

# **The CAST Proposal**

## **Compatible Affordable Sustainable Transportation**

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### **Summary**

All transport vehicles with piston and gas turbine engines have good energy efficiencies and further development potential. Moreover their energy and money costs of production are very low. However with oil-based fuels, cars cannot emit much less than about 100 gCO<sub>2</sub>/km and even with the development potential, trucks, buses, ships and aircraft all have corresponding minima. Moreover, meeting worldwide transport fuel demands much bigger than today's will not be possible using only 'conventional' oil, which is near to peak production. Also, for most developed countries, indigenous biofuels could only supply at most 10 to 30% of the present transport fuel demand. Hence fully renewable synthetic fuels will be needed to meet the challenges of energy security and climate change. As well as sustainable ethanol and methanol, the CAST proposal includes sustainable synthetic kerosene and diesel. This means that international air and marine transport could be brought within Kyoto 2.

Such sustainable fuels could be produced from CO<sub>2</sub> captured from the air and electrolytic hydrogen from renewable electricity. A world transport fuel demand equal to today's oil-based demand could be met entirely with wind electricity for fuel synthesis. Moreover all countries should have a substantial indigenous wind resource, thus offering security of supply. Such air capture, if followed by sequestration, could also be used to reduce the atmospheric CO<sub>2</sub> concentration, as suggested by Hansen et al.

The transition to sustainable transportation, with energy security and zero GHG emissions, would take at least 30 years, whatever the fuel and vehicle technologies. Therefore policy measures should mandate a GHG reduction rate of 3% per year, with the sustainable fuel chain being paid for by the oil/energy companies.

By putting forward the CAST proposal at COP 15, Denmark could announce a response to the challenges of energy security and climate change with a sustainable solution for the whole transport sector.

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For pdf or printed copies of the full CAST Proposal, with 50 pages, 16 Figures and over 170 References, please email either of the above.