



Carbon Capture and Storage West Coast Cement Conference

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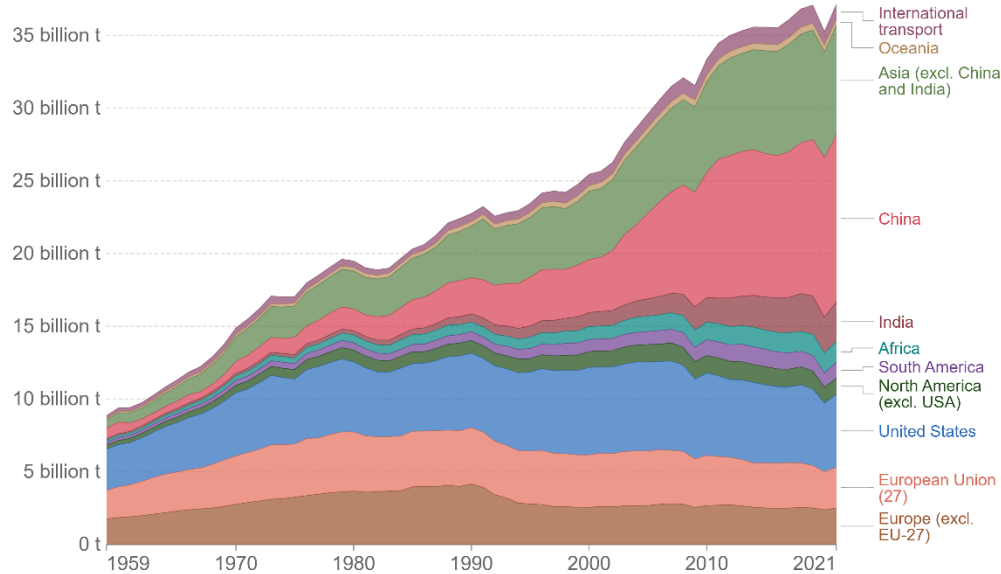
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Annual CO₂ emissions by world region

This measures fossil fuel and industry emissions¹. Land use change is not included.

Our World
in Data

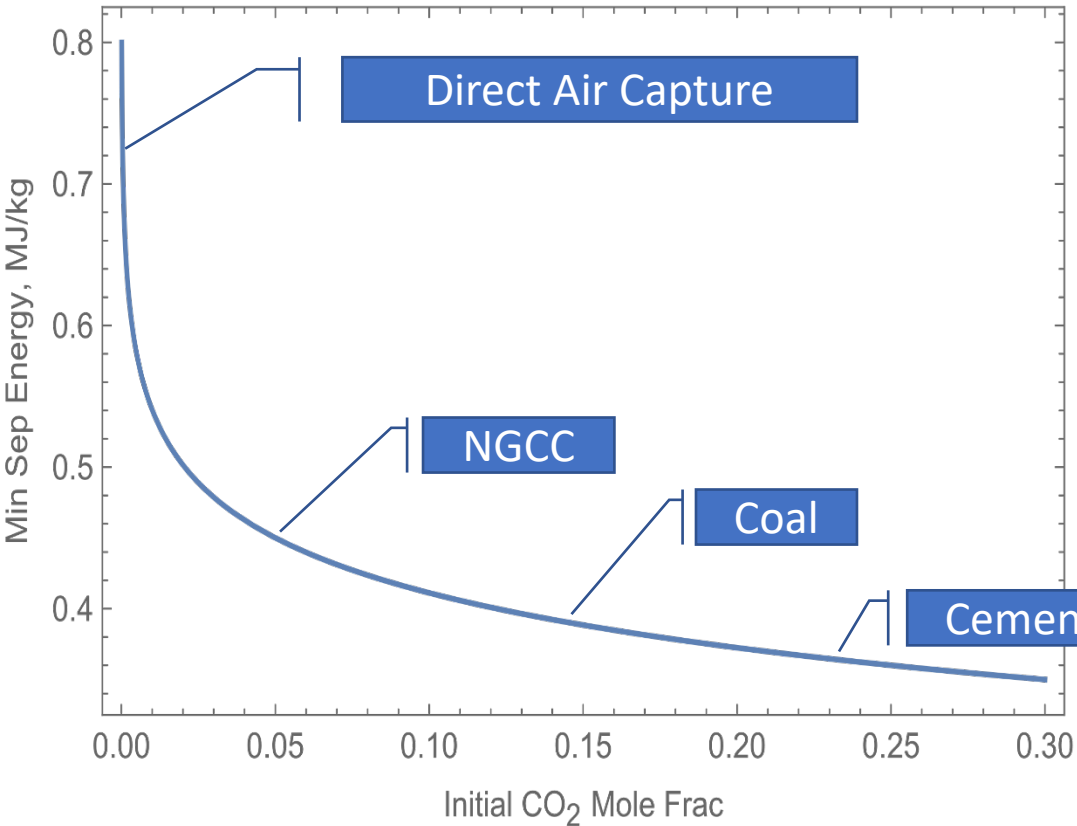


Source: Global Carbon Budget (2022)

OurWorldInData.org/co2-and-greenhouse-gas-emissions • CC BY

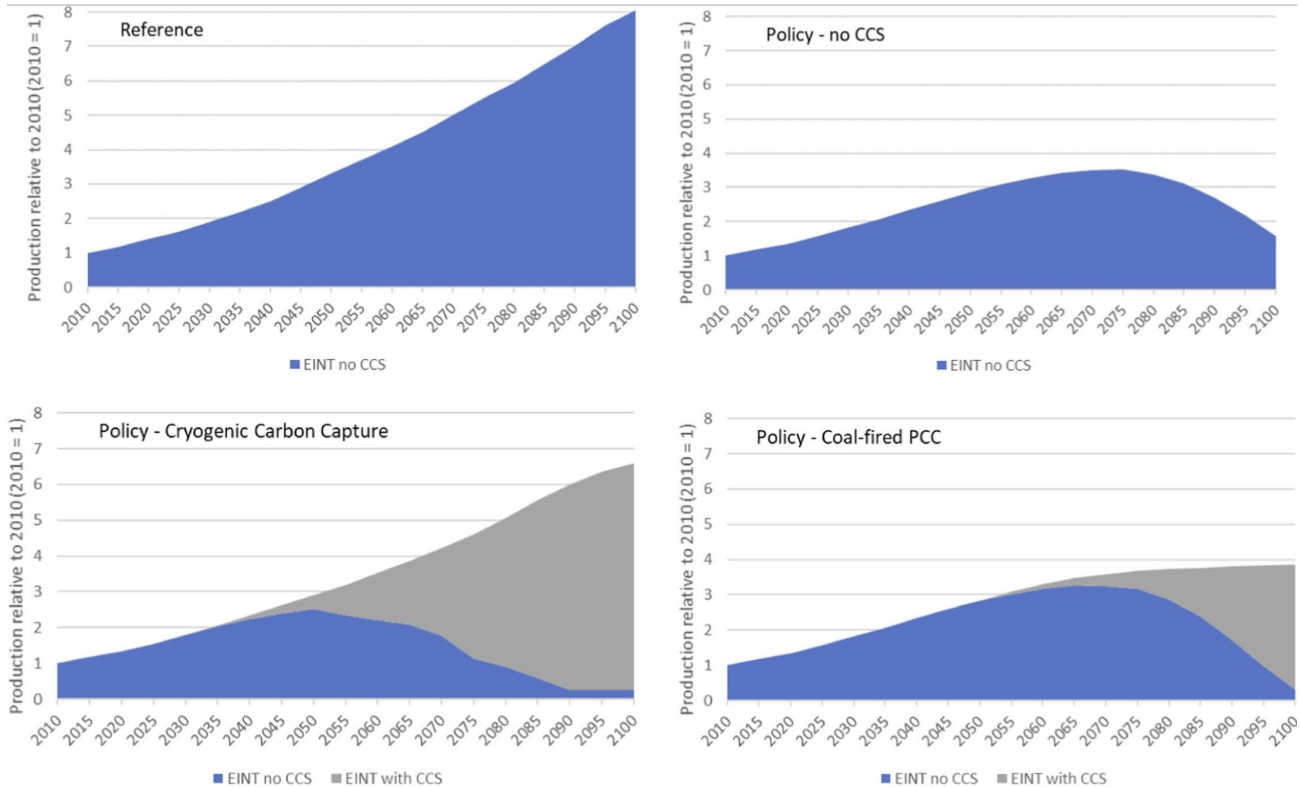
1. Fossil emissions: Fossil emissions measure the quantity of carbon dioxide (CO₂) emitted from the burning of fossil fuels, and directly from industrial processes such as cement and steel production. Fossil CO₂ includes emissions from coal, oil, gas, flaring, cement, steel, and other industrial processes. Fossil emissions do not include land use change, deforestation, soils, or vegetation.

Energy Demand vs Init. Composition



- Min. specific energy demand depends on initial composition in extreme and nonlinear ways.
- Min. specific energy becomes infinite as initial composition approaches zero.
- Differences in real systems exceed these minimum energy differences.

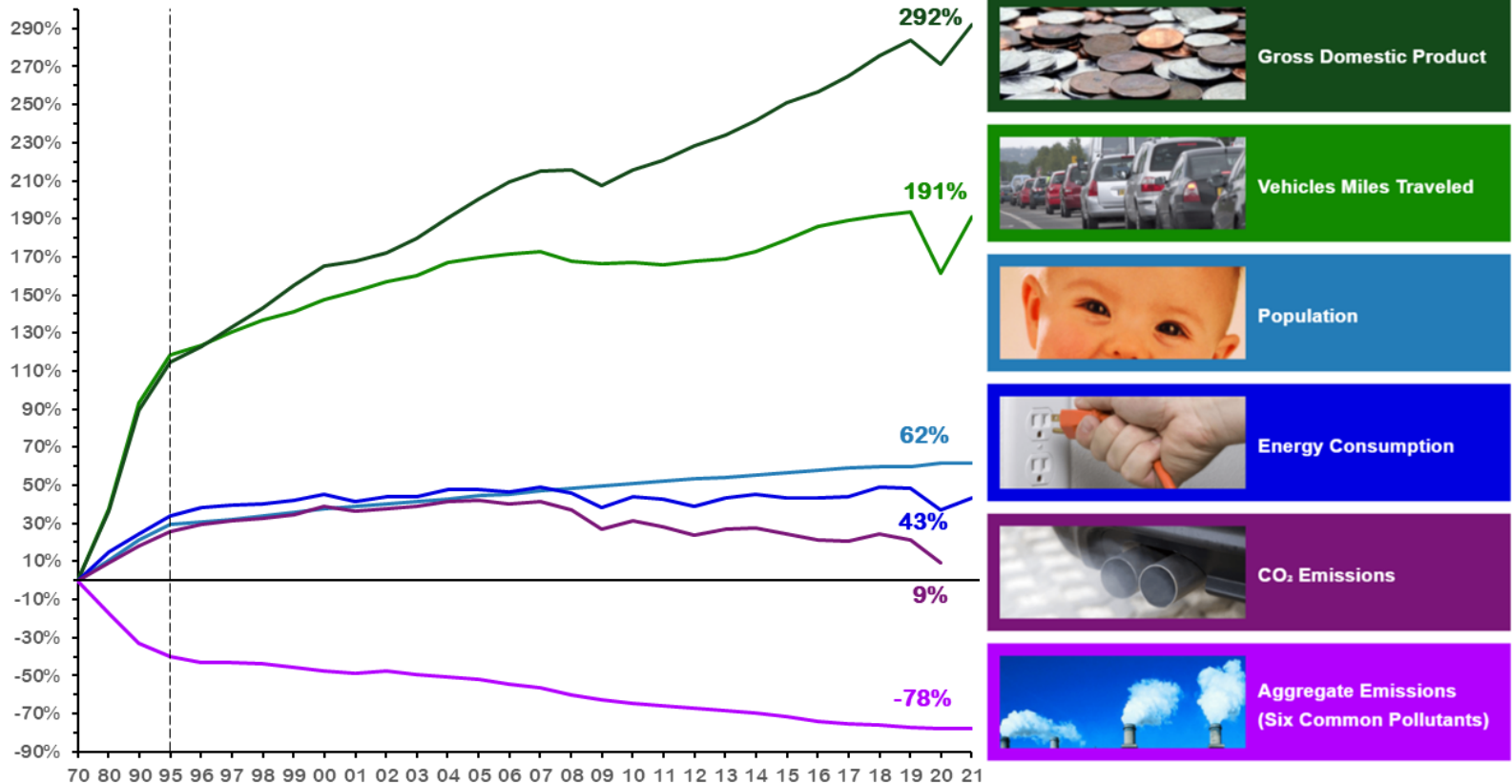
CCUS and CCC Effect On Industry



Source: Independent Analysis by ExxonMobil and MIT, Sergey Paltsev, Jennifer Morris, Haroon Khesghi, Howard Herzog, Applied Energy, 300, 2021, <https://doi.org/10.1016/j.apenergy.2021.117322>.

Unprecedented Challenge

Comparison of Growth Areas and Emissions, 1970-2021



-  **Gross Domestic Product**
-  **Vehicles Miles Traveled**
-  **Population**
-  **Energy Consumption**
-  **CO₂ Emissions**
-  **Aggregate Emissions (Six Common Pollutants)**