Asia-Pacific Economic Cooperation

APERC Asia Pacific Energy Research Centre

3. Hydrogen Analysis in the APEC Outlook 8th Edition

APERC Workshop
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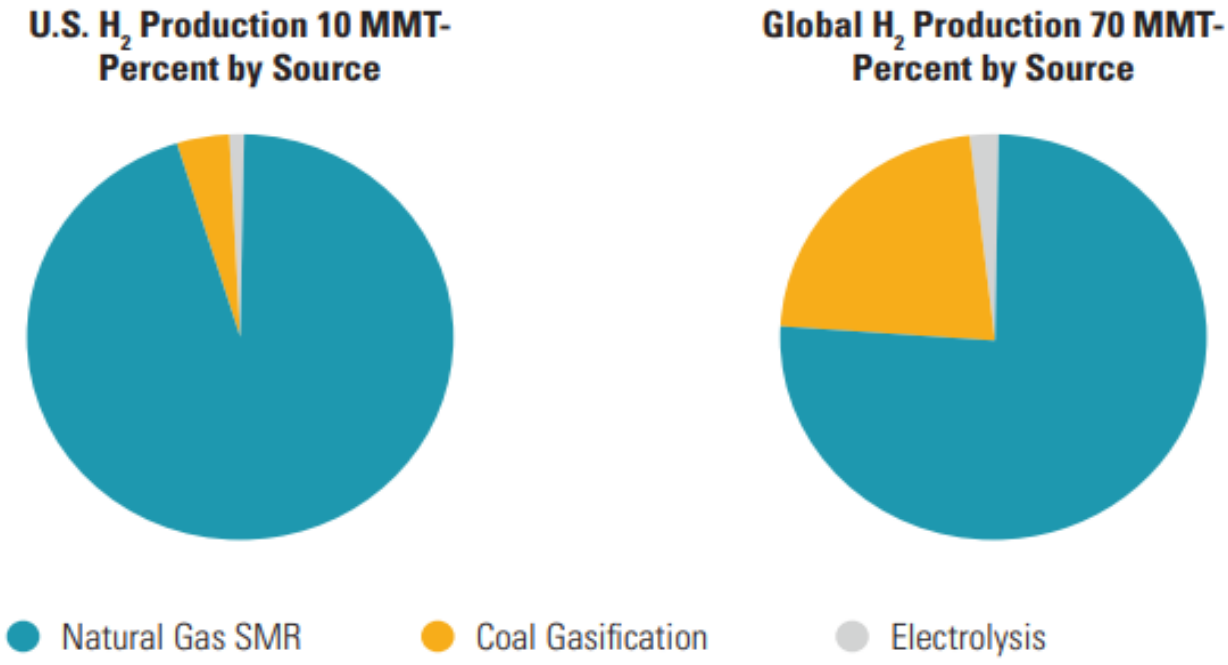
Hydrogen Current Status

Figure 3. U.S. and Global Production of Hydrogen



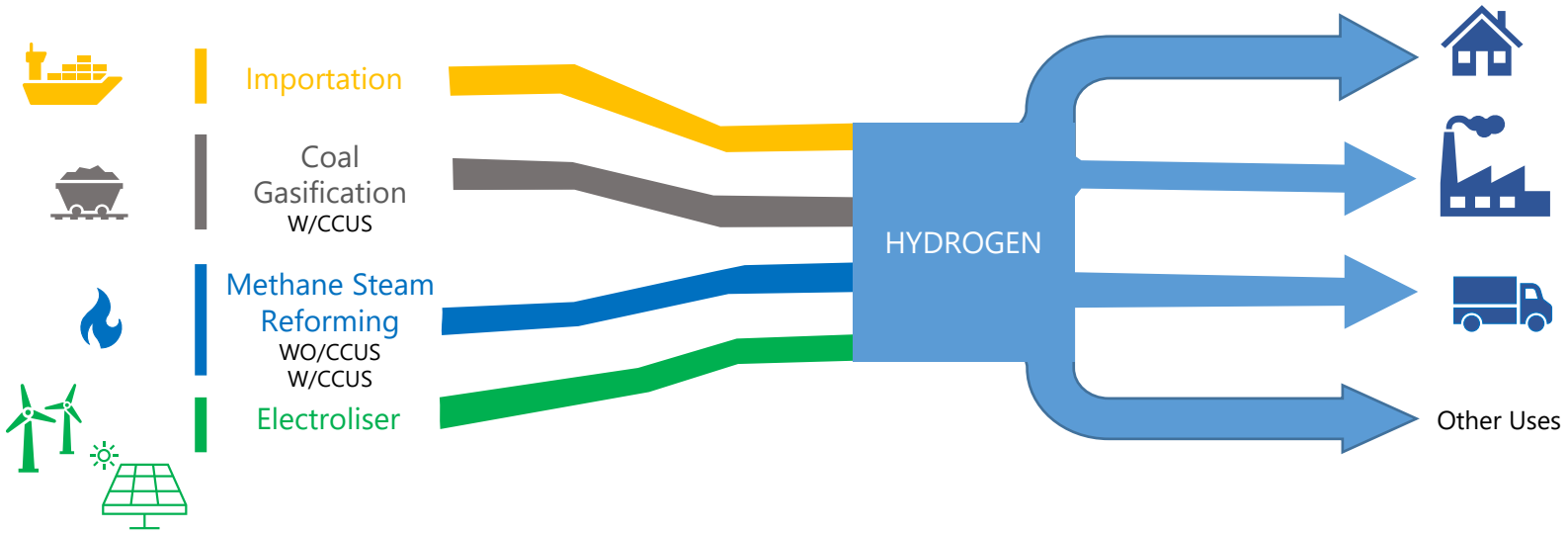
Source: Hydrogen Strategy Enabling A Low Carbon-Economy, U.S. Department of Energy (2020)

Hydrogen Production Potential across APEC economies

Resources	Economy
Optimal Renewable and Low Carbon resources	USA, Peru
Optimal Low-carbon Resources	Canada, Russia
Average Low-carbon Resources	Brunei Darussalam, Papua New Guinea, Indonesia, Malaysia, Vietnam, Thailand, Philippines
Optimal Renewable Resources	Mexico,Chile, Australia, China
Average Renewable Resources	China, New Zealand, Hong Kong

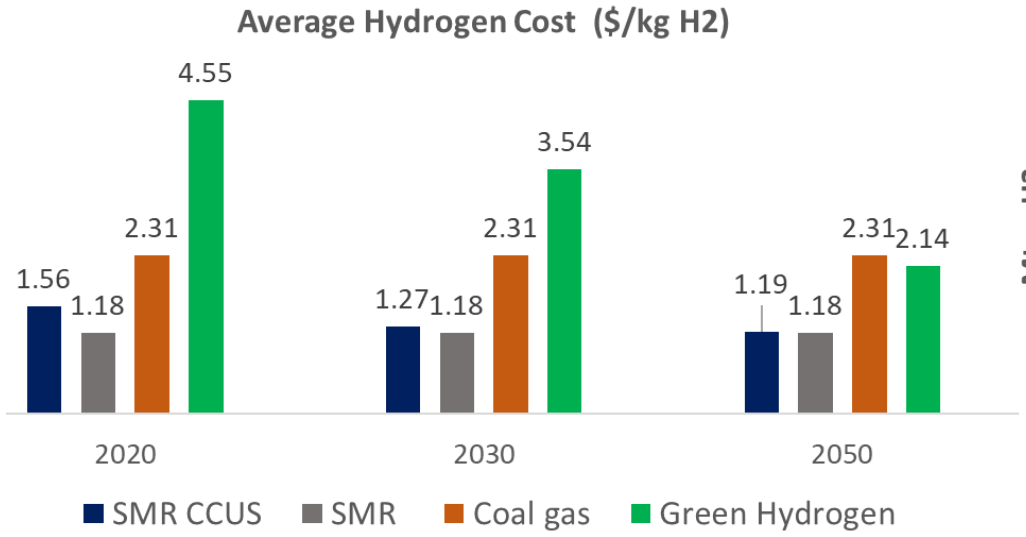
Source: Path to hydrogen competitiveness A cost perspective, Hydrogen Council (2020)

Schematic of Hydrogen Supply and Demand

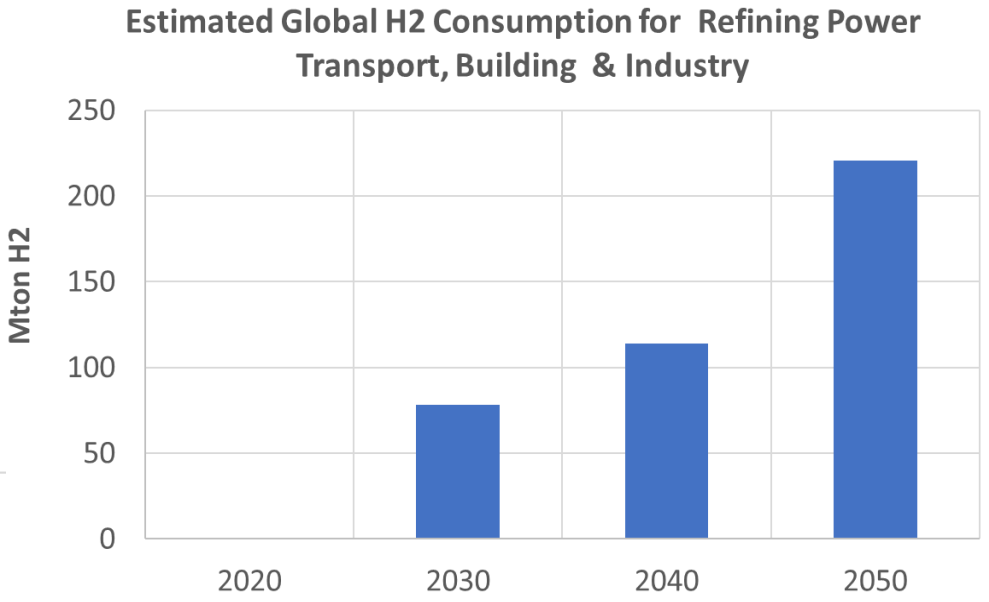


- Hydrogen demand is mainly policy driven
- Different technologies compete to satisfy hydrogen demand based on cost and resources availability.

Main Assumptions



Estimation based on average per cost per technology



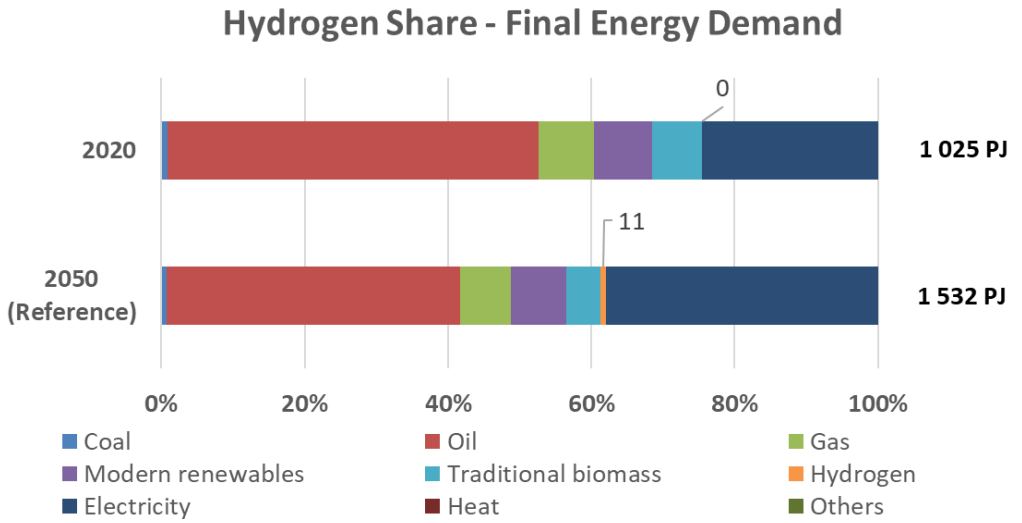
Estimation based on the data from IEA, Global hydrogen demand by sector in the Sustainable Development Scenario, 2019-2070, IEA, Paris https://www.iea.org/data-and-statistics/charts/global-hydrogen-demand-by-sector-in-the-sustainable-development-scenario-2019-2070

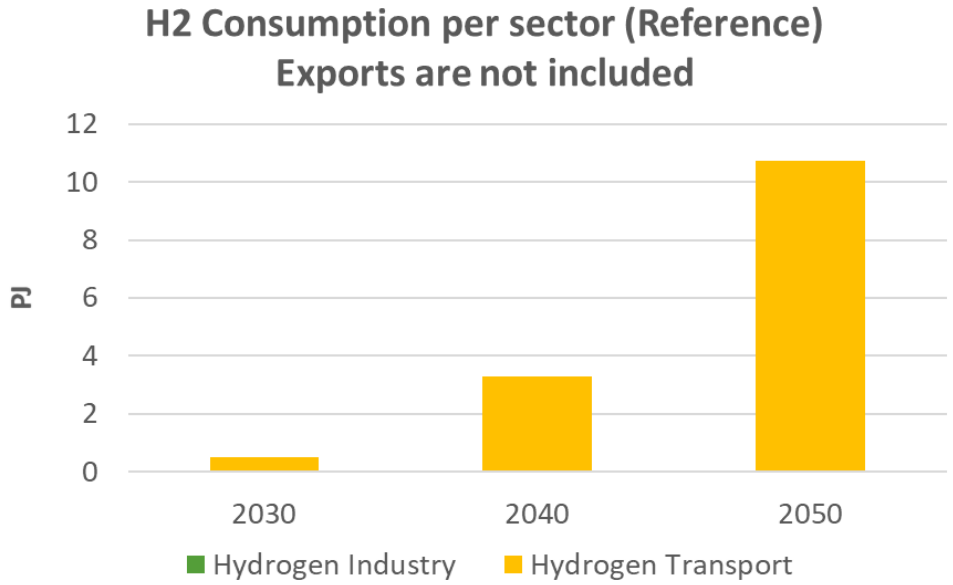
Hydrogen Potential in APEC

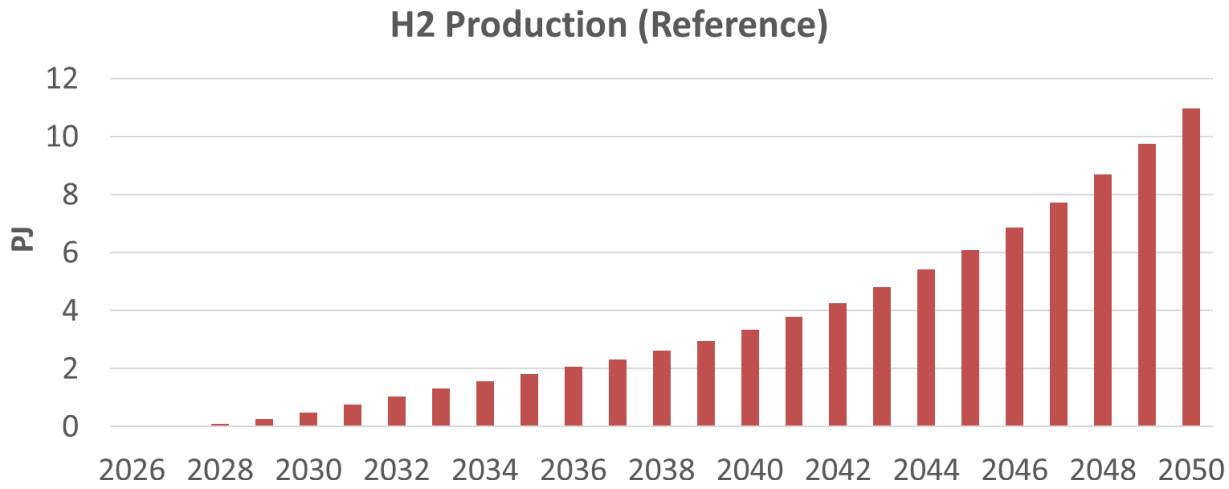
- Several APEC Economies have announced hydrogen strategies to position themselves in the international hydrogen market.

- In our Reference Scenario, APEC Hydrogen demand is estimated by local total hydrogen consumption in the end-use sectors (building, transport and industry). Exports are not considered.

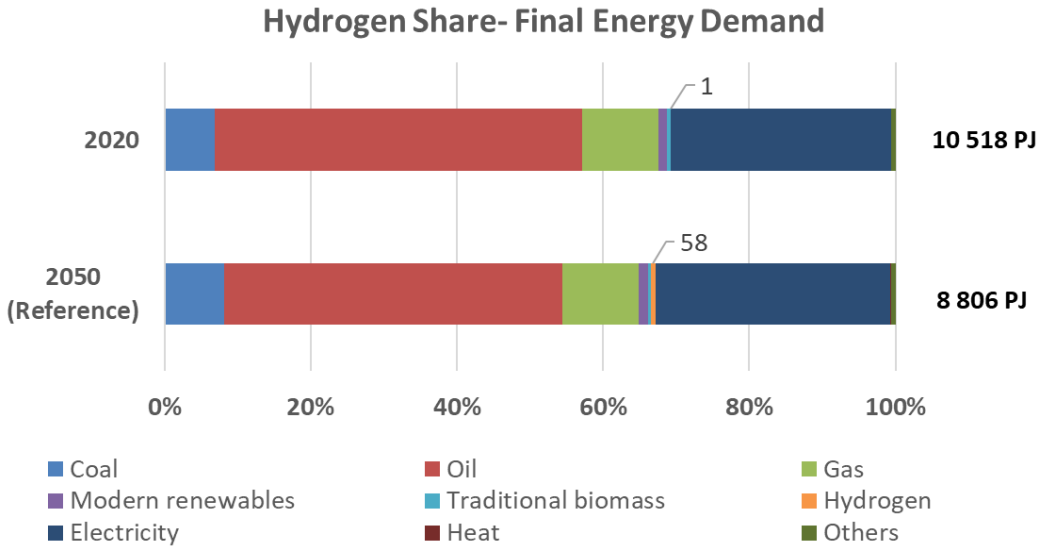
H2 EXPORTER-ILLUSTRATIVE

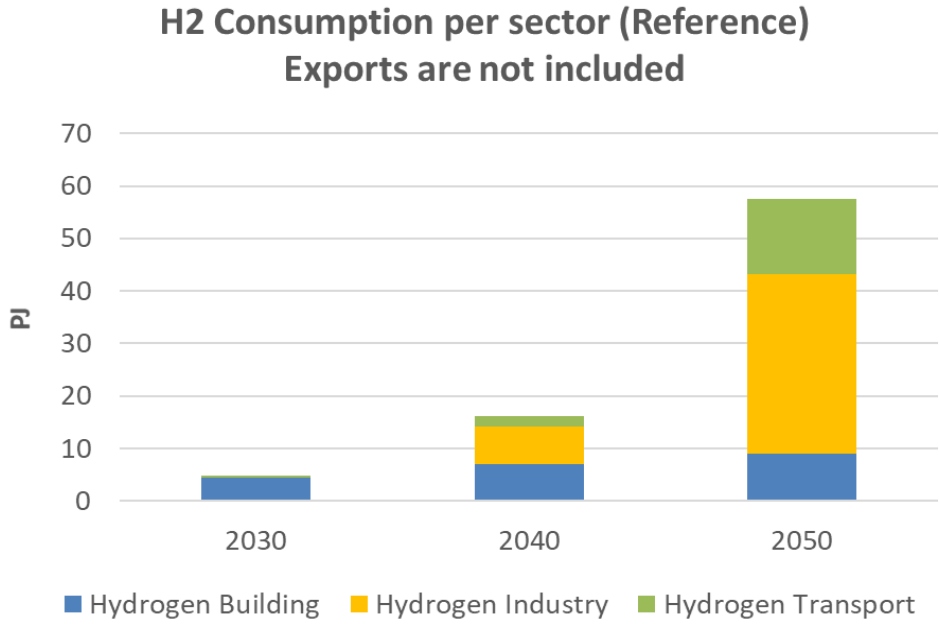


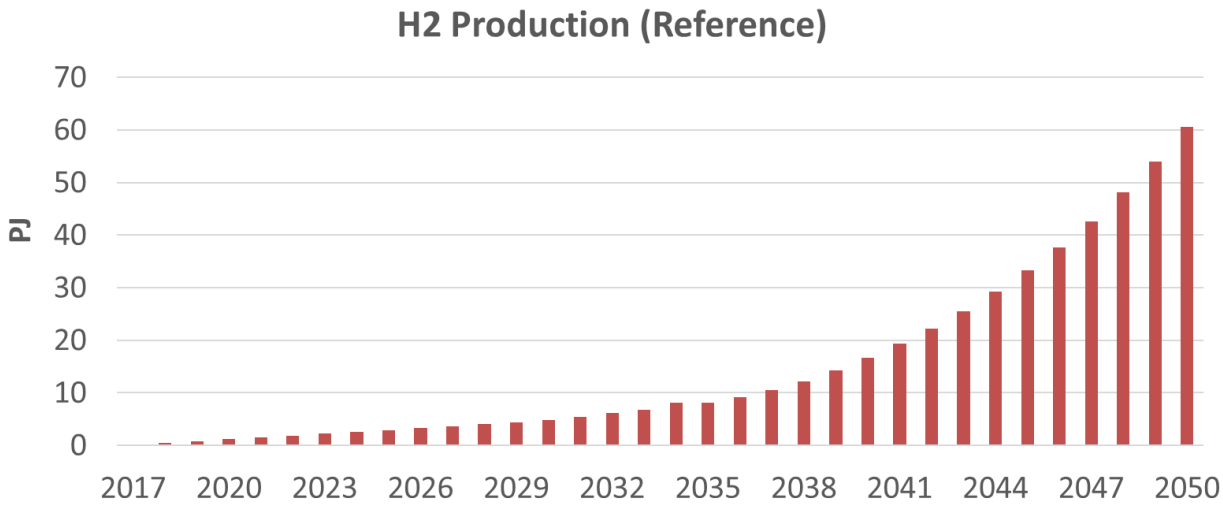




H2 CONSUMER-ILLUSTRATIVE







Discussion

- In the Reference Scenario, transport sector is the main consumer of hydrogen followed by industry. Comparatively, hydrogen demand in buildings is low.
- In this scenario, hydrogen demand will be satisfied mainly by blue hydrogen. Green hydrogen production becomes important at the end of the 2030-2040 decade.
- Green hydrogen cost will vary depending on the available renewable resources of each economy. An increase of hydrogen demand will drive the growth of green hydrogen production in economies where this technology is competitive.
- APERC is working on the Net-zero Scenario where hydrogen demand and supply will increase drastically. Its preliminary results will be sent soon to the EWG members for their review.

Thank you for your kind attention.

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