# Workshop on Advancing Digital Rural Community Models for Sustainable Agriculture and Inclusive Growth in APEC Economies

APEC Policy Partnership on Food Security

December 2025

Asia-Pacific
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We would like to express our sincere appreciation to the co-sponsoring APEC economies Japan; Republic of Korea and United States, for their invaluable support in advancing the goals of this Project. This Project was made possible with funding from the APEC Support Fund (ASF) General Fund.

As part of the Project, the Workshop on “Advancing Digital Rural Community Models for Sustainable Agriculture and Inclusive Growth in APEC Economies” was held on 30 September and 1 October 2025, in Ha Noi, Viet Nam. The Workshop featured four thematic sessions focused on concepts and trends shaping Digital Rural Communities (DRCs), practical digital solutions from APEC economies, enabling policy frameworks for scaling, and regional networking to foster collaboration on smart villages and digital transformation.

We are grateful to all speakers, experts, and participants whose active contributions made the Workshop a success. Their valuable insights and shared experiences greatly enriched the discussions, deepening understanding of digital rural transformation across APEC economies and inspiring new pathways for inclusive, resilient, and collaborative development.

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## I. BACKGROUND

In today's rapidly evolving global context, digital transformation is reshaping economies and societies, creating both opportunities and challenges for sustainable development. For rural areas in particular, digital technologies present powerful tools to boost agricultural productivity, enhance market access, strengthen value chains, and improve the quality of life for rural communities. Across the Asia–Pacific region, economies are increasingly recognizing the importance of Digital Rural Communities (DRCs) as a model to drive inclusive and resilient rural transformation in line with broader APEC priorities on digital economy, food security, and sustainability.

Despite these opportunities, many rural areas continue to face significant barriers to digital adoption. Limited infrastructure, inadequate connectivity, insufficient digital literacy, and resource constraints remain key challenges for scaling digital innovations in agriculture and rural development. Small-scale farmers, women, and vulnerable groups are often at risk of being left behind, while fragmented policy frameworks and weak institutional coordination further hinder progress. Addressing these challenges requires regional cooperation, knowledge sharing, and the identification of scalable best practices that can be adapted across diverse contexts.

Against this backdrop, the Institute of Policy and Strategy on Agriculture and Environment (ISPAE) under the Ministry of Agriculture and Environment (MAE) organized the Workshop "Advancing Digital Rural Community Models for Sustainable Agriculture and Inclusive Growth in APEC Economies". The event served as a platform for policymakers, experts, and practitioners from APEC member economies to exchange knowledge and showcase best practices on DRC development and digital innovations in agriculture and rural development.

The Workshop aimed to provide participants with a comprehensive overview of DRC progress within APEC, including policy frameworks, practical models, and opportunities for regional collaboration. It will highlight enabling conditions for scaling up inclusive digital transformation—such as supportive policies, infrastructure investment, institutional coordination, and stakeholder engagement—while fostering dialogue on future directions. Through this exchange, the Workshop sought to chart concrete pathways for advancing smart villages and digitally empowered rural communities, thereby contributing to inclusive growth, resilience, and sustainability.

The workshop was held on 30 September and 1 October 2025, at Pan Pacific Hotel, No.1 Thanh Nien Str., Ha Noi, Viet Nam, with the participation 70 delegates are, including approximately 18 international representatives from APEC member economies and 52 delegates from Viet Nam. The Vietnamese participants included officials from relevant departments of the Ministry of Agriculture and Environment, the Ministry of Science and Technology, and the Ministry of Industry and Trade, as well as representatives from research institutes, experts and scientists in related fields, and industry associations:

- 35 females (50%).
- Number of Speakers: 15
- Number of participants (not including speakers): 55 people.

The workshop was divided into four sessions:

The first session was named “Empowering Rural Futures: Concepts, Trends, and Digital Landscape”. It provided an overview of policy frameworks and highlighted the evolving digital landscape in agriculture and rural development across APEC economies, setting the stage for deeper discussions throughout the Workshop.

The second session was titled “Showcasing Best Practices – Digital Solutions from the Ground”. Session 2 highlighted practical experiences and best practices in building Digital Rural Communities (DRCs). It showcased models from Viet Nam and other APEC economies, demonstrating how digital solutions help address rural challenges, support MSMEs, empower women and communities, and offered lessons on scalable approaches for inclusive development across the region.

The third session addressed “Policy Frameworks and Initiatives for Scaling Digital Rural Communities (DRCs) in APEC Economies.” In this session, delegates examined the policy frameworks, domestic programs, and initiatives driving the scale-up of Digital Rural Communities (DRCs) across APEC economies. The discussion emphasized the importance of supportive policies, institutional coordination, infrastructure investment, and stakeholder engagement in creating an enabling environment, while also laying the foundation for a shared regional roadmap to advance DRC development.

The fourth session focused on “Networking for Regional Collaboration on DRC in APEC economies.” Session 4 provided an interactive platform for representatives from Viet Nam and other APEC economies to connect and exchange ideas. It created a networking space to explore opportunities for collaboration on digital transformation and the development of smart villages and communes, fostering stronger regional cooperation on advancing Digital Rural Communities.

## II. WORKSHOP SUMMARY

### 1. Opening Section

***Opening Remark by Dr. Nguyen Anh Phong, Deputy Director General of ISPAE***

Dr. Nguyen Anh Phong warmly welcomed all delegates and highlighted the significance of the international workshop on advancing smart village/commune models for sustainable and inclusive rural development in APEC economies. He emphasized that in the context of globalization and rapid digital transformation, rural development must go beyond physical infrastructure to embrace innovation and digital technologies. Smart village and Digital Rural Community (DRC) models, combining local strengths with modern tools such as IoT, big data, AI, and e-commerce, were presented as strategic solutions to narrow the rural–urban digital divide, enhance agricultural productivity, improve governance, and strengthen resilience.

He acknowledged that while APEC economies collectively represent a major share of global GDP and trade, many still face persistent rural–urban disparities in income, infrastructure, services, and access to technology. Rural communities are also more vulnerable to climate change and market fluctuations, with women, youth, and MSMEs particularly at risk of being left behind. Yet, successful practices from People’s

Republic of China; Japan; Republic of Korea; Thailand and Viet Nam have demonstrated the potential of smart village initiatives, despite remaining challenges such as uneven infrastructure, limited digital skills, and the need for stronger policies, financing, and public–private partnerships.

Dr. Phong underscored that the smart village initiative aligns closely with APEC's strategic priorities, including the Putrajaya Vision 2040, the Aotearoa Plan of Action, and the Bangkok Goals on the Bio-Circular-Green (BCG) Economy, all of which stress digital innovation, inclusivity, and sustainability. In Viet Nam, he noted, the government has integrated digital transformation into the "New Rural Development Program," with pilot models, digital cooperatives, and e-commerce solutions under the OCOP program already showing promising results.

He concluded by stressing the importance of international cooperation, innovative initiatives, and private sector engagement in driving comprehensive rural digital transformation. The workshop, he noted, serves as a crucial platform for APEC economies to share lessons, discuss challenges, and propose policy solutions to expand smart village models. Expressing his confidence in the active contributions of experts, policymakers, and stakeholders, he affirmed that the workshop would generate practical initiatives, concrete policy directions, and new opportunities for collaboration to advance sustainable and inclusive rural development across the Asia–Pacific.

## 2. Session 1: Empowering Rural Futures: Concepts, Trends, and Digital Landscape

Session 1 set the stage for the Workshop by introducing the core concepts and emerging trends shaping Digital Rural Communities (DRCs). The session provided an overview of policy frameworks and digitalization trends in agriculture and rural development across APEC economies. This session featured 5 presentations to explored pathways to close the urban–rural digital divide, examined DRC models within the region, and discussed Viet Nam's digital transformation landscape and its implications for rural areas.

### *Presentation 1. Rural Digital Divide: Drivers and Barriers to Inclusive Transformation*

Speaker: Ms. Nithima Ducrocq, Digital Fitness Programme Facilitator, UNDP

Mrs. Nithima Ducrocq serves as the Digital Fitness Programme Facilitator at UNDP, where she leads initiatives that enhance digital competencies across communities, organizations, and governments. With a deep commitment to inclusive digital transformation, she has played a key role in designing and implementing programs that connect technology with sustainable development objectives.

Throughout her professional journey, Mrs. Ducrocq has contributed to numerous digital literacy and capacity-building projects, enabling diverse stakeholders to effectively utilize digital tools for governance, innovation, and socio-economic advancement. Her work focuses on empowering individuals and institutions to

integrate digital solutions that improve public service delivery, promote transparency, and strengthen resilience against evolving social and environmental challenges.

Renowned for her hands-on facilitation approach, Mrs. Ducrocq creates practical learning experiences that equip participants to not only grasp digital concepts but also apply them in real-world contexts. She has worked collaboratively with governments, civil society, and international organizations, ensuring that digital transformation efforts are inclusive, sustainable, and responsive to local needs.

Through her leadership, Mrs. Ducrocq continues to advance UNDP's mission of promoting sustainable development, reducing inequalities, and building digital resilience. Her dedication to digital empowerment and social impact positions her as a prominent advocate at the intersection of technology and development.

Presentation details:

This presentation examined the rural–urban digital divide and its implications for inclusive transformation. Despite 5.5 billion people being online in 2024, nearly one-third of the global population—2.6 billion individuals—remain offline, with the majority living in rural areas of low and lower-middle income economies. The session highlighted that internet connectivity alone is not enough to bridge the gap; issues such as affordability, digital literacy, social norms, and the relevance of available services continue to exclude rural populations from digital opportunities. These barriers reinforce existing inequalities, leaving rural communities without equal access to markets, services, and opportunities that are increasingly delivered online.

To address these challenges, the presentation emphasized the need for comprehensive policy measures and multi-stakeholder partnerships. Strategies such as building digital public infrastructure—digital IDs to access social services and digital payment systems to enable financial inclusion—are essential to closing the divide. At the same time, strong data governance, privacy protections, and inclusive service design were underscored as critical for building trust and encouraging adoption among vulnerable groups. By collecting and analyzing disaggregated data, policymakers can better understand local needs and tailor interventions to overcome barriers related to affordability, relevance, and social norms. Ultimately, bridging the digital divide is not simply about technology access, but about creating an enabling environment where rural citizens can fully participate in, and benefit from, the digital economy.

***Presentation 2. Digitalization and DRC models in APEC economies***

Speaker: Mrs. Ta Thu Trang, Center for Information and Services in Agriculture and Environment (AGREINFOS)

Ms. Ta Thu Trang is a Senior Researcher at the Center for Information and Services in Agriculture and Environment (AGREINFOSE) under the Ministry of Agriculture and Environment (MAE). With over 15 years of experience in agriculture and rural development, she has played pivotal roles in numerous national and international development projects, serving as both Team Leader and Key Researcher.

Specializing in Public Policy and Management, Ms. Trang's expertise spans policy analysis and policy development in areas such as public–private partnerships,

agribusiness development, agricultural digitalization, land management, collective economy and cooperatives, and circular agriculture. Her work contributes significantly to shaping strategies that promote innovation, sustainability, and inclusivity within Viet Nam's agricultural sector.

In addition to her technical expertise, Ms. Trang is recognized for her strong stakeholder engagement and communication skills. She has collaborated extensively with enterprises, commodity associations, and local authorities, fostering close connections between policy formulation, on-the-ground practices, and sectoral needs.

Through her research and leadership, Ms. Ta Thu Trang continues to contribute to advancing evidence-based policymaking and strengthening the link between agriculture, environment, and sustainable development.

Presentation details:

This presentation explored the concept of Digital Rural Communities (DRCs), also referred to as Smart Villages, and their growing role in transforming rural areas across APEC economies. Originating from the European Union's "Smart Villages" initiative, the DRC model was defined as a community-driven approach that leverages digital technologies, local assets, and multi-stakeholder partnerships to improve economic, social, and environmental well-being. In Viet Nam, this concept has been adapted into official models, including "New-style Rural Smart Communes" and "E-commerce Communes," designed to foster resilience, strengthen local economies, and narrow the urban–rural gap. Key enablers such as supportive policy frameworks, investment in digital literacy, accessible finance, and collaborative public–private–community partnerships were emphasized as essential for scaling these initiatives.

The session also examined the transformative impacts that DRCs can unlock, ranging from boosting agricultural productivity through precision farming to enabling e-commerce and financial inclusion for smallholders. DRCs were shown to play a vital role in enhancing social inclusion by expanding digital healthcare, education, and opportunities for women, while also strengthening environmental sustainability and community governance. However, APEC economies face persistent challenges: infrastructure gaps, affordability barriers, fragmented policies, and limited digital skills continue to constrain progress. To overcome these divides, the presentation highlighted APEC's strategic frameworks such as the Putrajaya Vision 2040, AIDER, and the Framework for Securing the Digital Economy, along with emerging trends like blockchain, automation, and human-centric digitalization. The path forward calls for stronger cooperation, robust data systems, and scalable business models to ensure that pilot initiatives evolve into sustainable, inclusive digital ecosystems for rural transformation across the region.

***Presentation 3. Digitalization transformation landscape in Viet Nam: Implications for rural areas***

Speaker: Dr. Nguyen Duc Thuy, Institute of Digital Technologies and Digital Transformation, MoST

Dr. Nguyen Duc Thuy is a leading expert in digital technology and transformation, currently serving at the Institute of Digital Technology and Transformation. He has made significant contributions to advancing Viet Nam's digital innovation landscape, helping shape the nation's strategic direction in emerging technologies.

Combining academic excellence with practical leadership, Dr. Thuy's expertise covers key areas such as artificial intelligence (AI) and cloud computing. He has authored a number of influential publications that have informed AI policy development and digital transformation strategies in Viet Nam.

Driven by a passion for bridging research and real-world application, Dr. Thuy brings a forward-thinking perspective on how cutting-edge technologies can fuel innovation and promote sustainable societal progress. His insights continue to inspire policymakers, researchers, and industry leaders alike.

Dr. Thuy is also a regular speaker at domestic, regional, and international conferences, where he shares his deep knowledge on digital policy, artificial intelligence, and digital transformation, contributing to the global dialogue on technology-driven development.

Presentation details:

Presentation 3 explored the context of digital transformation in Viet Nam and its direct implications for rural development. Digital transformation was presented as a holistic process that goes beyond technology adoption, reshaping governance, production, and social interactions while creating new economic and social value. Domestic strategies, such as Resolution 52-NQ/TW and the Domestic Digital Transformation Program (Decision 749/QĐ-TTg), provide a roadmap for building a digital government, a competitive digital economy, and a digitally empowered society. The presentation emphasized that digital transformation is no longer optional: without it, sectors, organizations, and individuals risk falling behind in productivity, competitiveness, and access to opportunities. Viet Nam has made progress, with its digital economy contributing 18.3% of GDP in 2024, and ambitious targets are set for 2030 to further strengthen digital capabilities, innovation, and e-government performance.

Focusing on rural areas, the presentation highlighted how digital transformation initiatives are tailored to the needs of communes and farmers. Policies such as Decision 924/QĐ-TTg and related MARD/MAE digital plans support the development of "Smart Communes," integrating digital government, digital economy, and digital society at the local level. Farmers are becoming "digital farmers," capable of using e-commerce platforms, precision agriculture tools, and digital services to enhance productivity, reduce costs, and access broader markets. Digital platforms also foster collective action through cooperatives, farmer groups, and community networks, improving resilience and economic outcomes.

The discussion underlined the critical enablers for successful rural digital transformation, including infrastructure development, digital literacy and skills training, affordability of services, and the relevance of digital solutions to local needs. Challenges such as gaps in connectivity, limited human capacity, and uneven adoption across regions were acknowledged, alongside the importance of public-private partnerships and supportive policies to scale these models effectively.

Overall, the presentation concluded that digital transformation offers a pathway to modernize agriculture, increase rural productivity, and enhance quality of life, while narrowing the urban–rural development gap. By linking technology adoption with policy support, community engagement, and human capacity building, Viet Nam's approach demonstrates a practical model for inclusive and sustainable rural digital development.

***Presentation 4. Building Inclusive Digital Agriculture Ecosystems: Insights from Platforms to People***

Speaker: Anne Claudine, Agricultural Development and Commercialization Department, Mekong Institute

Ms. Anne Claudine is a key member of the Agricultural Development and Commercialization Department at the Mekong Institute, where she plays an integral role in promoting sustainable agricultural development and market-oriented growth across the Mekong subregion. Her work focuses on value chain enhancement, agribusiness development, and commercialization strategies, supporting smallholder farmers, cooperatives, and rural enterprises to boost productivity, strengthen market linkages, and increase income.

With extensive experience in program design and implementation, Ms. Claudine has led initiatives that foster innovative agricultural practices, promote regional cooperation, and integrate digital tools into agricultural systems. She provides technical assistance, capacity building, and advisory services to diverse stakeholders, ensuring that programs are both inclusive and sustainable.

Her contributions align closely with the Mekong Institute's mission of advancing regional integration, cross-border collaboration, and inclusive economic development. By bridging research, policy, and practice, Ms. Claudine helps create enabling conditions for rural communities to thrive in an evolving agricultural landscape. Her commitment to empowering farmers and promoting sustainable commercialization makes her a valued leader in regional agricultural development efforts.

Presentation details:

Presentation 4 examined how digitalization is reshaping agriculture, and the steps needed to build inclusive digital agriculture ecosystems. Digital technologies offer opportunities to improve productivity, expand market access, and strengthen climate resilience. Yet, adoption remains uneven due to barriers such as low digital literacy, affordability constraints, and limited usability of platforms. Smallholder farmers—often cultivating less than 2 hectares, relying on rain-fed agriculture, and facing weak market power—experience these challenges most acutely, with women farmers encountering additional hurdles in land access, training, credit, and information.

The discussion highlighted the diversity of digital platforms across government, private, and development sectors, ranging from SMS-based advisories to e-commerce and digital finance solutions. While some regions, such as Cambodia, show strong smartphone penetration and active social media use, agriculture-specific tools remain underutilized, and engagement is often passive. In Lao People's Democratic Republic

and other politically or geographically constrained contexts, uptake is slower, limited by connectivity, affordability, literacy, and sustainability concerns.

To address these challenges, the presentation emphasized the importance of aligning platforms with the needs of smallholders through co-design, enhanced digital extension, localized content, and continuous support. Regional cooperation and public–private partnerships were also identified as critical enablers to reduce gaps in access, trust, and capacity. The six proposed system shifts—from designing for equity to investing in digital public goods—aim to move the focus from technology to people, ensuring digital solutions deliver better incomes, safer food, and more resilient rural futures.

***Presentation 5. Assessment of smart commune development in New Rural Development Programme period 2021 - 2025***

Speaker: *Mr. Phuong Dinh Anh,* Deputy Director General, NRD Programme

Mr. Phuong Dinh Anh is the Deputy Director General of the Office for New Rural Development (NRD) under the Government Office of Viet Nam. In this capacity, he provides strategic advice and coordination support to the Central Steering Committee in the implementation of the National Target Program for New Rural Development (2021–2025). He places strong emphasis on the role of communication as a vital tool for enhancing community awareness and mobilizing public participation in the NRD process.

Prior to his current position, Mr. Phuong Dinh Anh served at the NRD Coordination Office of Ha Tinh Province, where he was seconded from the central government. During this time, he played a key role in organizing conferences, training courses, and communication campaigns to disseminate the Party's directives and the Government's policies on rural development. He also worked closely with media organizations to ensure widespread and effective communication about the program's goals and achievements.

With over 20 years of experience in agriculture and rural development, Mr. Phuong Dinh Anh has made significant contributions to enhancing the quality, efficiency, and sustainability of the NRD Program. His leadership reflects a deep commitment to building modern, prosperous, and culturally rich rural communities across Viet Nam.

Presentation details:

Presentation 5 provided an overview of Viet Nam's strategic shift from expanding rural development coverage to enhancing quality and sustainability through digital transformation. Guided by Decision No. 924/QĐ-TTg (2022), digitalization has been positioned as a core task rather than a supportive tool, with people placed at the center and strong participation encouraged from enterprises and communities. The framework rests on three pillars—digital government, digital economy, and digital society—each with specific 2025 targets aimed at improving administrative services, production models, and access to essential online services.

The presentation highlighted significant implementation results, including improved awareness among officials and rural residents, provincial-level planning, and the

rollout of pilot models. Digital government initiatives have achieved notable successes, such as online administrative services in Nam Dinh and Hue's adoption of 100% digital signatures. In the digital economy, communes like My Xuong have advanced electronic traceability and direct farmer–consumer connections, while others adopted e-commerce platforms and OCOP product authentication. Meanwhile, the digital society pillar has seen the deployment of surveillance systems, telemedicine, e-education, VR-enabled tourism, and expanded connectivity infrastructure. These pilot models demonstrate both practical progress and the potential for replication across provinces.

Despite these advances, challenges remain, including uneven infrastructure, limited digital literacy, financial constraints, and complex administrative procedures that slow implementation. Lessons learned emphasize that transformation must be driven by practical needs, with communes as focal units and people as active agents of change. Looking ahead, the presentation called for institutional improvements, investment in infrastructure and digital human resources, and the replication of effective models to build connected digital ecosystems. The conclusion underscored the importance of political will, innovation, and collective action to realize the vision of "Eco-friendly Agriculture – Modern Rural Areas – Cultured Farmers."

### 3. Session 2: Showcasing Best Practices – Digital Solutions from the Ground

This session focused on practical experiences and innovative approaches in building Digital Rural Communities across APEC economies. Participants explored how digital technologies were applied on the ground to address rural challenges, support MSMEs, empower women, and promote inclusive development. The session highlighted lessons from local initiatives in People's Republic of China; Republic of Korea; Thailand and Viet Nam illustrating scalable solutions in areas such as smart rural communes, sustainable agriculture, AI-powered food systems, and carbon-smart farming. Through six presentations, the session demonstrated the processes, successes, and challenges of implementing digital solutions, offering insights for replication and adaptation across diverse rural contexts. Delegates gained a clear understanding of how tailored digital strategies could enhance productivity, strengthen community resilience, and foster sustainable rural development.

#### *Presentation 1. Process of building a smart rural commune in Quang Tho commune, Hue city, Viet Nam*

Speaker: Mr. Le Thanh Nam, New Rural Development Office of Hue City

Mr. Le Thanh Nam brings over 23 years of experience in agriculture and rural development, with a career spanning diverse roles from irrigation engineering to program management. In the first 11 years of his professional journey, he focused on irrigation and rural infrastructure development, contributing to major projects such as coastal dike upgrades, riverbank and shoreline protection, and the construction of the Thuy Yen Reservoir—all of which enhanced production safety and strengthened the resilience of local communities.

For the past 12 years, Mr. Nam has been deeply involved in the National Target Program for New Rural Development in Hue City. Beginning as a senior officer and

now serving as Deputy Chief of Office, he has played a central role in coordinating the program and implementing a range of innovative pilot models. These include the “Smart Commune” model in Quang Tho, rural tourism linked with New Rural Development in Ngu My Thanh Village, the Bach Ma wine development initiative in Loc Tri Commune aimed at achieving 5-star OCOP standards, as well as the Nam Dong Food Safety Market and the domestic wastewater treatment model in An Lo Market, Phong Hien Commune.

Beyond program coordination, Mr. Nam actively fosters partnerships with international organizations, mobilizing resources and expertise to enhance the quality and sustainability of Hue’s rural development efforts. His leadership reflects a strong commitment to innovation, integration, and sustainable rural transformation in the context of Viet Nam’s New Rural Development goals.

Presentation details:

The presentation showcased the development of the Smart Rural Commune in Quang Tho, Quang Dien District, Thua Thien Hue Province, highlighting the process, achievements, and lessons learned in applying digital transformation at the local level. Hue city, with its heritage and rural potential, leveraged the Hue-S smart city platform as a foundational public digital asset, enabling timely socio-economic services and administrative reform. Quang Tho was selected as a pilot commune to implement a Smart Operations Center, forming the basis of the “Smart New Rural Development” initiative.

The Smart Commune model in Quang Tho was built on three pillars: digital government, digital economy, and digital society. Outcomes included fully digitalized public services, broadband internet access, security monitoring systems, and streamlined administrative procedures. Digital economic initiatives strengthened smart agriculture, tourism, and e-commerce, increasing incomes and promoting cashless payments. Residents benefited from improved access to healthcare, education, and information, while the poverty rate fell significantly to 0.53%, affirming Quang Tho’s status as a model smart commune.

Despite these achievements, challenges remained in sustaining and upgrading the model, including human resource needs, financial and technical capacity, and coordination with specialized units. The presentation concluded with proposals for APEC cooperation: establishing a Smart Rural Communities network, promoting technology transfer, harmonizing digital agricultural standards, and organizing joint digital skills training programs for farmers and local authorities.

***Presentation 2. Digital Village Construction: Underlying Logic, Practical Missteps, and Path Optimization, People’s Republic of China***

Speaker: Dr. Jingwei Han, Nanjing University of Finance and Economics, People’s Republic of China

Dr. Han Jingwei is a distinguished researcher specializing in grain supply chain management and material reserve policy. His work primarily explores collaborative loss reduction mechanisms within grain supply chains, with a strong theoretical and

policy-oriented approach toward enhancing domestic food security and resource efficiency.

Dr. Han has an impressive academic record, having published over 10 papers in SSCI-, SCI-, and CSSCI-indexed journals, along with securing two software copyrights. His research reports have been recognized and adopted by provincial and economy-wide authorities, reflecting the practical value and policy relevance of his work.

He currently leads the General Program project (2024) of the National Natural Science Foundation of China (NSFC), titled *"Research on the Collaborative Loss Reduction Mechanism in Grain Supply Chains Based on Service Ecosystems."* In addition, Dr. Han has participated in several major domestic research projects, including the National Social Science Foundation of China's Major Project on *"Research on the Practices and Experiences of the Party's Leadership in Safeguarding National Food Security Since the 18th National Congress of the Communist Party of China."*

Through his academic leadership and commitment to applied research, Dr. Han Jingwei contributes significantly to advancing China's food security strategies, supply chain efficiency, and sustainable agricultural development.

Presentation details:

The presentation examined digital rural construction as the latest stage of agricultural and rural informatization, tracing China's transition from early agricultural informatization in the late 1970s to the comprehensive digital village strategy launched since 2018. Digital technology was highlighted as a transformative force driving modernization in agriculture, governance, and rural life, while also reshaping government–market relations and addressing the urban–rural digital divide. The speaker emphasized that digitization, if implemented inclusively, could reduce transaction costs, stimulate innovation, and improve farmers' quality of life.

At the same time, several practical misunderstandings were identified, including an overemphasis on hardware investment, digital formalism, inequitable resource allocation, and excessive dependence on external operators. These practices risked creating unsustainable systems, widening the digital divide, and suppressing grassroots innovation. To overcome these issues, the presentation proposed four key recommendations: establishing an effective multi-level governance mechanism, strengthening data governance and security, ensuring more equitable allocation of public resources, and improving the digital literacy of both local cadres and farmers. These policy directions were presented as critical to fostering inclusive, sustainable, and innovation-driven digital rural development.

***Presentation 3. DRC Models in Thailand: Digital Solutions for Sustainable Sugarcane Farming***

Speaker: Mr. Worrawat Sriyook, Advisor-Sustainable Development, Mitrphol Group, Thailand

Mr. Worrawat Sriyook currently serves as Advisor for Sustainable Development at Mitr Phol Group, one of Thailand's largest agribusiness and renewable energy conglomerates. In this capacity, he plays a key role in driving the company's

sustainability strategy, integrating environmental, social, and governance (ESG) principles into operations to promote inclusive and climate-resilient growth.

Beyond his corporate leadership, Mr. Sriyook is deeply engaged in advancing sustainability policy and multi-sector collaboration at the domestic and international levels. He is the Chairperson of the Environment and Energy Commission at the International Chamber of Commerce Thailand (ICC Thailand) and serves as Advisor to the Committee of the Global Compact Network Thailand (GCNT) under the United Nations Global Compact (UNGC).

Mr. Sriyook also holds several influential positions, including Chairman of the Subcommittee on Climate Change Policy under the Thailand Carbon Neutral Network Committee (TCNN), and ESG Expert for the Stock Exchange of Thailand (SET). He represents the Thai Chamber of Commerce in the Forestry Mapping Working Group under the EU Deforestation Regulation (EUDR) Implementation Committee, contributing to Thailand's compliance and engagement with global environmental standards.

In addition, he serves as Vice Chair of the Committee on Educational Policy Development, Member of the Committee on Value Enhancement of Agricultural Products, and Member of the Committee on Circular Economy and Environment at the Thai Chamber of Commerce. He is also part of the Committee for Academic and Private Sector Collaboration at King Mongkut's University of Technology Thonburi (KMUTT), promoting innovation and sustainability partnerships between academia and industry.

With a career dedicated to sustainability leadership, policy advocacy, and cross-sector collaboration, Mr. Worrawat Sriyook stands as a prominent voice in advancing Thailand's sustainable development agenda and strengthening its contribution to regional and global climate action.

Presentation details:

The presentation on Thailand's Mitrphol Group highlighted the challenges faced by the agri-food sector, particularly in sugarcane farming, due to climate change, labor shortages, low productivity, and rising sustainability compliance requirements. Despite agriculture engaging 27 million people—around one-third of the population—it contributes only 9% to GDP, reflecting low efficiency and outdated practices. The issue of burned cane, driven by labor preference and faster harvesting, was noted as a key obstacle. While burned cane harvesting is penalized, solutions such as government-backed low-interest loans for harvesters, mechanization, and incentives for fresh cane were discussed to promote more sustainable practices.

Mitr Phol's ModernFarm model was presented as a leading example of digital transformation in sugarcane. Precision farming technologies such as GPS guidance, variable-rate fertilization, IoT-based automatic irrigation, UAV field monitoring, and telematics have improved productivity, efficiency, and environmental outcomes. These innovations, alongside initiatives such as purchasing cane leaves for biomass energy, support Thailand's broader goals of aligning agricultural sustainability with business strategies, reducing greenhouse gas emissions, and adapting to stricter domestic and

international sustainability standards. The presentation emphasized that digital solutions should be viewed as strategic investments, not expenses, and that collaboration, supply chain engagement, and readiness for new regulations are critical for building a resilient and competitive agricultural sector.

***Presentation 4. A New Standard for Food Resources: Powered by Big Data, Driven by AI***

Speaker: *Mr. Chang Sehun,* CEO, SNE Company, Republic of Korea

Mr. Chang Sehun is the Chief Executive Officer of SnE Company Corporation, where he leads innovative initiatives that integrate technology and business strategy to promote sustainable agricultural and trade solutions. With a distinguished career spanning media, business innovation, and research, he brings a unique interdisciplinary perspective to entrepreneurship and digital transformation.

Mr. Chang holds a Bachelor's degree in Korean Language and Literature from Yonsei University and a Master of Business Administration from the KAIST Graduate School of Future Strategy. Prior to founding SnE Company, he spent 20 years as a journalist, including leadership roles at *Seoul Newspapers*, where he gained extensive experience in communication, media relations, and public affairs.

An accomplished innovator, Mr. Chang is the designer of the Ugly Agricultural Products Transaction Price Algorithm and the Reverse Transaction Price Algorithm, pioneering systems that help stabilize agricultural trade and create value from overlooked or undervalued products. He also developed the Business Model and Transaction Network Scheme that underpin SnE Company's operational framework.

Mr. Chang has served as a Visiting Researcher at Duke University in the United States and is a member of the Kwanhun Club, a prestigious association of senior journalists in Korea. His professional excellence has been recognized through several honors, including the Presidential Commendation and the Minister of the Interior Commendation.

Through his visionary leadership, Mr. Chang Sehun continues to advance innovation, sustainability, and social value creation in Korea's agricultural and digital business ecosystems.

Presentation details:

The presentation introduced SNE's AI-driven agricultural forecasting platform, designed to optimize the full cycle of agricultural production—from predicting market demand and crop yields to guiding growth and harvest timing. Unlike IoT-based models, SNE leverages proprietary big data and ensemble AI techniques to deliver low-cost, high-precision forecasts without requiring physical equipment. Its unique IP portfolio includes AI systems for price forecasting (analyzing over 1 million data points daily), crop yield prediction (combining satellite and cadastral data), and growth forecasting (integrating 90,000+ image vectors with weather and soil data). These technologies position the company as a leader in Korea's agricultural AI sector and a potential global player in precision agriculture.

Applied to Viet Nam, SNE's platform seeks to address persistent challenges such as low farmer incomes, limited VietGAP certification, and barriers to adopting costly smart farm equipment. By digitizing handwritten farm records through OCR, automating compliance with VietGAP/GlobalGAP standards, and offering AI-driven yield and price predictions, the company aims to make advanced digital transformation accessible to smallholder farmers. Partnerships with government institutions and local enterprises are intended to build an integrated SaaS platform, enabling improved quality management, reduced input costs, and more resilient supply chains.

At the global level, the company noted rapid growth of AI and precision agriculture markets, driven by climate change, food security concerns, and government support. With projected CAGR of over 30% in AI and double-digit growth in precision farming, Southeast Asia presents a significant opportunity for low-cost, high-efficiency AI applications. SnE emphasized that its approach could not only preempt the agricultural data market in Viet Nam but also strengthen ESG management, increase farmer incomes, and build collaborative models for sustainable agriculture worldwide.

***Presentation 5. Smart commune model based on science, technology and innovation associated with digital transformation in specialty production areas in Quang Tri Province, Viet Nam***

Speaker: Mr. Nguyen Dinh Tinh, CEO, Digital Agriculture Cooperative

Mr. Nguyen Dinh Tinh is the Chief Executive Officer of the Digital Agriculture Cooperative (DAC), where he leads efforts to advance digital transformation in Viet Nam's agriculture and rural development sectors. With a strong background in research and technology application, and over a decade of experience in implementing digital solutions, he has played key roles in several economy-wide and provincial development initiatives.

Mr. Tinh has served as Secretary for two national-level projects—one focusing on the digital transformation of cooperatives nationwide, and another on the Smart Village – Connected Commune model in Thua Thien Hue Province. In addition, he has led one provincial-level project and one provincial science and technology project as Principal Investigator, contributing to the integration of digital innovation into local governance and rural services.

He is the author and developer of the "Integrated Smart Rural Services Platform – Smart Commune", a comprehensive digital tool that has been successfully deployed and utilized across multiple provinces in Viet Nam. This platform supports local authorities and communities in improving management efficiency, enhancing service delivery, and promoting connectivity in rural areas.

Drawing on his deep expertise in agriculture and rural development, Mr. Nguyen Dinh Tinh envisions a future where Smart Commune solutions are widely implemented economy-wide, driving positive transformations in rural livelihoods, governance, and digital inclusion. His leadership exemplifies Viet Nam's growing momentum toward a digitally empowered and sustainable rural economy.

Presentation details:

The presentation highlighted the implementation of a smart commune model in Cam Chinh Commune, Quang Tri province, which integrates science, technology, and digital transformation into rural development and specialty production areas. The model was designed through careful site surveys and infrastructure assessments, followed by installation of equipment, training for local officials and residents, and ongoing technical support. The choice of Cam Chinh was based on its advanced rural status, digital infrastructure, and strong readiness for transformation, making it a suitable pilot under domestic guideline 3445/BNN-VPĐP and provincial development orientations.

The smart commune platform introduced a wide range of digital solutions, including survey and feedback tools, e-suggestion boxes, instant notifications, and VR360 community tourism services. It also digitized agricultural production for key local products such as medicinal herbs, and deployed IoT-based remote irrigation systems for pepper gardens. Citizens could access public information, participate in local markets online, monitor services through public cameras, and interact with authorities more efficiently.

Results showed that the model strengthened local governance, enhanced citizen engagement, and created a tailored framework that improved achievement rates against domestic criteria. The pilot not only demonstrated the potential of combining digital technology with rural production but also provided orientations for replication and scaling up across Quang Tri province, offering a practical example of rural digital transformation for other APEC economies.

***Presentation 6. Proactive carbon farming with AI and Digital Twins for sustainable agriculture in Thanh Hoa Province***

Speaker: *Dr. Nguyen Phi Le, Hanoi University of Science and Technology*

Associate Professor Dr. Le Phi Nguyen is a distinguished scholar and innovator in the field of artificial intelligence (AI), currently serving as the Acting Director of the HUST Institute for AI Innovation and Societal Impact (AI4LIFE) and an Associate Professor at the School of Information and Communication Technology, Hanoi University of Science and Technology (HUST).

Dr. Le earned her Bachelor of Engineering (2007) and Master of Science (2010) degrees from the University of Tokyo, and later obtained her Doctorate in Informatics (2019) from the Graduate University for Advanced Studies, National Institute of Informatics, Japan.

She leads a dynamic research group of over 80 members, conducting cutting-edge research in both theoretical AI and its applications in environmental science, climate change, and smart healthcare. Her prolific academic portfolio includes more than 130 publications in leading international journals and conferences such as ICML, NeurIPS, ICLR, EMNLP, and IJCAI. Her outstanding research achievements have earned her multiple Best Paper Awards, including at ISSNIP 2014, ICT-DM 2019, CCGrid 2023, and CANDAR 2023.

Dr. Le actively contributes to the global AI community as a Technical Program Committee (TPC) member and reviewer for prestigious conferences and journals, including AAAI, NeurIPS, CVPR, ECCV, ICCV, UAI, ToN, and IoTJ.

Her research has been funded by renowned institutions such as VinIF, NAFOSTED, the Ministry of Education and Training (MOET), the Ministry of Science and Technology (MOST), and Aus4Innovation. Through her academic leadership and research excellence, Associate Professor Dr. Le Phi Nguyen continues to advance AI innovation for sustainable development and societal impact in Viet Nam and beyond.

Presentation details:

The presentation highlighted Thanh Hoa Province's proactive carbon farming initiative that leverages AI, IoT, and Digital Twin technologies to advance sustainable agriculture. By transforming real-world farm data into a "virtual farm," the system enables low-cost carbon monitoring, AI-driven decision support, and scenario-based simulations. This approach allows farmers to optimize irrigation, fertilizer use, and adopt carbon-smart practices such as alternate wetting and drying, while also informing policymakers with data-driven strategies.

The results showed strong impact: province-wide agricultural land was digitized, emission maps were generated, and recommended practices led to a 35.95% reduction in $CH_4$ emissions, 32.83% reduction in $N_2O$ from fertilizer, and a 15.92% yield increase. Despite challenges of affordability, limited IoT coverage, and farmer adoption, the presentation emphasized opportunities for scaling through provincial alignment, partnerships, and private-sector collaboration. This case demonstrates the potential of AI and Digital Twin solutions to align climate goals with agricultural productivity across APEC economies.

## 4. Session 3: Policy Frameworks and Initiatives for Scaling Digital Rural Communities (DRCs) in APEC Economies

Session 3 examined how local policies, programs, and digital initiatives are shaping the development and scale-up of DRC models. The session emphasized the importance of supportive regulatory environments, institutional coordination, investment in digital infrastructure, and active stakeholder engagement. The three presentations highlighted practical experiences in advancing digitalization, addressing infrastructure gaps, and strengthening data systems for agriculture and rural development, providing valuable insights for building a shared roadmap to accelerate DRCs across the region.

Following the presentation, the panel discussion titled: "The Way Forward – Opportunities and actions for scaling DRC across APEC" was held. Panellists emphasized the need for cross-economy collaboration, innovative financing models, and public–private partnerships to overcome infrastructure and adoption challenges. Discussions also highlighted opportunities to harmonize standards, strengthen farmer capacity, and integrate sustainability goals into DRC initiatives, setting directions for collective action across APEC economies.

### *Presentation 1. DRC Development in Viet Nam*

Speaker: Mr. Nguyen Hoang Dan, Deputy Director General of the Digital Conversion Department and Information Resource Data, MAE

Mr. Nguyen Hoang Dan currently serves as the Deputy Director General of the Department of Digital Transformation under the Ministry of Agriculture and Environment. He brings with him 25 years of experience in research and state management in the fields of agriculture and rural development, including nearly a decade in leadership roles within specialized agencies and regulatory bodies focusing on statistics, information technology, and digital transformation.

Throughout his career, Mr. Dan has demonstrated strong expertise in research synthesis, data analysis, and policy formulation, contributing significantly to the modernization and digital transformation of Viet Nam's agricultural sector. His work continues to support the development of data-driven governance and innovation toward a more sustainable, efficient, and digitally connected agricultural system.

Presentation details:

The presentation underscored the central role of policies in enabling digital change in agriculture and rural areas. With over 60% of the population living in rural communities that contribute 37% of GDP, Viet Nam has positioned digital transformation as both a necessity and an opportunity to modernize governance, strengthen the rural economy, and enhance social welfare. Key national decisions, such as the National Digital Transformation Program (Decision 749) and the Digital Economy and Society Strategy (Decision 411), provide the overarching framework for building digital government, economy, and society. Complementary policies focus on sectors like agriculture, health, education, and logistics, while dedicated rural initiatives promote the piloting and scaling of smart communes and villages.

Achievements to date include the implementation of around 50 smart communes and over 700 smart villages, with successful models in tourism, agriculture, and craft industries demonstrating the potential of digital solutions for rural development. Progress has been driven by local government initiatives in provinces such as Quang Ninh, Thanh Hoa, Hue, and Dong Thap, which have introduced tailored smart village programs aligned with domestic priorities. Nonetheless, challenges persist, including fragmented legal frameworks, limited financial mechanisms, insufficient digital human resources, gaps in digital infrastructure, and low technology adoption among some rural populations.

Looking ahead, the policy direction emphasizes inclusive and people-centered transformation to ensure no one is left behind. Priorities include expanding 5G and fiber-optic coverage, scaling digital skills training, supporting farmers and cooperatives to access e-commerce and smart logistics, and digitizing core records in land, health, and education. The presentation also recommended the establishment of rural digital transformation funds, preferential credit schemes, and stronger partnerships with international organizations and private technology companies to sustain and accelerate progress.

***Presentation 2. Digitalization of Grain Quality and Nutrition Resource Databases for Sustainable Agriculture and Rural Development***

Speaker: Dr. Jianlei LIU, Academy of National Food and Strategic Reserves Administration, People's Republic of China

Dr. Jianlei Liu earned his Ph.D. in Nutrition and Food Safety from China Agricultural University, followed by a Postdoctoral Fellowship at Teagasc Food Research Centre, Ireland, funded by the China Scholarship Council (CSC).

Dr. Liu currently serves as an expert for ISO/TC 34/SC 4 Working Group 4 on Amylose in Rice under the International Organization for Standardization (ISO). He is also a member of the Expert Panel of the Crop Science Society of China (CSSC) and a Chinese Registered Dietitian (RD).

His research focuses on grain quality assessment and mechanisms, standards development and revision, and the construction and application of grain quality and nutrition resource databases. He has led numerous research initiatives, including three national-level projects under the Special Fund of the Chinese Central Government for Basic Scientific Research Operations in Commonweal Research Institutes, one "China Good Grain and Oil" action program, one ISO international standard, five industry standards, and one association standard.

Dr. Liu serves as a Guest Editor for the SCI journal *Processes* and as a regular reviewer for several international journals, including the *Journal of Cereal Science* and *Next Research*. He has authored over 40 peer-reviewed publications, with three ranking among the top 1% of high-impact papers on the China National Knowledge Infrastructure (CNKI). Additionally, he has contributed two book chapters to the Elsevier publication *Plant-Based Proteins: Sources, Extraction, Applications, Value Chain and Sustainability* (Academic Press).

Presentation details:

Presentation 2 highlighted how digital platforms can drive agriculture beyond yield-focused models toward nutrition-sensitive and climate-resilient systems. In People's Republic of China, a Grain Quality and Nutrition Database has been developed to integrate multi-source data on staple and minor crops, enabling retrieval and analysis by year, region, variety, and quality indicators. With modules for sampling, visualization, resource search, recommendations, and automated quality reporting, the platform provides a scientific basis for breeding, processing, and policymaking, while making complex data accessible to a wide range of stakeholders.

The database has already generated tangible outcomes, including the development of advanced grain testing equipment, image-based variety identification technologies, and new wheat varieties bred from elite germplasm. It has also supported revisions of domestic standards for wheat, rice, millet, and barley, demonstrating its ability to bridge research, policy, and industry. Looking forward, the platform aims to advance precision identification of grain varieties, predict processing characteristics, and expand services to breeders, seed companies, processors, and food industries. By converting data into actionable intelligence, the Grain Quality and Nutrition Database contributes to more competitive markets, sustainable practices, and resilient food systems.

***Presentation 3. Digital Transformation in Viet Nam's Agriculture: Infrastructure Challenges and Last Mile Solutions***

Speaker: Dr. Bui Hai Nam, Deputy Director General of the Institute of Agricultural Planning and Projection, Viet Nam

Mr. Bui Hai Nam is the Deputy Director General of the National Institute of Agricultural Planning and Projection (NIAPP) under the Ministry of Agriculture and Rural Development (MARD), Viet Nam. He holds a Master of Science in Regional and Rural Development Planning from the Asian Institute of Technology (AIT), Thailand.

With over 20 years of experience, Mr. Nam has been dedicated to advancing Viet Nam's agricultural sector through international cooperation and innovation. His expertise lies in integrating advanced technologies for sustainable development and climate adaptation. He has led several pioneering initiatives, including the "Water from Wind" desalination project and the development of smart cold logistics chains to reduce post-harvest losses and enhance value chain efficiency.

Currently, his research focuses on digital transformation strategies in the Mekong Delta, aiming to bridge the digital divide and enhance climate resilience for smallholder farmers, contributing to a more inclusive and sustainable agricultural future for Viet Nam.

Presentation details:

Presentation 3 emphasized the central role of digital transformation (DT) in driving Viet Nam's agricultural sustainability, resilience, and competitiveness. The presentation highlighted how digital tools contribute to climate adaptation, resource efficiency, international compliance through traceability, and rural financial inclusion. However, these benefits remain limited by last-mile challenges. Despite near-universal 4G coverage and economy-wide digital strategies, gaps persist in broadband quality, affordability, and digital literacy, while agricultural enterprises continue to show low adoption of digital solutions. Fragmented databases, unclear data ownership, and weak technical standards further constrain the effectiveness of digital services for farmers.

This presentation also outlined practical solutions to overcome these barriers. Cost-effective models such as "Cloud First" infrastructure, Software-as-a-Service (SaaS), and mobile-first applications reduce investment burdens while delivering accessible tools to farmers. Community Digital Technology Groups (CDTGs) were showcased as a grassroots approach to build trust, enhance digital literacy, and enable practical applications in e-commerce, payments, and online services. Mobile Money has already provided financial access to millions of rural users, and emerging AgriFintech solutions could further support smallholders. The presentation concluded that advancing DT in agriculture requires synchronized reforms: completing the legal framework for data governance, scaling affordable digital infrastructure, and empowering communities to ensure last-mile connectivity translates into real productivity and income gains.

***Summary of Panel Discussion: The Way Forward – Opportunities and actions for scaling DRC across APEC***

Facilitator: Dr. Nguyen Mai Huong, Deputy Director of Rural Development Center

Panellists:

- Mr. Nguyen Hoang Dan, Deputy Director General of the Digital Conversion Department and Information Resource Data
- Dr. Nguyen Anh Phong, Deputy Director General of ISPAE
- Dr. Bui Hai Nam, Deputy Director General of the Institute of Agricultural Planning and Projection, Viet Nam
- Mr. Worrawat Sriyook, Advisor-Sustainable Development, Mitrphol Group, Thailand

**Question for Mr. Nguyen Hoang Dan:**

+ What is the biggest challenge in implementing smart village/commune models at the local level, and in your opinion, which area should be prioritized first?

Mr. Nguyen Hoang Dan explained that the most pressing challenge is the uneven state of digital infrastructure and the limited digital capacity at the grassroots level. Many communes still lack stable broadband connectivity and modern data-sharing systems, while local officials and residents often face barriers in digital literacy. He emphasized that before any other aspects of the model can succeed, priority must be given to strengthening infrastructure and building human capacity. These two areas form the foundation for rural communities to actively participate in digital transformation and to maximize the benefits of smart village initiatives.

+ In your role at the Digital Transformation Department, which government policy do you think has provided the most practical support for rural digital transformation in recent years?

According to Mr. Dan, the most practical and impactful policy has been Decision No. 924/QĐ-TTg (2022), which positioned digital transformation as an integral part of the National Target Programme on New Rural Development. This decision provided localities with a clear framework to follow and incorporated digital transformation into mainstream rural development agendas. He also highlighted Official Dispatch 3445/BNN-VPĐP (2023), which offered detailed guidance on piloting smart communes. Together, these policies not only supported experimentation but also ensured coherence across different provinces, helping to scale up rural digital transformation in a structured and confident manner.

+ How do you assess inter-sectoral coordination (between agriculture, infrastructure, education, health, information technology, etc.) in the development of smart village/commune models?

Mr. Dan noted that inter-sectoral coordination has improved but still faces limitations. Since the smart village concept cuts across multiple domains—agriculture, education, health, infrastructure, and IT—it requires strong collaboration to be effective. However, many initiatives remain fragmented, with ministries and agencies often working in

isolation. He underscored the need for better institutional mechanisms, shared databases, and joint planning efforts to break down silos. Strengthening coordination among sectors is essential to ensuring that smart village models are both sustainable and capable of delivering broad-based benefits to rural communities.

**Question for Dr. Bui Hai Nam**

+ From the perspective of agricultural planning and development, what are the biggest challenges in integrating smart village/commune models into current rural development programs?

Dr. Bui Hai Nam pointed out that the integration of smart village and commune models into rural development programs faces two main challenges: the lack of synchronization between planning frameworks and the uneven capacity across localities. Existing rural development plans were often designed without digital transformation in mind, making it difficult to retrofit smart models into them. Furthermore, the disparity in financial resources and technical know-how between regions creates inconsistencies in implementation. He emphasized the need to harmonize planning processes and provide targeted support to weaker localities to ensure balanced and inclusive development.

+ What difficulties has Viet Nam faced in building digital infrastructure and data platforms to support the development of smart rural areas?

According to Dr. Nam, Viet Nam's efforts to build digital infrastructure and data platforms in rural areas encounter significant difficulties. Infrastructure in many communes remains underdeveloped, with unstable internet connectivity and limited access to modern devices. In addition, data platforms are fragmented, with multiple ministries and agencies managing separate systems that are not interoperable. This lack of integration hampers efficiency and makes it difficult to create a unified smart rural ecosystem. Dr. Nam stressed that greater investment in rural connectivity, combined with a domestic framework for shared data platforms, is essential to overcoming these bottlenecks.

+ In the process of implementing digital transformation, how can we ensure that last-mile solutions truly reach each farming household, cooperative, and MSME in remote and disadvantaged areas?

Dr. Nam emphasized that ensuring last-mile coverage requires both inclusive policy design and practical on-the-ground support. Digital tools and platforms must be adapted to the specific needs and capacity levels of farmers, cooperatives, and MSMEs, rather than applying a one-size-fits-all approach. He underlined the importance of strengthening extension services, training programs, and local intermediaries who can bridge the gap between technology providers and end-users. In his view, success depends on combining accessible technology with strong local support systems to ensure no household or community is left behind in the digital transformation process.

**Question for Dr. Nguyen Anh Phong**

+ In your opinion, what policy or institutional factors are crucial to scaling up smart village/commune models in Viet Nam and across APEC?

Dr. Nguyen Anh Phong observed that scaling up requires not only a coherent national vision but also stronger institutional alignment across sectors. In his view, effective coordination between central ministries, local authorities, and the private sector is indispensable to avoid overlap and inefficiencies. Furthermore, he stressed that common digital platforms, shared standards, and interoperable systems are essential to ensure consistency and comparability across economies. Without such enablers, he warned, expansion efforts would remain fragmented and fail to reach their full potential.

+ How can DRC models be closely aligned with green development goals, low-carbon transitions, and climate change adaptation?

In addressing this question, Dr. Phong underlined that digital rural community (DRC) models should be conceived as vehicles for both digitalization and sustainability. For instance, precision agriculture tools can help optimize input use, smart irrigation systems can reduce water consumption, and digital monitoring can track carbon footprints more effectively. Moreover, he noted that digital traceability systems create opportunities for farmers to access premium markets demanding eco-friendly and low-carbon products. By linking technology adoption with environmental incentives, DRC models can simultaneously advance green growth and climate resilience.

+ How can we ensure financial sustainability and long-term governance models for smart villages/communes, rather than stopping at the pilot stage?

Turning to the issue of sustainability, Dr. Phong emphasized that financing and governance must go hand in hand. On the financial side, he proposed blending government budgets with private sector investment and international development assistance to diversify funding sources. On the governance side, he argued for embedding smart village management into local administrative structures, thereby moving beyond project-based approaches. Additionally, he suggested that citizen participation and accountability mechanisms are vital to maintaining momentum over the long run. Taken together, these measures would help pilot projects mature into durable models of rural transformation.

**Question for Mr. Worrawat Sriyook:**

+ In implementing the Digital Rural Community model for sustainable sugarcane farming in Thailand, what have been the biggest challenges faced by your company (e.g., infrastructure, costs, farmer adoption)?

Mr. Worrawat Sriyook explained that the most pressing obstacles lay in uneven infrastructure, particularly limited internet connectivity in rural sugarcane-growing regions. Beyond this, he pointed out that high initial costs of digital tools discouraged smaller farmers from participation. At the same time, farmer adoption was not straightforward; many growers were cautious toward unfamiliar technologies and required significant training and trust-building before embracing digital platforms.

These hurdles, taken together, have slowed down the pace of scaling the model economy-wide.

+ What digital technology solutions for sustainable agriculture has Mitrphol implemented that could be replicated in other economies?

In response, Mr. Sriyook highlighted several innovations that his company has piloted with success. For example, precision agriculture applications using drones and satellite imagery were deployed to monitor crop health and optimize fertilizer use. In addition, mobile apps for farmers provided real-time market data and weather forecasts, helping them make informed decisions. He also mentioned digital payment and supply chain platforms that enhanced traceability and transparency. Importantly, he noted that these solutions are not context-specific and could be adapted in other economies with similar rural conditions.

+ From a business perspective, how do you assess the potential of public–private partnerships in developing and scaling up smart village/commune models?

According to Mr. Sriyook, public–private partnerships (PPPs) are indispensable for the success of such models. On the one hand, governments can provide enabling infrastructure, regulatory clarity, and seed funding to de-risk investments. On the other hand, businesses bring innovation, market linkages, and managerial expertise. He emphasized that when both sides align their priorities, PPPs become powerful drivers for scaling, reducing duplication of efforts, and ensuring that initiatives remain commercially viable.

+ From a business perspective, what are your expectations from government policies or APEC-level cooperation mechanisms to help scale up this model?

Finally, Mr. Sriyook expressed clear expectations for stronger policy support and regional collaboration. At the economy-wide level, he called for more targeted incentives—such as tax benefits and concessional financing—to lower adoption costs for both farmers and agribusinesses. At the APEC level, he underscored the importance of knowledge-sharing platforms and cross-border cooperation in digital standards, which would allow best practices to diffuse more rapidly. He concluded by stating that with the right policy frameworks, APEC could serve as a springboard for regional upscaling of smart rural models.

**5. Session 4: Networking for Regional Collaboration on DRC in APEC economies**

Session 4 on *Networking for Regional Collaboration on DRC in APEC Economies* created an informal and interactive space for representatives from Viet Nam and other APEC member economies to connect, exchange ideas, and explore opportunities for cooperation in digital transformation and the development of smart villages and communes.

The session highlighted how networking can serve as a practical catalyst for advancing Digital Rural Communities (DRC) across diverse contexts. Participants identified common challenges, including infrastructure gaps, fragmented policy frameworks, and limited adoption of digital solutions among farmers and rural enterprises. Through open and interactive exchanges, they shared innovative

practices from their respective economies, such as grassroots digital literacy programs, mobile-first applications, inclusive financing mechanisms, and pilot projects demonstrating scalable smart village models.

Discussions in Session 4 underscored that the success of Digital Rural Communities (DRC) depends on building strong regional collaboration, inclusive digital infrastructure, and local capacity. Participants emphasized that digital transformation in rural areas cannot be achieved by technology alone but requires enabling ecosystems that connect people, institutions, and innovation networks across APEC economies. Strengthening partnerships and networking platforms such as this workshop can help identify synergies, mobilize shared resources, and scale up effective models.

A key recommendation was to enhance regional knowledge exchange and capacity development. This could be supported through joint training programs, peer-learning workshops, and exchange visits that bring together policymakers, digital entrepreneurs, and local communities. Collaborative research among universities and innovation hubs was also recommended to generate context-specific solutions for diverse rural settings in the region.

Participants also highlighted the need to improve digital infrastructure and connectivity, particularly in remote and under-served areas. They called for joint efforts to expand broadband access, promote affordable mobile-based technologies, and invest in interoperable data platforms for agriculture, education, and rural public services. In addition, harmonizing digital standards and promoting open data sharing among APEC economies were seen as essential to improve interoperability and accelerate regional digital integration.

Another important area of focus was digital inclusion and community empowerment. Participants agreed that without closing the digital literacy gap, rural populations—especially women, youth, and smallholder farmers—risk being left behind. Strengthening digital skills training and promoting community-based digital literacy programs were seen as essential. Encouraging women's leadership in digital entrepreneurship and involving youth in rural innovation labs could enhance sustainability and inclusiveness in the DRC agenda.

Finally, participants called for stronger policy coordination and multi-stakeholder collaboration. Governments should integrate DRC development into economy-wide rural and digital transformation strategies, ensuring coherence across sectors such as agriculture, environment, education, and health. Cross-economy dialogue under APEC can help align regulatory frameworks, promote data security and privacy standards, and identify opportunities for joint initiatives. Multi-stakeholder partnerships—linking governments, research institutions, the private sector, and civil society—will be key to sustaining momentum and scaling successful pilots.

**6. Closing Section**

The Workshop was formally concluded by Dr. Nguyen Anh Phong, Deputy Director General of ISPAE.

In his closing remarks, Dr. Phong extended heartfelt appreciation to all speakers, panelists, and participants for their active engagement throughout the sessions. He highlighted that the workshop had provided a rich platform for sharing practical experiences, innovative solutions, and forward-looking policies that can accelerate the digital transformation of rural communities in APEC economies.

Dr. Phong emphasized that the exchanges underscored not only the importance of digital tools and smart village initiatives but also the central role of collaboration and trust-building among economies. By fostering partnerships across governments, research institutions, private sector actors, and communities, APEC can scale Digital Rural Community (DRC) models in ways that are inclusive, sustainable, and resilient.

Reflecting on the discussions, he noted the diverse success stories and new approaches presented during the workshop—from technology-enabled agriculture to policy frameworks and cross-economy networking—which together demonstrate the strong momentum for advancing DRC in the region. He encouraged participants to continue building on the connections established, transforming shared insights into concrete actions such as joint pilot projects, knowledge-sharing platforms, and capacity-building programs.

In closing, Dr. Phong expressed confidence that the ideas and partnerships nurtured during this workshop will contribute meaningfully to the long-term vision of smart, sustainable, and digitally empowered rural communities across APEC. He thanked all participants once again for their commitment and looked forward to seeing the outcomes of their collective efforts in the near future.

All the Workshop documents can be found at:

https://sites.google.com/view/apec-vn2025-ddc/home

# AGENDA

# The Workshop on Advancing Digital Rural Models for Sustainable Agriculture and Inclusive Growth in APEC

**Time:** 30 Sep – 1 Oct 2025
**Venue:** Pan Pacific Hotel,
No.1 Thanh Nien Str., Ha Noi, Viet Nam

## DAY 01 - Digital Rural Communities for Inclusive and Sustainable Rural Transformation

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|---|---|---|
| **08.30 – 09.00** | **Delegate registration** | Organization Board |
| **09.00 – 09.10** | **Welcome and Introduction** | **AGREINFOS (Thanh)** |
| **09.10 – 09.30** | **Opening Remark** | **Dr. Nguyen Anh Phong,**<br>Deputy Director General of ISPAE |
| **09.30 – 10.15** | **Session 1: Empowering Rural Futures: Concepts, Trends, and Digital Landscape**<br>Objective: Provide an overview of Digital Rural Communities (DRCs) development, policy frameworks, and current digitalization trends in agriculture and rural development across APEC economies<br>**Presentations** *(15 minutes/ppt)*<br>• **Closing the Urban–Rural Digital Divide: Pathways to Inclusive and Sustainable Transformation**<br>*Ms. Nithima Ducrocq*, Digital Fitness Programme Facilitator, UNDP<br>• **Digitalization and DRC models in APEC economies**<br>*Mrs. Ta Thu Trang, Center for Information and Services in Agriculture and Environment (AGREINFOS)*<br>• **Digitalization transformation landscape in Viet Nam: Implications for rural areas**<br>*Dr. Nguyen Duc Thuy,* Institute of Digital Technologies and Digital Transformation, MoST | **Chairs:**<br>**Dr. Nguyen Anh Phong,**<br>Deputy Director General of ISPAE |
| **10.15 – 10.30** | **Tea break and group photo** | |
| **10.30 – 12.00** | **Presentations** *(15 minutes/ppt)*<br>• **Building Inclusive Digital Agriculture Ecosystems: Insights from Platforms to People**<br>*Anne Claudine, Agricultural Development and Commercialization Department, Mekong Institute*<br>• **Assessment of smart commune development in New Rural Development Programme period 2021 - 2025**<br>*Mr. Phuong Dinh Anh,* Deputy Director General, NRD Programme | **Chairs:**<br>**Dr. Nguyen Anh Phong,**<br>Deputy Director General of ISPAE |

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| | • **Q&A** | |
| **12.00 – 13.30** | **Networking Lunch** | |
| **Afternoon Program** | | |
| **13.30 – 14.30** | **Session 2: Showcasing Best Practices – Digital Solutions from the Ground**<br><br>Objective: Present and exchange practical DRC models from Viet Nam and other APEC economies, highlighting how digital technologies address rural challenges and promote inclusive development. It will draw lessons from local initiatives that support MSMEs, women, and communities, and explore scalable approaches for broader application across the region.<br><br>**Presentations** (20 minutes/ppt)<br><br>• **Process of building a smart rural commune in Quang Tho commune, Hue city, Viet Nam**<br>*Mr. Le Thanh Nam,* New Rural Development Office of Hue City<br><br>• **Digital Village Construction: Underlying Logic, Practical Missteps, and Path Optimization, China**<br>*Dr. Jingwei Han*, Nanjing University of Finance and Economics, China<br><br>• **DRC Models in Thailand: Digital Solutions for Sustainable Sugarcane Farming**<br>*Mr. Worrawat Sriyook,* Advisor-Sustainable Development, Mitrphol Group, Thailand | **Co-chair:**<br><br>**Dr. Nguyen Anh Phong,**<br>Deputy Director General of ISPAE<br><br>**Dr. Bui Hai Nam**, Deputy Director General of the Institute of Agricultural Planning and Projection, Viet Nam |
| **14.30 – 14.45** | **Tea break** | |
| **14.45 – 15.30** | **Presentations (cont.)** (15 minutes/ppt)<br><br>• **A New Standard for Food Resources: Powered by Big Data, Driven by AI**<br>*Mr. Chang Sehun,* CEO, SNE Company, Korea<br><br>• **Smart commune model based on science, technology and innovation associated with digital transformation in specialty production areas in Quang Tri Province, Viet Nam**<br>*Mr. Nguyen Dinh Tinh, CEO, Digital Agriculture Cooperative*<br><br>• **Proactive carbon farming with AI and Digital Twins for sustainable agriculture in Thanh Hoa Province**<br>*Dr. Nguyen Phi Le, Hanoi University of Science and Technology* | |
| **15.30 – 16.30** | • **Q&A**<br>• **Conclusion of Day 1** | |

## DAY 2: Roadmap and Cooperation for Scaling DRCs Across APEC

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| **09.00 – 09.15** | Wrap up of the Previous day<br>Introduction of Day 2 | **Dr. Nguyen Anh Phong**,<br>Deputy Director General of ISPAE |
| **09.15 – 10.00** | **Session 3: Policy Frameworks and Initiatives for Scaling Digital Rural Communities (DRCs) in APEC Economies**<br>Objective: Explore how policy frameworks, national programs, and digital initiatives are shaping the development and scale-up of DRC models. This session will outline the enabling environment needed for DRCs to thrive—including supportive policies, institutional coordination, investment in digital infrastructure, and stakeholder engagement as well as lay the groundwork for a shared roadmap to advance DRC across the region. | **Chairs:**<br>**Dr. Nguyen Anh Phong**,<br>Deputy Director General of ISPAE |
| | **Presentations** (15 minutes/ppt)<br>• **DRC Development in Viet Nam**<br>*Mr. Nguyen Hoang Dan,* Deputy Director General of the Digital Conversion Department and Information Resource Data, MAE<br>• **Digitalization of Grain Quality and Nutrition Resource Databases for Sustainable Agriculture and Rural Development**<br>*Dr. Jianlei LIU*, Academy of National Food and Strategic Reserves Administration, China<br>• **Digital Transformation in Viet Nam's Agriculture: Infrastructure Challenges and Last Mile Solutions**<br>*Dr. Bui Hai Nam*, Deputy Director General of the Institute of Agricultural Planning and Projection, Viet Nam | |
| **10.00 – 10.15** | **Tea break** | |
| **10.15 – 12.00** | **Panel Discussion**: The Way Forward – Opportunities and actions for scaling DRC across APEC<br>***Panellists:***<br>**Mr. Nguyen Hoang Dan**, Deputy Director General of the Digital Conversion Department and Information Resource Data<br>**Dr. Nguyen Anh Phong,** Deputy Director General of ISPAE<br>**Dr. Bui Hai Nam,** Deputy Director General of the Institute of Agricultural Planning and Projection, Viet Nam<br>**Mr. Worrawat Sriyook,** Advisor-Sustainable Development, Mitrphol Group, Thailand | **Moderator:**<br>**Dr. Nguyen Mai Huong,** Deputy Director, Rural Development Center |
| **12.00 – 13.30** | **Lunch** – Pan Pacific Hotel | |
| **Afternoon Program** | | |

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| **13.30 – 16.00** | **Session 4: Networking for Regional Collaboration on DRC in APEC economies**<br><br>**Objective:** Create an informal and interactive space for a small group of representatives from Viet Nam and other APEC member economies to network, exchange ideas, and explore opportunities for collaboration on digital transformation and the development of smart villages/communes.<br><br>• **Interactive Networking:** Participants will engage in small-group discussions and thematic networking rounds, designed to help them connect with peers from other economies, identify common challenges, and explore synergies.<br>• **Idea Exchange**: Participants will exchange innovative approaches and collaboratively map potential areas for cooperation, such as joint initiatives, knowledge exchange, and pilot projects. | ***Facilitator:***<br><br>**Dr. Nguyen Anh Phong**,<br>Deputy Director General of ISPAE |
| **16.00 – 16.30** | **Conclusion and Closing Remark** | **Dr. Nguyen Anh Phong**,<br>Deputy Director General of ISPAE |

## PHOTOS FROM THE WORKSHOP


### Opening section



## SESSION 1


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Mr. PHUONG DINH ANH
NGUYEN ANH PHONG
Dr. NGUYEN DUC THUY


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## SESSION 2


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## SESSION 3


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Dr. BUI HAI NAM
Ms. WORRAWAT SRIYOOK

**SESSION 4**


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