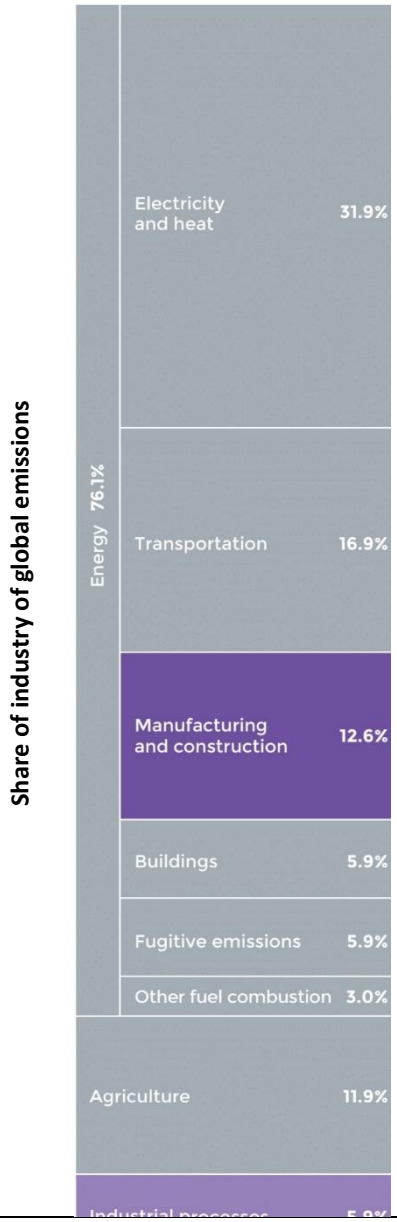
State of Climate Action 2021

Summary of the assessment of climate action in the industry sector - This factsheet is an excerpt from State of Climate Action 2021. All references, data sources, authors and methods can be found in the full report.



Key features of the industry sector in climate change mitigation

Emissions from the industry sector is the fastest growing source of emissions, is the largest energy consuming sector, and is often characterized as “hard-to-abate”.

Key contributors to industry emissions include energy and emissions intensive industries such as cement and steel, but also high-heat processes

The reduction of emissions in industry will require **increased electrification** coupled with the decarbonization of the power sector, and the **introduction of novel technologies**

The Paris-compatible benchmarks for industry:

1- Increase the share of electricity in final energy demand to 35% in 2030, 20-45% in 2040, and 50-55% in 2050
2- Reduce the carbon intensity of global cement production by 40% by 2030 and 85-91% by 2050
3- Reduce the carbon intensity of global steel production by 25-30% by 2030 and by 93-100% by 2050
4- Have 20 low-carbon steel facilities with a production capacity of at least 1 million tonnes (Mt) per year operational by 2030, and all steel facilities net-zero by 2050
5- Green hydrogen production capacity reaches 0.23-3.5 Mt (25 GW cumulative electrolyzer capacity) by 2026 and 500–800 Mt (2,630–20,000 GW cumulative electrolyzer capacity) by 2050

Enablers of climate action in the industry sector:

- The development of technoloy decarbonisation roadmaps coupled with emission reduction targets and infrastructure development
- Increased financial support to move technologies from the R&D, pilot and demonstration phase to full commercilization
- Adopting stricter regulation
- Create an increased demand for low-carbon industrial products
- Incentivize the increased scrap metal use
- Addressing the risk of carbon leakage
- Scaling renewable energy supply and reduce the cost of low-carbon electricity
- Driving down the cost of green hydrogen
    - Scaling renewable energy supply
    - Decreasing electrolyzer costs
    - Increasing hydrogen demand across “hard-to-abate” sectors
    - Multistakeholder coordination

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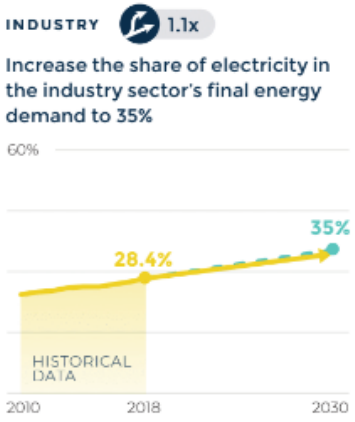
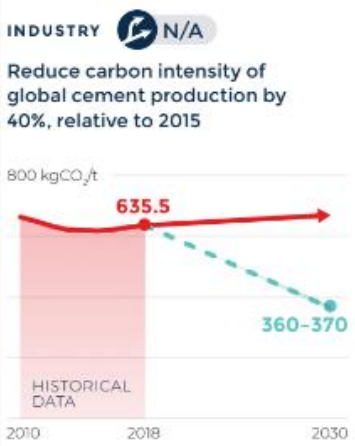
The state of climate action in the industry sector

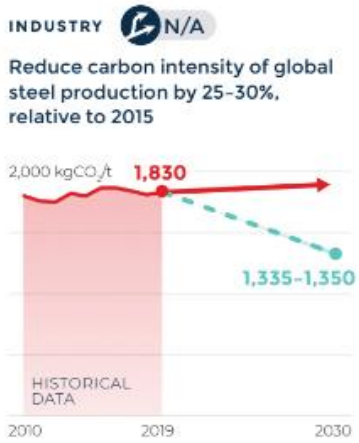
Although the **rate of electrification is increasing**, the current rate is insufficient to meet the 2030 benchmark. As historic electrification mainly has targeted non-heating industrial operations, further electrification targeting medium and high-heat processes might be more challenging. Recent rates of electrification need to increase by a factor of 1.1 to reach the 2030 benchmark.



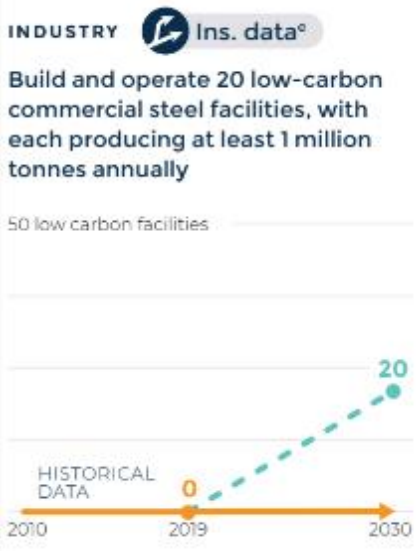
Although the **emissions intensity of cement production** has **decreased historically**, that trend has stagnated in recent years as traditional mitigation options have been close to fully adopted. Significant efforts are needed to adopt more innovative mitigation measures and to change the current trajectory.



The global **emissions intensity of steel production** has **stagnated** in recent years. To change the direction, the rate of recycled scrap steel must increase, combined with a shift in technology routes for primary steel production.



An **increasing number of low-carbon steel** projects is an encouraging sign – a total number of 18 low-carbon steel facilities are planned to go online by 2030. Yet, only 4 of those are planned to have a productin capacity of at least 1 Mt steel per year. That number needs to accelerate significantly to meet the 2030 target of 20 facilities, and more proejects need to move from the pilot and demonstration pahse into full-scale production.



Green hydrogen production is an **emerging technology** currently accounting for less than 0.1% global hydrogen production. Projections suggest a strong increase in global demand for green hydrogen in the medium- to long-term future. Given it is a nascent technology, green hydrogen production is likely to follow an exponential growth curve. The required electrolyzer capacity will depend on various factors such as electrolyzer efficiency and utilization.