

**Achieving deep cuts in CO₂ emissions in oil producing countries:
the Case of Saudi Arabia**
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Abstract:

COP 21 led to a historic global agreement to limit the earth's rising temperature to less than 2 °C. This will require countries to act upon climate change and achieve a significant reduction in their greenhouse gas emissions which will play a pivotal role in shaping future energy systems. The work presented shows an optimisation study to understand how an oil producing country can meet its CO₂ reduction targets to achieve the deep reduction in power generation and transport sectors, while looking into Saudi Arabia as a case study. For the power generation sector, it was found that the implementation of energy efficiency measures is necessary to enable meeting the 80% target, and it would also lower costs of transition to low carbon energy system while maintaining cleaner use of hydrocarbons with CCS. For the transport sector, it was found that it is possible, albeit costly, to achieve 50% reduction in CO₂ emissions in 2050 compared with emissions in 2015 when using synthetic fuels. Feasible implementation of synthetic fuels was also found to be dependent on the targeted cuts in CO₂ emissions, management of fuel demand, penetration of public transport, and economic growth. The breakeven price of crude oil needed to make CCS economically viable was determined under varying scenarios. Feasible implementation of synthetic fuels was also found to be dependent on the targeted cuts in CO₂ emissions, management of fuel demand, penetration of public transport, and economic growth.

Bio:

Dr. Yousef Alshammari is a postdoctoral researcher in energy systems analysis. His research addresses the global transition scenarios into a low carbon energy through the application of innovative technologies including carbon capture, solar fuels, fuel cells and hydrogen technologies. He conducted research projects at the IAEA, KAUST, OPEC, and he is currently a visiting researcher the University of Vienna, Austria. He obtained his PhD from Imperial College London in 2013 where I worked in designing innovative processes for underground gasification of hydrocarbons. He is a winner of the World Energy Congress award for top research papers in 2016, and a finalist for the 2017 UK Education Alumni awards in Saudi Arabia. He is also a board member of the the Future Energy Leaders programme (FEL-100), an exclusive network for high level achievers in energy led by World Energy Council.

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This event is free and open to the public. No registration is required.

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