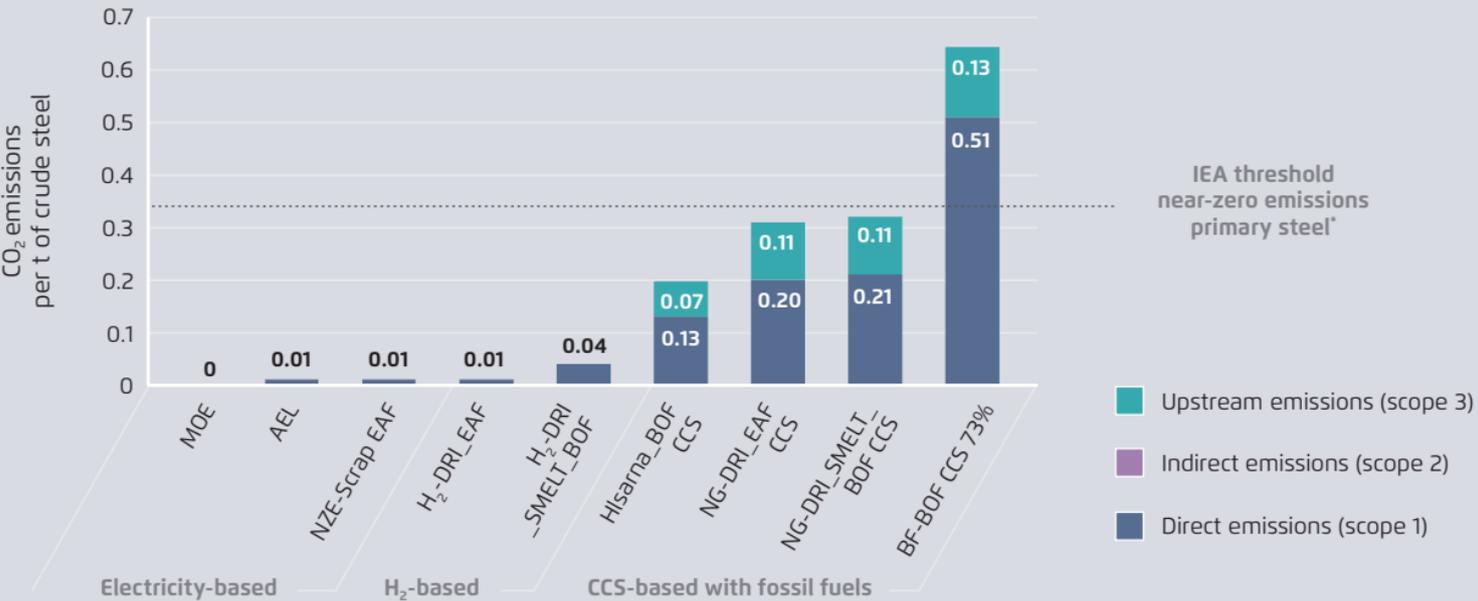


Residual CO₂ emissions (scope 1 and 3) of breakthrough technologies and proposed IEA near-zero emission threshold for primary steel

Figure 8



Agora Industry and Wuppertal Institute (2023), based on authors' analysis and IEA (2022g). Note: All primary steel production technologies in this figure have been calculated with a share of 16.5% scrap. *Due to scrap share adjustment the IEA threshold for near-zero emissions primary steel is around 0.34tCO₂/t of crude steel. Upstream emissions for CCS technologies are retrieved from IEA (2022) based on 2050 values for "indirect emissions of fossil fuels". They assume already large cuts of methane emissions relative to today. Indirect emissions (scope 2) are assumed to be zero if only zero-carbon electricity is used. MOE = molten oxide electrolysis; AEL = alkaline iron electrolysis; NZE-scrap EAF = near-zero emission scrap electric arc furnace; DRI-EAF = direct reduction and electric arc furnace; DRI-SMELT-BOF= direct reduction, electric smelter and basic oxygen furnace; BF-BOF CCS = blast furnace-basic oxygen furnace with post-combustion CCS.