



MUFG TRANSIT

APAC Sustainability Journey

Volume 2, July 2023
ESG Finance Department

Table of Contents

	Page
Section I: Market Insights	
Q2 2023 Highlights	
APAC Energy Transition Landscape	5
APAC Energy Transition Policy Updates	6-8
APAC Energy Transition Market Updates	9-10
Market Dynamics of Japanese Players	11
Section II: Regional Green Taxonomy Developments	
Features of a Green Taxonomy	13
Recent Key Updates	14
National Developments	15

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Section I: Market Insights

Q2 2023 Highlights | APAC Energy Transition Landscape

Public-led initiatives have sprung up to the forefront of APAC's transition financing landscape **surrounding a creditability of transition finance and harmonised rulebook to manage an early phase-out of coal-fired power plants**, a step further towards realising the region's net-zero ambitions

Harmonization of rulebooks for transition finance



- 1Q 2023's recent release of **ASEAN Taxonomy for Sustainable Finance Version 2**, the first regional taxonomy in the world to include specifics of how coal phase-out should occur to recognize early retirement of coal-fired power plants



- Jun 2023: GFANZ APAC Network launched a public consultation (till Aug 2023) on its proposed set of voluntary guidance for financing early retirement of coal-fired power plants in APAC region



- Jun 2023: ICMA 9th Annual Conference of the Principles
 - Announced 2023 edition of the Climate Transition Finance Handbook (CTFH) which includes updated guidance for transition finance & climate-themed bonds
 - Announced update to the Sustainability-Linked Bond Principles (SLBP) on the integration of sovereign issuer considerations in recommendations & tools for SLBs

Besides looking to decarbonize its hard-to-abate sectors domestically, Singapore is playing an increasingly active role in helping to realize energy transition by catalyzing action in the region given its status as a financing hub
















- Jun 2023: Ecosperity Week
 - Singapore Sustainable Finance Association (SSFA) established to scale-up voluntary carbon markets, transition finance & blended finance



- May 2023: Launch of **Finance for Net Zero (FiNZ) Action Plan**
 - Expands on scope of Green Finance Action Plan launched in 2019 to include **transition finance**
 - Jun 2023: Sustainable Loan Grant Scheme launched with MAS setting aside S\$15 million to extend the sustainable bond & loan grant schemes to **support transition instruments** till 2028
- Jun 2023: MAS launched a public consultation on guidelines of the managed phaseout of coal to be included in the upcoming **Singapore-Asia taxonomy**
- MAS also launched a public consultation on the Code of Conduct for ESG rating & data product providers

Q2 2023 Highlights | APAC Energy Transition Policy Updates - I

In addition to the energy transition policies highlighted in our first volume*, policies with new updates are indicated with a ● and further details are found on the next page.

Market	Highlighted energy transition policies			
Australia 	Climate Change Legislation	National Hydrogen Strategy ●	Australia Renewable Energy Roadmap 2022	
China 	Five-Year Plan on Renewable Energy Development & Modern Energy System (2021–2025) ●	Hydrogen policy	Coal policy	
Hong Kong 	Hong Kong's Climate Action Plan 2050	Zero-carbon policy ●	Green industry policies	
India 	National Electricity Plan (NEP) 2022-32 ●	National Hydrogen Mission	Coal transition policy ●	
Indonesia 	New Electricity Business Plan (RUPTL) 2021-2030	New Presidential Decree, Sep 2022	Premise for Transition Finance	
Malaysia 	National Energy Policy 2022-2040, Low Carbon Nation Aspiration 2040	Policies related to Hydrogen	Malaysia Renewable Energy Roadmap (MyRER), 2021	
New Zealand 	New Zealand Emissions Reduction Plan	Hydrogen strategy ●	New Zealand Energy Strategy 2011-2021	Regulatory Reforms for Energy transition
Philippines 	Philippines Energy Plan 2020-2040 ●	Renewable Energy market policies	Premise for Transition Finance	
Singapore 	Singapore Energy Transition, 4 supply switches	National Hydrogen Strategy	Singapore Green Plan, 2030	Energy efficiency & excellence strategy
South Korea 	10th Basic Plan for Electricity Supply and Demand (2022-2036)	National Hydrogen Roadmap	Renewable Portfolio Standards (RPS) ●	Green New Deal
Taiwan 	Energy Transition Promotion Scheme	5+2 Industrial Innovation Policy		
Thailand 	Power Development Plan, Alternative Energy Development Plan	20-year Smart Grid master plan	Electricity market	
Vietnam 	Power Development Plan VIII (PDP8) ●	Renewable Energy policy	Premise for Transition Finance	

*MUFG TRANSIT APAC Sustainability Journey Vol.1: (<https://www.bk.mufg.jp/global/globalnetwork/asiapacific/anncts/pdf/apacnews-20230419-01-en.pdf>)

Source: MUFG compiled from various public sources

Q2 2023 Highlights | APAC Energy Transition Policy Updates - II

New major clean energy highlights



Australia's Hydrogen Headstart (2023 Federal Budget released in May) - \$2 billion revenue support program to scale up green hydrogen production through competitive contracts

- Funding expected to support delivery of up to 2-3 large H₂ projects, requiring up to 1000 MW electrolyser capacity
- Expressions of interest open 1Q 2024, selectively awarded contracts to receive ongoing payments over 10-year period from 2026-27
- Aims to position Australia as an early mover & global leader in the clean hydrogen space



Existing National Hydrogen Strategy, 2019

Aims to create "clean, innovative, competitive and safe H₂ industry" as a **major global hydrogen player by 2030**

- Aim for **H₂ exports** to reach AUD 10 billion by 2040
- Plans to generate H₂ at **<AUD 2/kilo** & establish Australia's **first H₂ export hub**
- Investment of \$1.4 billion in building a **national hydrogen industry**



Vietnam's long awaited Power Development Plan VIII (PDP8) – approved by Ministry of Industry & Trade (MOIT) in May 2023 - US\$134.7 billion landmark plan takes into consideration Vietnam's Just Energy Transition Partnership(JETP)* agreement, calling for reduction in emissions generated by power sector while pivoting away from solar

- PDP8 aims to more than double Vietnam's current power generation capacity to >150 GW by end of the decade
- Serves as a fundamental step necessary to unlock funding for renewable projects, in particular offshore wind

Highlights of Power Development Plan VIII (PDP8)



- Target: 28 GW installed wind capacity by 2030, up from today's capacity of 4.6 GW
- Uplifting the development of **offshore wind power** to 20% of total wind capacity by 2030



- Gas-based power generation to rise to 25% of power mix by 2030
- LNG as Vietnam's **baseload fuel** driving both economic expansion & phased energy transition
- Addition of 5 new LNG projects with total capacity of 6 GW in the North



- Prohibit development of new coal-fired power plants by 2030 & LNG plants by 2035



- Phase out operation of existing coal-fired thermal power plants by 2050

*JETP in Nov 2022 entailed a US\$15.5 bn package of blended finance from public & private stakeholders to finance Vietnam's transition from coal to renewables

Source: MUFG compiled from Argus Media, ASEAN Main portal, IEA, PwC, The Edge markets and various public sources

Q2 2023 Highlights | APAC Energy Transition Policy Updates - III

Other clean energy highlights from the region



Hydrogen



Hong Kong

- Zero-carbon policy, Jun 2023:
 - 2023-24 budget: US\$25.6 million for trials of double-decker buses & heavy vehicles powered by H₂ fuel cells
 - Government's long-term strategies for the application of H₂ energy in road transport to be released by 2025



New Zealand

- Hydrogen strategy, May 2023:
 - Target to develop regulatory roadmap for H₂ by 2024
 - Budget 2023: government pledged to provide up to NZD100m in subsidies for green H₂ consumption over a ten-year period
 - Focus on enabling hard-to-abate sectors to switch from using fossil fuels to H₂



Renewables



China

- Five-Year Plan on Renewable Energy Development & Modern Energy System, Jun 2023:
 - 1st massive offshore wind auction launched in Guangdong by national government



Philippines

- Philippines Energy Plan 2020-2040:
 - Apr 2023: President signed executive order directing Department Of Energy to set up a policy & administrative framework within 60 days to speed up issuance of offshore wind related permits, licenses & clearances



South Korea

- Renewable Portfolio Standards (RPS), Apr 2023:
 - Ministry of Trade, Industry & Energy allocated \$185.5 million for its rebate scheme for rooftop PV systems & other small renewable energy systems







Others









India

- Coal transition policy, Jun 23:
 - The government announced not to consider any proposals for new coal plants for the next 5 years & focus on growing its renewables sector instead
- National Electricity Plan (NEP) 2022-32
 - Electricity Grid Battery Scheme, Jun 2023: \$2.63 billion draft proposal for a production-linked incentive subsidy scheme till 2030 for companies to set up manufacturing capacity for battery cells in India

Q2 2023 Highlights | APAC Energy Transition Market Updates - I

Date	Developers	Energy Type	Project type	Project Details
Australia 				
May-23	Iwatani, Kansai Electric Power, Marubeni, Stanwell, Keppel Infrastructure	Hydrogen	-	Develop Queensland's largest renewable H ₂ project for export to Japan & Singapore, while supplying large domestic industrial customers. Commitment of AUD117 million from government & consortium partners
Jun-23	Iwatani			Spend ¥30bn out of ¥178bn allocated on H ₂ -related projects on developing a supply chain from overseas H ₂ projects in Australia
China 				
Jun-23	SP Group	Solar	Investment	Singapore's SP Group announced investment in its 1 st batch of agrivoltaic assets in Guangdong. Total installed capacity of 78 MWp, integrate solar PV with 7.8 MWh of BESS across 4 existing agricultural sites
	China Energy Investment Corporation	CCUS	-	Started operations at Asia's largest coal-linked carbon capture, utilisation & storage (CCUS) facility
Hong Kong 				
May-23	Towngas	Hydrogen	-	Towngas and city authorities launched a trial H ₂ extraction programme from existing gas supply under government's pilot scheme for HK to soon have its first home-produced H ₂ for transport use
	Citybus, Hans Energy			Pilot project to build HK's 1 st H ₂ refuelling station – at a Citybus depot in West Kowloon – received an "agreement in principle" from the government, to be ready by Sep 2023
India 				
May-23	JICA, IREDA, IIFCL	Renewables	-	Japan International Cooperation Agency (JICA) has provided lines of credit to Indian Renewable Energy Development Agency (IREDA) & India Infrastructure Finance Company (IIFCL) for renewable energy capacity of 8 GW
Indonesia 				
Jun-23	World Bank, PLN	Solar	-	\$1.14 billion project to expand access to cleaner electricity, connecting ~2 mil people to grid in eastern Indonesia & help PLN improve its capacity to manage energy transition
Malaysia 				
Apr-23	Osaka Gas, IHI, Petronas	Biomass	MOU	Conducted feasibility study on a methanation project to produce e-methane using unutilised biomass in Malaysia to determine whether to proceed to FEED phase
Jun-23	MHI, TNB Genco	Hydrogen		Conducted studies in H ₂ & ammonia value chain production, supply, logistics, storage & related infrastructure; low carbon fuel co-combustion technology in thermal plants & CO ₂ capture
	Tenaga Nasional Berhad (TNB)	Renewables	-	Sustainability roadmap for Malaysia & the region launched, subsidiary TNB Genco committed to several expansion plans from 2023 such as stepping up collaboration with major power players in Thailand, Vietnam & Laos to advance Malaysia's aspiration of becoming Renewable Energy hub for ASEAN

Q2 2023 Highlights | APAC Energy Transition Market Updates - II

Date	Developers	Energy Type	Project type	Project Details
Philippines 				
May-23	JGC Philippines, Inc.	Solar	-	Awarded EPC contract by Altenergy for 20 Mvac Solana solar power project in Hermosa, Bataan
	Blueleaf Energy, SunAsia Energy			Awarded contract from Philippine government to build & operate <u>world's largest floating solar project</u> , with cumulative capacity 610.5MW
Jun-23	BlueFloat Energy	Wind		Unveiled 7.5 GW of Floating Wind Projects in Philippines after securing contracts for 4 (floating) offshore wind project sites by the government
Singapore 				
Apr-23	Keppel Infrastructure, ExxonMobil	Hydrogen, Ammonia	MOU	Develop access to low-carbon hydrogen and ammonia for scalable commercial and industrial applications in Singapore
	City Energy, Gentari (PETRONAS subsidiary)	Hydrogen		Jointly conduct feasibility studies of a H ₂ supply chain from Malaysia to Singapore
South Korea 				
Apr-23	Idemitsu Kosan, Korea Electric Power Corporation(KEPCO)	Ammonia	MOU	Collaboration on establishment of blue/carbon-free ammonia supply chain in Japan and Korea
Taiwan 				
May-23	Taiya Renewable Energy, Cyan Renewables	Wind	MOU	Support Taiwan's offshore wind growth with cable-layers, foundation & wind turbine installation vessels. Outlines partnerships on key infrastructure like offshore wind supply base in line with government's 15GW new addition of offshore wind power by 2035
Thailand 				
Mar-23	IHI, EGAT	Hydrogen	MOU	Study construction of BESS & fuel conversion to ammonia
Apr-23	CP, Toyota, CJPT			Promote initiatives for carbon neutrality suited to Thailand in energy, data & mobility such as producing H ₂ from poultry farm's biogas & conducting Carbon Neutrality Mobility Event
May-23	JERA, PTT			Study on development of supply chain for H ₂ & ammonia in Thailand
Vietnam 				
Jun-23	Institute of Energy Vietnam (IE), PTSC M&C	Wind	MOU	Deliver one of Vietnam's 1 st offshore wind power assets following government's recent push in PDP8 for offshore wind
	Marubeni, VinES	Energy Storage		Set out a framework for development of a BESS project

Energy Transition Landscape in APAC (ex-JP) | Market Dynamics of Japanese Players

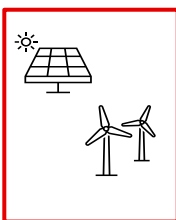
Energy transition policies drive actual developments in APAC (ex-JP) with Japanese players rising to the opportunities presented in this market.

Compiled Energy Transition Announcements* in Asia (ex-JP), India & Oceania involving Japanese players from 2018 to Jun 2023

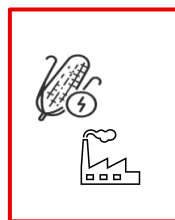
		Australia	India	Indonesia	Malaysia	New Zealand	Philippines	Singapore	South Korea	Taiwan	Thailand	Vietnam	Total by Category
RE	Solar	2	9	2	3	-	4	1	-	3	6	9	39
	Wind	-	2	1	-	-	3	-	2	2	-	5	15
	Geothermal	-	-	2	-	1	0	-	-	-	-	-	3
	Hydropower	-	-	3	-	-	4	-	-	-	-	3	10
	Biomass	-	2	2	2	-	-	-	1	-	-	5	12
	Waste to energy	-	-	1	-	-	-	-	-	-	1	3	5
	LNG	1	1	3	-	-	1	-	-	-	-	7	13
Low-carbon technology	Biomass Co-firing	-	-	2	3	-	-	-	-	-	-	1	6
	Hydrogen	12	2	4	6	4	-	8	5	-	5	-	46
	CCUS/CCS	3	-	8	5	-	-	-	-	1	1	-	18
	Ammonia co-firing	-	1	5	3	-	1	-	-	1	1	-	12
	Ammonia	5	-	2	1	-	-	4	2	-	1	-	15
	Total by Country	23	18	39	23	5	12	13	10	7	15	30	194

* Announcements include Acquisitions, Consortiums, Framework Agreements, Investments, Joint Study Agreements, Joint Ventures, Partnerships, Project Updates & MOUs etc.

Source: MUFG compiled internally & from public sources (2023)



- **India, Indonesia, Philippines & Vietnam** are most active markets for the entrance of Japanese players into renewable project activities. Solar energy drew in majority of the activities in the region while the picking up of wind project activities are observed in Vietnam.



- **Indonesia & Malaysia** appeared to be a **test-bed** to attract activities in decarbonization technologies like mono-firing, dual-firing to blend coal with a cleaner source of energy e.g., green hydrogen, green ammonia, biomass.



- Markets that have enacted a national hydrogen strategy such as **Australia, Singapore & South Korea** have attracted more Japanese clean-technology providers and investors looking for collaborations within the supply chain to produce H₂ abroad for export to Japan or other nearby markets in the region



- **Indonesia & Vietnam** attracted the largest number of project activities, reflecting a high market demand to secure a cleaner source of energy to reduce the countries' coal dependency within their net zero targets

Section II:
Regional Green Taxonomy
Developments

Features of a Green Taxonomy

- A classification rulebook/tool for economic activities into distinct groups, green, and otherwise, plus activities that are transitional
- Establish clear criteria & remove uncertainty in determining activities which are environmentally sustainable
- Alleviate concerns on greenwashing around green & sustainable products

Major Global Standards (Regional Taxonomy)



EU Taxonomy

Introduction

- 1st launched in 2020, leading standard for other taxonomy developments across the globe

Interoperability

Ability to harmonize & standardize taxonomies across the world

- 2022: EU Parliament's proposal for an EU Green Bond Standard **to integrate the EU taxonomy with global capital markets**

Inclusion of coal

- Exiting from coal is a prerequisite to access sustainable financing

Mechanism

- 6 Environmental Objectives (EOs)
- Do no significant harm (DNSH) criteria
- Technical screening criteria only exists only in place for 2 EOs (Climate Change Mitigation & Adaption)
- Jun 2023: European Commission published a package of measures intended to develop & strengthen the EU Taxonomy
 - Draft recommendation for **transition finance** was released



ASEAN Taxonomy for Sustainable Finance

- Version 2 released in Mar 2023, designed to promote transition towards sustainable finance among ASEAN

- Designed to be interoperable with EU Taxonomy & other national taxonomies of ASEAN member states

- 1st regional taxonomy in the world to **layer out different tiers of conditions coal phase-out** could qualify for sustainable financing
- Promote a just & orderly transition

- 4 Environmental Objectives, 3 Essential Criteria
- Exception to DNSH if remedial actions are introduced within 5 years

- Credible & science-based Foundation Framework (principles-based qualitative assessment) + Plus Standard (advanced technical screening criteria)



Traffic light system

Economic activities split into different categories (green/amber/red) to classify their environmental sustainability

- Tier 1: Green
- Tier 2: Amber
- Tier 3: Amber

} E.g. In recognition of transition efforts, includes early retirement of coal-fired power plants. measures-based approach uses amber category for technologies that contribute to emissions reduction, instead of specific economic activities

Green Taxonomy Developments in the Region I National Developments

While green investments are pouring into the region, national taxonomy developments for sustainable finance are of key interest to investors and companies in establishing market clarity and the enabling of benchmarking with peer markets in the region.

Market	Taxonomy / Classification for Green Assets or Products	Governance, strategy, risk identification / assessment / monitoring	Stress Testing / Scenario Analysis	Disclosure*
Australia 	•	✓	✓	✓
China 	✓ (bonds)	✓	✓	•
Hong Kong 	•	✓	✓	✓
India 	*	•	•	✓
Indonesia 	✓	•	•	✓
Malaysia 	✓	✓	✓	✓
New Zealand 	• (agriculture)	•	•	✓
Philippines 	✓	✓	✓	✓
Singapore 	•	✓	✓	✓
South Korea 	✓	✓	✓	✓
Taiwan 	*	*	✓	✓
Thailand 	•	•	•	✓
Vietnam 	*	✓	-	✓

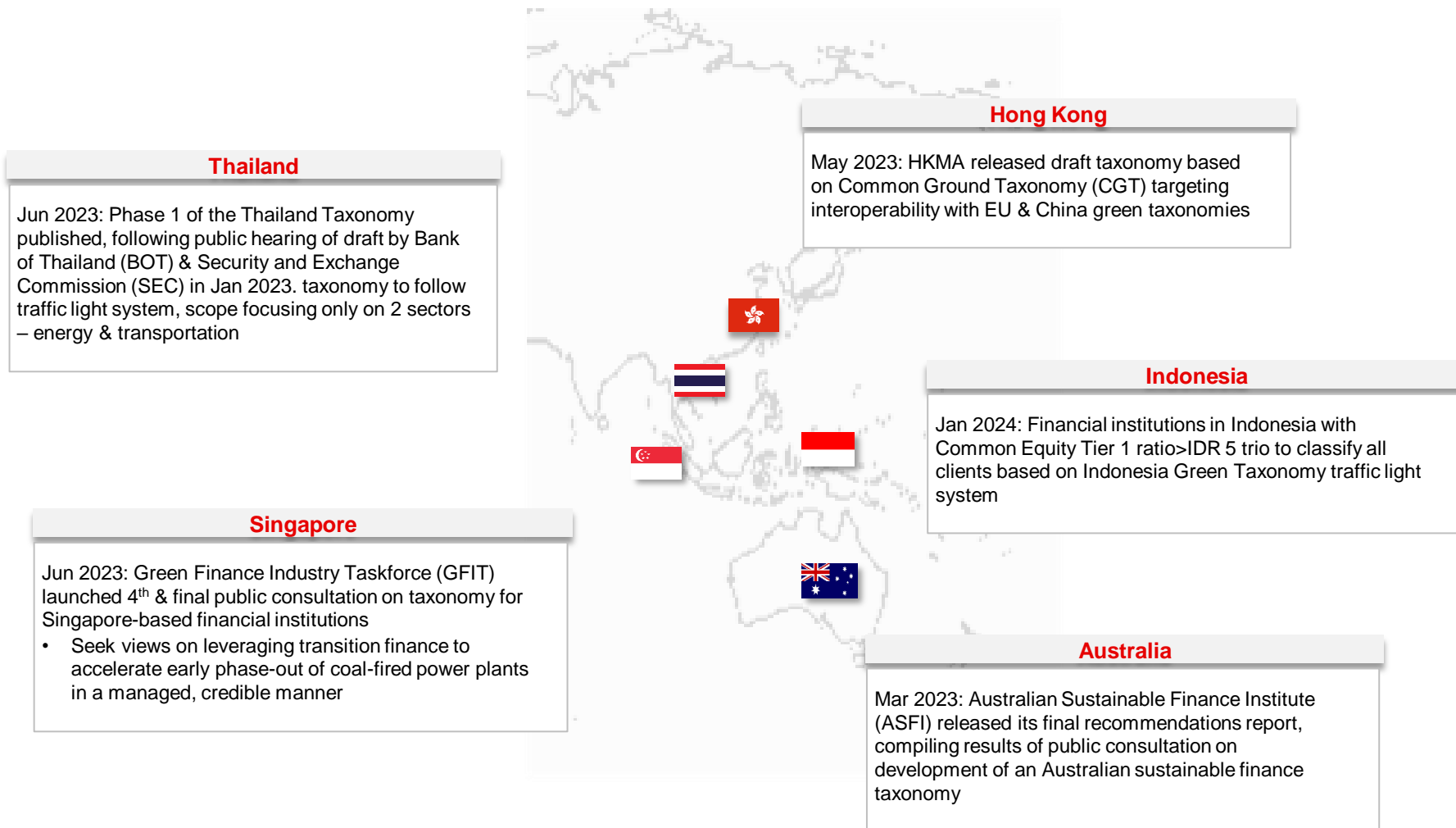
*includes any form of ESG disclosure for corporates and/or ESG fund disclosure/requirements in place

Legend:

- ✓ = Policy/requirements implemented or issued
- = Policy/requirements at consultation stage
- * = Under consideration, no papers issued yet

Green Taxonomy Developments in the Region | Recent Key Updates

Momentum in national taxonomy developments has been picking up steadily with the lead of regional frameworks like the ASEAN Taxonomy & EU Taxonomy, a welcome step to bring in clarity in financing green, sustainable and transition activities.



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