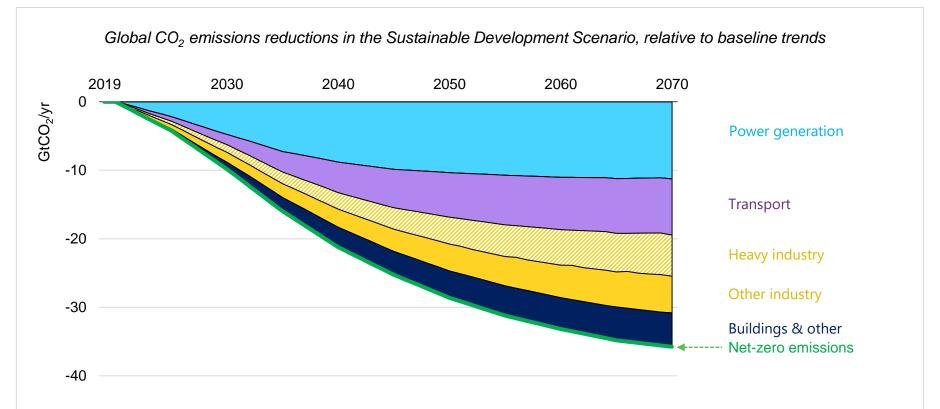


Iron and Steel Technology Roadmap

Peter Levi, Industry Sector Lead, Energy Technology Policy Division Global Forum on Steel Excess Capacity, 22nd April 2021

Focusing on the power sector is not enough to reach climate goals

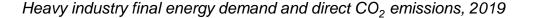


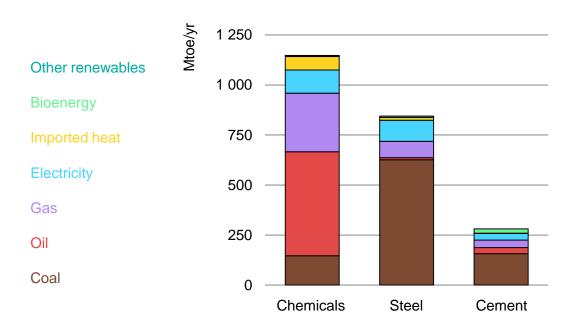


Clean energy technology progress in the power sector is encouraging, but alone not sufficient to reach energy and climate goals. About half of all CO₂ emissions today are from industry, transport and buildings.

Emissions from heavy industry sectors are 'hard to abate'





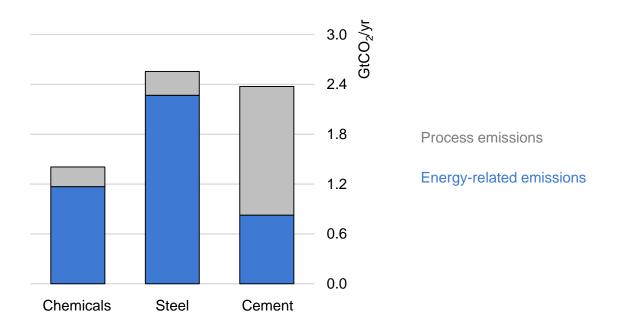


Fossil fuels account for around 85% of the final energy used in heavy industries, which, combined, account for just under a fifth of total energy system CO₂ emissions.

Emissions from heavy industry sectors are 'hard to abate'



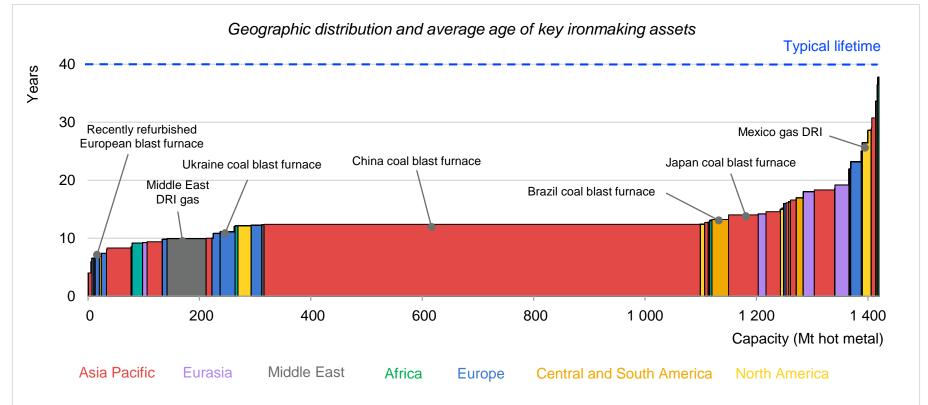
Heavy industry final energy demand and direct CO₂ emissions, 2019



Fossil fuels account for around 85% of the final energy used in heavy industries, which, combined, account for just under a fifth of total energy system CO₂ emissions.

Existing capacity is the starting point for the transition

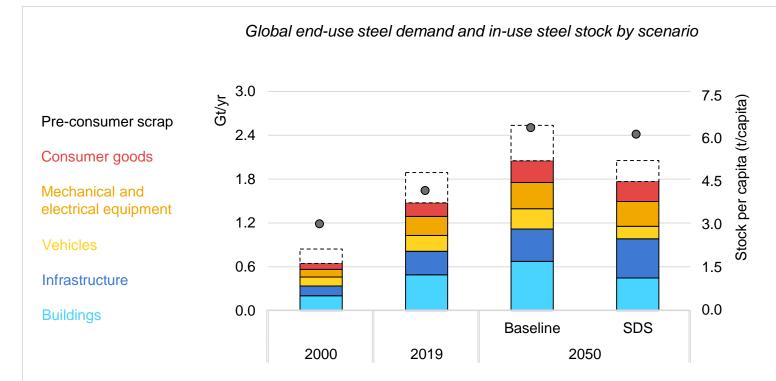




Around 50% of the existing stock of ironmaking equipment is based in China, with India contributing a further 5%. The current stock is quite young, with a global average age of 13 to 14 years for blast furnaces and DRI furnaces.

Steel continues to play a pivotal role across multiple end-use sectors | 20

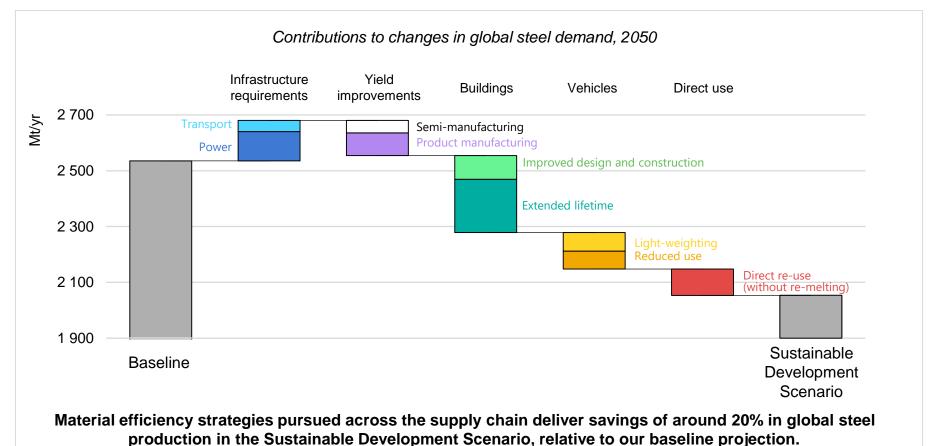




Global demand for steel is projected to increase by more than a third through to 2050 in our baseline projection. In the Sustainable Development Scenario, demand is reduced through material efficiency strategies.

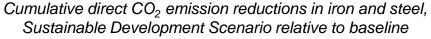
There is great potential for a more efficient use of steel

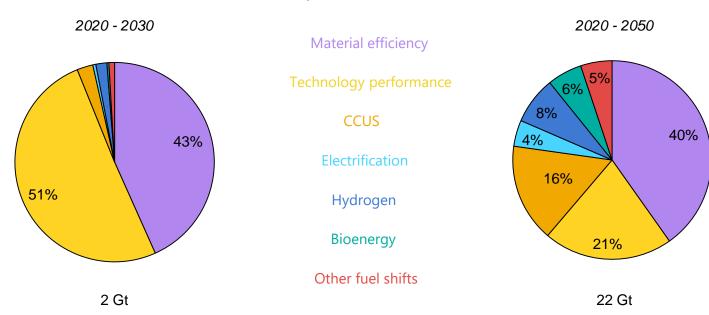




A portfolio of mitigation strategies is required





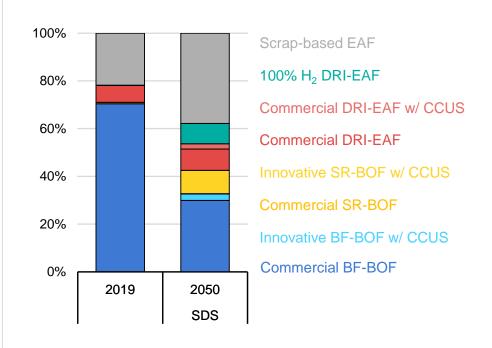


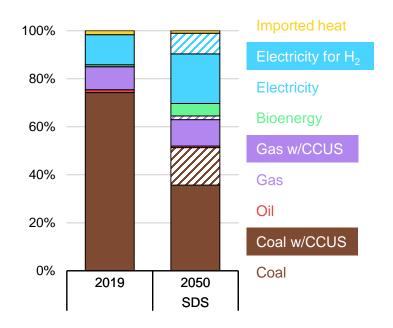
Technology performance improvements and material efficiency deliver 90% of annual emission reductions in 2030. In the longer term, innovative technologies such as CCUS-equipped and hydrogen-based production are required.

A diverse portfolio of energy carriers and processes





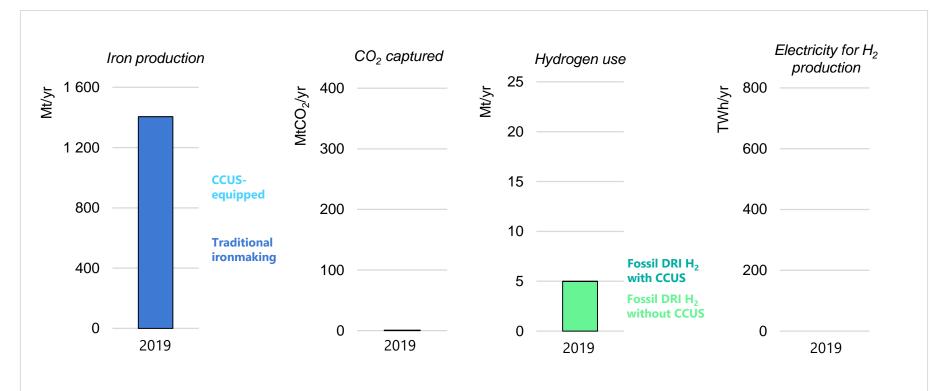




Unabated use of coal drops by more than 50% in the Sustainable Development Scenario by 2050, facilitated by widespread deployment of innovative technologies.

Sustainable steel requires a major push for clean energy infrastructure | 20

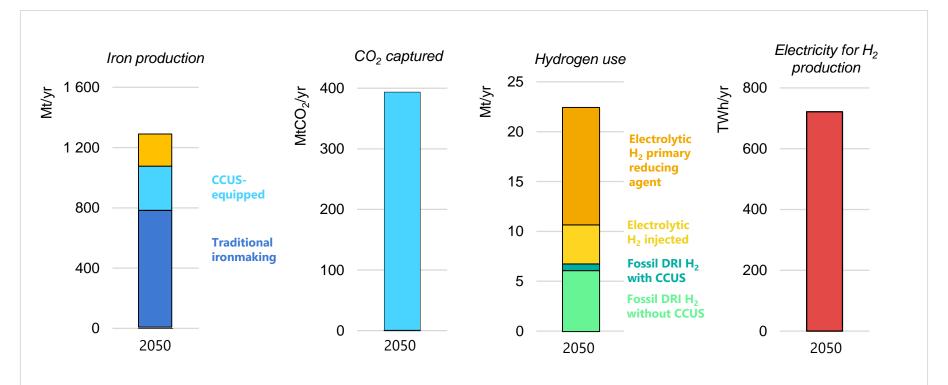




The transformation for primary steel production in the Sustainable Development Scenario requires infrastructure developments for CO₂ transport and storage, hydrogen production, and renewable electricity generation.

Sustainable steel requires a major push for clean energy infrastructure | 20





The transformation for primary steel production in the Sustainable Development Scenario requires infrastructure developments for CO₂ transport and storage, hydrogen production, and renewable electricity generation.

Governments have a critical role to play in accelerating the transition |



Driving force: stakeholder collaboration Governments, steel producers & other actors Framework fundamentals Planning and policy for long-term CO₂ emission reductions Targeted actions for specific technologies and strategies Scrap use & steel demand Steelmaking technologies Managing existing assets & Creating a market for near-Developing earlier-stage Accelerating material near-term investment zero emission steel technologies efficiency **Necessary enabling conditions** International co-operation & Infrastructure planning & Tracking progress & a level playing field development improved data

