



PHNOM PENH REFLECTIONS

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The 5th East Asia Energy Forum (EAEF5) was held on the 12th of September 2022 organised by the Economic Research Institute for ASEAN and East Asia (ERIA), Energy Research Institute Network (ERIN), and the Ministry of Mines and Energy, Cambodia

With the theme 'ASEAN's Challenges on Carbon Neutrality and Energy Security', the Forum was held both virtually and in-person with opening speeches by H.E. Mr Suy Sem, Minister of Mines and Energy, Cambodia, and H.E. Dato Lim Jock Hoi, Secretary-General of ASEAN. Keynote speeches were given by Energy Ministers from Brunei Darussalam, Indonesia, Japan, Philippines, Thailand, and the United States,

EAEF5 has been a great success with insightful presentations and active discussions about challenges as well as opportunities for resolving the climate and energy security challenges together.

Since the 4th EAEF in September 2021, both the global energy landscape and climate strategies have changed significantly. On one hand, global ambitions for carbon neutrality were further intensified by the adoption of the Glasgow Climate Pact which aims to limit the rise of global average temperatures to 1.5 degrees implying a 45% reduction of global CO2 emissions by 2030 and net zero emissions around mid-century. On the other hand, global energy prices become volatile and fossil fuel prices have risen steeply, due to underinvestment. The global energy supply is not catching up with robust post-COVID-19 demand recovery.

The Implication of Russia - Ukraine War to Regional Energy Situation

The Russia-Ukraine War further exacerbated imbalances of global fossil fuel demand-supply, stoking inflationary pressures and slowing pandemic recovery. The immediate reduction of oil supply due to the collective efforts of Western-led sanctions on Russia has recast global energy trade and made oil markets vulnerable, putting pressure on



global fossil fuel supply security even though fossil fuels will still be needed in coming decades. This is causing the increase of overall energy costs and deepening energy security concerns around the world.

The decline in natural gas supply from Russia has significantly impacted global supply chains and led to unprecedented soaring spot prices. Asian countries are experiencing serious impacts from the gas crisis. Global LNG flows are increasingly redirected to Europe which aims to decrease dependence on Russian pipeline gas. Since European utilities are willing to pay more, developing and emerging economies of Asia are obliged to curb their LNG procurement.

The Russia–Ukraine war is a wake-up call about the need for energy supply security. Periods of high fossil fuel prices offer stronger incentives to move away from the reliance on imported fuels and use them more efficiently. This may accelerate more efficient use of energy and a shift away from fossil fuels, driving down costs of renewable energy quicker than expected.

However, energy system transformation cannot happen overnight. Since energy supply disruption and energy insecurity are damaging current daily life and industrial activity, supply security of fossil fuels has become the top priority in most countries including ASEAN member states. Under such conditions, the gap between actual energy trends and desirable energy transition pathways deriving from the Paris Agreement and the Glasgow Climate Pact could widen further. This energy crisis could be prolonged and there are no immediate alternatives to oil and natural gas. Any new investment in energy projects could take time. Thus, achieving energy security simultaneous to climate mitigation—especially with an affordable price—has become far more complicated.

Crucial Role of Natural Gas

Secure and stable Natural gas supply is particularly crucial for the ASEAN region in order to pursue the goals of energy security and low carbon energy transition. Switching from coal, which is the predominant fuel in power generation in the region, to gas is regarded as a pragmatic short- and mid-term means for reducing GHG emissions towards 2030. Current LNG price hikes could discourage such fuel switching and allow coal to remain in the regional energy mix longer than expected.

Delaying the shift to natural gas could also hinder further penetration of variable renewable energy (VRE). Inherent characteristics of VRE namely, intermittency, low-



capacity utilisation ratio and seasonality (rainy season and dry season) call for back-up systems for balancing power demand and supply at the grid level. Since battery technologies are still expensive, the need for operational flexibility of natural gas will increase in accordance with the growing share of VRE. Gas price hikes could discourage rapid penetration of VRE.

Amelioration of natural gas demand-supply imbalances cannot be achieved by ASEAN and East Asia countries alone. Global efforts, including enhanced energy efficiency, power generation from other sources, across-the-board ramping up of natural gas and LNG production, optimisation of gas infrastructure (e.g. storage capacity), and investment in natural gas from upstream to downstream are crucial.

Securing necessary investments in natural gas is particularly important. On-going global trends to phase out fossil fuel investment, including natural gas, for the sake of 1.5 degrees temperature stabilisation goal could discourage investment in addressing current energy security concerns and result in prolonged economic difficulties in both developed and developing countries. It should be acknowledged that ASEAN member states are experiencing much higher energy demand growth, a higher share of fossil fuels in the current energy mix, and not necessarily favourable endowment of VRE resources.

Securing Affordable Energy Transition Pathways

An increasing number of ASEAN countries have announced their respective carbon neutrality goals prior to or at the COP26. However, carbon neutrality cannot be achieved by a mere target announcement. Pathways towards carbon neutrality may vary between countries. Availability, accessibility, and affordability of energy supply as reflected in the APAEC (ASEAN Plan of Action of Energy Cooperation) is the most fundamental requirement for ASEAN member countries.

ERIA's technology optimisation analysis for decarbonising ASEAN energy mix towards carbon neutrality in 2060, produced in collaboration with the Institute of Energy Economics of Japan (IEEJ) suggests that i) energy efficiency improvement and electrification in end-use sectors, combined with low-carbon power supply, are core strategies for decarbonising ASEAN energy systems ii) not only VRE, but also other



carbon-free technologies (hydro, geothermal, biomass, nuclear, CO₂ free hydrogen and CCUS) and negative emission technologies, as well as forest carbon sinks, should contribute to carbon neutrality iii) during transition periods, fuel switching from coal to natural gas, deployment of more efficient turbines, and co-firing with hydrogen or ammonia, all play important roles iv) while affordable technologies will be deployed in the mid-term, more niche but expensive technologies would be required in the last stage of complete carbon neutrality v) for political, economic, and social acceptability, mitigation costs must be reduced through technology innovation, large scale deployment, and regional/international cooperation

Role of Electric Vehicles and Battery Storage Systems

The most rapidly increasing areas in energy demand are occurring in the electricity, transport, and industrial sectors. Intermittency is one of the main barriers to adopting higher shares of VRE in electricity generation. Without an adequate plan for electricity storage, a too hasty penetration of VRE would risk blackouts. Electricity storage, i.e., batteries, will therefore play a key role in integrating VRE to the grid. Electricity storage technologies shall also provide stability services to mini-grids, improving the power quality, and increasing the potential share of VRE in remote grids.

While the cost of VRE and batteries is falling globally, these costs are still relatively high in ASEAN countries. Therefore, it is essential that governments set up integrated technology strategies including incentives and legal mechanisms to support deployment of electricity storage systems to facilitate the integration of VRE into the grid.

In ASEAN, electrification of mobility will suit decarbonisation objectives only if it goes hand-in-hand with a growing share of non-fossil fuel in power generation. The potential of electric vehicles (EVs) to provide vehicle-to-grid (V2G) flexibility services deserves consideration. This will enable greater penetration of VRE. EVs should not be passive participants in the process of energy transformation. It is therefore crucial that ASEAN countries pursuing mobility electrification also promote massive decarbonisation of the power sector in one integrated strategy. Absorption of alternative mobility fuels such as biofuel is also useful for decarbonisation.



Financing Energy Transition Technologies

There are numerous opportunities to reduce emissions in the ASEAN region. The transition to carbon neutrality will have to safeguard energy supplies against this backdrop, recognising some countries' limited ability to leap suddenly to renewable energy due to economic constraints and ability to pay huge costs of decarbonisation. Thus, climate sustainability will need to be considered together with energy security, affordability, and reliability of supply.

Various governments and international organisations have established standards and guidelines to ensure that financial flows are consistent with a pathway towards carbon neutrality. However, these tend to focus on green technologies rather than transition technologies, and often have limited relevance to the ASEAN region.

ASEAN has a different energy landscape compared with North America and the European region in terms of economic development, current energy mix, resource endowment, and cross-country or inter-regional interconnections. Such differences do not justify simplistic application of standards and guidelines applied in advanced countries.

Therefore, ASEAN stakeholders including governments, financial institutions, and the private sector, will need to clearly identify the appropriate transition technologies, while simultaneously promoting renewables and clean technologies. Given that high dependence on fossil fuels could continue in the region, improved emission reductions are necessary through the introduction of highly efficient combined cycle gas turbines (CCGT), coal and ammonia co-combustion, gas and hydrogen co-combustion, and coal and biomass co-combustion in power generation with the possibility of CCUS, are vital and relevant for the just transition towards carbon neutrality. Gradually, transition technologies will need to be identified and financed for all sectors.

The government, private sector, banking sector, and other financial institutions should not hesitate to fund such identified transition technologies together with renewable and clean technologies. In addition, Asian countries should raise their voices in the international debate on green finance so that diverse national/regional circumstances could appropriately be taken into consideration. In this way, the smooth transition that considers energy security, affordability, reliability, and climate change altogether could be ensured.