Expert Working Group on Universal Access to Modern Energy Services, Renewable Energy, Energy Efficiency and Cleaner Use of Fossil Fuels

Associated Event: 10th Asia-Pacific Forum for Sustainable Development

Eighth Meeting

Date: March 30, 09:00-16:00 (GMT+7)
Format: Hybrid (MR-G, UNCC and MS Teams)

Background

ESCAP at its 73rd Commission Session in May 2017 adopted Resolution 73/8 Strengthening regional cooperation for sustainable energy development in Asia and the Pacific which requested the secretariat to conduct analytical studies, compile and disseminate relevant energy information and data. The Commission also established two expert working groups under Committee on Energy:

- the Expert Working Group on Energy Connectivity; and
- the Expert Working Group on Universal Access to Modern Energy Services, Renewable Energy, Energy Efficiency and Cleaner Use of Fossil Fuels (EWG-SDG 7).

The Eighth Meeting of EWG-SDG 7, was held in hybrid mode on 30 March 2023, sought expert inputs on the challenges faced by member States in identifying appropriate energy technology choices to underpin the energy transition and the delivery of global agendas such as SDG 7 and the Paris Agreement. In addition to the widespread uptake of renewable energy and advanced energy efficiency, countries are examining how to adopt other low carbon technologies or to enhance the sustainability of existing technologies.

Previusly, on 13 December 2022, the Seventh Meeting of EWG-SDG 7 was held. Participants discussed two topics -the progress of SDG7 roadmap development; and the application of national cooling action plans in countries of the region. The need for countries to develop concrete strategies to transition towards net zero emissions by 2050 was discussed in depth and several countries outlined their plans for net zero which included technologies such as gas and nuclear energy.

The 8th EWG meeting built on that discussion by considering the roles that both low and zero carbon technologies can play in the energy portfolios of member States. The meeting solicited advice from experts on the role of these technologies in the energy transition; their social, environmental and economic trade offs; and provided guidance on how the secretariat can support countries develop strategies to reach net zero emissions by 2050.

Key Questions and Outcomes

This 8th EWG examined the following key guiding questions:

1. What are the latest developments in the principal technologies that can underpin the energy transition –including solar, wind, hydro, energy efficiency, natural gas and nuclear?
2. What are the opportunities presented, and trade offs to be managed in these technologies to support the region's energy transition?
3. What are opportunities for regional cooperation to support the deployment of these technologies and to mitigate any negative impacts?

Summary of Discussions

Session One – Technologies in Focus

Opening and introductions

The session was opened by Mr Hongpeng Liu, Director of ESCAP Energy Division and Mr Minoru Takada, Team Leader, Sustainable Energy, UN DESA.

Presentations

Ms Ksenia Petrichenko, Energy Efficiency Policy Analyst at the International Energy Agency, provided an introduction on the mitigation potential of energy efficiency in the Net Zero Scenario. She described what is necessary to realise the net zero pathway by 2030, including:

- an increase in energy investments (must increase by almost 6 fold in emerging and developing economies)
- a substantial change and improved organisation of power systems
- demand-response availability will need to increase tenfold, mostly coming from the building sector

Ms Petrichenko noted that, while progress is occurring to improve energy efficiency, concerted action by governments around the world is necessary. This will be the primary focus of the IEA's Annual Global Conference on Energy Efficiency scheduled for May 2023.

Ms Liming Qiao, Head of Asia, Global Wind Energy Council, provided an outline of the Asia-Pacific wind market, as well as observed current data around the cost of wind and the role of the new offshore wind sector, which is key to meeting net zero targets. She noted that the global wind energy industry saw cumulative wind installation in the Asia-Pacific region grow to 437GW in 2022, representing 56% of global new installation and 48% of the global total installation.

Ms Qiao also reflected on the offshore wind market, 72% of which is located within the Asia-Pacific. Turbine size has been growing dramatically and an aggressive cost reduction trend will further reduce the levelized cost of energy (LCOE) of wind in the future. LCOE has fallen due to:

- technology improvements
- higher capacity factors

- developer experiences

Ms Techi Capellan, Secretary-General, APVIA; CEO, SunAsia Energy, presented on ASEAN decarbonisation pathways, noting ambitious renewable energy targets for 2030 by Indonesia, Malaysia, Philippines, Thailand and Viet Nam. The principal challenges to further decarbonisation comprise limited investment, excess fossil fuel capacity, weak grid infrastructure and a centralised supply chain.

Ms Capellan offered possible pathways forward, such as storage solutions to address grid stability, hybrid solutions where renewables are paired with storage technologies, investment in OneASEAN grid, creating innovative financing mechanisms and closer cooperation with China, for example by mobilising Chinese capital through BRI.

Ms Amina Kadyrzhanova, Sustainability Specialist, International Hydropower Association presented on the way hydropower is key to a renewables-based future. As hydropower has a lot of potential in the Asia Pacific region, she presented a new 'Hydropower Sustainability Standard', designed to demonstrate sustainability and unlock international funding. The Standard covers twelve environmental, social and governance (ESG) topics, including: Biodiversity and Invasive Species, Indigenous Peoples, Cultural Heritage and more. Reflecting on the earlier presentations, **Mr Michael Williamson** noted the synergies between hydropower and other types of renewable energy, including floating solar on reservoirs. Hydropower is an important complement for variable renewable energy due to its dispatchable nature and integration with storage. He also expressed that he was impressed that these sustainability standards came from industry, who will be integral to institutionalising these best practices.

Mr Bharadwaj Kummamuru. Executive Director, World Bioenergy Association, presented on the global outlook on bioenergy, the largest renewable energy source globally. Some 85% of biomass comes from the forestry sector, and 10% from the agriculture and animal sector. He outlined that there were industrial decarbonisation opportunities in shifting from gas fired boilers to biomass for significant cost savings in Asia. These are sometimes hard to abate sectors, but not too difficult where biomass heating opportunities already exist.

Mr Michael Williamson acknowledged the interesting presentation, but noted that no one technology would be a silver bullet to achieving SDG7, but rather the issue is how countries can combine these technologies. He opened the floor for questions.

Q&A

Ms Stephanie Held, UNDP, asked whether the panel had considered the impact of critical raw materials and the social response to increased demand. **Ms Qiao** answered that supply chain constraints were identified as a key concern for the industry. While there is no quick fix, she acknowledged that there are challenges to meeting net zero. She highlighted the need to repurpose training and build capacity to carry out these opportunities.

A participant asked a question about the impact of scaling modern bioenergy in relation to food security concerns and deforestation. **Mr Kummamuru** responded that, although it is hard to generalise, there has been a shift from crop-based biofuels to non-edible crops for

production. At the same time, other regions are seeing excess food wastage being diverted to ethanol production. There is not a direct correlation between food prices and biofuel consumption. However, there is a significant impact of biomass on forestry. Modern biomass uses wood residues which is not a significant deforestation concern.

A representative from the **Chongqing Renewable Energy Society** made a comment with suggestions and ideas on how to accelerate deployment of renewable energy in the region.

Presentations

Mr King Lee, Director Harmony Programme, World Nuclear Association, discussed the role of nuclear energy in contributions to low carbon energy and an overview of nuclear technology, covering uranium, mining, utilities and power plant construction, and waste management. Nuclear energy is the second largest share of low-carbon electricity in the world today, with both advanced and small modular reactors offering use applications to decarbonise.

Mr Lee noted that nuclear is a catalyst for economic development and provides high investment into local and regional economies. He noted it had the lowest lifecycle GHG emissions of any low-carbon technology and had a low impact on cumulative human health and low ecosystem damage.

Mr Henri Paillere, Section Head-Planning and Economic Studies, International Atomic Energy Agency, also presented on nuclear energy as a way to secure net zero. He offered support to ESCAP member States in energy planning and capacity-building, noting that 7 out of 26 newcomer countries at IAEA were ESCAP members.

Mr Paillere noted a growing optimism in the role nuclear power could play, with a high case scenario of 873GW by 2050, which included long-term operation of existing plants and about 588GW of new builds over three decades. New nuclear is more expensive than solar PV and wind. However, nuclear can lead to a lower cost energy system and is estimated to avoid 70Gt of CO2 over five decades. Security of supply is becoming a driver of the deployment of low-carbon energy technologies as uranium resources are widely available and nuclear fuel can be easily stored on site.

Mr Michael Williamson commented that both presentations brought understandings to the table, resonating with the theme that a basket of technologies is required for decarbonisation. He also acknowledged that many economies in the Asia-Pacific region are using nuclear power.

Mr David Cavanagh, Managing Director, Integrated Energy Pty Ltd, presented on hydrogen opportunities in the Asia-Pacific region. The hydrogen ecosystem is a key link in the chain to decarbonise. The main method is green hydrogen produced from green hydrogen or wind or solar, it can also be produced by nuclear or biomass, or conventional methods like natural gas with carbon sequestration.

Mr Cavanagh expressed that there is a rapidly narrowing window of opportunity to enable climate resilient development. In terms of the percentage reduction, land transport, buildings, industry and electricity could all be enabled by significant contributions from hydrogen (as much as 80Gt of CO2 abatement by 2050). It was noted that there are large

opportunities for sustainable, economic application of hydrogen and renewable energy across Asia and the Pacific, supported by learnings from Australia.

Q&A

A participant asked a question about the impacts of upstream dams and infrastructure on downstream communities and the social cost of hydropower adoption. **Ms Kadyrzhanova** answered that the new hydrogen standards would engage stakeholders in upstream and downstream dams and basin-level planning. Industry is taking the social impacts of projects very seriously.

Ms Stephanie Held, UNDP, questioned the role of hydrogen and nuclear in addressing modern energy access for all and access to clean cooking. **Mr Lee** responded that there is a need for the capability and capacity of nuclear power to be increased within Asia to deploy. **Mr Cavanagh** noted that hydrogen does not need to be applied on large, million-dollar export scale, but on a small-scale in remote communities. He referred to experiences applying hydrogen to communities in outback Western Australia, displacing 10% of diesel use without constructing any new infrastructure.

A government representative participant directed two questions to Ms Kadyrzhanova. The first around the role of pump storage hydropower in addressing climate change and the second around the lowering LCOE of hydrogen over the next decade. **Ms Kadyrzhanova** responded that pump storage schemes are a good example of energy storage, such as repurposing old mines. **Mr Cavanagh** responded that, with the downward cost trend and more efficient conversion of hydrogen, there is an expected tipping point well within the next decade. He expects that to be produced at scale and available commercially within the next 10 years.

Another government representative offered to provide inputs to a discussion on cleaner use of coal at the next session of the expert working group.

Special Presentation: Global Cooling Pledge

Ms Lily Riahi, Global Coordinator, Cool Coalition, presents on the global cooling pledge that is being developed under COP28, under the UNEP-led Cool Coalition. Increasing access to cooling is critical for reducing food loss and improving access to medicines, however cooling undermines the energy transition as it is the largest growing demand of energy use in Southeast Asia.

Ms Riahi noted that the energy consumption of cooling, if we were to continue with business-as-usual, would be equivalent to energy use in China and India. Cooling is a blind spot of the energy transition. To ensure resilient and secure energy systems that can support economic growth, we must achieve efficient cooling. The Global Cooling Pledge will feature prominently at COP28.

Mr Rama AlShamsi, OSECC, was invited to speak, emphasising that cooling is contributing to the climate crisis. Over the last year of consultations, there has been a diverse range of actors who have raised cooling as among their top climate concerns. In response, he presents COP28 as the 'Cool COP'. **Mr Arjit Sengup,** Bureau of Energy Efficiency, India

asserted that the Cooling Pledge would be linked to SDGs, acknowledging that emerging economies have some of the lowest rates of access to cooling, but will increase that cooling demand in the future.

Session Two – Natural Gas in the Spotlight

Mr Sergey Tulinov, Energy Division, ESCAP, presented the study "the regional snapshot on natural gas", representing the role natural gas can play in achieving the sustainable energy transition in Asia and the Pacific. The region has almost reached 100% electrification and Asia is now the world's largest consumer of energy resources with the largest potential in terms of reducing emissions. At the same time, natural gas can play a greater role in:

- achieving CO_2 emission reductions in comparison with coal and oil
- coal-to-gas switching in power generation
- increasing access to modern cooking fuels
- producing blue hydrogen

Mr Tulinov noted that Asia and the Pacific has all the competences for establishing a gas value chain and huge potential for cross-border cooperation.

Mr Branko Milicevic, Sustainable Energy Division, UNECE, was invited to present on the work of the Group of Experts on Gas, which includes biomethane, biogas, hydrogen, among others. Its current activities include gas and SDGs, methane management, net zero through synergies between renewables and gases, hydrogen energy, system resilience and security of supply, CCUS etc.

Mr Milicevic noted that hydrogen has been used as a feedstock for more than 100 years. However, only 5% of green hydrogen has reached financial investment decisions within the EU. He emphasised that, to determine whether hydrogen projects are sustainable, a complex classification that goes beyond colours must be developed. One that does not only talk about how many kg of CO2 is produced but other things like socio-environmental impacts.

Roundtable Discussion

Ms Valerie Ducrot, Executive Director, Global Gas Centre, moderated the roundtable discussion.

Mr Supawat Tatthong, Vice President of LNG Supply Department, PTT (Thailand), discussed the role of natural gas and LNG in the energy transition. He acknowledged that natural gas remains an important energy source for ASEAN countries, seeing the largest demand from China. Japan, South Korea and Taiwan, who depend heavily on LNG imports to respond to their gas demand. For Thailand, he stated that natural gas is Thailand's primary power generation source, and demand is only expected to grow. Due to its sufficient infrastructure and government support, Thailand has developed a natural gas value chain from upstream to downstream to fulfill country demand.

Ms Ducrot asked where PTT would be in 10 years, to which **Mr Tatthong** responded that PTT has the intention to respond to global trends and climate change, but natural gas plays a role

in that transition. A government representative asked a question whether PTT had a strategy on developing natural gas for vehicles, while a representative from the **Asian Development Bank** questioned the role of gas as a transitional fuel. **Mr Tatthong** noted that PTT is using corporate natural gas for transportation as well as promoting its use in marine transport. He reiterated that gas infrastructure and financing is planned for the next 20 years, and that gas will play a role to meet energy demand needs alongside renewables.

A participant enquired about the role of Thailand and its strategic location in the LNG sector. **Mr Tatthong** answered that Thailand can support the region as counter-seasonality and LNG storing can provide security.

Ms Earl Rivera-Dolera, Lawyer, Head of International Arbitration, Frasers Law Company, explored the role of natural gas from the perspectives of a developing economy. In ASEAN, Viet Nam leads wind and solar uptake, while Philippines is following with hydrogen facilities opening in 2024. She noted that the top five foreign investors in the renewable energy and natural gas space in Viet Nam were from Singapore. Among the next key milestones for Viet Nam will be:

- Approval of PDP VIII.
- Development of legal framework for renewable energy.
- Amendment to national masterplan and relevant sectors' masterplans.
- Development of incentive programs to attract private investment.

Participant discussions focused on energy tariffs in Viet Nam, the role of natural gas in the national energy transition plans, establishment of the Just Energy Transition Partnership (JETP) in Vietnam and other relevant topics. **Mr Takuro Yamamoto**, Chief Representative, Tokyo Gas, presented on the role of natural gas in meeting Japan's energy needs. LNG supply sources are diversified globally to avoid geopolitical risks such as depending too much on certain regions and sea routes. The presentations key messaging outlined that:

- The energy market is facing a complex situation (post-COVID recovery, crisis in Ukraine).
- It's important to configure a diversified energy mix to secure supply of security.
- Natural gas and LNG will play a vital role in the current energy system.
- Every stakeholder in the value chain must tackle decarbonisation challenges.

Participants from the floor questioned whether natural gas is sustainable ultimately in the context of global energy security. **Mr Yamamoto** noted that natural gas has abundant reserves, and the market is confident in the volume of natural gas. Another **participant** asked whether Japan had seen financial shocks in the gas market. **Mr Yamamoto** responded that 30M tonnes of LNG are off long-term contracts which is decoupled from the market price.

Mr Sobhith Komalavally Hariharan, Global Newbuild Support Manager & Gas Technology Specialist, Lloyd's Register, presented next, speaking on natural gas from a marine perspective. International shipping is contributing to 9% of global transportation CO_2 emissions, however, natural gas is functioning as a key enabler for maritime decarbonisation. He noted that the marine industry is enabling the low-carbon gas value chain through large-

scale transportation for thermal power plants and industrial application, including development of liquified CO_2 carriers for offshore sequestration and liquified hydrogen carriers.

Participants from the floor asked questions on the evolution of Lloyd's in the next decade and the difficulty of hydrogen being transported in the future. **Mr Hariharan** said he expected to see ships increase in operational efficiency and cleaner fuel alternatives. Addressing the hydrogen question, he responded that there is a huge difference in terms of geothermal properties. Hydrogen requires ships to use energy-intensive vacuum tanks. Currently, there is no finalised design or suitable materials to have large capacities of hydrogen transported.

Ms Xu Qinhua, Director of the Centre for International Energy and Environment Strategies Studies, Renmin University, presented on the role natural gas plays in the synergy of energy-water-environment security in Central Asia, highlighting a case study of Sino-Central Asian natural gas pipelines. **Mr Sergey Turkin,** Head of Division, Gazprom, presented on possibilities for the coal-to-gas switching, asserting that it was the fastest way to decrease both carbon emissions and toxic emissions. Using examples from China and the UK, he presented on positive impacts of gas transitions. It is also the best option for transportation to reduce GHG emissions.

Mr Turkin also discussed developments in marine bunkering being undertaken in Russia by Gazprom in 2022 in the ports of the Baltic Sea. Sustainable development should not only be climate-friendly but cognisant of water use, land use and rarity of earth minerals. He stressed that gas is the winner in all these aspects.

Ms Ducrot thanked all presenters for their insights.

Interventions from discussants

Mr Dingheuy, National Energy Administration of China, presented on the oil-to-gas switch underway in China. Difficulty in maintaining high-level outputs and high cost of production is seen in late-stage oil exploration. To increase the supply of oil commodities and to upgrade the energy production and supply structure, China is using three principles:

1. diversified development (onshore and offshore, centralised and distributed, single scenario and comprehensive scenarios);
2. systematic development to realise the unification of energy security; and
3. ecological priorities.

He also identified four main objectives, including the exploration of wind and solar resources of the oil fields; advancing the exploration of offshore oil and gas, while simultaneously developing offshore wind; promoting large-scale energy storage implementation; and proactively promoting the construction of green oil in gas field demonstration projects.

Dr Nuki Utama, Director, ASEAN Energy Centre, made a comment on ASEAN regions demand for natural gas, which is expected to increase to 300 million cubic metres by 2050. However, according to ASEAN Energy Outlook 7, it shows by 2025, the region will be net importers of

the natural gas. The latest data indicates that ASEAN natural gas demand was at 160 billion cubic metres in 2021. ASEAN is looking to:

- pursue the development of carbon gas market
- pursue opportunities of small-scale LNG, which include tax and fiscal incentives
- work on the ASEAN security agreement in providing opportunities of energy bunkering
- research methane energy reduction initiatives in oil and gas industries.

Mr Sergey Tulinov thanked all speakers and invited Mr Hongpeng Liu for his closing remarks

Mr Hongpeng Liu wrapped up the session with reflections on the context around energy efficiency, solar, wind, bioenergy, hydrogen, natural gas, and nuclear. He thanked the panellists for providing useful insights on the current status and challenges in these sectors. He also examined how these technologies, market and cost reductions have created great potential to contribute to decarbonisation.

Mr Liu acknowledged that governments and industry must manage these trade-offs between different technologies and mitigate negative impacts. He thanked participants for good comments about CCUS and other technologies that ESCAP can cover in the future. All these technologies present a good combination for countries to have an option based on their own national conditions. He highlighted that the just energy transition as a guiding principle was a key message that emerged during the discussion.

Mr Liu closed the session by thanking speakers and participants for their active contribution.