



Hydrogen in Decarbonization Strategies in Asia and the Pacific

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Why hydrogen?

- Expected to be a “game changer” in energy production and consumption: contribute to net zero emission pathway
1. Decarbonizing hard-to-abate industries (where RE is not a substitute) e.g., steel, cement, and petrochemicals.
 2. Energy storage: seasonal/long-term; excess of RE
 3. Transport
 4. Source of revenue from export

Countries with national hydrogen strategies in Asia-Pacific

Implemented

Australia

People's Rep. of China

India

Japan

Singapore

Rep. of Korea

Forthcoming

- Kazakhstan

- South East Asia

- Mongolia

- Nepal

- New Zealand

Asia is home to some of the world's most advanced hydrogen economies, in particular People's Rep. of China, Japan and the Rep. of Korea.

Exporters' benefits

- Source of revenue
- Low carbon production only if using RE or CCS
- If can export can produce for local demand at lower cost (due to scale)
- Examples: SEA, MENA, Australia, and Central Asia

Importers' benefits

- When consumed - zero carbon (any hydrogen even if grey)
- Energy security
- Examples: Japan, Rep. of Korea, EU.

Issues with Hydrogen: production, storage, transportation and utilization

1. Safety:

- If used at unprecedented scale
- New applications

2. Cost: H₂ Demand in CA?

- Green hydrogen is expensive (but falling), better to use RE where possible
- Need to produce at scale to drive cost down (but what is demand for local H₂?)

3. Infrastructure: Central Asia is land locked

- Low volumetric energy density (energy per volume)
- Production, Transportation (short and long distance) and Utilization: all require infrastructure (better to use existing infrastructure where possible)

4. Water scarcity in CA



Hydrogen policy in India

1. Demand creation

- Develop strategic international partnerships to enable export.
- Enforce consumption targets (“minimum share”) for green hydrogen and its derivatives for designated consumers, e.g., petroleum refiners, fertilizer producers, etc.
- Support deployment of FCEV buses and trucks by covering capital costs of initial years.

2. Incentives

- Support domestic electrolyzer manufacturing and green hydrogen production.
- Supply incentives on green hydrogen production.

3. Enabling systems

- Identify and develop “**Green Hydrogen Hubs/Valleys**,” regions capable of supporting large-scale production and/or utilization of hydrogen. 10 states were selected based on existing steel and fertilizer industries, refineries, ports, renewable energy operations, and potential power generation capacity.
- Develop certification for green hydrogen and its derivatives.
- Provide public investment in research and development.

Thank You!

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