

Description of Additional Supplementary Files

File Name: Supplementary Data 1

Description: Figure: It provides the original data of Figures 1-5.

File Name: Supplementary Data 2

Description: Flows: This section provides calculation data across six key areas: the division of energy and feedstock used in fossil hydrocarbons, linking primary chemicals to downstream production, tracing the carbon source, evaluating CO₂ mitigation potential, and comparing emission intensities. Uncertainty ranges are indicated alongside the process-based coefficients. All references and data sources are documented in the accompanying spreadsheet.