ERRA

21st Annual Conference
Energy Regulators Forum
CO-LOCATED WITH FGA

15 - 17 MAY 2024

Bangkok, Thailand

Adaptive Regulation in Energy Transition

Organised By ERRA

Hosted By

Energy Regulatory Commission
Office of the Energy Regulatory Commission

CONFERENCE DAILY NOTES | DAY 1 | WEDNESDAY, MAY 15, 2024

FUTURE ENERGY ASIA STRATEGIC SUMMIT OPENING SESSION

Sompop Pattanariyankool, Deputy Permanent Secretary of the Ministry of Energy of Thailand, during the Future Energy Asia opening session.

Hosted by the Ministry of Energy of the Kingdom of Thailand and co-hosted by PTT Group and EGAT, the Future Energy Asia Exhibition and Summit, incorporating Future LNG Asia and Future Mobility Asia, kicked off on 15 May 2024. During the three-day conference and exhibition, over 22,000 international energy professionals, investors, and innovators shall gather to influence, support and deliver Asia's clean energy vision.

The conference commenced with the opening remarks from Christopher Hudson, President of DMG events, Sompop Pattanariyankool, Deputy Permanent Secretary of the Ministry of Energy of Thailand, Wuttikorn Stithit, Chief Operating Officer - Upstream Petroleum and Gas Business Group of PTT Public Company Ltd. (PTT), and Tawatchai Sumranwanich, Deputy Governor of the Strategy, Electricity Generating Authority of Thailand (EGAT).

Christopher Hudson stressed the need for a pragmatic approach to enabling the future energy transition, securing supply, and decarbonizing the energy supply chain. Moreover, Christopher Hudson mentioned the need for regulatory support and innovation and highlighted the Energy Regulators Forum organized by ERRA as a key part of the Future Energy Asia event.

Sompop Pattanariyankool highlighted Thailand's goals to achieve carbon neutrality by 2050, net-zero by 2065, and to achieve 50% of energy supply by renewable energy by 2037. Thailand aims to achieve these goals through electrification, energy storage, biogas and biomass, solar and wind technologies.

Wuttikorn Stithit noted that PTT Group sees the increase of renewable energy and the decarbonization technologies as imminent. PTT strategy is to focus on 2 key pillars, the first is prolonging the competitiveness of their existing conventional businesses (oil and gas) through energy efficiency and gradual decarbonization, and as a second pillar investing on renewable energy, electric vehicles and energy storage value chains.

Tawatchai Sumranwanich highlighted that Future Energy Asia (FEA) shall serve as hub to facilitate collaboration and innovation during the energy transition period. Thailand's Power Development Plan is focused on achieving Energy Security, advancement of the Economy, and Environmental Friendliness through renewable energy, grid modernization, integration of future energy production innovations, reforestation, Carbon Capture Utilization and Storage (CCUS), and through support measures such as Energy Efficiency, and applying concepts of bioeconomy, circular economy, and green economy.

As part of the Opening Ceremony for the Future Energy Asia Strategic Summit, ERRA Chair, **Maia Melkidze** represented ERRA and the Energy Regulators Forum in the Ribbon Cutting Ceremony.

Maia Melikidze, ERRA Chair (third from the right), part of the Future Energy Asia Strategic Summit ribbon cutting ceremony.

ENERGY REGULATORS FORUM OPENING SESSION

Opening Remarks by Maia Melikidze (on the left), Chair of ERRA, and Samerjai Suksumek (on the right), Chairman of the Energy Regulatory Commission (ERC) of Thailand.

The Energy Regulators Forum kicked-off with opening remarks from ERRA's Chair, Maia Melikidze, and the Chairman of the Energy Regulatory Commission (ERC) of Thailand, Samerjai Suksumek.

The Chair of ERRA, Maia Melikidze, introduced the Energy Regulators Forum in Thailand as ERRA's gateway to the South-East Asian region and invited all regional regulators to join the ERRA group of regulators. Moreover, the importance of collaboration was highlighted in order to tackle the issues of the energy transition.

The Chairman of the Energy Regulatory Commission (ERC) of Thailand, Samerjai Suksumek, highlighted that the ERC is committed to the energy transition and to enhancing collaboration and knowledge sharing between Energy Regulators.

The Energy Regulators Forums were structured around four sessions, through 3 days of presentations:

Session 1: Safeguarding Energy Transition Goals
Session 2: Impact of Clean Energy Sources on the Grids and System Stability
Session 3: Mobilising Green Finance
Session 4: Facilitating Innovative Technologies for Energy Transition

Session I: SAFEGUARDING ENERGY TRANSITION GOALS

Session 1: Safeguarding Energy Transition Goals discussion panel.

Session I outlined the intricate clean energy transformation challenges that stand in front of the energy sector and will put the key actors that shape the response to them – policymakers and regulators – in the spotlight. As the energy transition is an ongoing global mission with complex regional and local risks and opportunities that have to be addressed with tailored legal frameworks, the session will identify high-level observations on where, when and how to employ them to the benefit of the energy system and the ultimate welfare of the end-consumers.

The session was moderated by ERRA Presidium Member, Dietmar Preinstorfer, Director of International Relations at E-Control Austria.

The discussion panel included Pierre Noël, Senior Energy Advisor at Tony Blair Institute (TBI) Global Advisory; Alejandro Hernandez, Principal and India and Global Opportunities Program Director at Regulatory Assistance Project (RAP), and Julien Perez, Vice President of Strategy & Policy of the Oil and Gas Climate Initiative.

Pierre Noël's presentation focused on accelerating the low-carbon transition in Southeast Asia. The presentation highlighted that the role of regulators in this context is to enable and to guide investments through emulating success cases, making the economic case for the energy transition, push efficiencies and successes through innovative regulatory interventions, and to enable future energy transition for incumbent companies and societies.

Alejandro Hernandez's presentation focused on the need for prioritizing decarbonization in the Energy Regulators decision-making process. The acceleration of electrification and renewable energy deployment expands the role of regulators in reforming regulatory procedures and overseeing and approving larger and multiple projects. The RETA report highlights the good examples of how regulators have been making decarbonization a priority, it identifies gaps where current regulatory frameworks hinder this and identifies examples which can be utilized by governments and regulators to achieve the acceleration.

The presentation highlighted examples where regulators' innovative procedures led to increased prioritization of decarbonization in the sector, such as in Michigan, Germany, and Australia.

The presentation concluded with the key message that regulators need to have decarbonization as an objective in legislation, carbon pricing, more resources to tackle the increased scope and clear communication channels to provide regulatory input for policymaking. On the other hand, the regulators need to anticipate the low carbon future in their decisions, reform regulatory processes and regulations (quicker, more proactive decisions) and advise governments on practical and technical implications of energy transition policies.

Julien Perez from the Oil and Gas Climate Initiative presented the perspective of National Energy Companies and their importance in the energy transition. The presentation highlighted a case study by the OGCI, where their objective to reduce methane emissions of natural gas. OGCI identified countries which large methane emissions with willingness to reduce emissions, however they lack technologies to address the issues. OGCI supported Iraq national companies in utilizing satellite technologies to initially identify sources of methane leaks or emissions, and then engaged with the company to fix the issue. The result was a significant reduction of methane emissions as soon as the sources were identified. 30 companies have signed up to the Oil and Gas Decarbonization Charter (OGDC), which includes a Net Zero emissions by 2050, Near Zero Upstream Methane Emissions by 2030 and near Zero Routine Flaring by 2030.

Discussion Panel and Q&A session

The discussion panel and Q&A session highlighted the importance of established technologies such as wind and solar - as well as innovation in accommodating these technologies - in the energy transition.

Alejandro Hernandez mentioned that the role of regulators changes based on the individual country context, however in all cases the role of regulators should be expanded. Moreover, regulators should be proactive in driving the conversation of the new roles of regulators, as well as utilize knowledge-sharing platforms between regulators.

Julien Perez noted that state-owned energy companies have the know-how and expertise to go through the energy transition and, if

given the correct price signals and incentives, are willing to shift to renewable energy. However, if there is a demand, and no suitable replacement for the revenues from oil and gas for state-owned companies, these companies will be more hesitant to shift their business model. Similarly, there is a need for identification of least-cost decarbonization pathways and a need to present business cases to countries for them to move forward with decarbonization. Julien Perez also talked about the need for clarity in policy and regulatory decisions, along with measures aiming to socialize the cost of decarbonization is crucial to enabling the energy transition.

REGULATORS' PANEL DISCUSSION SAFEGUARDING ENERGY TRANSITION GOALS IN ASIA

This Regulator's Panel Discussion aimed to explore strategies ensuring that Asian countries meet their energy transition objectives amidst growing demands and climate change challenges.

The panel was moderated by Phuwanart Choonhapran, Assistant Secretary General at the Energy Regulatory Commission (ERC) of Thailand.

The panellists consisted of decision makers in their respective energy sectors, namely, Rashdan Yusof, Chairman of the Energy Commission of Malaysia, Eugene Toh, Assistant Chief Executive of the Energy Market Authority of Singapore, and U Moe Thu Aung, Deputy Director of the Ministry of Energy of Myanmar.

The discussion panel highlighted the need for cooperation between ASEAN countries, and the importance of joining efforts in the push to decarbonization.

Rashdan Yusof, Chairman of the Energy Commission of Malaysia, noted that Malaysia is one of the few countries in ASEAN that is an oil and gas exporter, and that oil and gas is a large driver of economic development in Malaysia. The Malaysian National Energy Policy (2022-2024), apart from macroeconomic resilience and energy security, also includes social equity and affordability, and environmental sustainability. Malaysia aims to achieve net zero by 2050 through phasing out coal and increasing the renewable energy mix to 70% from around 7%, using gas as a transitional fuel, and through improving energy efficiency. Malaysia foresees investment needs of around 40 billion USD in grid development alone. Malaysia introduced the Energy Exchange Malaysia as a pilot program to exchange clean energy between neighbouring countries. The core concerns in Malaysia as per Rashdan Yusof are high subsidies in the gas sector, increase in tariffs as a result of reducing subsidies and consequently a poor business case for renewable energy. One solution that Malaysia is looking into is to initiate the green transition through the industry and large consumers.

Eugene Toh, Assistant Chief Executive of the Energy Market Authority of Singapore, presented the energy transition process of Singapore. The early stages of liberalization of energy markets in Singapore started in 2003 by introducing markets and the second

stage included increasing competition in the energy markets. Singapore's path to decarbonization revolves around increasing collaboration and competition in markets, through 4 strategies:

1. Maximizing solar deployment.
2. Switching to natural gas to ensure energy stability.
3. Increasing interconnections and cooperation with regional markets.
4. Introducing and planning for new technologies such as hydrogen, including technical, regulatory, and political capabilities.

Eugene Toh highlighted the Carbon Tax measure and its deployment to the Singaporean public as an example where decarbonization measures were implemented.

U Moe Thu Aung, Deputy Director of the Ministry of Energy of Myanmar, presented that Myanmar focuses their decarbonization efforts through introducing a) short-term, medium-term and long-term development plans; b) utilizing renewable energy sources with a target of 30% of the energy mix by 2030; c) promoting energy efficiency and conservation; d) promoting research and development; e) ensuring price affordability through energy pricing policies; and, f) implementing carbon neutrality, through electrification of mobility and CCUS.

Regulators Panel Discussion: Safeguarding Energy Transition Goals in Asia.

CONFERENCE DAILY NOTES | DAY 2 | THURSDAY, MAY 16, 2024

Session II: IMPACT OF CLEAN ENERGY SOURCES ON THE GRIDS AND SYSTEM STABILITY

Session II: Impact of Clean Energy Sources on the Grids and System Stability.

Session II of the Energy Regulators Forum focused on preserving system stability with increased penetration of renewable energy sources is a growing challenge in most jurisdictions. Session II analysed methods for monitoring the system and measuring the impact of variable RES and offered conclusions on possible regulatory methods and tools to promote and facilitate grid resilience.

The Session was moderated by **Jelena Diliene**, Board Member of the National Energy Regulatory Council (NERC) of Lithuania.

Session II was kicked-off by DNV – Energy Systems APAC, represented by **Peerapat Vithayasrichareon,** Principal Consultant, with a presentation on "Addressing Technical Challenges from High Penetration of Variable Renewables".

The presentation focused on managing the challenges of renewable integration through flexibility resources, which include interconnectors, storage and demand response, and policy, market and regulatory instruments. Depending on the integration phase of renewable energy in the grid, variable renewable energy sources pose different challenges, thus there is no one-fits all solution. Some of the solutions highlighted in the presentation are a) Electricity Grid upgrades, through cross-border interconnections and Flexible

Alternating Current Transmission System (FACTS); b) Flexible Generation that can provide inertia, fast frequency response, primary response; c) Storage, through batteries, Pumped Storage Hydro, and Hydrogen; and d) Demand Response, through load shifting, and smart meters.

Based on a study conducted by DNV, regional interconnection in the ASEAN can reduce the need for investments of 600 GW of solar, 1.2 TWh of electricity storage and 16 TWh of hydrogen storage, due to sharing low-cost and low-carbon resources. The benefits of regional interconnection in the ASEAN region can lead to cost savings of up to 800 billion USD in decarbonization. The challenges to cross-border interconnection development include technical barriers, financial and economic (funding, market structure, financial resources), and policy and regulatory frameworks (diverse policies in the region, uncertainty on the political will, and lengthy regulatory processes). The report stresses a need to harmonize regional policy and regulatory frameworks, to address financial risks and uncertainty, and to secure supply chain and resource development in the ASEAN region.

The session was followed by a presentation from **Nazim Khiari**, Senior Advisor at the Council of European Energy Regulators (CEER), and a presentation from **Isaac Portugal Rosas**, Energy Analyst on the Clean Electricity Transition at the International Energy Agency (IEA).

Peerapat Vithayasrichareon, DNV – Energy Systems APAC (left), and Jelena Diliene, National Energy Regulatory Council (NERC) of Lithuania (right).

Nazim Khiari's (CEER) presentation on the "Main Barriers for Investments to Accelerate Grid Expansion", focused on the European context on barriers to investments, based on the joint report from ACER and CEER "Position on Anticipatory Investments".

The presentation highlighted that permit granting is the main reason for delays in key projects, and certain aspects of national frameworks can discourage anticipatory investments. The ACER and CEER report recommends reducing planning uncertainty, improving coordination and information exchange among network users, operators, and regulators, regularly updated public "hosting capacities" maps, strengthening the role of regulators, and introducing separate approvals for permit granting and construction, among others.

Isaac Portugal Rosas presented the Regulatory Energy Transition Accelerator's (RETA's) flagship project on Regional Interconnection and the joint RETA and IEA Report on Electricity Grids and Secure Energy Transition. The presentation highlighted that their different regions and countries are at various stages of the power integration process. Depending on the level of regional integration, different regulatory frameworks are possible. Regional Regulators, where designated, provide regulatory oversight, harmonisation of investment recovery methodologies and regional market frameworks, and monitoring of joint electricity markets and market participants.

The key enabling factors for successful regional interconnection initiatives are a) strong political will to co-operate, b) Sound cross-border trading rules and transmission regulation, and c) Regional institutions with clear and significant executive power.

Two case studies were presented during the second Session, specifically the:

- Hawaiian case study on System Stability in an Island Grid System, presented by **Lorraine H. Akiba**, President/CEO of LHA Ventures and Former Commissioner at the Public Utilities Commission (PUC) of State of Hawaii, USA; and
- India case study on Reliable Operation of the Power System with High Variable Renewables Penetration, presented by **Rajiv Kumar Porwal**, Director of System Operation at Grid India.

The Hawaiian electric system is comprised of 6 separate island grids with no interconnection and transmission capability between islands, thus each island grid operates independently for energy generation and system balancing. The State of Hawaii aims to achieve 100% renewable electricity by 2045. Apart from large-scale wind and solar generation, Hawaii also has the largest amount of installed rooftop PV in the United States. Due to the isolated grid system, the Hawaiian Energy Regulator was given a high degree of freedom to implement regulatory policies separate from the US main grid.

Lorraine H. Akiba, President/CEO of LHA Ventures and Former Commissioner at the Public Utilities Commission (PUC) of State of Hawaii, USA (left), and Kumar Porwal, Director of System Operation at Grid India.

The Hawaiian through regulatory frameworks the regulator enabled the introduction of grid modernization technologies, such as technologies which allow quick response and ancillary services and advanced meters. The Hawaiian regulator also requested the development and reviewed the Hawaiian Electric's Integrated Grid Plan which is the implementation methodology of the Grid Modernization Strategy. The Hawaiian regulator also established frameworks to support the roll-out of Demand Response technologies.

The Indian electric grid is one of the largest synchronous grid systems in the world with approximately 442 GW of generation capacity (191 GW from renewables) generating more than 5.3 TWh of electricity daily. The high integration of Renewable generation technologies in the Indian Grid causes different grid stability concerns, such as power quality issues (voltage variations and overshoots), resource adequacy concerns and increased ramping requirements.

The Indian regulator is continuing to establish regulations and standards for interconnections, renewable energy plants, short- and long-term resource adequacy, and introducing robust compliance verification processes. The regulator is pushing for regular transmission planning, based on potential RE zones, and planning and deployment of innovative solutions to provide grid stability. India is looking experimenting with Thermal Flexibility through various pilot projects.

REGULATORS' PANEL DISCUSSION
GRID STABILITY AND MARKET OPERATIONS – THE ROLE OF THE REGULATOR

This Regulator's Panel Discussion aimed to explore strategies ensuring that Asian countries meet their energy transition objectives amidst growing demands and climate change challenges.

The panellists consisted of **Lorraine H. Akiba**, President/CEO of LHA Ventures, and Former Commissioner at the Public Utilities Commission (PUC) of State of Hawaii; **Kocou Laurent Tossou**, Chairman of ECOWAS Regional Electricity Regulatory Authority (ERERA); **David Morton**, Chairman of ICER and Former Chair & CEO of British Columbia Utilities Commission (BCUC), Canada; **John Charalambidis**, Head of Renewable Energy and Storage Directorate at the Regulatory Authority for Energy, Waste and Water (RAAEY), Greece; and, **Nicolas Leong**, Energy Business Director of North & Southeast Asia at Wärtsilä Singapore Pte Ltd.;

Lorraine H. Akiba initially spoke on the importance of resilience of the energy system in the face of emergencies from natural and man-made issues. Regulators should establish resilient regulatory frameworks which allow utilities to proactively introduce solutions to emergency prevention and management response. The integrated grid planning process should also foresee emergency cases and propose solutions in these cases. In Hawaii the micro-grid framework allowed micro-grids to be isolated in cases of emergencies to provide basic life-support services.

Regulators' Panel Discussion: Grid Stability and Market Operations – The Role of the Regulator.

Kocou Laurent Tossou highlighted that the regulators should be proactive and develop strategic policies to mitigate the risk of uncertainty and grid instability. Regulators should aim to identify and provide clear markets structures, characteristics, and regulations to enable grid stability solutions.

David Morton spoke on reliability and market regulation in North America and the role of the Federal Energy Regulatory Commission (FERC) and North American Electric Reliability Corporation (NERC) on enabling of Distributed Energy Generators and aggregators.

John Charalambidis presented the status and the uptake of renewable energy projects in Greece. During the last few years, the share of renewable energy in the Greece electricity grid has increased substantially. This caused the regulator and policymakers to mandate energy constrains or curtailments for renewable energy generation. Energy constraints are now part of the new energy legislation.

Nicolas Leong presented the perspective of Asia and Singapore in facilitating the integration of Renewable Energy. Due to the lack of land availability in Singapore, Singapore committed to purchasing and importing renewable electricity from neighboring countries. Singapore is also using gas to provide balancing and flexibility along with batteries and storage, due to the current feasibility of storage.

Session III: MOBILISING GREEN FINANCE

Session III: Mobilising Green Finance.

Session III of the Energy Regulators Forum involved key stakeholders of the energy and finance sectors responsible for and experienced in scaling up green finance. Speakers presented the process of facilitating successful projects on national and on regional levels.

The Session was moderated by **Andrijana Nelkova-Chuchuk**, Commissioner of the Energy, Water Services and Municipal Waste Management Services Regulatory Commission (ERC) of North Macedonia, and ERRA Presidium Member.

Session III started with a presentation from **Balaji M K**, Director at Advance Energy Systems under the USAID Smart Power Program in Thailand. The presentation provided an overview of how finance can accelerate and facilitate decarbonization and the innovation necessary to just energy transition in Southeast Asia. Balaji noted that by 2030, at least 35% of the energy mix in the Southeast Asian region shall be produced from renewable energy sources. Moreover, EV production and utilization rates are expected to further increase the electricity demand in the region.

In the region most of the funding for clean energy comes from the public sector (65%), with private financing compromising only 35% of total financing. The key challenges are categorized in 4 main themes: a) Insufficient financial attractiveness, b) Infrastructure challenges, c) Regulatory and Policy uncertainties, and d) Challenges in the power sector. Nonetheless of the challenges, innovations in

the SEA countries have been apparent, such as the Laos Monsoon Wind Power Project where the project was financed by concessional capital, A/B loans, grants and parallel loans. Increasing financial attractiveness through leveraging private financing and introducing financial incentives, as well as efficiency in regulatory and policy processes can drive the speed of financing in the region.

The following presentation delivered by **Ana Stanič** from E&A Law, focused on the disputes arising from renewable energy support schemes (such as Feed-in Tariffs, competitive auctions, and green certificates), under national law, international investment treaties, and investor-state contracts in the EU. From 2012 to 2016 there was a sharp increase of arbitration cases under the ECT in the renewable energy sector. Most of these cases came due to changes in rules in the Feed-in Tariff or Green Certificate schemes.

Ana Stanič highlighted that to encourage energy transition, the possibility for investors to address claims in arbitration is crucial. Moreover, EU member states and EU's refusal to pay out under arbitral awards undermines legal certainty and international rule of law and reduces attractiveness as place for investment. The key message of the presentation was to devise a robust and predictable regulatory framework for promotion of new technology.

During the Q&A session, Ana Stanič noted that changes in the regulatory environment should not be radical and should not change the key investment incentives ex post.

The second part of Session III continued with two case studies which highlighted successful examples of green financing projects in emerging countries.

Panittra Vejjajiva, Head of Financial Institutions and ESG Solutions at United Overseas Bank (UOB) in Thailand. UOB offers several sustainable financing solutions, including a one-stop solar financing platform, green loans for real estate and green buildings, an integrated energy efficiency platform, and an EV platform.

The highlighted case studies included:

- Wind Farm financing in Thailand, where UOB financed the development of a 45 MW onshore wind farm.
- Solar C&I Portfolio in Vietnam, where UOB financed the development, financing, operations, and maintenance of a portfolio of up to 100 MWp of Commercial and Industrial rooftop solar PV projects across various locations in Vietnam.
- Solar Rooftop Project in Singapore, Where UOB financed the development of a portfolio of rooftop solar projects, with a combined capacity of 97.7 MWp in Singapore, across more than 1,200 public housing blocks and 49 government sites. The project was the largest solar rooftop project in Singapore at the time and included a Virtual PPA with Facebook.
- Solar C&I Portfolio in Thailand, where UOB financed costs incurred for the construction of a 60 MWp portfolio of C&I solar PV projects. The transaction was completed against the backdrop of COVID-19, where the structure of financing was

sufficiently robust to withstand peak COVID-19 induced volatility.

Obboon Vongsuriya, SVP Multi-Corporate Business Department from KASIKORNBANK PCL (KBank) in Thailand. The vision of KBank is to be Net-Zero in own operations by 2030, carbon neutral in the financed portfolio by 2050, and net zero GHG emissions by 2065.

KBank has launched 5 key programs:

- K-Energy Saving Guarantee, which provides retrofitting, change of equipment, or production process improvement to reduce energy consumption of business operation.
- K-Solar Rooftop Financing, which provides installation of Solar panels for self-consumption in the business operations.
- Power Purchase Agreement Financing, which provides installation of Solar or Energy Efficient equipment by project developers and ESCO's to 3rd party buildings.
- EV charger financing, which supports installation of EV chargers for internal usage or for customers, and
- Sustainability Linked Loan, which provides financing for general business use for companies with clear ESG KPI.

Panittra Vejjajiva, Head of Financial Institutions and ESG Solutions at United Overseas Bank (UOB) in Thailand (left), and Obboon Vongsuriya, SVP Multi-Corporate Business Department from KASIKORNBANK PCL in Thailand (right).

Regulators' Panel Discussion: Key Success Factors of Green Financing.

REGULATORS' PANEL DISCUSSION KEY SUCCESS FACTORS OF GREEN FINANCING

This Regulator's Panel Discussion aimed to analyse the elements that contribute to the success of green financing initiatives. Discussion points will include the evaluation of risk, the mobilization of capital, and the creation of financial products that support sustainable energy projects.

The panellists consisted of **Shinya Nishimura**, Senior Energy Specialist at the World Bank Group; **Kevin Toohers**, Regional Manager for Southeast Asia and the Pacific at the U.S. Trade and Development Agency (USTDA); **Pariphan Uawithya**, Managing Director, Country Delivery, Asia, at the Global Energy Alliance for People and Planet (GEAPP).

Shinya Nishimura started the discussion by highlighting that the role of Multilateral Development Banks has been to act as an advocate for addressing climate change and energy policy issues, and to develop tools and roadmaps to provide technical assistance to countries seeking decarbonization. Moreover, the ESG framework has been the basis of all World Bank activities. The WB highlights that the main issues of the region are the high degree of coal consumption, low quality of grids, lack of access to electricity in certain parts of the region, and the complexities that come with providing electricity in island communities. According to Shinya Nishimura, the role of the government and regulators in the

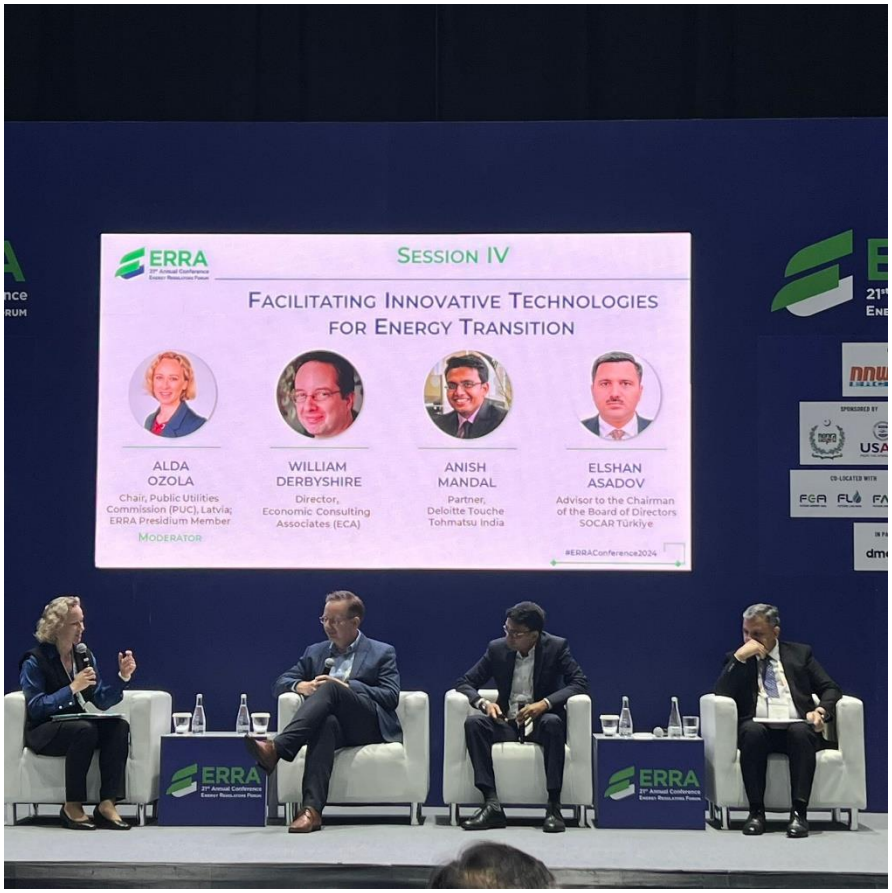
decarbonization effort is to provide an enabling environment and an enabling infrastructure.

Kevin Toohers described the mission of USTDA as to support infrastructural development in developing markets and to facilitate market cooperation between beneficiary states and the US. USTDA links U.S. businesses to export opportunities by funding project preparation and partnership-building activities that develop sustainable infrastructure and foster economic growth in partner countries. Kevin Toohers highlighted that Small Nuclear Medium Reactors are an emerging technology which USTDA is exploring.

Pariphan Uawithya described that GEAPP was created to enhance flow of financing in the decarbonization efforts of the region. GEAPP focuses on battery energy storage adoption, supports the adoption of distributed renewable energy generation, and the transition from coal. GEAPP utilizes three instruments a) technical assistance, technical assessments, and building capacities of government, b) direct project investments, and c) providing a blended finance platform. Pariphan Uawithya mentioned that while targets for decarbonization are useful and needed, the regulatory framework is crucial to pushing the decarbonization efforts.

Conference Daily Notes | Day 3 | Friday, May 17, 2024

Session IV: FACILITATING INNOVATIVE TECHNOLOGIES FOR ENERGY TRANSITION



Session IV: Facilitating Innovative Technologies for Energy Transition.

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The final Session of the Energy Regulators Forum covered the theme of regulatory and technological innovations facilitating the energy transition. The session was highlighted by case studies from the UK, India, and Türkiye, which delved into the regulation of the energy transition, battery energy storage, and green technologies. The second part of Session IV was highlighted by a panel discussion on Regulatory Frameworks to Support Innovation.

The Innovation Case Studies panel was moderated by **Alda Ozola**, ERRA Presidium Member and Chair of the Public Utilities Commission (PUC) of Latvia.

The panel kicked off with a presentation from **William Derbyshire**, Director of Economic Consulting Associates (ECA). The presentation focused on the key mechanisms introduced in the most recent electricity price reviews in Great Britain to manage the uncertainties around the energy transition and discussed their application in the ASEAN context.

William Derbyshire highlighted that the future of energy transition in Great Britain is characterized by high uncertainty. This includes uncertainty in the rate of electrification, uptake of DERs, and costs of materials and labour. Ofgem's currently has 37 general

uncertainty mechanisms to mitigate these uncertainties, from which 3 were highlighted:

- Net Zero reopener, which allows adjustments to allowed revenues to respond to changing policies, such as the Sixth Carbon Budget. The trigger is issued by Ofgem, on the advice of the Net Zero Advisory Group.
- Worst-served customers Use it or Lose it (UIOLI), which is intended to ensure that incentives to improve average supply quality do not lead to the worst-served customers (WSC) being ignored. The mechanism provides a specific ex-ante allowance to be used only for improving supply quality to worst-served customers.
- The LV networks secondary reinforcement volume driver, enable additional investment in LV networks to meet net zero requirements (e.g., DG and EV). The allowance is an Ex-ante allowance set on forecasts and adjusted up or down to match actual volumes.

The second case study presented came from **Anish Mandal**, Partner at Deloitte Touche Tohmatsu in India. The presentation focused on the regulatory changes needed to enable battery energy storage systems to meet their role efficiently and effectively.

Through the case study of a 20 MW/40 MWh BESS plant in India, Anish Mandal argued that due to the regulatory landscape the foreseen BESS costs exceeded the benefits that could be monetized, as arbitrage is the key value stream. In India BESS is not allowed to participate in secondary & primary ancillary services market. However, with upcoming regulations, Secondary Reserve Ancillary Services (SRAS) and Resource Adequacy, which are major value streams for BESS globally, are expected to play significant role in enhancing BESS benefits over the next 2-4 years in India.

The third and final case study focused on the experiences of SOCAR in Türkiye, the Azerbaijani state-owned Oil company, on the topic of energy transition and green technologies.

The presenter **Elshan Asadov**, Advisor to the Chairman of the Board of Directors of SOCAR Türkiye, highlighted that SOCAR Türkiye is exploring certain pathways to adjust their business model in light of the energy transition. SOCAR Türkiye has developed their Sustainability Roadmap, which is looking into alternative fuels, bionaphtha, green finance, and ESG Ratings.

REGULATORS' PANEL DISCUSSION
REGULATOR REGULATORY FRAMEWORKS TO SUPPORT INNOVATION.

The discussion was focused on the need for flexible regulatory frameworks that can adapt to technological advancements, support pilot projects, and encourage collaboration between startups, incumbents, and regulators.

The panellists consisted of **Monalisa C. Dimalanta,** Chairperson & CEO of the Energy Regulatory Commission (ERC) of the Philippines; **Renatas Pocius**, Chairman of National Energy Regulatory Council

(NERC), Lithuania; **CoAnn Teoh**, VP – APAC at Energy Exemplar; and **Sudharma Yoonaidharma**, Commissioner at the Energy Regulatory Commission (ERC) of Thailand.

Monalisa C. Dimalanta mentioned that the Philippines Regulator has used regulatory sandboxes to test and adapt EVs, peer-to-peer trading, and other innovative technologies. The speaker also highlighted the possibility of finding innovations from outside the power sector and then emulating them in the power sector. In this light, the Philippine Regulator has worked with the Central Bank to emulate the regulation developed for the FinTech industry to the peer-to-peer trading market.

Renatas Pocius from Lithuania highlighted several success stories of regulatory sandboxing. Lithuania has allowed all consumers to be prosumers, including consumers in multi-apartment buildings or through energy communities. Lithuania has also adopted rules which allow regulated companies to propose innovative investments to their grids. If approved by the regulator the investments are included in the regulated asset base and a 1% premium is added as a driver for companies to innovate. The issue of long permit wait time was tackled through a hybrid generation permit, where the permit allows different technologies mixes such as wind, solar and battery storage to be connected at the same connection point with the same permit, without needing to invest in the grid. Renatas Pocius highlighted that digitalization and innovative IT solutions lead to new challenges in the field of Cyber Security.

Regulators' Panel Discussion: Regulatory Frameworks to Support Innovation

CoAnn Teoh from Energy Exemplar highlighted the importance of utilizing digital technologies and modelling tools to support innovation and analyse the effect of innovation in the grid through a safe environment. Modelling tools can allow regulators and utilities to identify new technologies and further the discussion and cooperation between both sides.

Sudharma Yoonaidharma from ERC of Thailand explained the local context of regulatory sandboxing in Thailand. Due to stringent government laws on the energy market and privatization of public utility companies, the regulator has utilized innovative regulations to introduce competition in the market. The regulator has allowed newcomers to invest in the energy market, and now the private sector compromise more than 50% of total installed capacities.

The Thai regulator also issues sandbox licensees to initially test pilot projects. If successful, the regulator then uses these success stories to influence policy reform and decision-making and thus enable the large-scale rollout of such technologies.

CONCLUDING REMARKS

Pál Ságvári ERRA Vice-Chair and the Vice-President for International Affairs at MEKH Hungary provided the concluding remarks. He outlined that regulators on this corner of the world have the same type of struggles that ERRA's core region. For example, much like in ERRA's core region as one of the most serious emerging topics of the ASEAN countries remains energy transition and sustainability.

Mr. Pál Ságvári, ERRA Vice-Chair and the Vice-President for International Affairs at the Hungarian Energy and Public Utility Regulatory Authority (MEKH)

The Energy Regulators Forum was structured around four sessions:

Session 1: Safeguarding Energy Transition Goals,
Session 2: Impact of Clean Energy Sources on the Grids and System Stability,
Session 3: Mobilising Green Finance,
Session 4: Facilitating Innovative Technologies for Energy Transition.

During the goals policy session, it became clear that:

- that ASEAN countries are currently somewhat lagging behind compared to non-OECD countries (exception is Vietnam). The US and DE examples showed that during 15-20 years it was possible to come down from 550 g/kwh to around 300 g/kwh.
- No one reached net-zero level yet but frontrunners advice is the best to start with relatively easy and cheap measures and do not ignore to manage those who are losing ground because of the transition.
- IEA's 3 country sandbox examples on Germany, Australia and Chicago. According to which, in Chicago the state regulator simply obliged the utility to make a non-binding hard-cap scenario for a faster decarbonization, and it worked.
- According to OGCI Initiative example simply just monitoring and informing companies about methane leakage (without commitment) eliminates the problem how it happened in Iraq.
- The panel agreed clearly that regulators' role need to be expanded with identification of least cost decarbonization pathway and knowledge sharing platform is key for successful recipes to spread.

The goals regulatory session showed that all 3 regional countries (Malaysia, Singapore, Myanmar) have the decarbonization goal on their mind. Focus is on spreading solar deployment. However, it was said that in some countries fossil fuels are heavily subsidised that makes poor business cases for renewables. Regulators also mentioned that affordability is politically sensitive when it comes to energy questions. Natural gas's role is clearly defined as a transition fuel and also these countries are getting interconnected and increasing regional cooperation.

Grid system stability session showed how a prime and complex issue is to keep the systems stable and reliable with increased intermittent renewables in the system. As each countries energy mix and system is different there is no one size fits all solution. But it was presented that Demand side management, electricity storages are good local solutions but there is also a huge potential in interconnection as a flexibility as well. A study showed that 600 GW of solar, 1,2 Twh of electricity storage and 16 Twh of hydrogen storage could be saved of there would be an effective ASEAN electricity market. Achievement that needs political will, funding, changing of market structure and a lot of technical harmonization.

The presenters showcased the tiniest microgrid system in the world, Hawaii islands which are completely isolated and got a huge freedom from US grid could manage it by using advanced technologies for balancing ancillary services and using all available flexibility in the system at hand. On the other hand, we have also seen one of the world's largest grids in Indian case study example and how difficult it is to synchronize huge daily swings in their national system. Their aim is to rather concentrate on some RE zones where the grid will be strengthened.

On green finance session the participants explained the importance of stable and reliable regulatory framework which is necessary for the inflow of the private capital and loan for financing the energy transition. Currently Southeast Asia the public sector is doing the heavy lifting of the sector's financing. Especially at the early stages of the transition the role of multilateral development banks is vital. Current challenges expressed are the unstable regulatory framework, insufficient infrastructure, market immaturity and financial unattractiveness.

On innovative technologies and regulatory sandboxing participants saw good examples from UK and India, Philippines, Lithuania, Thailand of how regulators can be innovative on one hand by relying on existing regulatory tools, sandboxing and implementing pilot projects. Different countries have very different possibilities to manoeuvre for regulators. In Lithuania 1% additional return and some derogation can be received from the regulator for innovative solutions. The key message was that the regulators should be enablers of technologies and business models, by giving the safe space to be innovate.