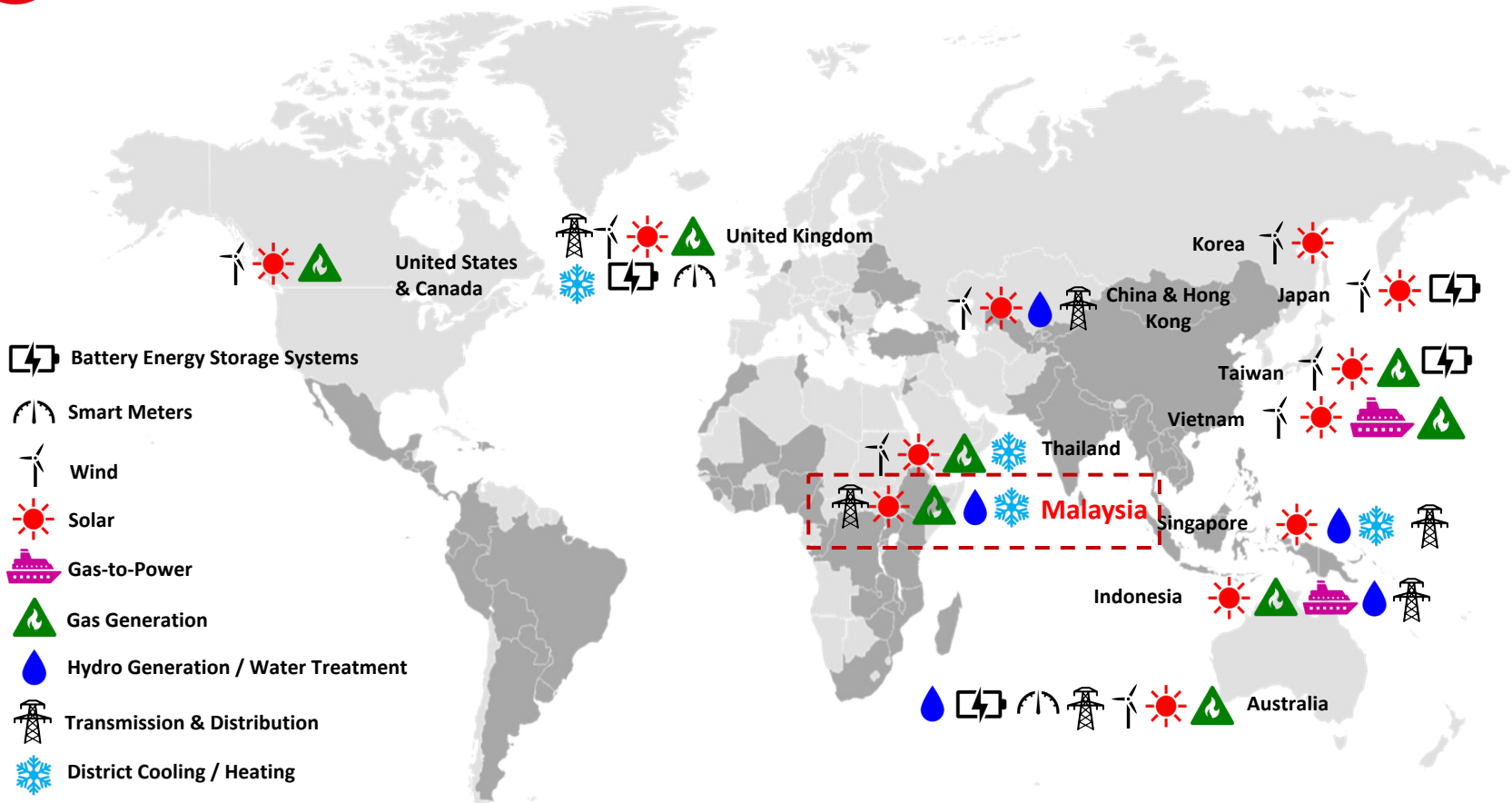
OCBC Group's Global Presence: Supporting the Energy Ecosystem



ASEAN Experience | Evolution of Power Generation & Funding Source

1900s – 1990s	1990s – 2010s	2010s – Present	Future
State-Led Development	**Public-Private Partnerships**	**Renewable Energy Transition**	**Decarbonising the Future**
			
✓ **State-owned utilities** ✓ Development of **nation-wide power transmission networks** ✓ Mainly **coal power plants** which are gradually phased out today	✓ **Liberalisation** of the ASEAN power markets **attract private capital** ✓ **IPP model** with "investors-friendly" PPA terms including **take-or-pay**	✓ Concerns over **environmental sustainability** and **climate change** ✓ Progressive transition to **renewable energy (RE)** backed **by FiT mechanism & long-term RE PPAs** ✓ **Intermittent nature of RE** hence the **search for alternative generation sources**	✓ The **1.5°C global warming target** prompted a world-wide **transition to cleaner energy** ✓ Demand for clean energy led to the **proliferation of new technologies and innovations** ✓ **Green hydrogen, CCUS, carbon credit trading exchanges, EVs** etc are some of the more promising initiatives today
✓ **Primarily government-funded**	✓ Funded via **fixed-rate greenfield project finance bond markets** which is **unique to Malaysian capital markets**	✓ Funded via **loan and bond markets** through mixture of **green and sustainability-linked products**	✓ **Which financing model works to de-risk the hydrogen economy?**

Shaping the Future | Ecosystem for Green Hydrogen Financing

Technological Advancement

- Inability to **scale** and **high cost** of production
- **Limited track record** of deployment

De-risking Mechanism :

- ✓ **Financially strong industrial sponsors & EPC Contractors**
- ✓ **Equity participation** from technology providers

Natural Resources & Infrastructure Development

- Proximity & reliability of **RE & water** as feedstock
- **Inadequate storage & transportation value chain infrastructure**

De-risking Mechanism :

- ✓ **Long term RE & water supply agreement**
- ✓ **End-to-end financing** from production, transportation to storage

Policies

- **Lack of long-term roadmap or established tax policies and regulations**

De-risking Mechanism :

- ✓ Industry-based **carbon emission threshold**
- ✓ **Investment & production tax credits** (for the developers)
- ✓ **Demand-side incentives** (for buyers)

Pricing Mechanism

- **Cost-plus pricing model** which **lack transparency and may lead to inefficiency**

De-risking Mechanism :

- ✓ **Fixed price, long-term contracts** with reputable offtaker with a progressive **shift towards market-driven pricing** based on demand and supply

Market Demand

- **Insufficient & uncertainty in market demand**
- **Non-existence of common marketplace for commodity trading** as well as **derivatives market** for risk management

De-risking Mechanism :

- ✓ Focusing on **green hydrogen usage for hard-to-abate sectors**
- ✓ Establishment of **ETS or carbon levy**

Green Hydrogen Financing Mechanism

- **Information asymmetry** – financiers' / investors' concerns vs technology providers' requirements
- **Multi-level risk allocation** across the entire value chain

De-risking Mechanism :

- ✓ **Public-private partnerships**
- ✓ **Blended finance – ECA, MDB etc**