

Geo-engineering Debate: Transport Fuel, then 'Roll-back'

Gordon Taylor
G T Systems

Overview

- Tyndall Centre study compared effectiveness
- Air Capture of CO₂ offers up to -2 W/m²
- Should next compare energy implications
- Ultimate Carbon may be only ~ 1000 GtC
- Implies severe shortage of Transport Fuels
- Hence synthetic fuels from captured CO₂
- Technology deployed for Transport Fuels
- Scaled up to roll back CO₂ concentration

Energy Implications - 1

- The starting point was the 'Geo-engineering' study by Lenton & Vaughan, 2009
- This compared options for Radiative Forcing Potential
- They should also be compared for Energy Implications
- For example, some involve many space launches or repeated flights or sea trips

Energy Implications - 2

- The 'Ultimate Carbon' may be only about 1000 GtC (ref. Laherrere, 2006)
- This would imply a severe shortage of Transport Fuels
- High energy liquid fuels are essential for payload, range of Aircraft, Ships, (non-electric) Trains and (heavy) Trucks
- These account for half of the Transport Fuel demand
- Biofuels could never supply more than 10 to 30%, and have many problems

Energy Implications - 3

- Air Captured CO₂ could be used for Synthetic Fuels
- Wind electricity would provide Renewable Hydrogen
- And energy for CO₂ capture and Fuel Synthesis
- Fuels would include Methanol - excellent for Cars
- Plus Gasoline for Cars during transition, with Kerosene and Diesel for Aircraft, Ships, Trains and Trucks

Energy Implications - 4

- Such Synthetic Fuels could displace Unconventional Oil
- So mitigating CO₂ emissions for Transport Fuels (and heat) with no need for sequestration
- Fuel companies would deploy Air Capture of CO₂ to suit
- This could be scaled up, and the CO₂ sequestered
- So enabling 'roll-back' reduction of CO₂ concentration
- Air Capture units would be at ground level & 'reversible'

Further information at:
www.energypolicy.co.uk

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