

# Prospect for Hydrogen in APEC

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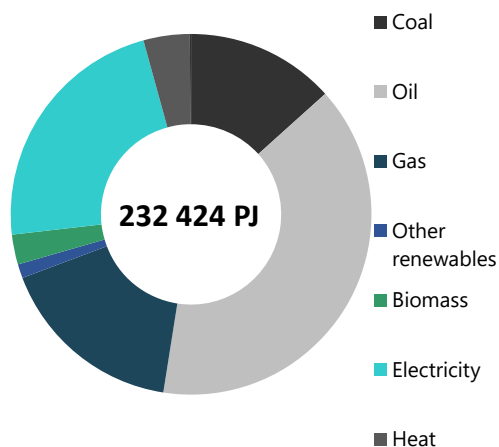
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# APEC economies are considering hydrogen as part of their strategies for the future

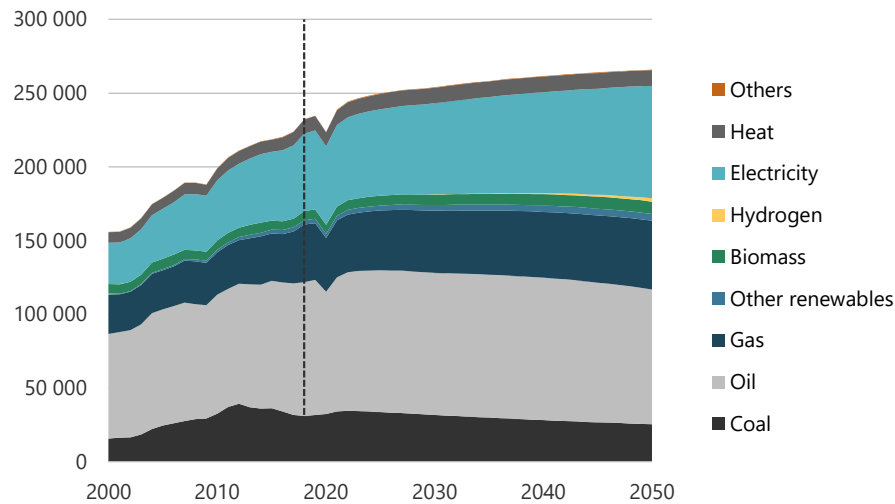
APEC fuel share in the final energy demand in 2018



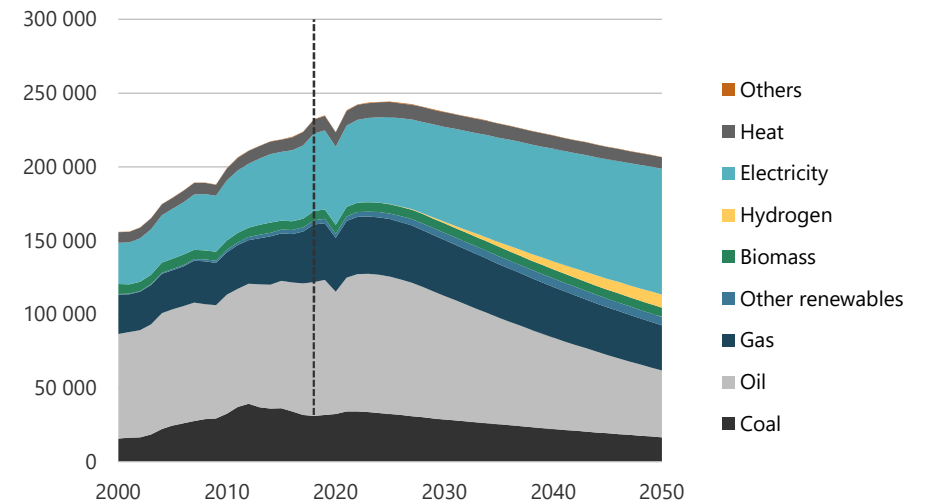
- Around 70% of APEC's final energy demand is satisfied by fossil fuels.
- Almost half of APEC have strategies, roadmaps, or other documents that show their potential plan for the development of a future hydrogen market.
- Some economies such as Japan or Korea emphasize the potential of replacing fossil fuels with hydrogen at the energy end-use sectors; others, such as Chile and Australia, highlights the role of hydrogen in the green energy exports.

# Hydrogen can play a role in future APEC energy mix

APEC final energy demand in REF (PJ)



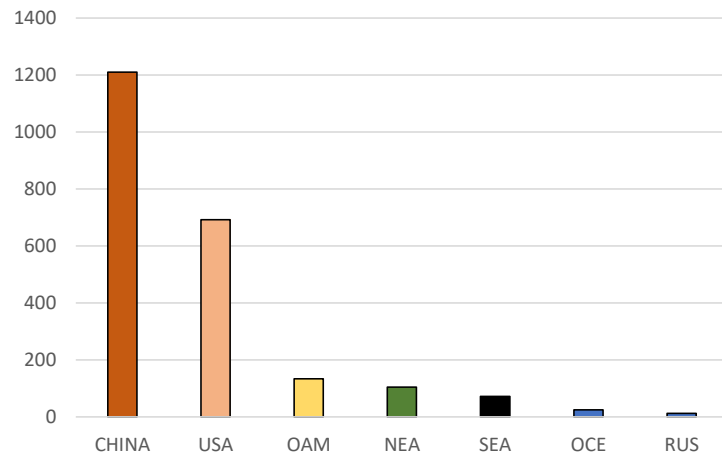
APEC final energy demand in CN (PJ)



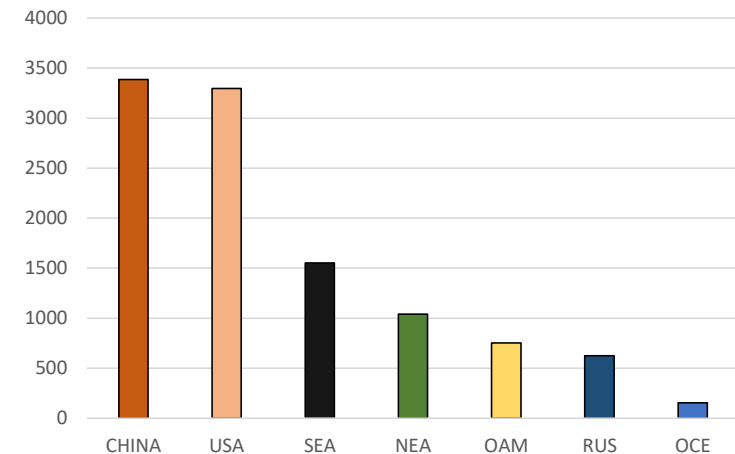
- Hydrogen accounts for 1% of final energy demand in REF and 4% in CN by 2050.
- Demand for hydrogen energy in CN is higher than REF at around 9000 PJ.
- Hydrogen replaces mainly oil products.

## In addition to USA, China and SEA become relevant hydrogen consumers

Hydrogen demand by APEC region in REF (PJ)



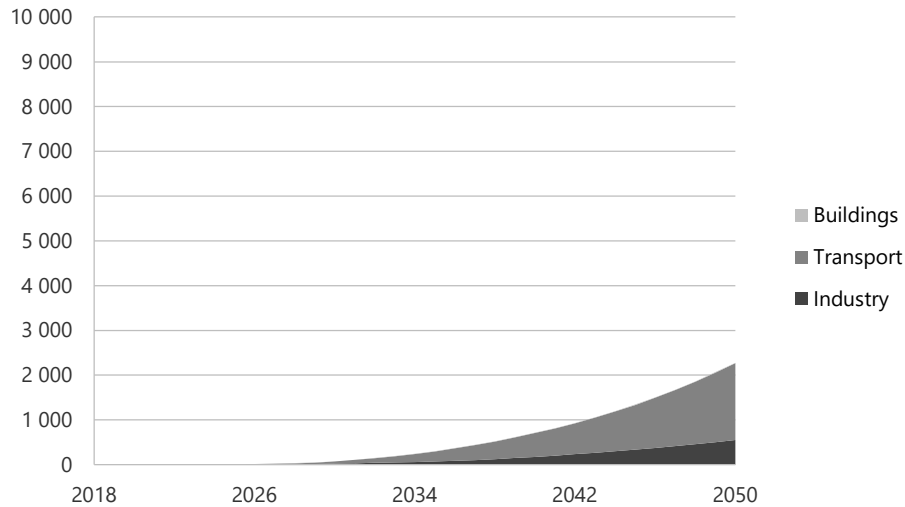
Hydrogen demand by APEC region in CN (PJ)



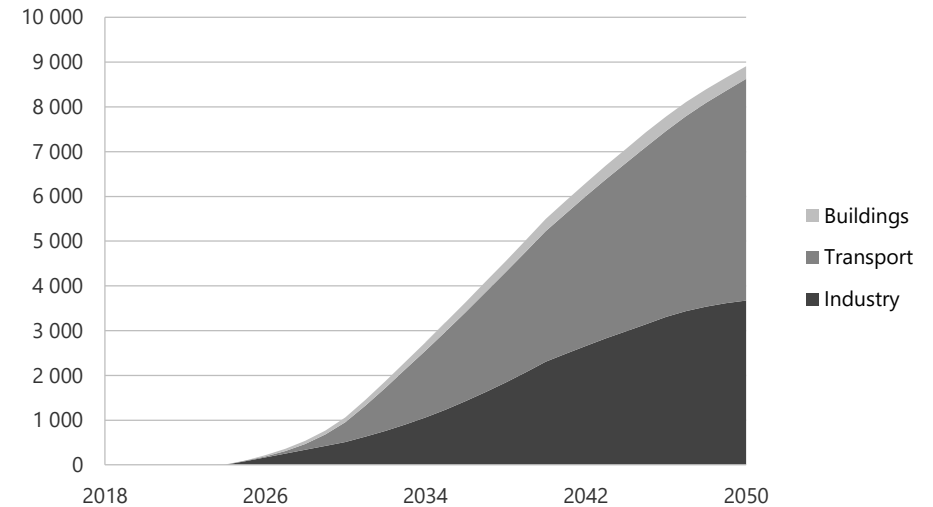
- In REF, hydrogen demand reaches 2200 PJ and China becomes the main hydrogen consumer in APEC with more than a half of the hydrogen demand by 2050. USA remains a top hydrogen consumer with almost 30% of the demand in 2050.
- In CN, other economies -excluding China, USA, and Japan- represent one third of the APEC's hydrogen demand. Hydrogen demand in SEA is almost half the demand in USA by 2050 in CN.

## Transport and Industry are considered the hydrogen demand drivers

Hydrogen demand by sector in REF (PJ)



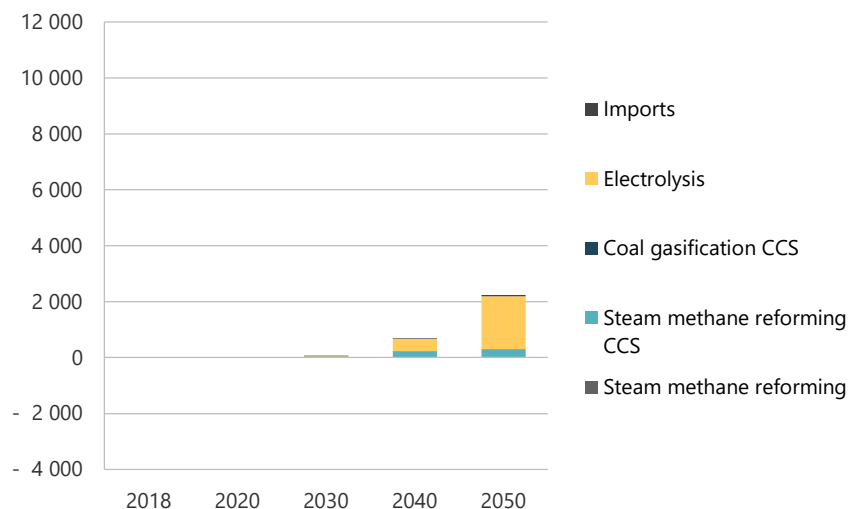
Hydrogen demand by sector in CN (PJ)



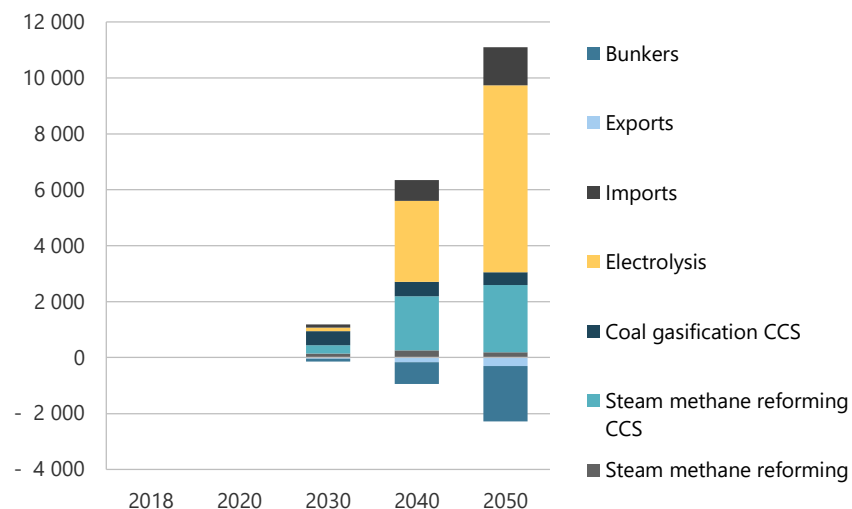
- Hydrogen is consumed mainly in transport for long-distance heavy-duty transport.
- In REF, hydrogen represents 3% of the total energy demand in transport by 2050. In that scenario, hydrogen is also used in industry mainly in steel production.
- In CN, hydrogen grows faster due to more an increase of fuel cell vehicles and higher utilization in industry. Additionally, hydrogen is used in building sector as part of the mixture hydrogen-natural gas for heating.

# Blue hydrogen paves the road for green hydrogen

## Hydrogen production by technology in REF (PJ)



## Hydrogen production by technology in CN (PJ)



- In REF, blue hydrogen production reaches 300 PJ and green hydrogen reaches around 1900 PJ in 2050.
- In CN, blue hydrogen production increases 8 times and green hydrogen 3.5 times with respect to REF in 2050.

## Conclusions

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- APEC will play a major role in the global energy sector. After initial leadership by Japan and Korea in building hydrogen demand, China and US will lead hydrogen for energy consumption in the long run.
- Hydrogen demand growth is very substantial. This growth requires investments in hydrogen production capacity, namely blue hydrogen, at the beginning, and green hydrogen in later years.
- Transport leads hydrogen consumption in long distance heavy freight and passenger transport. Industry is the second biggest consumer of hydrogen for energy use.
- Hydrogen is not only a source of energy but also a driver for investments in other sources of energy such as natural gas and renewable energy.
- Even though exports were implemented in CN, the estimated APEC hydrogen demand still requires additional imports. These results show potential opportunities for trading, especially in economies that have not yet developed a vision regarding hydrogen.

**Thank you.**

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