Geopolitics of Energy Transformation:  
*The Hydrogen Factor*  

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Hydrogen demand could grow 5X or more by 2050
Hydrogen and its derivatives could grow from negligible amounts today to 20% of global trade in energy commodities by 2050.
Emerging national hydrogen strategies and initiatives
An expanding network of hydrogen trade routes, plans and agreements
Water consumption of hydrogen in 2050 compared with selected sectors today (bn m³)

Water usage

Map of water stress levels

2 769 m³

768 m³

464 m³

34.7 m³

24.8 m³

Agriculture

Industrial

Municipal

Desalination production (2018)

Hydrogen production (2050)

High

Medium

Low
Comparison between economic potential of green hydrogen supply below USD 2/kgH2 and forecasted hydrogen demand, in EJ/year, in 2050
Policy considerations

• Hydrogen is part of a much bigger energy transition picture, and its development and deployment strategies should not be pursued in isolation.

• Setting the right priorities for hydrogen use will be essential for rapid scale-up and long-term contribution to decarbonisation efforts.

• International co-operation will be necessary to devise a transparent hydrogen market with coherent standards.

• Policy makers should consider broader impacts of hydrogen scale-up on sustainable development to ensure positive, long-lasting outcomes.

• Investment in renewable energy and green hydrogen in emerging economies can contribute to economic growth and stability.

• National strategies, trade agreements, and regulatory schemes can provide signals about hydrogen’s role in LTES (e.g., grid integration, sectoral priorities).
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