

United Kingdom Country Profile - Netzero Steel Project

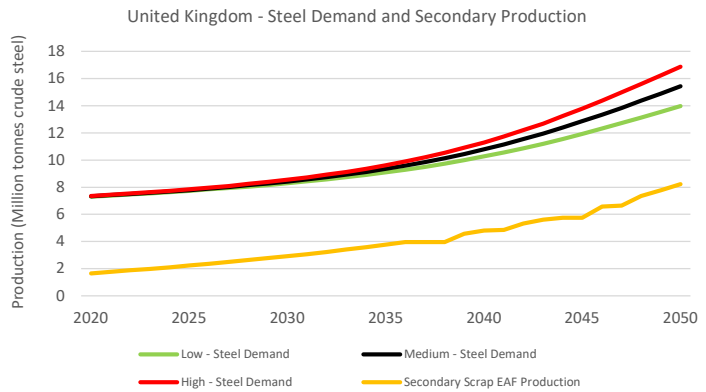
www.netzerosteel.org/countries-results/

The Netzero Steel Project considers the geo-spatial evolution of production of 5 existing facilities in the UK described in the GEM database that account for 77% of the UK's 2019 production, as well as 1 smaller additional archetype plant that was added to account for missing production. All scenarios achieve >90% reduction in emissions by 2050, see the full report for the methodology and background to the study.

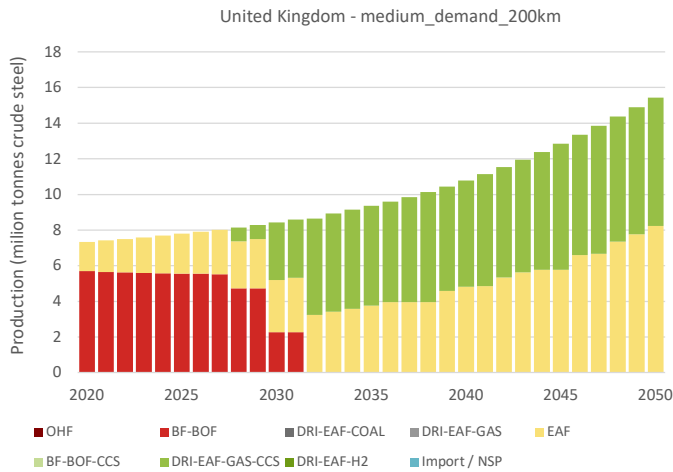
All the nine modelled scenarios (3 demand scenarios) and (3 CCS pipeline length scenarios) reduce overall emission intensities from an estimated existing emission intensity of 1.61 tCO₂e/tonne of steel in 2019 to 0.13 tCO₂e/tonne of steel in 2050. This compares to a global average of 1.58 in 2019 and 0.14 tCO₂e/tonne of steel in 2050. Note that the study boundary includes all direct energy and process emissions that occur at integrated iron and steel mills, but does not include GHG Protocol Scope 2 or Scope 3 class emissions that occur off-site, or allow for the crediting of exported energy products (See report for more details).

Demand Transition

- In the medium demand scenarios United Kingdom's steel demand increases 110% between 2020 and 2050.
- low/medium/high scenarios in 2050 correspond to 195/215/235 tonnes crude steel per capita. This compares to a global average of 206/236/267 tonnes crude steel per capita.
- Secondary production from scrap in EAF rises from 28% in 2020 to 53% in 2050 in our central scenario. This compares to the projected global average of 46%.



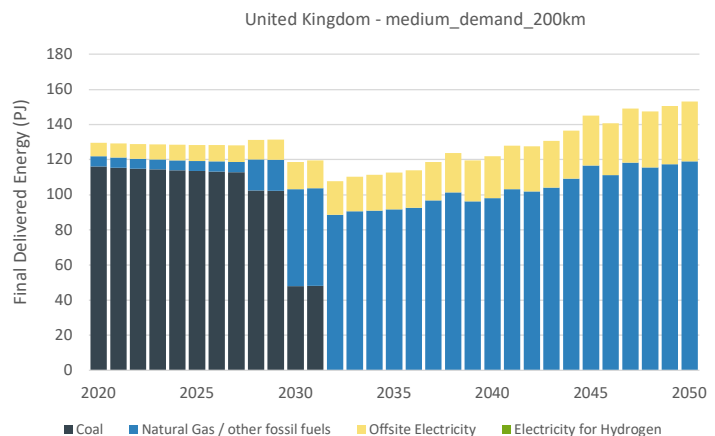
Technology Transition



- By 2030 more than half of United Kingdom's production is projected to be low carbon in the central scenario.
- DRI-EAF-H2 does not deploy in any modelled scenarios.
- Steel production with CCS retrofit accounts for 47% of production in the 2050 central scenario (range of scenarios is 41% to 51%).

Energy Transition

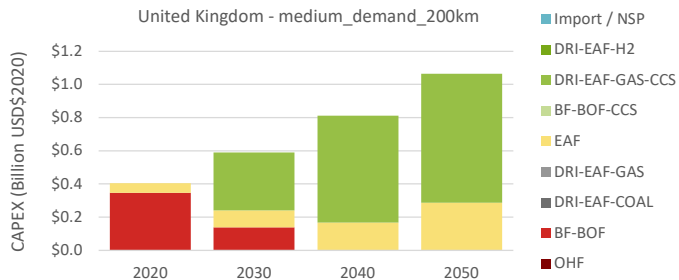
- Facility energy demand for fossil fuels falls by 2% by 2050 in the central scenario (range of scenarios is 2% to 116%).
- Electricity demand rises to 9 TWh in 2050, a rise from current levels of 4.4x by 2050 in the central scenario (range of scenarios is 4.0x to 4.8x). For comparison, electricity demand in 2050 represents 3% of current total electricity demand in United Kingdom.



Net Zero Steel

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Investment Transition

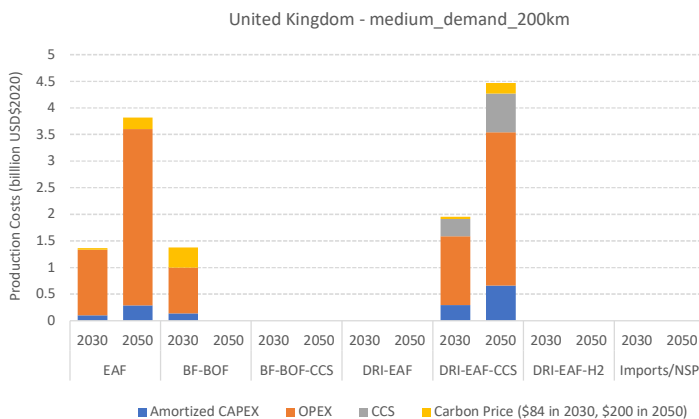


- CAPEX investment increases by 263% from 2020 to 2050 in the central scenario.

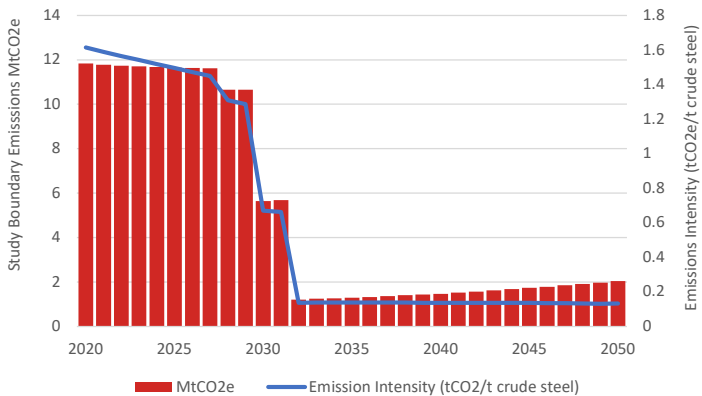
- DRI-EAF-GAS-CCS contributes to the largest share of CAPEX investment, 73% in 2050 in the central scenario.

- Total production costs in 2020 \$USD are estimated to be \$5 billion in 2030 and \$8 billion in 2050 for the central scenario.

- Amortized CAPEX costs are projected to be 11% of overall production costs in 2050 for the central scenario.



Emissions Transition



- Cumulative emissions between 2030 and 2050 are 156 MtCO2e (Range for scenarios is 156 to 159 MtCO2e.)

- Emission intensity of production falls from 1.61 tCO2e/tonne of crude steel in 2020 to 0.13 tCO2e/tonne of crude steel in 2050.