



RystadEnergy

# Current Landscape and Future Directions in Green Hydrogen

Presentation Prepared for Asia Pacific Green Hydrogen 2024

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14 June 2024



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# Agenda

01 Introduction to Rystad Energy

02 Our Market Perspectives

# Rystad Energy

We are a world-leading, independent advisory and analysis company with solutions that cover the entire energy value chain.

# Global presence



## EMEA

- Aberdeen
- Brussels
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- Copenhagen
- Dubai
- London
- Madrid
- Oslo**
- Paris
- Stavanger

## Americas

- Bogota
- Buenos Aires
- Calgary
- Houston**
- Los Angeles
- Mexico City
- New York
- Rio de Janeiro
- Sao Paulo
- Washington DC

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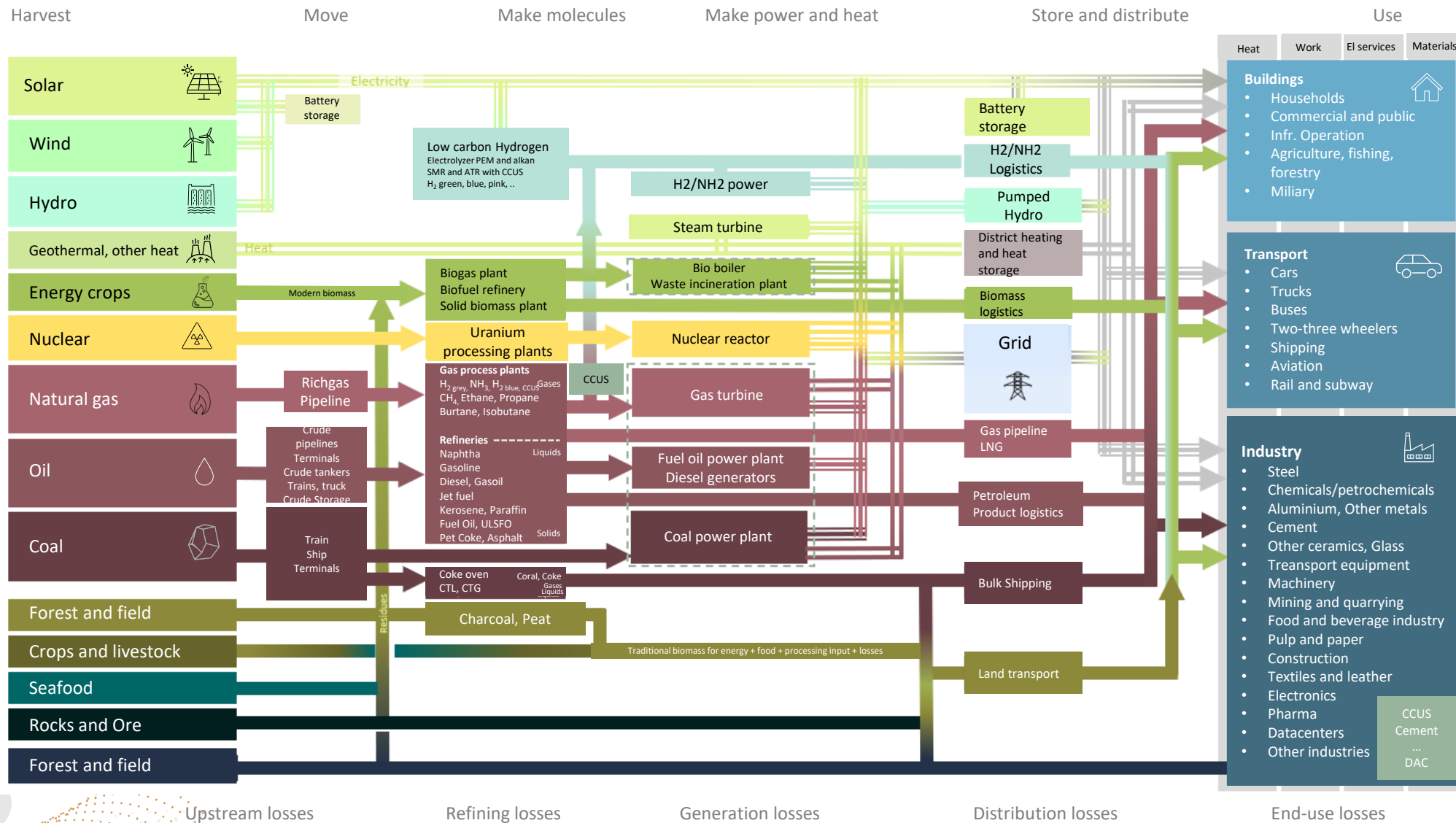
Tokyo

What we deliver

**Data.**  
**Analytics.**  
**Advisory.**  
**Education.**



# Our energy map

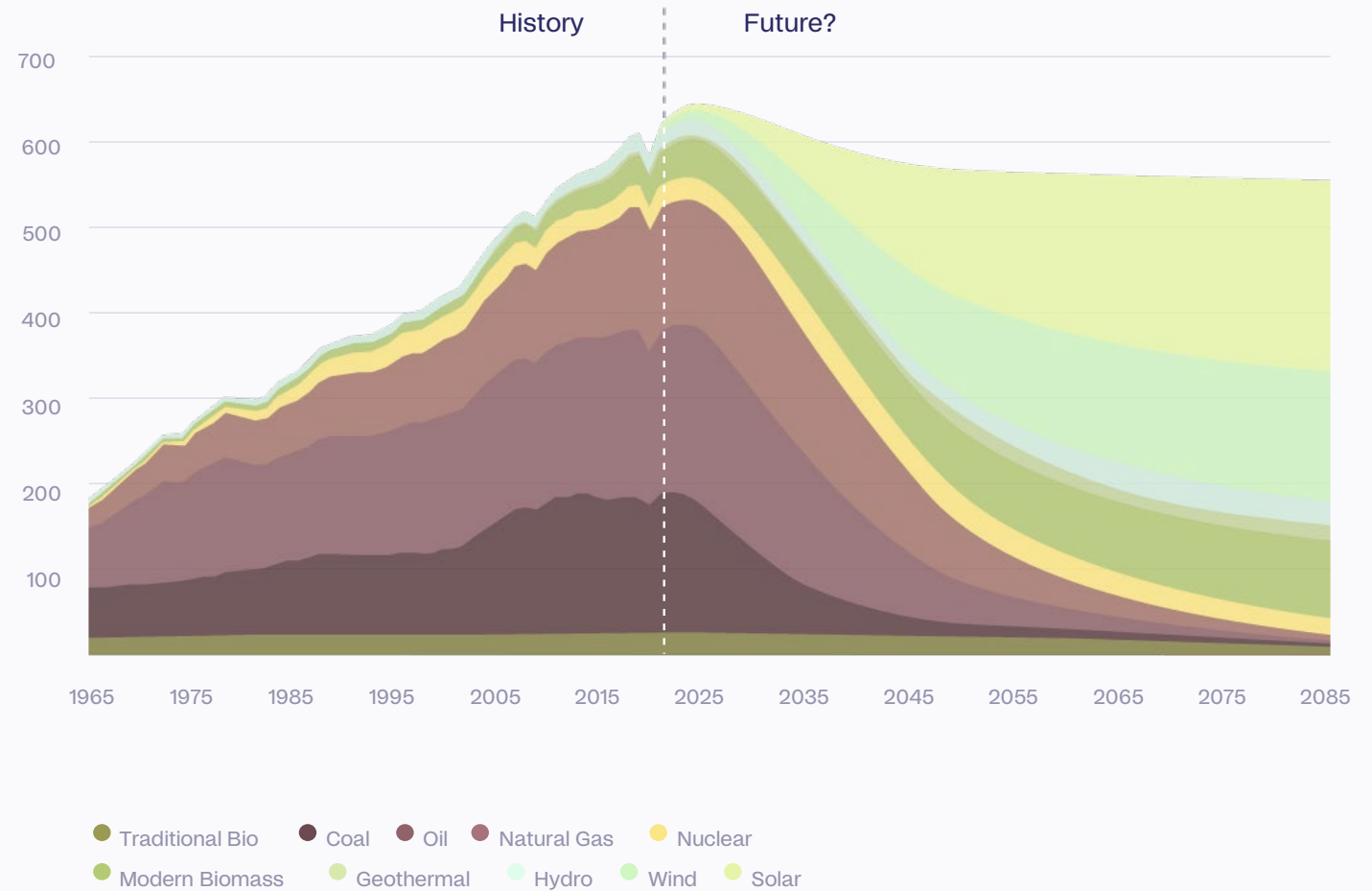


End-use of energy

In the energy transition, every degree matters

... and we cover it all.

Development of energy consumption source





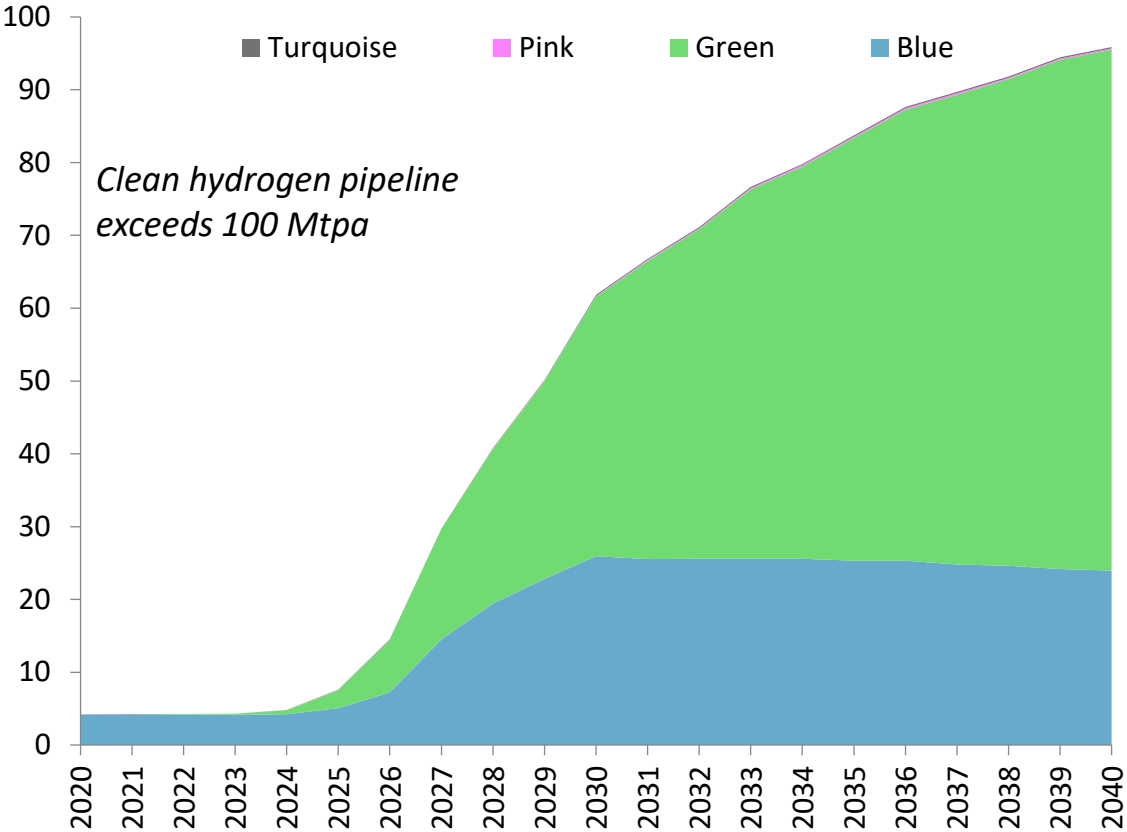
# Agenda

01 Introduction to Rystad Energy

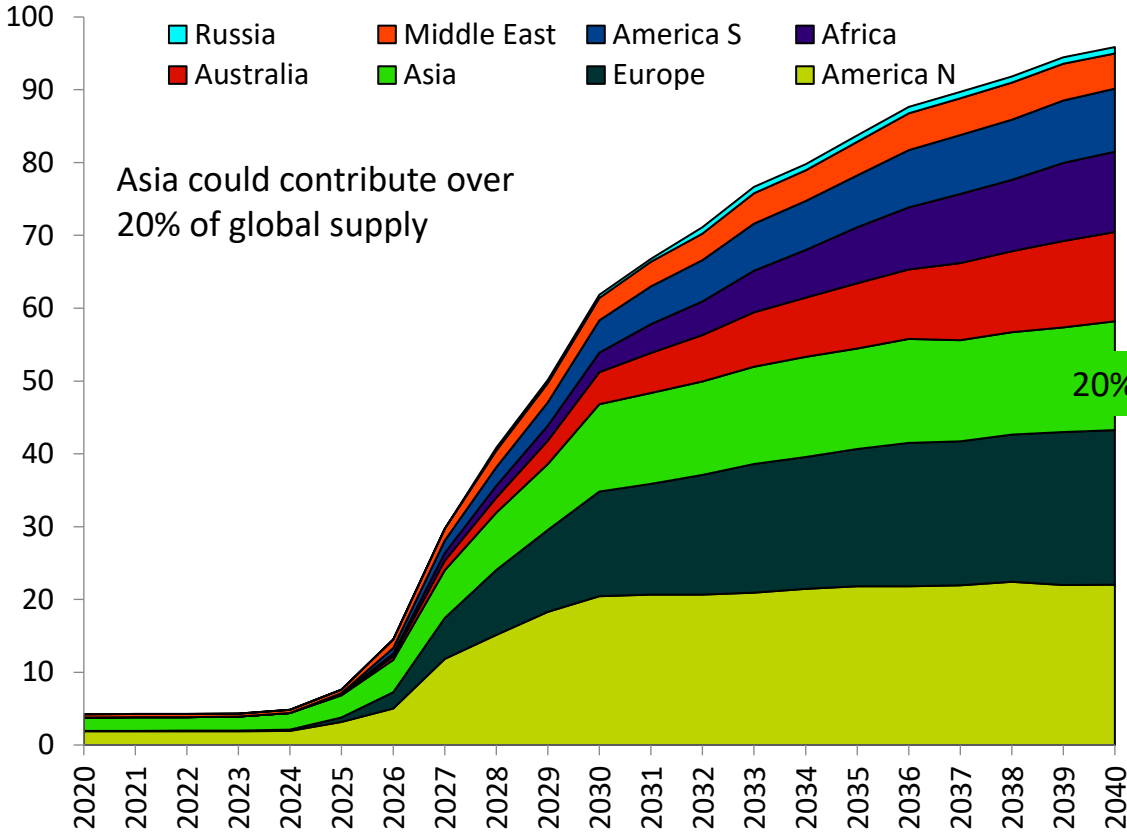
02 **Our Market Perspectives**

# Pace of hydrogen developments remains robust globally

**Overall clean hydrogen production pipeline by type**  
Million tonnes (Mt)



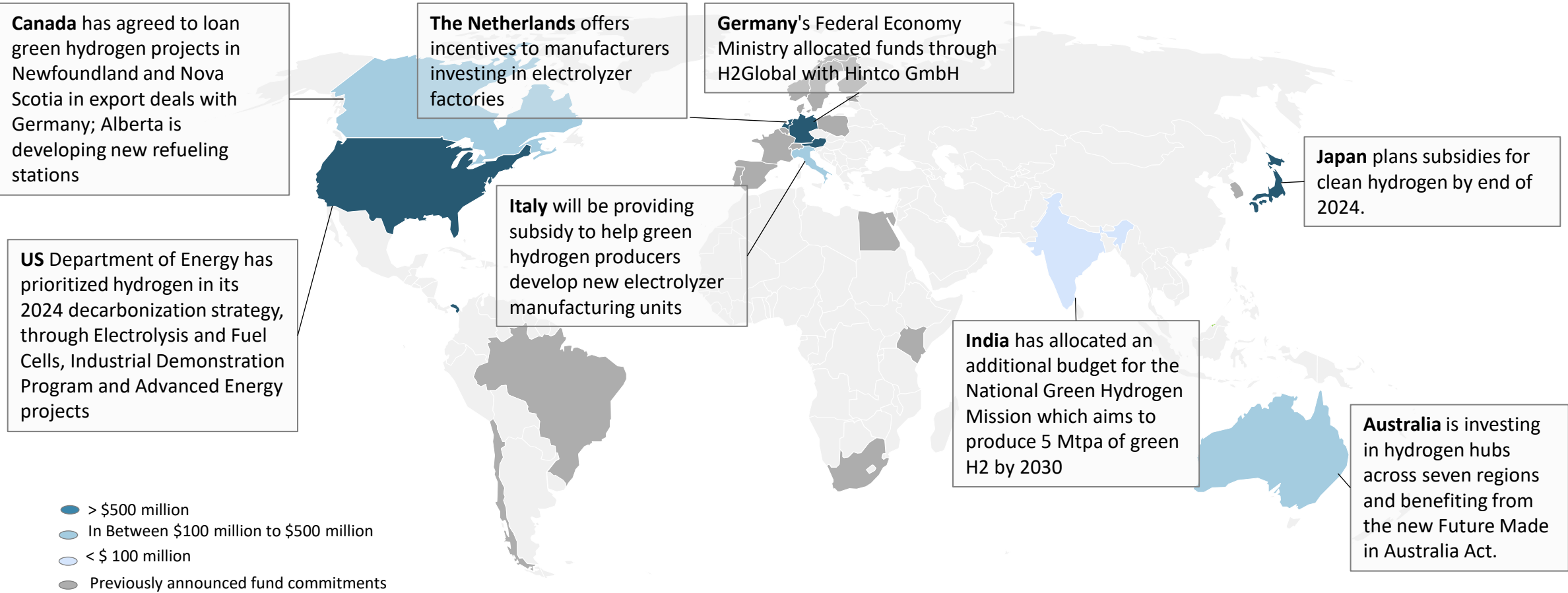
**Overall clean hydrogen production pipeline by geography**  
Million tonnes (Mt)



Source: Rystad Energy research and analysis

# Worldwide hydrogen momentum to see continued uplift in policy support across key countries

## Government hydrogen funding announced in 1Q 2024 by region

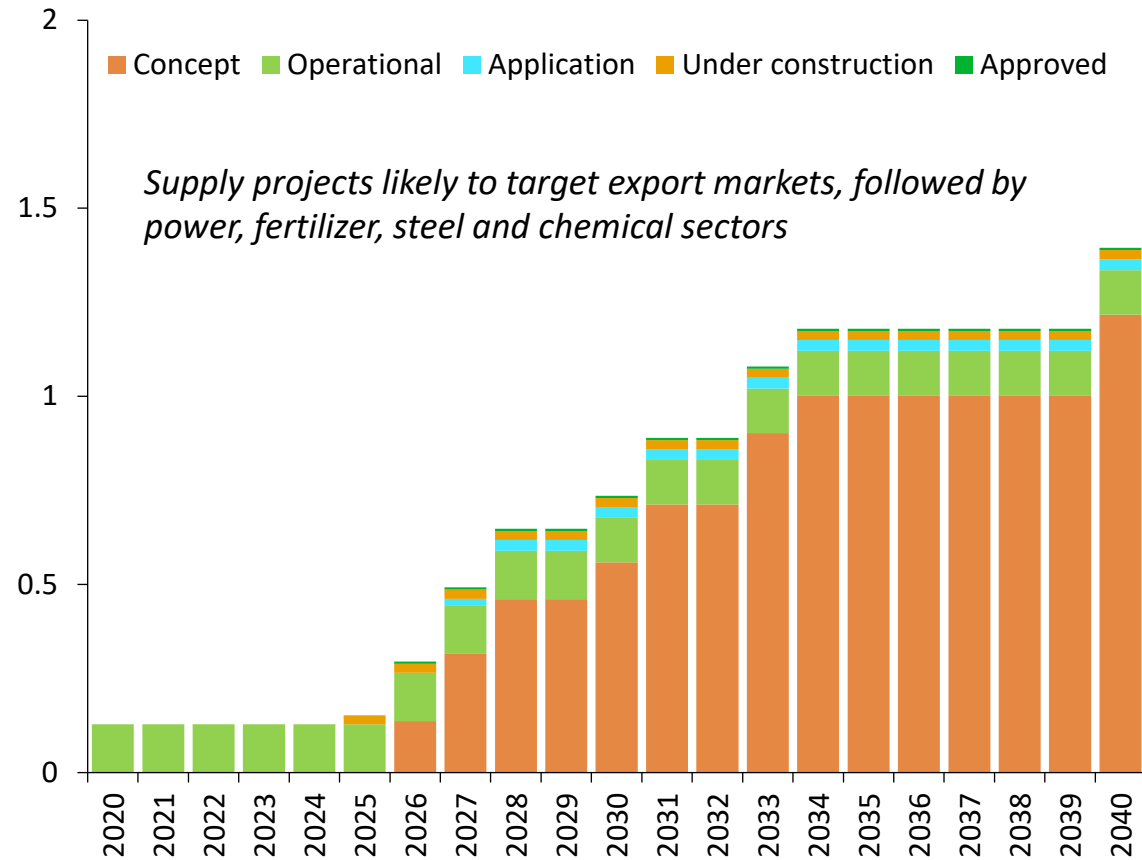


Source: Rystad Energy research and analysis

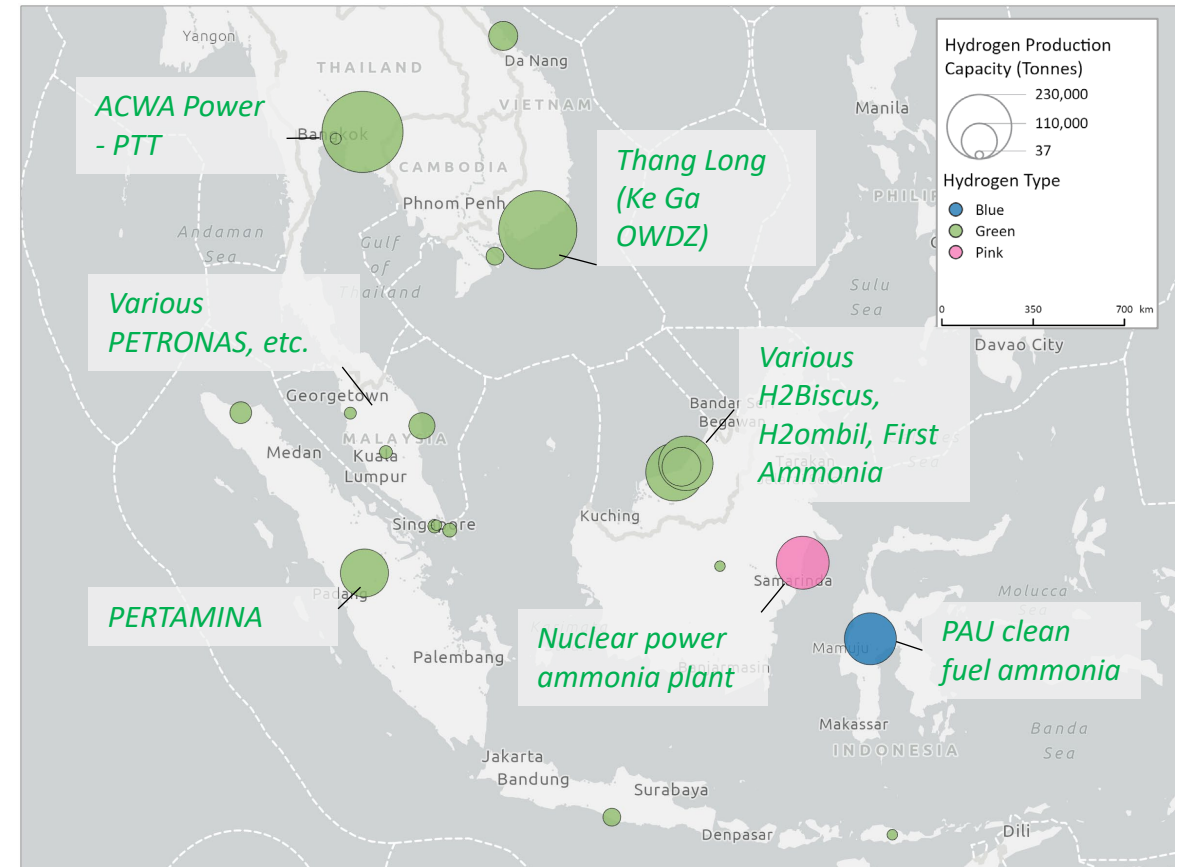
# Southeast Asia to see potential supply, offtake and trading opportunities

## Status of announced SEA hydrogen projects

Million tonnes (Mt)



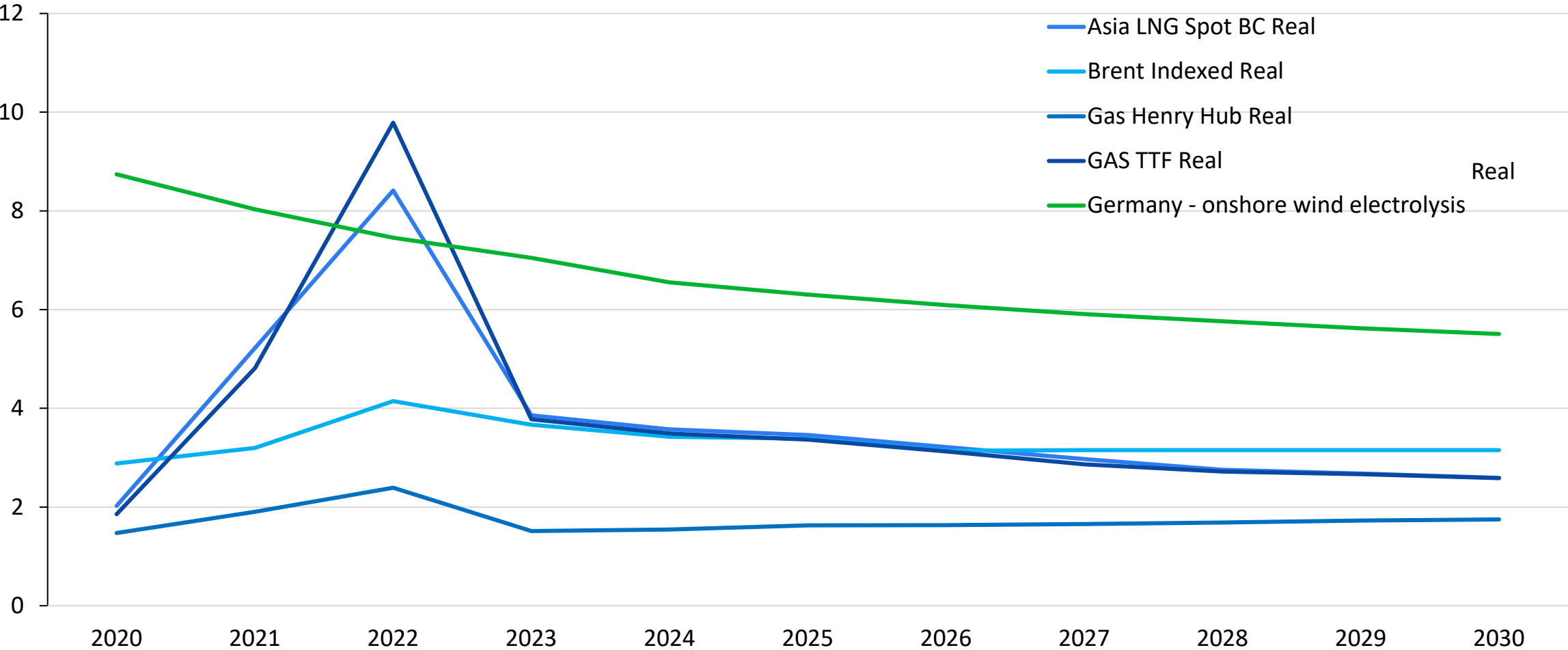
## Map of clean hydrogen assets in Southeast Asia



Source: Rystad Energy research and analysis

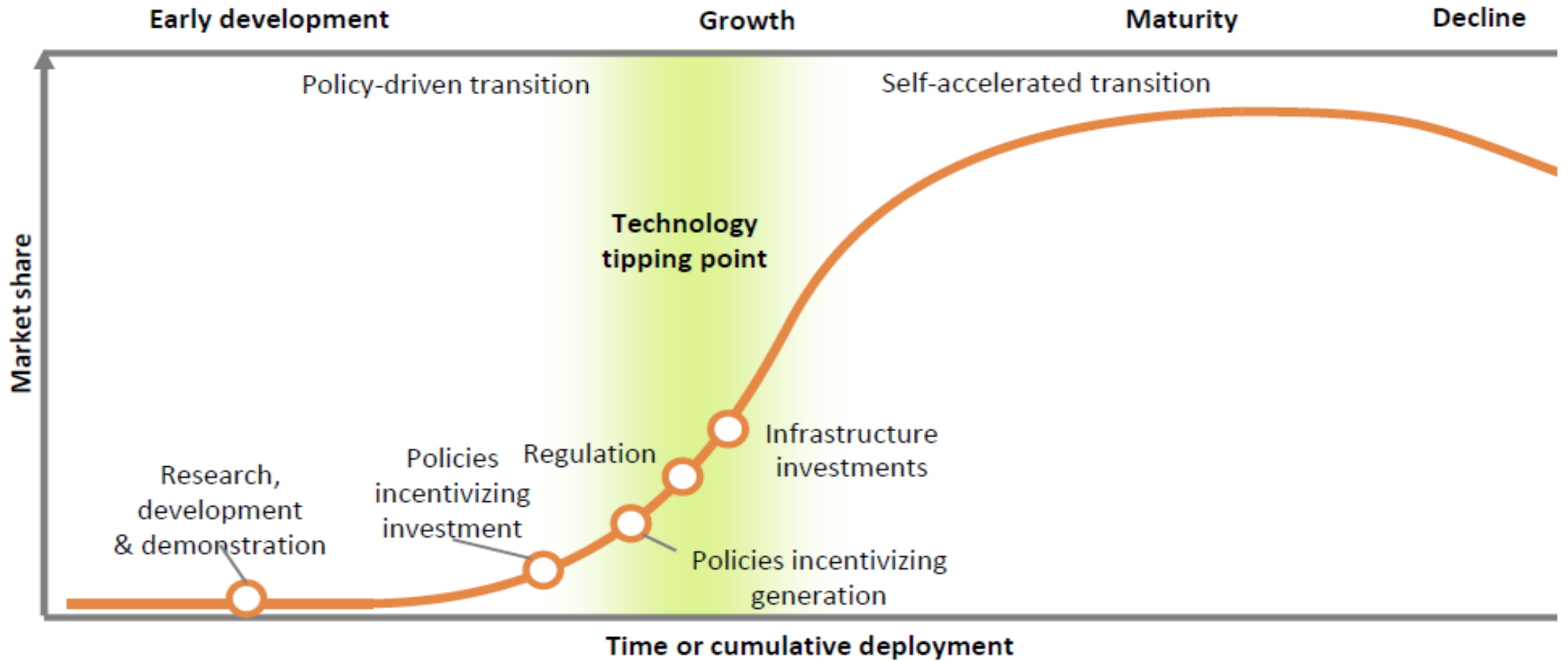
# Green hydrogen unlikely to close the gap to blue without policy support

Average levelised cost of hydrogen from Green and Blue hydrogen  
USD/kg hydrogen



Blue hydrogen assumption using gas market price , with CCS at 80% capture rate. Electrolysis with alkaline electrolyzer (real) .  
Rystad Energy Hydrogen Solution

# Technology penetration curve – creative destruction



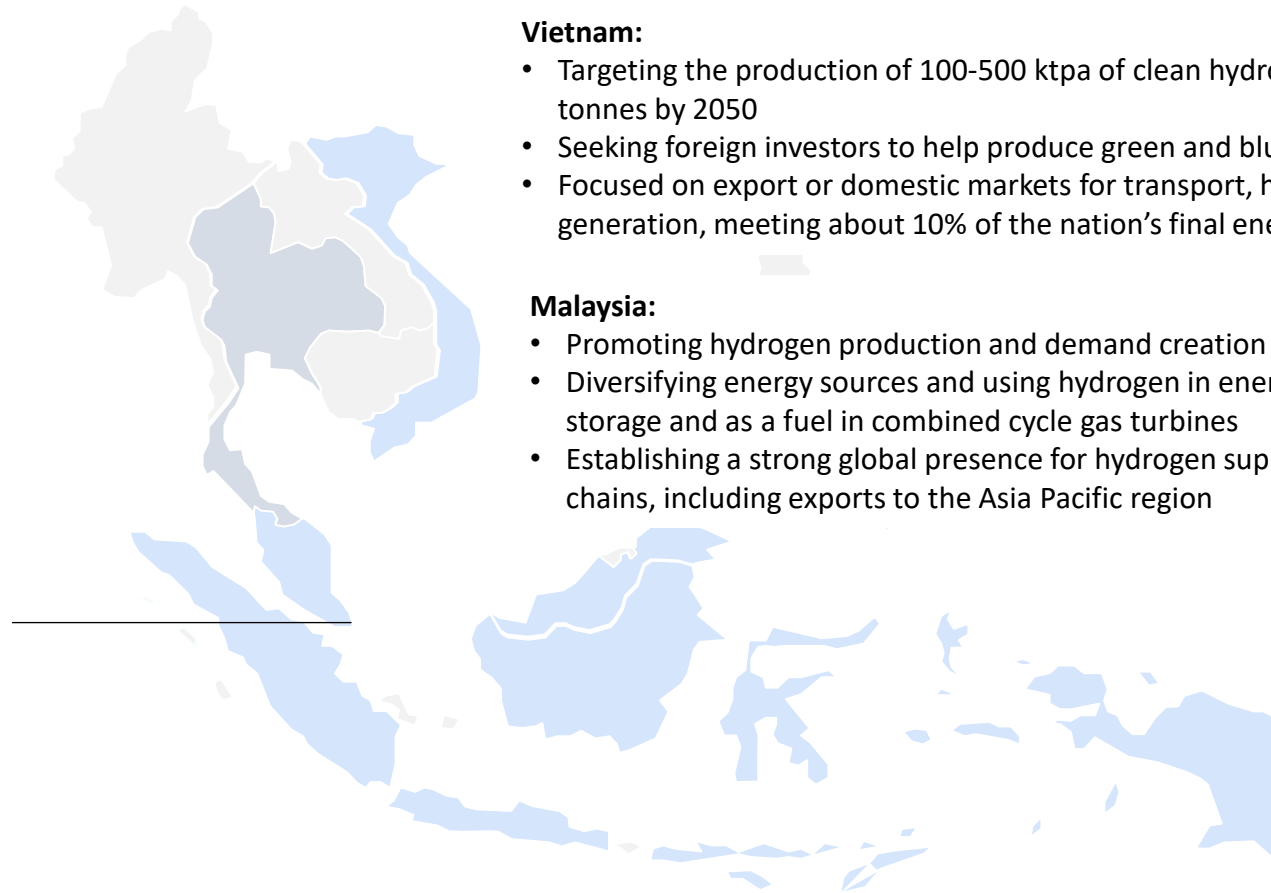
# Uptick in policy developments could drive further momentum in project development

## Hydrogen-related policy highlights in Southeast Asia

- National hydrogen strategy available
- Initial policy discussion
- No stated policies

### Singapore:

- Experimenting with the use of advanced hydrogen technologies through pathfinder projects
- Investing in R&D
- Pursuing international collaborations to enable supply chains
- Facilitating skills development



### Vietnam:

- Targeting the production of 100-500 ktpa of clean hydrogen by 2030, rising to 10-20 million tonnes by 2050
- Seeking foreign investors to help produce green and blue hydrogen
- Focused on export or domestic markets for transport, heavy industry and power generation, meeting about 10% of the nation's final energy demand by 2050

### Malaysia:

- Promoting hydrogen production and demand creation
- Diversifying energy sources and using hydrogen in energy storage and as a fuel in combined cycle gas turbines
- Establishing a strong global presence for hydrogen supply chains, including exports to the Asia Pacific region

### Indonesia:

- Promoting the production of green hydrogen from renewables
- Developing infrastructure for hydrogen production
- Fostering R&D and encouraging partnerships with domestic and international stakeholders
- Developing domestic and export markets

Source: Rystad Energy research and analysis

# Key Takeaways



Global hydrogen markets continue to scale underpinned by continued policy support and cost reduction



New supply, offtake and trading opportunities are gradually emerging in Southeast Asia



Most projects could see challenges – more policy support needed drive momentum globally and regionally







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