MUFG TRANSIT

APAC Energy Transition: Regulatory Round Up 2024

March 2025
ESG Finance Department

MUFG Bank, Ltd.
A member of MUFG, a global financial group

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Section I: Introduction

APAC Energy Transition 2024 – A shift from strategy formulation to implementation focus

In 2024, APAC markets have progressed from establishing energy transition strategies and defining roadmaps to:

- Release **implementation guidelines**
- Issue **clean energy utilization mandates**
- Clarify CCS/CCUS rulebooks to support **cross-border movements of CO_2**
- Provide essential **grants and incentives**, particularly for hydrogen and offshore wind sectors, which are otherwise not commercially viable

APAC Major Energy Regulatory Updates in 2024

Note – The analysis only includes major regulatory and policy developments publicly announced by the governments during 2024.

Major Regulatory Updates

Source: MUFG compiled from S&P and various public sources.

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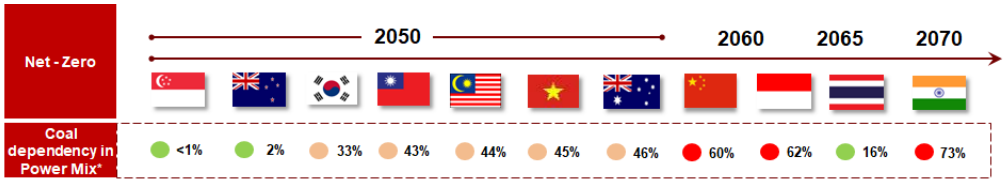
APAC Energy Transition Policy 2024 – The three common themes



1. Renewable Energy – Conventional renewables such as solar and wind continue to surface as a **common theme** among energy mix of all markets irrespective of varied NDC pathways

Solar energy has received immense policy support, and we see great uptake in rooftop and utility solar. Led by China and India.

Offshore wind adoption has been comparatively slower, but we observe government push in South Korea, New Zealand, and Taiwan.

2. Alternate Energy – Build up **new energy capabilities** to reduce reliance on fossil fuels

Palm-oil producers e.g. Indonesia, Malaysia are exploring **bioenergy** as a way to maximise domestic resources self-sufficiently, reducing dependencies on energy imports.

A push for alternative sources of energy and unlocking new revenue streams drive a surge in policies to support **hydrogen value chain** establishment e.g. Australia, India, Malaysia.

Nuclear makes inroads with interest around Small Modular Reactors but concerns around safety expect to limit its share in the energy mix this decade.

3. Fossil Fuel Transition – Baseload security, echo LNG's importance as a **transition fuel** in the region

Markets such as Philippines & Vietnam with **high dependency on coal** are extending adoption of **natural gas,** securing a stable energy supply until alternative energy sources reach commercial maturity.

2024

Source: MUFG compiled from S&P and various public sources.

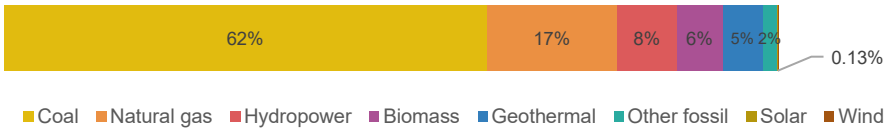
Section II: ASEAN

Indonesia – Eased regulatory restrictions ; focus on solar, wind & CCS

Net Zero Target
2060

Solar
Wind
BESS
Hydro
Geothermal
Bioenergy
CCUS
Hydrogen
Nuclear
LNG

Energy Mix in 2023



Major Policy Updates in 2024

Local content requirements (LCR) lowered:

- To fill the financing gap and expedite energy transition, the government lowered threshold for using local made equipment for Solar (from 40% to 20%), Geothermal (from 29-42% to 20-29%), & Hydropower (from 48-71% to 23-45%) projects with an aim to attract international funding. The move also intends to attract concessional fund as projects with >50% finance from multilateral/bilateral lenders are exempted from LCR.

Geothermal: To harness abundant geothermal storage and attract investors/developers into new projects, the government proposed to shorten project permit time from 1.5 yr. to 5 days. A newly proposed regulation is also underway to allow extension of geothermal PPAs for up to 30 years.

Bioenergy: To promote and enable usage of domestic biomass for co-firing, the government introduced LCR of 21% on biomass & increased palm oil blend mandate with biodiesel to 40% in 2025, from 35%

Carbon Capture and Storage (CCS): Legal framework updates were released on CCS implementation in early (PR 14/2024) and late (MEMR 16/2024) 2024. The regulations allow entities to utilise depleted oil & gas reservoirs for CCS operations, allowing 30% storage capacity for overseas carbon, and lays clear framework to attract participation of entities beyond production sharing contract firms.

Nuclear: Government is focusing on creating a regulatory framework for nuclear energy however the plan is to only start producing nuclear power by 2032 with initial focus on safety, technological readiness and potential cost.

Targets

↓ **32%** Reduction of GHG emissions against 2030 BAU (NDC)

↑ **44%** Renewable energy share in power mix by 2030 under Just Energy Transition Partnership scenario

Outlook for 2025 & beyond

We view that easing of LCR mandate for projects with concessional funding will overcome local supply chain challenges and directly enhance financial viability, allowing a faster scaling of solar, geothermal & hydropower projects.

✓ Look out for policy measures to minimise long-term effect on local industries & domestic supply chains (2025).

Utilising Indonesia's abundant forest and palm-oil resources is crucial for achieving the 2050 net-zero carbon emissions target in transportation and power sectors. We foresee increased domestic biomass usage in these sectors, though environmental concerns like food crises and deforestation pose challenges, especially for export markets.

With the legal framework established and recent G2G announcements with Japan, Korea, and Singapore, we anticipate a revival of ongoing CCS projects and emergence of essential capture and storage projects along its value chain in 2025.

Source: MUFG compiled from ASEAN briefing, Antara, Reuters, HKTDC, PWC, Argus and various public sources.

Malaysia – Leveraging CCS while focus remains to expand conventional RE

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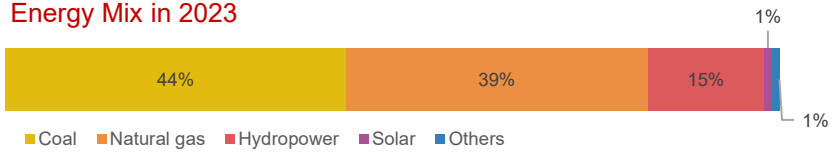
Energy Mix in 2023



Major Policy Updates in 2024

Solar: 2024 remained a year of focus to advance solar energy

- Solaris Program: Program to promote Net Energy Metering (NEM) scheme by providing a rebate of up to RM4,000 on new PV installations in residential premises.
- Expanding Large-scale Solar (LSS) program: Program enables development of large-scale solar projects by awarding power contracts via bidding. The government revived competitive bidding in 2024 for projects with LSS 5 (2024-25), offering 2 GW of capacity, double of LSS 4 (2020) with aim to accelerate energy transition and attract developers at the back of declining PV costs.

National Biomass Action Plan: Launched in late 2023, with 2024 as inaugural focus year, the plan aims to leverage the region's abundant biomass source to build a competitive biomass sector by providing investment, tax incentives & enabling stakeholder collaboration.

CCUS Bill: Aims to attract investment & promote bilateral agreements by creating a legislative framework to assess technical competency of CO_2 storage and regulate deployment of CCUS projects including a licensing and permitting regime and guidelines for managing risk as well as project liability.

Corporate Renewable Energy Supply Scheme (CRESS): This initiative aims to enable large corporate consumers with high energy demands to purchase renewable energy directly from independent power producers (IPPs) through PPAs and via an open grid access system.

Targets

↓ **45%** Reduction of GHG emissions by 2030 compared to 2005 levels (NDC)

↑ **40%** Renewable capacity in total energy mix by 2035 (NDC)

Outlook for 2025 & beyond

- Solaris Program expected to trigger a quick win by driving demand and boosting orderbook for PV manufacturers since installations under this program require to be operational before Mar 2025. The growing national commitment to scale LSS program is set to unlock capital flow while allotting increased opportunities in utility solar projects especially for established developers.
- Production of biomass pellet is expected to rise, however export market to remain prominent due to lack of support mechanism to stimulate domestic co-firing.
  - ✓ We expect domestic demand to be primarily driven by Malakoff's target of 3-5% co-firing in 2025, however lookout for any incentive mechanism in 2025 to pivot bankability in domestic co-firing.
- We expect more concrete movements in CCUS projects following Malaysia's CCUS bill announced in Mar 2025 with a clear framework on project development in its push to become a regional hub. A further push from domestic carbon tax is set to price emissions in 2026 and growing bilateral agreements with cross-border emitters.

Source: MUFG compiled from Malaysia govt, Bernama, Saurenergy, The Edge Malaysia and various public sources.

Philippines – Increased focus on alternatives

No Net Zero Target

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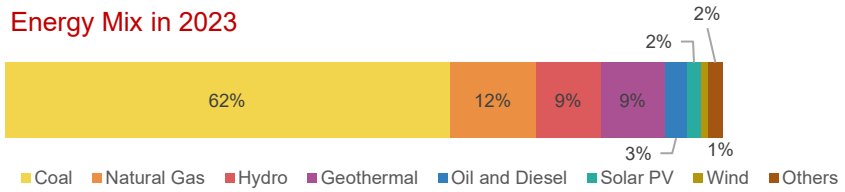
Energy Mix in 2023



Major Policy Updates in 2024

LNG - Natural Gas Industry Development Act*: To develop natural gas as a transitionary/"bridge" fuel to renewable energy by developing local LNG industry. The law aims to prioritise use of indigenous natural gas and reduce reliance on imports by establishing a downstream industry. Under Philippines' 2040 Clean Energy Scenario, share of natural gas in energy mix set to increase from 5.8% in 2020 to 11.6% by 2040.

Hydrogen - Hydrogen Energy guidelines: To incentivise production and use of hydrogen and its derivates and reduce dependency on imported oil. The law aims to increase energy security by paving the way for adoption of green and blue hydrogen in the energy sector through incentives similar to renewable energy projects together with legal framework to attract local and foreign investment.

Nuclear - Nuclear Energy Roadmap: To explore public-private partnership in developing domestic nuclear program and have commercially operational nuclear plants of >1200 MW by 2032 in the power mix gradually increasing to 4,800 MW by 2050. This aims to support the government's target of increasing the renewable share to 35% by 2030 and 50% by 2040 in energy mix.

Although no major policy updates in conventional renewables, government stressed its aim to double solar and triple wind capacity. Also introduced monitoring protocols to speed up execution.

* *Drafted and introduced in 2024. Received President's assent on Jan 9, 2025*

Targets

↓ **2.71 – 72.29%** Emission Reduction by 2030 (NDC)

↑ **35%** Increase the share of renewable energy in power generation to 35% by 2030

Outlook for 2025 & beyond

- Increased prioritisation for LNG import infrastructure projects and other *LNG to Power* projects critical to meet government's target of increasing natural gas share to 26% in energy mix by 2040.
- Blue hydrogen and ammonia co-firing projects in coal and natural gas plants are likely to attract private capital in line with government's vision. We do not expect large-scale private investment in nuclear in 2025.
- Increased private financing in floating and rooftop solar projects to benefit from faster execution guidelines and removal of nationality requirement etc. Private investment in geothermal and hydro likely to slow down in alignment with government priorities.
  - ✓ Government expected to invest in improving transmission lines and grid connectivity that remain as bottlenecks in renewable uptake

Source: MUFG compiled from Enerdata, Enviliance, Argus Media, Panay News, Businessworld, AsianPower and various public sources

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Thailand – Transitioning from natural gas; focus on solar, wind, and biomass

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Energy Mix in 2023

Major Policy Updates in 2024

Solar - Power Development Plan (PDP 2024-37): Increase renewable energy generation target to 51% by 2037 with significant focus on solar and energy storage systems. The plan is a sub-set of the National Energy Plan that aims to reduce CO_2 emissions by >106 million tonnes by 2037.

Bioenergy - Extension of biofuel subsidy: Extension of biofuel subsidies by two years to increase use of E-20, E-85, B-10 and B-20 blend fuels. With this, government aims to increase the demand for domestic feedstock and achieve targeted SAF blend rate of 8% by 2036. Government also earmarked procurement of 6.5 MW of electricity from biogas and 30 MW from industrial waste between 2022-2030.

Wind energy - Regulatory Framework: Announced a new regulatory framework for wind turbines aiming to attract international investment in large-scale wind projects by aligning Thailand's wind energy regulations with international practices. With higher FiT rates than other RE sources, the government targets 1.45GW of electricity from wind sources by 2030 .

CCS - Framework for Regulating Carbon Capture and Storage: Amended the Draft Petroleum Act to develop a framework towards regulating CCS business. By leveraging experience from petroleum exploration and production sector, government aims to deploy CCS in the energy and industrial sector to support goal of net-zero emissions in 2065.

Targets

↓ **30%** Reduce GHG emissions by 30% from projected BAU level by 2030 (NDC)

↑ **30%** Increase the share of renewable energy capacity to 30% by 2037

Outlook for 2025 & beyond

- We expect a continuous growth in solar power project developments driven out of PDP 2024 and Feed-in Tariff scheme for ground mounted solar plants. Thailand also relaxed the need for permits for rooftop solar regulation that is expected to reduce total installation cost and increase its usage.
- Wind energy regulations are expected to provide clarity and security for wind turbine manufacturers and project developers, and we expect more investments in onshore wind projects.
- Corporates are likely to deploy more capital towards biofuel blending projects as ethanol subsidy is expected to incentivise domestic feedstock production and increase supply of molasses-derived and cellulosic ethanol.

Source: MUFG compiled from Bangkok Post, BCG, Bioenergy Times, and various public sources.

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Singapore – Focus on Solar, CCUS, hydrogen and natural gas

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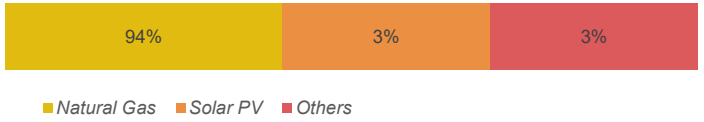

Major Policy Updates in 2024

Hydrogen - National Hydrogen Strategy: To complement and diversify power mix alongside other low-carbon sources and support low-carbon hydrogen to meet up to 50% of projected electricity demand by 2050. **USD 5bn Future Energy Fund** announced to encourage investments in low-carbon energy, prominently in Hydrogen and shortlisted two consortia to develop ammonia supply chain.

Natural Gas: To establish a centralised natural gas agency for LNG procurement from 2026 towards enhancing energy security, stabilise gas prices during geopolitical uncertainty and promote long-term gas contract for GenCos. Also aims to diversify the sources of imported gas beyond Indonesia, Malaysia and Australia.

CCS - Power Sector Carbon Capture and Storage (CCS) Grant Call: To deploy CCS technologies in decarbonising the power sector while leveraging available natural gas infrastructure. Government also invited proposals from power generation companies for exploring CCS options where govt will co-fund the feasibility study.

Solar Energy - Future Grid Capabilities Roadmap: To identify key barriers and focus areas for electricity grids in the event of increased RE supply.

- This supports national aim to strengthen grid resilience (when supply of RE increases in the grid in future from domestic generation and imports) and promote distributed energy resources e.g. rooftop solar PVs, battery energy storage systems etc.

Targets

↓ 60MtCO2e

To reduce emissions to around 60 $MtCO_2e$ in 2030 (NDC)

Outlook for 2025 & beyond

- Increased interest and prioritisation for hydrogen compatible natural-gas projects as government has invited private players to build, own and operate new power plants that are hydrogen-compatible.
  - ✓ E.g. Singapore has called for proposals for two hydrogen-compatible natural gas power plants.
- The hard-to-abate sectors will be pulled to bank on CCS as a viable backup plan for emissions reduction and invest in R&D projects to benefit from polices and MoUs on CCS.
- We expect companies in the energy sector to deploy resources towards LNG as government aims to boost LNG supply by granting additional LNG bunker supplier licenses.

Source: MUFG compiled from EMA, Strait Times, Business Times, Korea Times, Reuters and various public sources.

Vietnam – New Electricity Law paves the way for a range of renewables

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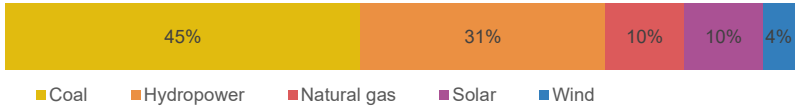

NDC Targets

↓ **15.8%** Reduction of GHG emissions below 2030 BAU (NDC)

↑ **39.2%** Renewable energy share in power mix by 2030

Major Policy Updates in 2024

New Electricity Law 2024: Adopted in Nov 2024, to be effective from Feb 2025, aiming to create a competitive & transparent energy market while also promoting investment in renewable energy.

- ✓ The law provisions for mandatory longer-term minimum power purchase for large scale projects such as Offshore wind and LNG-to-power i.e. >80% of loan principal repayment, up to 15 years.
- ✓ To reduce overall cost of electricity production, the law prioritises gas-fired projects that use domestic natural gas, especially those that share a common infrastructure of LNG import terminals and pipelines.
- ✓ Offshore wind projects will enjoy a long-term minimum power purchase agreements along with other special incentives and support mechanism e.g. Reduced financial obligations for land leases and sea allocations, subject to a foreign-ownership cap at 49% for certain projects.
- ✓ Renewable projects to produce New Energy Electricity (green hydrogen ,green ammonia) and projects that integrate with battery storage gain higher priority over standalone projects.
- ✓ Re-introduction of nuclear energy but government to own monopoly on all projects, right from investment to operation, until decommissioning.

*DPPA: Government-issued decree to permit **Direct Power Purchase Agreements** for renewable energy with provision for private developers to sell electricity directly to large energy consumers both from state-owned grids as well as private transmission connections.*

Outlook for 2025 & beyond

- A reduction of sea & land fees, enhancing of a minimum purchase mechanism and more open stand for foreign investment with a provision to allow future transfer of ownership/participation demonstrate willingness of the government to attract more private capital especially in offshore wind projects where foreign expertise is crucial for a success of initial developments.
- We expect to see more details of how these new developments such as take-or-pay and fuel-pass through mechanisms will be deployed to enhance the bankability of the new projects and to revive stalked projects that otherwise lack financing.
- More to lookout for battery storage as we expect greater policy clarity in early 2025 for the preferential mechanism under the New Electricity Law 2024, for integrating battery storage systems with renewable energy.

Source: MUFG compiled from S&P Global, Reccessary, ESG News, IEEFA, Enerdata, AsianPower and various public sources.

Section II: Oceania

Australia – Incentivising RE with special focus on solar, battery & hydrogen

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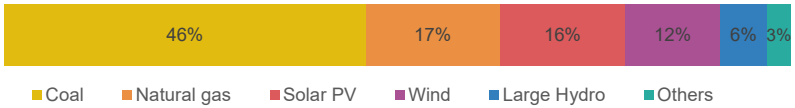
Energy Mix in 2023



Targets

↓ **43%** 43% reduction of GHG emissions by 2030 below 2005 levels (NDC)

↑ **82%** 82% renewable energy in the grid by 2030

Major Policy Updates in 2024

National Battery Strategy: To leverage its abundant resources of critical minerals such as Lithium, Nickel, Cobalt, A$ 532 mn allotted in incentives to promote battery production with major focus on large-scale energy storage for electricity grid and EV supply chain.

Solar SunShot program: With an aim to accelerate development of local solar PV supply chains, drive innovation, reduce import and capitalise on the growing export opportunity, A$ 1 bn allocated in investment & incentives to support commercialisation of domestic PV innovations & scale local production of solar PVs.

Incentivising Hydrogen Production and expanding Hydrogen HeadStart program: To double down on the Hydrogen HeadStart initiative which provides production credit for green/renewable hydrogen, additional funding of A$ 2 bn allocated in 2024, taking the cumulative value to A$ 4 bn. Tax incentives worth A$ 6.7 bn on production of green hydrogen announced, to be available from 2027-28 to 2040-41.

Funding the CCS research to map potential geological storage: Federal budget 2024-25 committed A$ 556 mn over 10 years to map suitable storage locations with an aim to attract developer/investor interest in CCS projects, while also aiming to establish cross-border agreements to project Australia as the global emissions storage hub.

Outlook for 2025 & beyond

- With global battery demand set to quadruple by 2030, we expect increased investment from EV manufacturers and renewable energy developers in battery infrastructure. The 'National Battery Strategy' will reduce costs of domestically produced batteries and position Australia as a global battery export hub.
- Increased financing is expected for domestic PV manufacturing, especially for companies with positive climate performance. The solar SunShot program prioritises firms with sound climate transition plans, offering capital grants and production-linked payments to address bankability issues and encourage production.
- Hydrogen production is picking up, though investment decisions are slower due to cost considerations. The increased Hydrogen HeadStart outlay and production tax incentive aim to attract developers and address cost issues.
  - ✓ Watch out for the Federal election, as hydrogen policy progress depends on smooth voting execution.
- With grants no longer available for new CCS projects, government research on CCS storage is the latest federal step to push corporate interest, though uptake may be limited without financial incentives..

Source: MUFG compiled from DCCEEW, CSIRO, ARENA, PV magazine, Reuters and various public sources.

New Zealand – Assist conventional RE while new focus on Hydrogen

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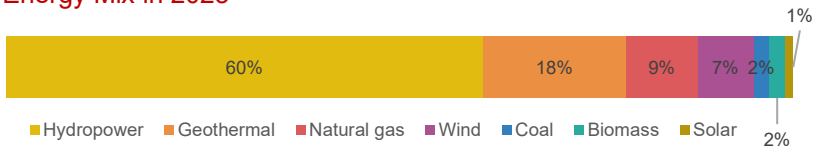

Major Policy Updates in 2024

Hydrogen Action Plan: Aims to unlock investment in low-emission hydrogen by removing regulatory barriers & increasing cross border relationship in terms of promoting international market access while also aiming to attract foreign investment.

Offshore Renewable Energy (ORE) Bill: Expected to be enacted in 2025, the purpose of this bill is to provide certainty for developers investing in offshore renewable energy projects. It provisions to officially allow exclusive 'feasibility study & commercial' permits for interested offshore wind developers.

Harnessing geothermal by leveraging technology: Allocation of up to NZD 60 mn from the Regional Infrastructure Fund to support R&D for exploring the supercritical geothermal technology (SCGT). The technology can generate three times more energy than current sources hence unlocking investment at the back of evidence-based science.

Second Resource Management Amendment (RMA) Bill – While the first RMA bill came into force in Oct 2024 targeting primary sectors such as farming, Second RMA bill introduced by late 2024 with key focus on accelerating consents for renewable projects and infrastructure development.

Targets

↓ **50%** Reduction of GHG emissions by 2030 from 2005 levels (NDC)

↑ **100%** To source 100% electricity from renewable sources by 2030

Outlook for 2025 & beyond

- With key focus on easing regulations around renewable project approvals under second RMA bill & with the provision for hydrogen project funding from various domestic contestable funds as well as foreign investment, government is paving the way for private sector participation in hydrogen project developments to meet domestic demand arriving particularly from the industrial and heavy transport sector while also laying a foundation to gradually develop hydrogen ecosystem with long-term focus on export potential.
- While the ORE bill enhances investor confidence by offering a framework to assess viable offshore wind projects, we believe that it lacks financial support mechanism which is needed to attract larger investor as well as developer participation.

✓ Lookout for more guidelines & clarity as developers prepare for submissions, with the bill expected to be enacted in mid-2025.

Source: MUFG compiled from Riviera, Chambers & Partners, Scoop news, NZ govt and various public sources.

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Section III: Rest of APAC

China – Increase renewable energy consumption

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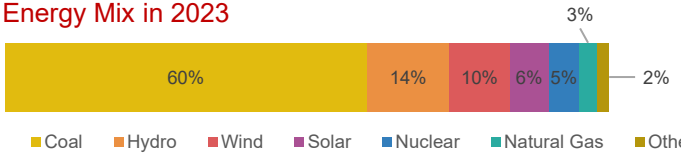

Major Policy Updates in 2024

Solar and Wind Energy - New renewable energy plan (Energy Law 2024): Emphasises on increasing RE consumption (demand creation) and sectoral integration of renewable energy instead of focusing on capacity installations alone unlike previous plans. For instance, the law prioritises distributed solar energy for agriculture and rooftop solar panels for public buildings. Government also aims large-scale wind and solar power bases in desert and arid regions.

CCUS and Bioenergy - Action Plan for Low-Carbon Transformation (2024-27): The plan sets out emissions-reduction targets for new and retrofitted coal power plants by co-firing either biomass or green ammonia or using CCUS. This aligns with broader agenda mandating all coal-fired power plants to start "initial low-carbon transformation" in 2025 in attempt to reduce their CO_2 emissions by 50% by 2027.

Guidelines for low-carbon hydrogen use in industrial sectors: To ramp up deployment of low-carbon hydrogen in industrial (iron and steel, oil refining, ammonia, and cement) and transport sectors (hydrogen fuel cell vehicles, aviation and shipping). Many provinces also eased restriction on construction of hydrogen facilities and announced financial support. The law epitomises China's increasing emphasis on production and utilisation of low-carbon hydrogen as a key lever to achieve carbon peaking and carbon neutrality targets.

Targets

↓ **65%** Lower carbon intensity by "over 65%" in 2030 from the 2005 level (NDC)

↑ **~25%** Increase the share of non-fossil fuels in primary energy consumption to around 25% in 2030 (NDC)

Outlook for 2025 & beyond

- Increased investment in wind energy and energy storage projects as China continues to prioritise them under the new Energy Law and existing 14th FY plan.
  - ✓ Government subsides have also improved commercial viability and developers are expected to receive higher feed-in tariffs enabling them reduce cost associated with wind turbines, R&D etc.
- The upcoming demand and clear policy signals are expected to encourage businesses deploy more capital towards existing and new hydrogen compatible projects (e.g., hydrogen fuel cell vehicles) and benefit from government subsidies.
  - ✓ We also expect foreign investors partnering with local energy companies through MOUs and JVs to gain market access.

Source: MUFG compiled from CMS, Global Times, Reuters, S&P, Enerdata, PV Magazine, Asian Power and various public sources.

India – Push for solar, green hydrogen and bioenergy

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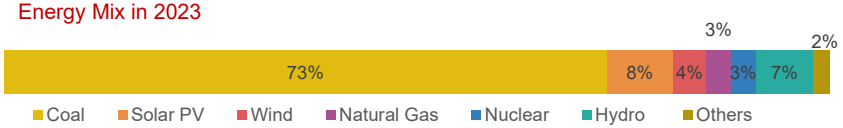
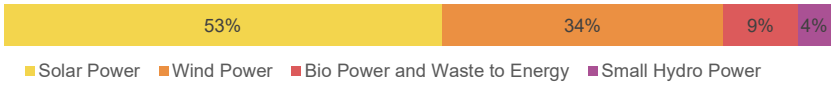


Renewable Energy – Installed Capacity during 2022-23 (Provisional)



NDC Targets

45% Reduction in emissions intensity - 45% below 2005 levels by 2030 (NDC)

50% Increase the share of non-fossil power capacity to 50% by 2030 (NDC)

Major Policy Updates in 2024

Solar Energy: Government mandated Indian clean energy firms to use local made solar cells in public infrastructure projects from 2026 and added solar PV cells to Approved List of Models and Manufacturers framework. This supports national vision of boosting domestic manufacturing of solar panels and their offtake through demand creation.

Hydrogen - Scheme Guidelines for setting up Hydrogen Hubs (National Green Hydrogen Mission): To maximise production of green hydrogen and its derivatives (such as green ammonia) and encourage its large-scale utilisation and export. Many states also notified incentives for Green Hydrogen production. This aims to achieve commercially viable hydrogen ecosystems and attract private sector investments.

Bioenergy - Updates to National Bioenergy Programme, National Mission on Co-firing of Biomass in Thermal Power Plants: To accelerate the integration of biomass co-firing in the energy mix, mandate for certain coal-based thermal power plants increased to incorporate 5% biomass pellets co-firing annually within one year and 7% in two years.

- Increased blending targets for ethanol (20% by 2025) and focus on expanding use of compressed biogas (CBG) for use as low-emission fuel in vehicles and captive plants to leverage abundant availability of agri feedstock.

Outlook for 2025 & beyond

With recent mandate and Production Linked Incentive (PLI) for Solar PV Modules and Strategic Interventions for Green Hydrogen Transition Programme increasing green hydrogen production and lowering electrolyser cost, we expect

- ✓ Increase in investment by domestic players in solar cell manufacturing to reduce import dependency. We also expect continued interest from investors and developers in solar projects benefiting from Feed-in-Tariffs and growing demand.
- ✓ Supportive momentum to green hydrogen projects targeting domestic industrial demand, while optimising the infrastructure to reduce storage and shipping costs continue to be crucial to unlock the value of the large-scale export projects
- ✓ Uptake in biomass pellet manufacturing to meet co-firing target for coal plants starting May 2025. We also expect increased financing of CBG infrastructure projects benefitting from government planned investment of INR 75,000 crs, production offtake guarantees, and target of 5000 CBG plants by FY2025.

Source: MUFG compiled from PV Magazine, Business Standard, SECI, PIB, MNRE, ET Energy World and various public sources.

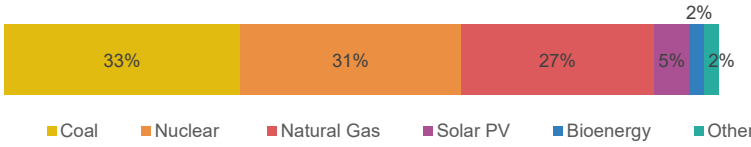
MUFG

South Korea – Shift to offshore wind, nuclear and hydrogen

Net Zero Target
2050

Solar
Wind
BESS
Hydro
Geothermal
Bioenergy
CCUS
Hydrogen
Nuclear
LNG

Energy Mix in 2023



Major Policy Updates in 2024

Wind energy - Offshore Wind Power Supply Roadmap: To accelerate growth of domestic wind power by initiating competitive and accelerated bidding timeline for large-scale offshore wind projects. Considering wind energy as a significant driver of the nation's energy transition, total of 7–8 GW worth of offshore wind power capacity (both fixed and floating offshore) to be auctioned between 2024-2026 to meet its target of 22% renewable energy capacity by 2030.

Nuclear Energy- Working-level draft of the 11th Basic Plan: Approved the construction of two nuclear plants, scrapping its anti-nuclear policy. South Korea plans to have 30 plants operational by 2038 to support other RE sources in meeting increased electricity demand expected to come from semiconductor and data centre industries. In COP29, South Korea also became a signatory to "Declaration to Triple Nuclear Energy" that commits to achieve a tripling of global nuclear capacity from 2020 by 2050.

Hydrogen - Korea Hydrogen Economy Roadmap 2040: Launched world's first power bidding market for clean-hydrogen-fired power generation and introduced measures supporting production, distribution, and utilisation of clean hydrogen. Government notified three hydrogen hubs in the country and held its first Hydrogen Cooperation Dialogue with Japan for bilateral private-led hydrogen supply chain cooperation for clean hydrogen and its derivatives such as – green ammonia.

Targets

↓ **40%** Reduce GHG emissions by 40% by 2030 (NDC)

↑ **22%** Increase the share of renewable energy capacity to 22% by 2030

Outlook for 2025 & beyond

- We expect large-scale investment in offshore wind power generation and gradual establishment of complementary infrastructure such as ports.
- Opportunities for companies specialising in areas such as small modular reactor construction, nuclear fuel supply chain where we expect increased momentum.
- Clean Hydrogen Portfolio Standards which incentivises power producers by offering long-term contracts is likely to encourage companies to invest in electrolysis and liquid hydrogen projects including hydrogen-fired electricity generation. However, as observed with the recent clean hydrogen power auctions, high costs of importing low-carbon hydrogen are likely to remain a challenge for companies.

Source: MUFG compiled from MOTIE, Hydrogen Insight, The Korea Economic Daily, World Nuclear News, Korea Times, and various public sources.

Hong Kong – Thrust on Solar, LNG, bioenergy and hydrogen

Net Zero Target
2050

Solar
Wind
BESS
Hydro
Geothermal
Bioenergy
CCUS
H_2 Hydrogen
Nuclear
LNG

Energy Mix in 2023

Major Policy Updates in 2024

Hydrogen - Strategy of Hydrogen Development and Technical Guidelines on Hydrogen Fuel Application: Aims to increase the production of hydrogen energy and make it a key component of the energy mix. Focus is also on enabling increased uptake of hydrogen especially in the transport and power sector. For instance, subsidy scheme for trials of hydrogen fuel-cell heavy vehicles. The strategy revolves around improving legislations, establishing standards for hydrogen and aligning with market practices etc.

Bioenergy - Action Plan on Green Maritime Fuel Bunkering: To develop Hong Kong into a high-quality green maritime fuel bunkering centre and provide bunkering services to ocean-going vessels on green maritime fuels such as LNG and/or green methanol. The policy aligns with mainland China's 14th Five-Year Plan (2021-2025) that calls for schemes towards development of green ports and use of clean maritime fuels.

Solar Energy - New Feed-in-tariff (FiT) for Solar: Govt announced new FIT rates for solar energy and introduced measures for installation of solar PV systems in open car parks by private sector.

- The measures support Hong Kong's Climate Action Plan 2050 which also aims to encourage the private sector to build renewable energy systems on their land and private properties by benefiting from government support and financial incentives.

Targets

↓ **50%** Reduce carbon emissions by 50% before 2035 as compared to the 2005 level (NDC)

↓ **70%** Reduce carbon intensity by 65% to 70% by 2030 using 2005 as the baseline

Outlook for 2025 & beyond

Green transportation is one of the four decarbonization strategies along with net-zero electricity generation, energy saving and green building, and effective waster reduction under Hong Kong's the Climate Action Plan 2050. To leverage the established hydrogen production facilities in Guangdong, we expect more developments around hydrogen-ready facilities and legislations.

✓ Watch out for an amendment relating to the production, storage, transportation and application of hydrogen fuel (2025).

As the government has set clear action plan to become a high-quality green maritime fuel bunkering centre, look out for Green Maritime Fuel Bunkering Incentive Scheme (2025) and govt tender for green maritime fuel storage project (2025)

Source: MUFG compiled from The Strait Times, Asian Power, Civic Exchange, The Maritime Executive and various public sources.

Taiwan – Transitioning from coal and phasing out nuclear

Net Zero Target
2050

Solar
Wind
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Hydro
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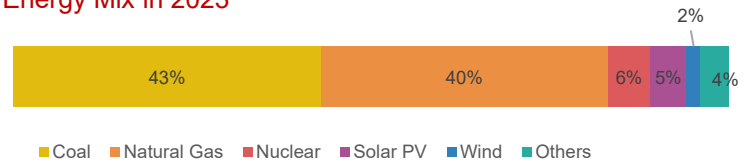
LNG

Energy Mix in 2023



Major Policy Updates in 2024

Solar and Wind Energy – Amendments to Green Power Flexible Allocation directives: Ease of PPA restrictions for corporates by relaxing the need to procure entire renewable energy output of a plant, allowing more flexible procurement from multiple facilities.

- This aligns with government's aim to increase the proportion of green electricity available for industrial and large energy consumers and support their transition from coal in line with Taiwan's NDC of reducing emissions by 23 to 25% by 2030.

Wind energy - Relaxation of local content requirements for offshore windfarms: Government dropped local content requirement policy that was introduced in 2021 and proposed change aims to reduce restrictions for wind energy developers. Going forward, developers would not be mandated to meet a specific localisation level as part of the eligibility. The move is targeted towards increasing green energy supply (5.G GW from wind sources by 2026) while enhancing grid connectivity and energy security.

Although no major policy updates were observed in green hydrogen, government continued its feasibility studies for a regulatory framework to support its NDC and net zero ambitions.

Targets

↓ **25%** Reduction emissions by 23 to 25% by 2030 (NDC)

↑ **22%** Increase the share of renewable energy to 22% by 2025

Outlook for 2025 & beyond

- We expect that the amendments to green power procurement guidelines will increase demand for green electricity by the manufacturing sector which is likely to stimulate financing in renewables.
- Easing of local content mandate will encourage foreign offshore wind developers (particularly from Europe) to increase their stake in Taiwan's offshore wind projects as the localisation mandate was a key barrier for their participation.
- Expect increased uptake of green hydrogen projects especially, in industrial and transport sector.
  - ✓ Watch out for Taiwan's National Hydrogen Development Strategy and Applications (2025).

Source: MUFG compiled from Riviera, Asia Nikkei, The Asset, Taiyang News, Recessary, Norton Rose Fulbright, and various public sources.

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