

# Workshop on Infrastructure Regulation and Competition from Structural Reform Experiences in APEC

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APEC Economic Committee

November 2024



**Asia-Pacific  
Economic Cooperation**





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# Introduction

## Overview

Economic regulation of infrastructure strives to promote efficient, low-cost and reliable service provision while ensuring financial viability and competitive functioning of markets. Essential infrastructure services like telecommunications, energy and transport are fundamental enablers to achieve inclusive, resilient and sustainable growth in the APEC region. These infrastructures provide critical inputs and platforms for social endeavours, business transactions and economic activities. The efficacy of their operations has been a hallmark of critical structural reforms undertaken over the years. This has also given birth to new regulatory laws, institutions, regime and processes that respond to natural monopolies and market failures associated with the nature and operation of some of these infrastructures.

However, the formidable effects of the COVID-19 pandemic, fast-evolving technologies, and emerging developments in the infrastructure sector, have adversely impacted operations, investments and competitiveness, thus bearing implications for their respective regulatory approaches. Within each APEC economy, there is need to understand key issues with regard to regulation, governance and policies for the infrastructure sector. This calls for a robust and transparent regulatory framework to allow economies to capitalise on opportunities and at the same time boost recovery and resilience against future shocks. In doing so, it enables implementation of the APEC Putrajaya Vision 2040 including through the Aotearoa Plan of Action.

To this end, this project sought to facilitate capacity building workshop with a view to share best practices and experiences on infrastructure regulation and competition policy and how productivity and efficiency can be enhanced. The workshop was held on 16 August 2024 in Lima (Peru) during the Third Senior Officials Meeting (SOM3).

This Summary Report provides a summary of the workshop proceedings and discussion, articulating experiences on infrastructure regulation, challenges in current practices, and explore ways of improving design and performance of regulatory system to make it more pro-competitive in order to achieve sustainable development outcomes in the APEC.

## Objective

The aim of the workshop was to facilitate capacity building and sharing of best practices on economic regulation and competition policy on infrastructure such as

telecommunications, energy, water and transportation, and highlight key lessons to draw on in pursuit of delivering essential services to support inclusive and sustainable development in APEC economies.

Promoting a robust regulatory regime and competitive environment to enhance operation of critical infrastructure services is integral to achieving goals of the Enhanced APEC Agenda for Structural Reform (EAASR). Experts, regulators, policy makers, and academics with work experience and interest in infrastructure regulation and competition policy were invited to engage and discuss salient workshop themes. Discussions dwelled on application of economic regulation on infrastructure services as part of structural reform agendas, with a view to ascertain whether it has resulted in desired outcomes in terms of consumer welfare, investment profile and economic growth.

## Relevance

Ensuring and creating a robust regulatory regime for critical infrastructure to operate and deliver essential services is necessary in achieving goals of the Enhanced APEC Agenda for Structural Reform (EAASR). EAASR calls for open, transparent and competitive markets in APEC economies in order to promote strong, balanced, inclusive, innovative and sustainable growth. Functioning of competitive markets through application of sound regulations is critical to drive improved delivery of transportation, electricity, telecommunication and other infrastructure services. In addition to fulfilling the above, the workshop links directly to the APEC Putrajaya Vision 2040, in which APEC economies committed to foster quality growth that brings palpable benefits and greater health and wellbeing to all. It also implements the Aotearoa Plan of Action through allowing economies to share experiences and identify best practices in infrastructure regulation through forums and workshops.

The project aligns with EAASR which falls within the remit of the Economic Committee (EC). To advance structural reform agenda in accordance with EAASR, one of the activities that EC would do is to support economies through capacity building initiatives and implement projects per se. In addition, the EAASR Individual Action Plans (IAPs) of most member economies strongly emphasise the need for facilitating competition, protecting consumers, and enhancing operation of markets. The project is consistent with the EAASR calls for open, transparent, and competitive markets in APEC economies in order to promote strong, balanced, inclusive, innovative, and sustainable growth. Hence, it is fitting to utilise the EAASR Sub-Fund under the APEC Support Fund (ASF).

Capacity building and sharing of experience on the best practice in infrastructure regulation through this workshop will greatly benefit particularly the developing APEC economies. For example, Papua New Guinea is entangled with a web of challenges



in its energy, telecommunication and other infrastructure sectors where there are issues concerning reliability, affordability and quality of services. Regulators, policy makers and academia will find it useful to keep abreast with new knowledge and best practices on implementing infrastructure regulation and to learn key lessons and strategies in addressing inherent challenges, drawing on experiences from APEC member economies. It is envisaged that this capacity building workshop could provide a basis for economies to adjust their EAASR IAPs to add regulatory structural reforms that could be funded from existing APEC structural reform capacity building sub-funds.

## Workshop discussion

The proceedings of the workshop that was held on 16 August 2024 during the margin of the 2024 Third Senior Official Meetings (SOM3) in Lima (Peru) are highlighted in the following sections. The structure is based on the workshop agenda in Annex 1.

### Welcome and Opening Remarks

In opening the workshop, Ms Alice Mckenzie, the Program Director for the Economic Committee at the APEC Secretariat, welcomed all participants and expert speakers to the workshop. In echoing the pleasure of the Economic Committee supporting this workshop on infrastructure regulation and competition that focused on structural reform experiences within the APEC economies and its relevance for application, she outlined the relevant priorities and key focus on promoting structural reforms, having regard to the following;

- creating open, transparent, and competitive markets,
- boosting business resilience,
- ensuring inclusive growth, and
- harnessing innovation and technology.

She thanked the Papua New Guinea for the hard work put into the workshop together and to Peru for hosting the workshop at the Lima Convention Centre where all SOM3 related meetings and workshop were held.

Ms Mckenzie emphasised that Infrastructure plays a critical role in driving economic growth, enhancing connectivity, and improving the quality of life for our citizens. Effective regulation and healthy competition are the foundations of quality infrastructure development. To maximise the investments in infrastructure services, it is important to ensure that they are efficient, sustainable, and inclusive. However, it is common that regulating infrastructure (particularly) in the utilities sector, is often

characterized by market failures such as natural monopolies, which presents significant challenges, and make regulation critical to achieve efficient outcomes.

Over the years, APEC economies have embarked on various structural reforms aimed at improving infrastructure regulation and fostering competition. These reforms have not only made progress in addressing existing challenges but have also paved the way for innovative solutions and best practices that can be shared and adapted across our diverse economies. Fittingly, this workshop offers great opportunity to delve into these experiences, to learn from each other, and to discuss how regulatory frameworks and competitive environments can be enhanced. Consequently, this provides support to make our infrastructure investments economically viable, socially inclusive and environmentally sustainable.

Ms Mckenzie acknowledged the presence and commitment of the distinguished panel of experts who would share their insights and experiences. She is confident that their contributions will enrich our discussions and provide us with valuable perspectives on how to navigate the complexities of infrastructure regulation and competition. She encouraged all participants to actively engage in the discussions, to share your own experiences and challenges, and to collaborate in identifying practical solutions that can be implemented within the respective economies. She concluded with the notion of effective collaboration and productive dialogue to build a more connected, competitive, and resilient APEC region.

## Session 1: Regulating for Efficient Infrastructure outcomes

The first session of the workshop started on a positive note with two expert speakers – Professor Mark Jamison from the University of Florida, United States, and Dr Bronwyn Howell from the Victoria University of Wellington, New Zealand – setting the scene. They delved straight into the rationale of application of economic regulation and competition in infrastructure industries, highlighting how these services can reach optimum delivery in a cost-efficient manner while attracting private sector investment for new infrastructure development.

It was deduced that effective economic regulation is vital for efficient delivery of infrastructure and utility services such as electricity, water and telecommunication which are fundamental for economic growth and sustainable development. That is, a robust regulatory framework is integral to maximizing the potential of the essential infrastructure to deliver on the desired economic and social outcomes.

According to Viscusi and others (2018), economic regulation refers to government-imposed restrictions on firm decisions over price, quantity, and entry and exit. This includes enforcement of regulation to limit the ability of monopoly providers of essential infrastructure services to charge excessive prices. In most cases,

economic regulation is applied by the authority with remit on economic regulation and competition in its oversight of rail, ports, water and retail energy pricing.

Traditionally, the provisions of the essential infrastructure services were exclusively undertaken by the public sector, in particular, the state-owned enterprises (SOEs). However, over the years, the SOEs performed poorly delivering costly and inefficient services which were detrimental to consumers, investment and productivity. Consequently, in most cases, privatisation of these infrastructure assets was pursued to promote more efficient operations, increase investment and service coverage, and reduce the financial burden on government budgets. However, natural monopoly characteristics arising from pervasive economies of scale and scope of these infrastructure prevails, making it difficult for competition to flourish in some segments of the infrastructure sector (Kirkpatrick and Parker, 2004).

To address this, structural reforms took effort, which saw establishment of new regulatory laws, institutions, contracts, and regimes where economic regulators are regulating infrastructure sectors such as electricity, water and telecommunications (Brown, et al., 2006). The rationale was mainly to address issues associated with natural monopolies and market failures associated with network industries with a view encourage efficient, low-cost and reliable service provision while ensuring financial viability and new investment (Eberhard, 2007).

Beside the standard objectives of achieving economic efficiency, encouraging investment, promoting competition, mitigating monopoly power, allowing cost recovery and protecting the interests of consumers, the application of economic regulation, in some cases, takes into consideration the broader social, environmental and industry development objectives (Albon and Decker, 2015).

## Professor Mark Jamison

Professor Mark Jamison is the Director and Gerald Gunter Professor of the Public Utility Research Center (PURC), and Director of the Digital Markets Initiative (DMI) at the University of Florida. He provides research and International training and research on business and government policy, focusing primarily on information technology and utilities industries. Dr. Jamison's current research topics include competition policy and regulation of information technologies, institutional development in regulation, and competition and innovation in the information sectors

In his presentation on the importance of infrastructure regulation, Professor Jamison began by engaging the audience through a survey about their backgrounds and roles related to government and policymaking across various regions. He outlined four primary purposes of infrastructure regulation: affordability, controlling monopoly power, ensuring reliability, and promoting adequate investment, emphasizing that the

rationale for regulation is context-dependent. The discussion then shifted to the balance required between long-term infrastructure planning and short-term political demands, highlighting the information asymmetries faced by regulators and infrastructure providers.

Infrastructure and utility services sector contain monopoly components that require some form of economic regulation (of prices) to ensure that their activities are of maximum benefit to society. Economic regulation focuses on key economic aspects of a relationship between service provider with market power and end users (businesses and households) of the infrastructure service. Regulating infrastructure limits the power of the monopolistic infrastructure service provider, ensuring that delivery of essential service is done in a cost-reflective

A sustainable and effective regulatory system must credibly satisfy the demands of both service providers and end-users (consumers). According to Brown, et al (2006), there are two fundamental aspects of regulatory systems – regulatory governance (Institutional and legal design, and the framework within which decisions are made) and regulatory content (specific methods and rules for regulation). Regulatory content only becomes important if effective regulatory governance is established.

A benchmark for best practice regulatory governance is the ‘independent regulator’ model which encompasses organizational independence, financial independence and management independence. According to Brown, et al. (2006), regulatory and policy functions must be separated to ensure clarity and accountability, to avoid conflicts of interest and ensure equal treatment of private-owned firms and state-owned enterprises. The principal rationale for the independent regulator model is to avoid unpredictable political intervention. An independent regulator gives prominence to sound regulatory regime which in turn ensure delivery of quality services for businesses and households. However, a weak regulatory system can be fatal. According to Public-Private Infrastructure Advisory Facility (2015), well-functioning regulatory system often opens the door to political influence on tariffs without adhering to transparent processes and objective economic principles. This can result in poor cost recovery, lack of investments in maintenance and new assets, and ultimately poor access to basic infrastructure services.

Professor Jamison identified six essential elements for effective regulation: attracting investment, maintaining a stable regulatory framework, developing regulatory expertise, designing proper incentives, conducting thorough analytical work, and ensuring political sustainability. He also touched upon key regulatory theories and introduced his personal view that "regulation is about disappointing people at a rate they can endure," encapsulating the complexities and challenges faced in the field of infrastructure regulation.

## Dr Bronwyn Howell

Dr Howell has a PhD in economics and public policy, an MBA, and a BA in operations research, all from Victoria University of Wellington in New Zealand. She is Senior Lecturer in the School of Management at Victoria University of Wellington, a non-resident Senior Fellow at the American Enterprise Institute in Washington DC, where she focuses on the regulation, development, and deployment of new technologies.

In an informative presentation, Dr Howell emphasized the unique challenges faced by small and remote economies, particularly in the Pacific, regarding the adoption of new technologies. Drawing on New Zealand experience, she highlighted the complex and intersecting regulatory environment that necessitates a humble approach to navigating uncertainty. A framework introduced from the Cynefin Institute illustrated the shift from complicated to complex regulatory landscapes, stressing the importance of understanding the limitations of knowledge and control.

The discussion also addressed the disruptive nature of new technologies, and the caution needed in regulatory responses, emphasizing that competition should not be viewed as the goal of infrastructure regulation.

Key regulatory considerations were outlined, including the significance of ownership and independence, the dangers of pursuing perfection at the expense of progress, and potential unintended consequences of regulations, drawing a parallel to historical practices in regulating early automobiles. Overall, Bronwyn's insightful presentation underscored the importance of careful and informed regulatory approaches in the face of evolving market dynamics.

## Q&A Session

The Q&A of the first session focused on addressing key regulatory challenges in emerging technologies, with discussions led by both experts, Prof. Jamison and Dr. Howell. It began with the first question by participant from China relating to exploration of stable regulatory frameworks for new infrastructures like AI and EV charging stations. The response emphasized the necessity of foundational knowledge and political sustainability in regulation.

The panel further examined the disruptive influence of satellite technologies on telecommunications, highlighting the difficulties in regulating providers without a physical presence while navigating legacy regulations.

As the conversation shifted to AI, concerns about the potential for a fragmented global regulatory landscape and the balance between innovation and risk management were raised, alongside warnings against premature regulatory actions.

The complexities of regulating state-owned enterprises (SOEs) were discussed, stressing the need for strong governance structures and competitive neutrality principles to mitigate political interference.

Finally, the discussions during Q&A session underscored the importance of transparency in regulatory processes and stakeholder engagement, suggesting that public education about regulatory institutions could foster better understanding and trust.

Key recommendations and action items emerging from the session's discussion are outlined as follow.

- Develop clear, stable regulatory frameworks that allow for technological evolution.
- Implement benchmarking systems to compare performance of state-owned enterprises.
- Increase transparency in decision-making processes and information sharing.
- Educate the public about the role and purpose of regulatory institutions.

## Session 2: Issues in Infrastructure Regulation

The second session explored specific economy experiences on the current and emerging challenges facing economic regulators, investment authorities and competition watchdog in promoting opportunities for adequate investment in infrastructure industry. The session featured expert speakers from Peru's Promotion of Private Investment Policy, Mexico's Federal Economic Competition Commission (COFECE) and Papua New Guinea's Independent Competition and Consumer Commission (ICCC), who shared experience on the forms of regulations in respective contexts and the challenges faced in executing and enforcing regulatory measures to ensure fair and competitive markets for infrastructure service provisions.

The session endeavored to unearth the trending issues in the world of infrastructure regulation through sharing of experiences / case studies in Mexico; Papua New Guinea; and Peru. It became obvious that in an era of transition to reduced emission targets, privatization and heighten commercial focus, regulating infrastructure can face challenges along the way. Empirical research reveals that while the central aim of the economic regulation is to achieve economic efficiency in the delivery of

infrastructure services, there is a dilemma in striking a balance in encouraging long-term investment and promoting long-term interest of consumers (Cifentes, 2016). For example, a regulatory decision that calls for significant price increase to underpin new investment, may be costly for low-income consumers. However, more broadly, the onslaught of COVID-19 pandemic, fast-evolving technologies, and emerging developments in the infrastructure sector, have tested the strength and resilience of existing regulatory system that oversee operations, investments and competitiveness of that infrastructure. These challenges are common to many economies and across different regulated industries in the APEC.

Following section provides account of the respective economies who participated in this session.

### Ms Maria Susana Morales – Peru experience

Ms Maria Susana Morales is the General Director, Promotion of Private Investment Policy in the Ministry of Economics and Finance of Peru. She has 14 years of experience in developing Public-Private Partnerships (PPP) and possesses thorough knowledge of the PPP investment process and its regulations, strategic prioritization, preparation and structuring, procurement, and addendums.

She shared experience on Peru's Public-Private Partnership (PPP) system and infrastructure development and provided an overview of the economy's longstanding commitment to leveraging private investment for public utilities, highlighted by the establishment of a dedicated PPP law in 2008 and the governance of the Ministry of Economics and Finance since 2015.

The discussion emphasized the structural components of the PPP process, including an established legal framework, institutional organization, project pipeline reliability, and the training of public officers, all aimed at enhancing project management through compliance with OECD principles. Notable recent achievements included the awarding of six significant projects worth approximately USD5 billion across various sectors. Furthermore, the presentation outlined the importance of a robust National Infrastructure Plan, currently in its third version, which identifies 72 key infrastructure projects and emphasizes ongoing monitoring and technical assistance to ensure effective implementation and sustainable growth in the coming years.

Key action items proposed included the establishment of project management offices in grantor agencies, the integration of sustainability into PPP guidelines, and the provision of CP3P certification for grantors.



## Ms Andrea Gamboa Mendoza - Mexico experience

Ms Andrea Gamboa Mendoza is the Executive Director of the Regulated Markets Division of the Federal Economic Competition Commission of Mexico (COFECE) where she was responsible for handling market research studies to define strategies for structural remedies. She has led analysis of markets of high economic impact and design research plans including evaluation of the impact of regulatory provisions on the performance of agriculture, transport and energy markets in Mexico. She holds master's degree in public policy from the Mexico Autonomous Institute of Technology.

She presented COFESE's role and activities in Mexican economic regulation and competition policy outlined the organization's foundational establishment as an autonomous constitutional entity, following reforms to Article 28 of the Political Constitution in 2013.

COFESE is tasked with promoting market efficiency through competition policy and possesses three primary powers: issuing non-binding opinions, declaring ineffective competition, and investigating markets. Ms Mendoza highlighted COFESE's influence, illustrated through a 2019 opinion on Mexican Port Law advocating for regulatory amendments to boost competition, particularly in bidding processes.

Furthermore, COFESE's investigative capability was emphasized, particularly through its findings in the railway market revealing a lack of competition on petrochemical routes, which led to tariff regulation. The organization also addresses competition barriers by employing corrective measures, as seen in the case of the Mexico City Airport slot allocation issues. Overall, COFESE's efforts span various sectors, underscoring its critical role in navigating and enhancing competition across the Mexican economic landscape.

## Mr. Paulus Ain - Papua New Guinea experience

Mr Paulus Ain is the current Chairman and CEO of the Independent Consumer and Competition Commission (ICCC) of Papua New Guinea. Mr Ain obtained a bachelor of economics degree from the University of Papua New Guinea in 2000. He was first appointed to his current position in May 2015, for a term of five years. He is currently serving his second consecutive term. He is one of the pioneer employees of the ICCC; and held various senior positions in the space of economic regulation for 13 years.

Mr Ain focused on the function and operations of the ICCC, detailing its background, regulatory changes, and current roles. Established after significant economic reforms



in 2000 and modeled after Australian and New Zealand counterparts, the ICCC functions as a principal multi-sector regulator emphasizing consumer protection and competition while maintaining independence in decision-making.

Key points discussed included the transfer of certain regulatory responsibilities to sector-specific regulators, the current oversight of postal and port services, and the challenges faced in stakeholder engagement and government interference.

He touched on a particular case study which highlighted the ICCC's efforts to regulate both public and private ports, emphasizing the ongoing work to include private ports under its regulatory umbrella. He concluded with insights into upcoming reforms in competition policy and legislation, along with an action item to advance the regulation of private ports.

## Q&A Session

The panel discussion during the Q&A Session focused on the challenges and experiences of Public-Private Partnerships (PPPs) across various economies, highlighting key insights from Mexico; Papua New Guinea; and Peru.

Participants noted that while the PPP model is not universally effective in enhancing public service efficiency, the private sector often responds more swiftly to emergencies. Peru shared its legal principles for PPPs, emphasizing sustainability but acknowledging difficulties due to long-term commitments and government debt management.

The conversation also addressed regulatory frameworks versus competition law, with Peru and Mexico describing their regulatory structures and the need for systematic evaluations of PPP impacts.

A significant action item emerged: the publication of a comprehensive evaluation of PPP effects in Peru within nine months, aimed at refining future implementations.

## Session 3: Regulation for Electricity Market Reform

Narrowing down to specific infrastructure sector, this session hosted an informative and insightful presentation on growing debate about reforming electricity market. Expert speakers from Indonesia and United States explored appropriate regulatory design and application for economies undergoing market reforms in the electricity sector, noting the paradigm shift in embracing key reform elements including consideration to separate commercial, regulatory and policy functions, as well as unbundling of segments where feasible to facilitate competition.

It was noted that many economies had undergone significant reforms in their electricity sectors over the past decades. In most cases, it was the separation of commercial, regulatory and policy functions, as well as unbundling of segments where feasible to facilitate competition. Where there is dominance of government ownership through vertically integrated utility responsible for generation, transmission, distribution and retailing of electricity, there are concerns of poor incentives to operate efficiently. (Joskow, 2008; Kessides, 2012).

Premised on the theme of economic regulation and electricity reform, participants and speakers at the workshop discussed on prospect to explore appropriate regulatory design and application for economies undergoing market reforms in the electricity sector. To this end, it became clear that there is urgent need to changes the market to accommodate the inevitable transition from centralized, dispatchable power to decentralized, intermittent generation sources.

## Professor Mark Jamison

Drawing on the work of colleague expert in electricity regulation at the Public Utility Research Centre, Warrington College of Business at University of Florida, Professor Jamison had another opportunity to present on electricity market reform. He began with an overview of critical insights into restructuring electricity markets, with a focus on successful reforms in Latin America, particularly Chile and Argentina, and the challenges faced in the United Kingdom and California.

The presentation outlined key motivations for these reforms, such as enhancing efficiency, attracting private investment, and addressing financial constraints. It emphasized common pitfalls in reform efforts, including the misalignment of authority and responsibility and the absence of incentives for generating capacity.

Additionally, the discussion covered essential considerations for restructuring, like ensuring appropriate incentives for generation companies, maintaining grid stability, and creating effective pricing structures. Financial challenges were also highlighted, stressing the need for accurate cost allocations and robust cash flow management to navigate the complexities of restructured markets.

## Mr Ridho Pamungkas

Mr Ridho Pamungkas is the Head of Regional Office I of the Indonesian Competition Commission (ICC). He has worked at the ICC since 2007 and has experience in conducting investigations related to business competition cases and conducting policy analysis on regulations that intersect with business competition law in

Indonesia. Until now, he has been actively involved in conducting market studies on issues in strategic sectors that have the potential for unfair business competition.

In his presentation, he provided a detailed overview of the history and current structure of electricity regulation in Indonesia. Mr Pamungkas began with the evolution of electricity laws from 1985 to 2009, highlighting the establishment of PLN as the state-owned electricity utility in Indonesia, the introduction of private sector involvement, and the end of the state monopoly on electricity supply.

The presentation further examined the electricity market structure, which remains largely dominated by PLN, illustrating issues such as limited consumer choice and state control over tariffs, which are determined by various cost components including fuel prices. Additionally, the presentation addressed the oligopolistic nature of the generation sector and the inefficiencies stemming from PLN's monopoly, emphasizing the need for restructuring and the establishment of an independent regulatory body to foster competition and improve market efficiency.

## Q&A Session

In response to questions in the Session 3 Q&A, the speakers discussed the complexities involved in electricity generation, highlighting the impact of new technologies such as solar and wind that have shifted the industry towards decentralized power generation, allowing edge-level production to reintegrate with the grid.

The discussion also covered government initiatives promoting renewable energy, including forthcoming legislation aimed at facilitating small-scale generators' integration into the existing electricity framework.

Challenges surrounding pricing were examined, particularly the difficulties in determining costs amid varying influences that affect generation and its efficiency for new investments. Historical insights were offered on the evolution of electricity transmission systems and the resultant grid stability issues, mentioning how renewable energy plays a dual role in both stabilizing and destabilizing the grid.

The session concluded with an emphasis on the necessity for improved measurement and pricing mechanisms related to grid disruption, alongside the monitoring of legislative developments affecting renewable energy sellers.

## Session 4: Regulating Telecommunication

The last session examined the ever-changing telecommunication industry and how regulation plays a key role in promoting efficient access to key infrastructure such as spectrum and broadband, while, at the same time, maintain incentives for efficient investment and innovation. Expert speakers from Mexico; New Zealand; and the United States shared thoughtful insights and experience on best practices when regulation matters especially in light of the rapidly evolving landscape of technologies, development of innovative products and digital platforms including AI, and growing consumer demands for more data and improved connectivity.

It is evident throughout the world that the telecommunications markets have been undergoing fundamental transformations in ownership and governance. This includes privatisation of state-owned telco firms, and market liberalisation. This has led to technological innovation which changed both the range of products and services traded. In the course, the markets have transitioned from monopolies governed exclusively by government provision and regulation to more a complex, imperfectly competitive institutions governed by a mixture of competition law and regulation.

The introduction of privatisation and competition into many parts of the telecommunications industry has increased the importance of rigorous analysis of market activity. In many cases, this has resulted in an increase in regulatory responses. Most notable relative to the times of historic monopolies have been the clearer articulation and transparency of regulatory objectives and responses. Whereas the activities of a monopoly firm could be dictated by its government owner, or mutually contractually agreed in a (private) franchise agreement between a regulator and a single firm with legislated protection from competition, in many jurisdictions it has been deemed necessary to create an explicit regulatory framework to govern the transition towards a 'normalised' set of markets where greater reliance can be placed upon generic competition law principles to govern interaction (Alexandis & Cave, 2010).

In common instances in many economies, telecommunication regulations are introduced within the context of extant competition law to address the demonstration of market power or dominance that would, in their absence, create competition problems. Whilst specific ex ante regulatory provisions exist, the trend is towards less sector-specific and more ex post interventions.

### Professor Mark Jamison

Drawing on his wealth of experience and expertise in telecommunication regulation, Professor Jamison presented the challenges and regulatory considerations within the telecommunications industry. He emphasized the need for a delicate balance

between change and stability, identifying that only 2% of efforts should focus on transformation while maintaining 98% of existing frameworks.

He made an interesting observation that the evolution from traditional voice technology to broadband has introduced uncertainty in the digital ecosystem, prompting a discussion about the importance of public policies and regulations that encourage healthy competition without unintended negative effects on marginalized customers.

Key challenges highlighted include net neutrality, the complexities of regulating rapidly evolving technologies, and the necessity for clear roles among citizens, government, regulators, and operators to avoid conflicts arising from miscommunication.

The role of regulators as neutral facilitators was illustrated through real-world examples, such as scenario planning to address stakeholder priorities. The session concluded with insights on how effective regulation can shape future developments in telecommunications, reinforcing the significance of balanced decision-making in the industry.

## Dr Bronwyn Howell

Having worked extensively in the telecommunication sector, Dr Bronwyn took the opportunity to join panel of expert speakers to provide a comprehensive overview of the evolution and current state of telecommunications, tracing its history from the 1880s through the rapid technological advancements following the introduction of the iPhone in 2007.

It highlighted a significant shift from technology-centric to use case-focused regulation, emphasizing the diverse needs of consumers and the resulting challenges for telecom operators regarding pricing and revenue.

The discussion also addressed industry trends towards vertical integration, the need for resilience in the face of climate change, and the implications of indigenous rights in spectrum allocation.

Additionally, there was an exploration of the regulatory landscape, particularly concerning the safety of AI and new technologies, emphasizing the balance needed between regulation and innovation. The session underscored the limitations faced by domestic regulators in managing global content and the pressing need for effective content moderation frameworks during crises.

## Mrs Andrea Escobedo Garcia

Mrs Andrea Escobedo is the Director of Radio Spectrum Regulation and Project Management, Federal Telecommunications Institute (IFT), Mexico. She has a degree in Law, with Master's studies in Political and Social Sciences and more than 13 years of experience in telecommunications and broadcasting, science, technology and research in organizations in the Telecommunications, Energy and Government sector, developing successful regulatory projects relevant to the telecommunications sector such as the organization of frequencies for aeronautical operational control.

Mrs Escobedo presentation focused on the initiatives and evolving role of the Federal Telecommunications Institute (IFT) in Mexico, emphasizing collaboration among key stakeholders in the APEC region.

The session highlighted the establishment of three regulatory committees aimed at enhancing cooperation in Radio Spectrum Management and 5G Development while addressing the unique challenges faced by small operators.

Key strategies discussed included implementing spectrum accumulation limits to promote competition, introducing the concept of 'partial service areas' for auctioning spectrum, and exploring dynamic spectrum access technologies.

Future initiatives were outlined, such as the secondary use of spectrum for private networks and the classification of the 6471 GHz band as unlicensed spectrum. Action items were proposed, including collaboration on 5G initiatives, conducting regulatory studies, and refining regulations for the preponderant economic agent ahead of the conclusion of the IFT-12 auction process in 2025.

## Q&A Session

In the Q&A session, participants and panelists engaged in an open discussion focusing on key issues affecting network infrastructure, notably the ownership and regulation of towers and the challenges faced by operators investing in their own networks. Participant from Papua New Guinea highlighted difficulties in enforcing infrastructure sharing with new entrants, proposing government-backed shared tower structures to promote collaboration.

The session also explored the role of IFT's domestic infrastructure system in enhancing infrastructure sharing in Mexico.

Additional topics included the implications of AI on data quality for model building, barriers to open-source and cross-border data sharing, and the necessity of local data for effective AI training.

Participants criticized General Data Protection Regulation (GDPR's) broad privacy approach, advocating for regulations on AI that are more aligned with human oversight.

The discussion also touched on the trend of data localization and its implications in the evolving 5G landscape.

An interesting observation that emerged from this session is the convergence of many different activities onto a single digital platform which may or may not be operated by a firm also offering internet access. This is starting to pose some challenges for regulators. This is evident in the proliferation of rights to distribute audio and video content with the supply of internet access services. Historically, regulating the content of distributed (broadcast) material is under remit of one regulator and the technological means of distributing (broadcasting) is addressed by separate regulatory authorities. However, there is a nagging question of how this can be integrated and be regulated by single regulator.

## Closing Remarks

Dr Osborne Sanida, Director of the National Research Institute in Papua New Guinea had the honour of closing the workshop. He thanked all the distinguished speakers and participants who contributed meaningfully to this workshop. On behalf of the Papua New Guinea delegation, he expressed sincere gratitude towards Peru to allow hosting of this APEC-funded workshop in Lima during the Third Senior Official Meetings (SOM3).

Dr Sanida reintegrated the key message that effective economic regulation is vital for efficient delivery of infrastructure and utility services such as electricity, water and telecommunication which are fundamental for economic growth and sustainable development. This is consistent with the APEC-OECD Integrated Checklist on Regulatory Reform, and importantly the Enhanced APEC Agenda for Structural Reform (EAASR) which call for well regulated, competitive markets in the APEC economies as a driver for economic efficiency and improvement in consumer welfare and productivity.



## Conclusion and Recommendations

- Effective economic regulation is vital for efficient delivery of infrastructure and utility services such as electricity, water and telecommunication which are fundamental for economic growth and sustainable development in APEC. Therefore, APEC economies should strive to establish and promote a robust regulatory framework to maximize the potential of these essential infrastructures to deliver on the desired economic and social outcomes.
- Discussion on the rationale for infrastructure regulation and competition concluded with identification of four primary purposes – (1) affordability, (2) controlling monopoly power, (3) ensuring reliability, and (4) promoting adequate investment. This emphasised the importance of promoting a robust and effective regulation of infrastructure and utility services such as water, electricity and telecommunication, where their provisions are predominately undertaken by state-owned utilities embedded intrinsically with monopoly characteristics. It reiterated the view that regulating monopolies serves to counter the tendency of infrastructure firms endowed with monopolist status to set prices above, and deliver service below, the levels that would prevail under competitive market conditions. In addition to the prospect of limiting abuses of market power, regulating infrastructure is essential to responding to market failures and improving economic efficiency through promotion of reliability and needed capital investments.
- The essence of economic regulation ensures that consumers have access to reliable and quality infrastructure services at affordable prices. It is important to ensure that the provision of these services is financially viable and sustainable, and as such do not pose an excessive financial drain on public funds and can attract necessary investment funding. Electricity, water, telecommunication and other infrastructure and utility services are optimally managed and operated in an efficient and technically effective manner to support social and economic development. Tariffs (prices) reflect the true cost of providing efficient infrastructure services and provide incentives to both service providers and customers.
- Essential elements for effective regulation were further highlighted. These include attracting investment, maintaining a stable regulatory framework, developing regulatory expertise, designing proper incentives, conducting thorough analytical work, and ensuring political sustainability. A benchmark for best practice effective regulation is the independent regulator model which encompasses organizational independence, financial independence and management independence, that strive to ensure clarity and accountability, to



avoid conflicts of interest and ensure equal treatment of private-owned firms and state-owned enterprises. The motive is to avoid unpredictable political intervention which can be costly to effectiveness of infrastructure regulation.

- The discussion further underscored the importance of careful and informed regulatory approaches in the face of evolving market dynamics and that public must be educated about the role and purpose of regulatory institutions. Considering this, respective economies should strive to develop clear, stable regulatory frameworks that allow for technological evolution, implement benchmarking systems to compare performance of state-owned enterprises, and increase transparency in decision-making processes and information sharing.
- The workshop provided invaluable opportunity and forum for sharing experiences from member economies on how their structural reform agendas have impacted infrastructure regulation and promotion of competitive markets. The presentations by Mexico; Papua New Guinea; and Peru are case in point, where respective economies shared experience on the forms of regulations in respective contexts and the challenges faced in executing and enforcing regulatory measures to ensure fair and competitive markets for infrastructure service provisions. It is recommended that more of similar workshops should take place in near future.
- For Public Private Partnership (PPP) investments to flourish within the realm of infrastructure regulation, it is recommended that a project management office in grantor agencies must be established. Of utmost consideration is the effort to promote and strengthen a conducive regulatory environment that would entice private sector investments.
- Discussions on specific infrastructure services shared light on the prospect of different regulatory approaches. Pricing regulation for electricity is critical to determine cost of services including inputs at generation investments to transmission networks. Renewable energy can play a dual role in both stabilizing and destabilizing the electricity grid, as such the need for regulation on that is critical. Whereas, in telecommunication sector, regulation matters most in light of the rapidly evolving landscape of technologies, development of innovative products and digital platforms including AI, and growing consumer demands for more data and improved connectivity. It is important to strike a right balance between regulation and innovation when exploring how AI and new technologies fit into regulatory landscape,
- The workshop presentations and discussions brought to light interesting insights and progress, consistent with the APEC-OECD Integrated Checklist

on Regulatory Reform, and importantly the Enhanced APEC Agenda for Structural Reform (EAASR) which call for well-regulated, competitive markets in the APEC economies as a driver for economic efficiency and improvement in consumer welfare and productivity. As such, APEC economies should strive to embrace and fulfill priorities in EAASR.

- Further, the presentation and discussion emanated from the workshop aligns with the EAASR, of which the APEC Economic Committee (EC) has significant responsibilities on. To advance structural reform agenda in accordance with EAASR, it is recommended that similar capacity building workshop, should be promoted. In addition, individual member economies should action EAASR Individual Action Plans (IAPs) to fulfill the need for facilitating competition, protecting consumers, and enhancing operation of markets.
- It was evident that the workshop promoted important dialogue and idea sharing among participants and speakers on how well markets function to achieve efficient and quality service provision, as well as advocating for suitable regulatory intervention where competition is not effective. For example, the presentations in Sessions (3) and (4) demonstrate that the efficient operations in markets for infrastructure services like electricity and telecommunication are tentacles of economic regulation and competition policy. Building on the same premise, a specific sector workshop is recommended to identify and understand better the existing and emerging challenges confronting critical infrastructure services for inclusive, sustainable growth in the APEC.

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# Appendices

## Annex 1. Workshop Agenda

<b>8:30-9:00am</b>	<b>Registration</b>
<b>9:00-9:15am</b>	<p><b>Welcome &amp; Opening Remarks</b></p> <p>Ms Alice Mckenzie, Program Director, APEC Economic Committee</p>
<p><b>Session 1</b></p> <p><b>9:15-10:45am</b></p>	<p><b>Regulating for efficient infrastructure outcomes</b></p> <p>Effective regulation is vital for efficient delivery of infrastructure and utility services such as electricity, water and telecommunication which are fundamental for inclusive and sustainable development. As an introduction to the workshop, the opening plenary session will focus on the rationale and importance of economic regulation and competition on infrastructure services in the APEC region, delving on how these services can reach optimum delivery in cost-efficient manner while attracting private sector investment for new infrastructure development. The panel discussion will also focus on the merits of introducing genuine competition and fostering conducive regulatory environment that can effectively support structural reforms in infrastructure service provisions.</p> <p><b>Moderator:</b> Ms Rosa Castillo, Chief economist - Tribunal of Competition – INDECOPI (Peru)</p> <p><b>Speakers:</b></p> <ul style="list-style-type: none"> <li>• Professor Mark Jamison, Director of Public Utility Research Centre, Warrington College of Business, University of Florida</li> <li>• Dr Bronwyn Howell, Wellington School of Business and Government at Victoria University of Wellington, New Zealand</li> </ul> <p>Q&amp;A and Interactive Discussion with Participants</p>
<b>10:45-11:00am</b>	<b>Photo session / break</b>
<p><b>Session 2</b></p> <p><b>11:00am-12:30pm</b></p>	<p><b>Issues in Infrastructure Regulation</b></p> <p>What are the trending issues in the world of infrastructure regulation? In an era of transition to reduced emission targets, privatization, and heightened commercial focus, regulating infrastructure can face challenges along the way. Speakers will share experience and reflect on pressing issues confronting economic regulation and competition in key infrastructure services. This will include case studies of regulators in selected economies, sharing what forms of regulations and the challenges faced in executing and enforcing regulatory measures to ensure fair and competitive markets for service provisions in respective economies.</p> <p><b>Moderator:</b> Professor Mark Jamison, Director of Public Utility Research Centre, Warrington College of Business, University of Florida</p> <p><b>Speakers:</b></p> <ul style="list-style-type: none"> <li>• Ms Maria Susana Morales, General Director, Promotion of Private Investment Policy, Ministry of Economics and Finance, Peru.</li> <li>• Ms Zyanya Andrea GAMBOA MENDOZA, Executive Director-Regulated Markets, Federal Economic Competition Commission of Mexico</li> <li>• Mr Paulus Ain, Commissioner &amp; CEO, Independent Competition and Consumer Commission, Papua New Guinea</li> </ul> <p>Q&amp;A and Interactive Discussion with Participants</p>
<b>12:30-2:30PM</b>	<b>Lunch</b>

<p><b>Session 3</b></p> <p><b>2:30-3:30PM</b></p>	<p><b>Regulation for electricity market reform</b></p> <p>Many economies have undergone significant reform in their electricity sectors over the past decades. In most cases, the supply of electricity was undertaken by a State-Owned Enterprise that was a vertically integrated utility responsible for generation, transmission, distribution and retailing of electricity. However, concerns arose with respect to government ownership models because of poor incentives to operate efficiently. As a result, a standard reform paradigm evolved with key features that include separation of commercial, regulatory and policy functions, as well as unbundling of segments where feasible to facilitate competition. This session will explore appropriate regulatory design and application for economies undergoing market reforms in the electricity sector. In view of that, speakers will discuss the prospect of making fundamental changes to the market to accommodate the inevitable transition from centralized, dispatchable power to decentralized, intermittent generation sources.</p> <p><b>Moderator:</b> Dr Bronwyn Howell, Wellington School of Business and Government at Victoria University of Wellington, New Zealand</p> <p><b>Speakers:</b></p> <ul style="list-style-type: none"> <li>• Professor Mark Jamison, Director of Public Utility Research Centre, Warrington College of Business, University of Florida</li> <li>• Mr Ridho Pamungkas, Head of Regional Office, Indonesian Competition Commission</li> </ul> <p>Q&amp;A and Interactive Discussion with Participants</p>
<p><b>Session 4</b></p> <p><b>3:30-4:30PM</b></p>	<p><b>Regulating telecommunication in an ever-changing environment</b></p> <p>The rapidly evolving landscape of technologies, development of innovative products and digital platforms, and growing consumer demands for more data and improved connectivity, are hallmarks of telecommunications industry today. The industry is further impacted by government policies on broadband networks, spectrum allocation and universal services. These dynamics have created challenges for regulators. Regulations need to promote efficient access to key infrastructure and competition in related markets while, at the same time, maintain incentives for efficient investment and innovation. This session will discuss these with a view to recommend a policy and regulatory frameworks that need to recognize how new technologies, new products and increasing convergence can potentially reinforce effectiveness of established regulatory approaches.</p> <p><b>Moderator:</b> Ms Zyanya Andrea GAMBOA MENDOZA, Executive Director-Regulated Markets, Federal Economic Competition Commission of Mexico</p> <p><b>Speakers:</b></p> <ul style="list-style-type: none"> <li>• Dr. Bronwyn Howell, Wellington School of Business and Government at Victoria University of Wellington, New Zealand</li> <li>• Mrs Andrea Escobedo Garcia, Director of Radio Spectrum Regulation and Project Management, Federal Telecommunications Institute, Mexico</li> <li>• Professor Mark Jamison, Director of Public Utility Research Centre, Warrington College of Business, University of Florida</li> </ul> <p>Q&amp;A and Interactive Discussion with Participants</p>
<p><b>4:30: -5:00PM</b></p>	<p><b>Closing Remarks</b></p> <p>Dr. Osborne Sanida, Director - National Research Institute of Papua New Guinea</p>