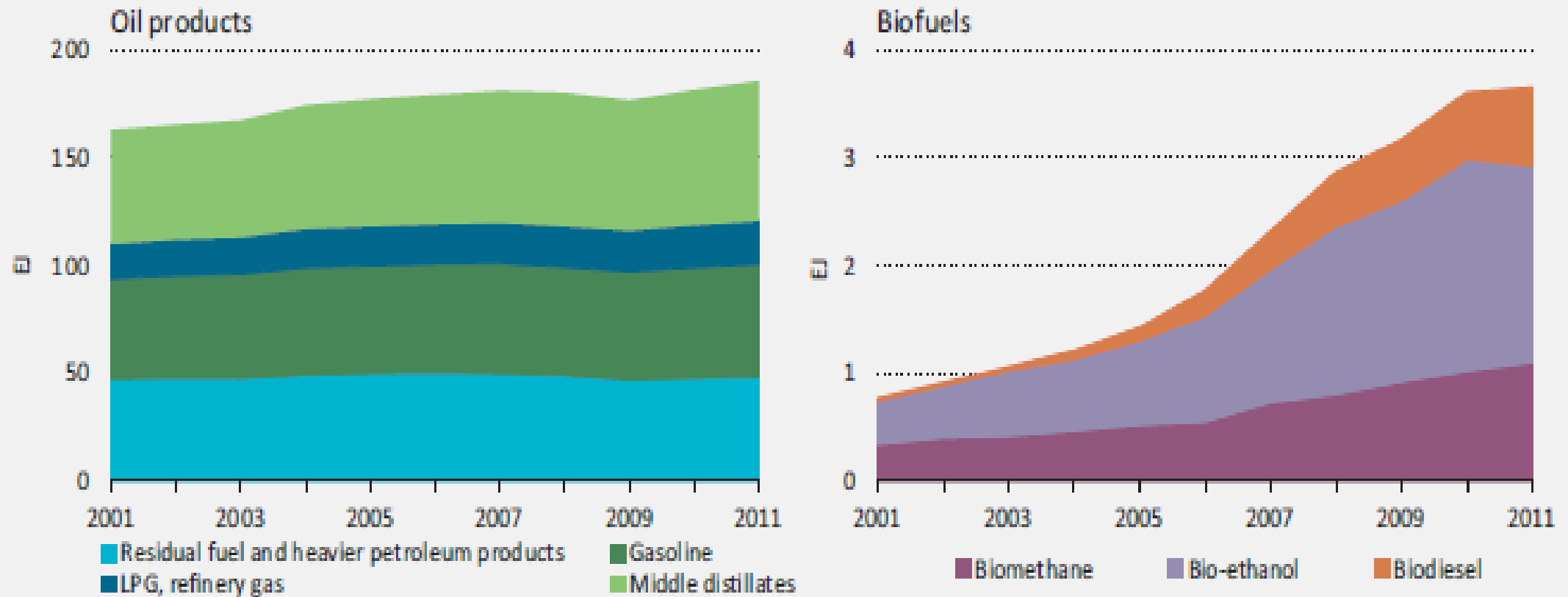


## Systems approach – Process integration

- Recover heat from one process to be reused in another
- Process intensification
- De-bottlenecking / uprating
- Overall plant or site-wide optimisation

Figure 1.6

## Oil products and biofuel demand



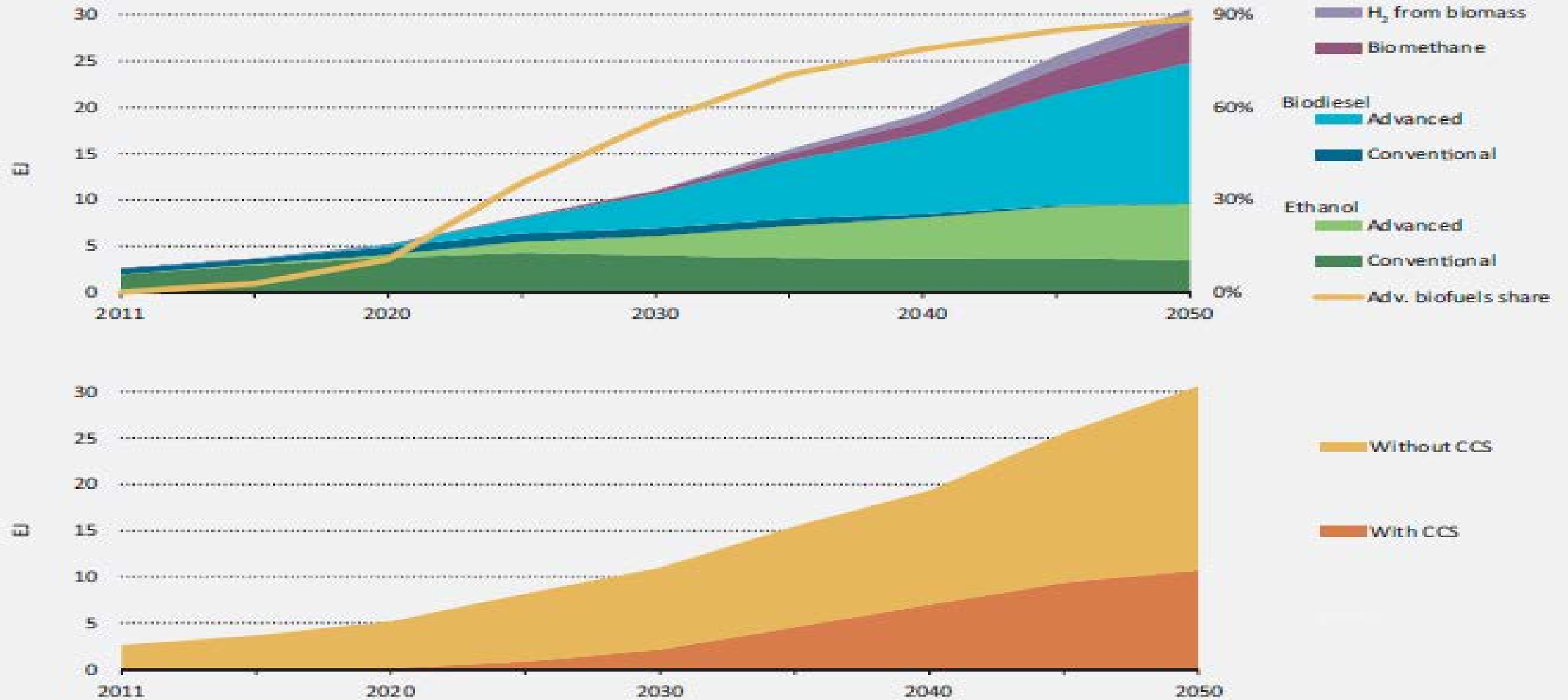
Note: LPG - liquified petroleum gas.

### Key point

*Petroleum demand grew steadily over the last decade with some shift to middle distillates in the mix. Biofuel production more than quadrupled, but from a low base.*

Figure 1.7

## Biofuel production by technology type in the 2DS

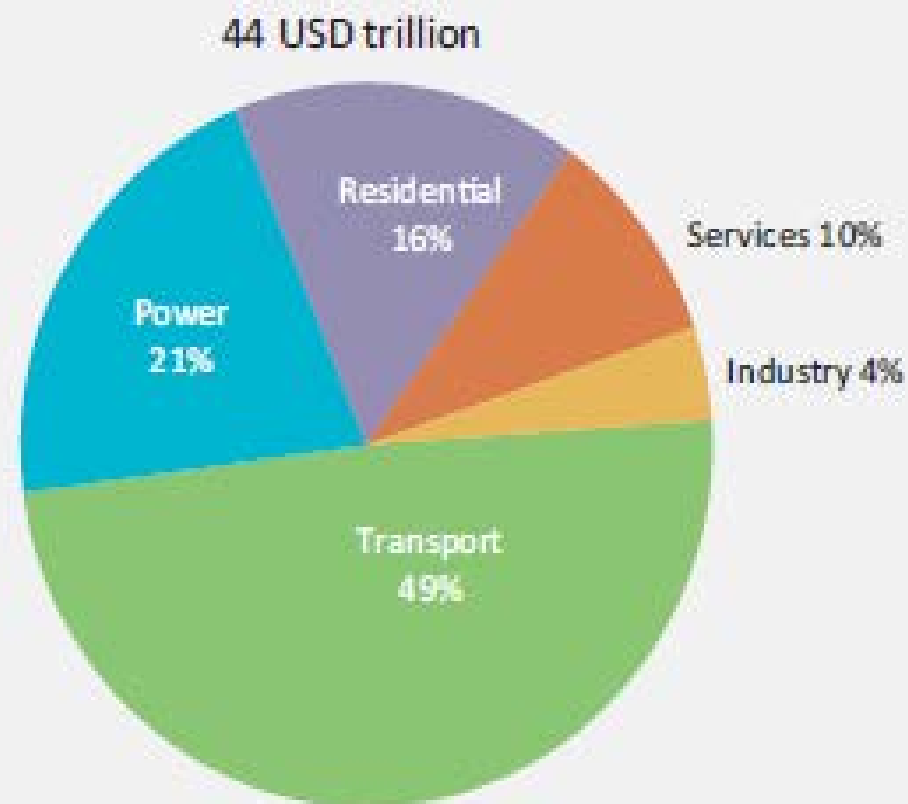


### Key point

Advanced biofuel production accounts for almost 90% of global biofuel production by 2050 in the 2DS, of which more than one-third is equipped with CCS.

Figure 1.20

## Additional global investment needs in the 2DS, 2011-50



Note: regional data can be found online at: [www.iea.org/etp2014](http://www.iea.org/etp2014).

### Key point

*Transport dominates the additional investments needed to decarbonise the global energy system.*