



**U.S.-INDO-PACIFIC
STANDARDS & TECHNOLOGY
COOPERATION PROGRAM**

A banner with a golden-yellow background featuring a network of white lines and glowing nodes, overlaid on a blurred cityscape at night. The text is in a bold, blue, sans-serif font.

**FINAL PROGRAM REPORT:
U.S.-Indo-Pacific Standards and
Technology Cooperation Program
(STCP)
Volume 1**

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EXECUTIVE SUMMARY

From 2019 to 2023, the American National Standards Institute (ANSI) implemented the U.S. Trade and Development Agency (USTDA)-sponsored U.S.–Indo-Pacific Standards & Technology Cooperation Program (STCP) by organizing six workshops in the Indo-Pacific region in the sectors of information and communication technology (ICT), green transportation, agribusiness, healthcare and medical devices, etc. The program provides a forum for the public and private sectors of the U.S. and Indo-Pacific countries to achieve the following objectives:

- Cooperate on issues related to standards development, technical regulations, and conformity assessment policies and procedures.
- Facilitate U.S.-Indo-Pacific dialogue on standards, conformity assessment, and international best practices.
- Exchange up-to-date information on the latest issues related to standards and regulatory developments in sectors such as transportation, energy, telecommunications, healthcare, and agriculture.

The STCP workshops successfully achieved the program objectives and illustrated development impact with two indicators: Human Capacity Building Development, and Supporting International Best Practices. The workshops reached a broad variety of experts and participants from most of the Indo-Pacific eligible countries, including Indonesia, Thailand, Philippines, Vietnam, Malaysia, Singapore, Myanmar, and Laos, and there were also contributions from other U.S. partner countries such as Japan, Korea, and United Kingdom. The total number of participants achieved 1338 for six workshops, exceeding the target of 500 participants trained in the program. Among the participants, 299 were from the U.S., and 1039 were from other countries. The average number of participants is 223 per workshop.

The workshops also addressed critical topics in infrastructure sectors in the Indo-Pacific region, which also eventually supported the relevant strategic pillars of the U.S. government's Indo-Pacific Economic Framework for Prosperity (IPEF) that launched in 2022 at the later stage of the STCP. The topics selected for STCP workshops promote internationally aligned standardization, conformity assessment, and best practices in cybersecurity and data protection, 5G and advanced communication, new generation of Wi-Fi and unlicensed 6 GHz spectrum band allocation, digital healthcare and government procurement for medical devices, cold chain logistics and transportation infrastructure, as well as electric vehicle and its supporting industries in the host countries. With the support of local co-organizers and partners, the workshops gained buy-in and active engagement from host country policymakers, and yielded follow-up communication and collaboration between the U.S. business and their host country counterparts as described later in this Final Report. The private sectors from both sides also provided in-kind support to the workshops, including the time and insights of subject-matter experts, promotion and marketing efforts for speaker and participant recruitments, and also valuable feedback and suggestions after the events.

As described in the evaluation sections of this report, the STCP achieved many promising results in both commercial opportunities and regulatory impact. The program achieved the stated goals in both human capacity development and in supporting international best practices, with over 1300 participants learning about the most relevant and timely best practices, conformity assessment, and U.S. and international consensus standards across a wide spectrum of sectors. Not only did the program massively outperform its expected participation, but it also reached across public and private sectors, with local regulators,

businesses, and standards developers participating with their U.S. counterparts. The connections made between regulators, policy-makers, industry experts and other professionals will surely support increased commercial opportunities in the future as well as the development of the sectors covered in Indo-Pacific countries.

Volume 1 of the STCP Final Report includes the following sections: 1) overview of all the workshops, 2) development impact assessment, 3) evaluation results, 4) regulatory changes and impacts, and 5) U.S. commercial opportunity prospects.

OVERVIEW OF WORKSHOPS

The STCP program consisted of six workshops that occurred between 2021 and 2023. Although the initial planning started in 2019, the COVID-19 pandemic caused USTDA and ANSI to pause and re-evaluate the appropriate methods and platforms to continue the technical assistance (TA). As a result, the first workshop was conducted in Thailand as hybrid (in-person and virtual), and the remaining five workshops in the program were conducted fully virtually.

The table below details the number of unique participants at each workshop, identifying those who are based in the U.S. and those from the host countries as well as other USTDA-approved countries. A more detailed analysis of the difference in each workshop’s participation level and its contributing factors can be found in the Evaluation Results section of this report.

Workshop	U.S. Participation	Non-U.S. Participation	Total Workshop Participation
Workshop 1	89	509	598
Workshop 2	45	69	114
Workshop 3	38	116	154
Workshop 4	49	71	120
Workshop 5	22	30	52
Workshop 6	56	244	300
Program Total	299	1039	1338

Workshop 1: U.S.-Thailand Cybersecurity and Data Protection Standards Workshop

On March 3-5, 2021, ANSI coordinated and organized the U.S.-Thailand Data Protection and Cybersecurity Standards Workshop to support Thailand’s efforts to comply with international standards for data protection and cybersecurity, and explore relevant technologies and innovation. This hybrid workshop took place in a hybrid model, including participation online via Zoom, and in person at the Intercontinental Bangkok in Thailand.

Highlights from the workshop are as follows:

- Co-organizers included the Software Alliance (BSA), AmCham Thailand, and the Thailand Ministry of Digital Economy and Society (MDES), with significant contributions from the National Cybersecurity Agency (NCSA) and the Office of the Personal Data Protection Committee.
- Nine U.S. companies were represented in the agenda while 27 total U.S. firms participated in the workshop; as well as four U.S. government agencies and two U.S. research and development organizations.
- Ms. Ajarin Pattanapanchai, Permanent Secretary of MDES, and Michael Heath, Charge d’Affaires of the U.S. Embassy gave opening remarks.
- Four representatives from the Thailand government delivered remarks, including speakers from the Office of the Personal Data Protection Committee and the National Cybersecurity Agency Working Group.
- Almost 600 individuals participated in the hybrid workshop, with the majority being Thai government and industry representatives.
- **84%** of all surveyed participants indicated that the workshop met their objectives in attending.
- **75%** or more of surveyed U.S. companies believe that the workshop will improve or greatly improve international best practices, national cybersecurity strategies, and advanced technology in Thailand. Over **90%** of surveyed U.S. companies indicated that the workshop will at least somewhat improve all five topics, including personal data protection and information and digital policy and data governance.
- Several noteworthy outcomes are in development after this workshop including: a private sector consortium has continued to engage with the government of Thailand to discuss the implementation of the Personal Data Protection Act (PDPA), and is looking to step up engagement directly with MDES. A U.S.-based firm has also started working with several local industry organizations to maintain engagement with the Thai government on digital issues. Discussions related both to the implementation of the PDPA and Thailand’s participation in an ASEAN Cross Border Data Transfer mechanism are ongoing. Overall, statements from the Thailand government regarding policy approaches to privacy, data protection, and cross-border data flows are encouraging.

Workshop 2: U.S.-Vietnam 5G Standards Workshop

On August 31 – September 1, 2021, ANSI coordinated and organized the U.S.-Vietnam 5G Standards Workshop to engage with key Vietnamese and U.S. 5G public officials and industry experts to share solutions to meet growing 5G demand while addressing security needs and promoting market openness, an enabling regulatory environment, and industry best practices. This virtual workshop took place online via Zoom.

Highlights from the workshop are as follows:

- The Vietnam Ministry of Information and Communications (MIC) co-organized the workshop alongside USTDA and ANSI, and significantly contributed to the success of the workshop by closely collaborating with all stakeholders throughout the planning phase, and facilitating dialogue during the workshop.

- Eight U.S. companies were represented on the agenda, and a total of ten U.S. firms participated in the workshop as well as five U.S. government agencies/departments.
- Mr. Trieu Minh Long, Director General, Department of International Cooperation of the MIC, and Verinda Fike, Regional Director for the Indo-Pacific, USTDA, gave opening remarks on Day 1 of the workshop.
- One representative from the Viet Nam Telecommunications Authority (VNTA), Mr. Nguyen Tuan Vinh, delivered a presentation providing an overview of Vietnam's most up-to-date regulations and standards for 5G rollout and infrastructure. For the rest of the panel sessions, co-moderators from MIC, VNTA, and the Authority of Information Security facilitated the discussions.
- Almost 130 individuals participated in the workshop, with a majority being Vietnamese government and industry representatives.
- **100%** of all surveyed participants indicated that the workshop met at least some of their objectives in attending.
- **71%** or more of surveyed participants believed that the workshop will improve or greatly improve international best practices and advanced technology. Over **80%** of all respondents believed that the workshop will at least somewhat improve all of the five topics: international best practices, 5G standards and Open RAN, spectrum allocation and licensing, cybersecurity in 5G, and advanced technology.
- Several outcomes are in development following this workshop, with some U.S. companies indicating that they are currently following up with Vietnamese workshop participants. Overall, statements from the Vietnamese government regarding policy options for 5G standards are encouraging and promising.

Workshop 3: U.S.-Thailand 6 GHz Spectrum Workshop

On February 17 – 18, 2022, ANSI coordinated and organized the U.S.–Thailand 6 GHz Spectrum Workshop to advance the discussions of international standards harmonization on the license-exempt allocation of the 6 GHz spectrum band in Thailand. This virtual workshop took place online via Zoom.

Highlights from the workshop are as follows:

- USTDA and ANSI co-hosted the workshop with three major Thai government offices: the Ministry of Digital Economy and Society (MDES), the Office of the National Digital Economy and Society Commission (ONDE), and the Office of The National Broadcasting and Telecommunications Commission (NBTC). The Thai partners significantly contributed to the success of the workshop by closely collaborating with all stakeholders throughout the planning phase.
- Five U.S. firms and five government agencies/departments presented and took part in the panels over the two days.
- 154 participants joined the virtual sessions; 64 of which were from Thailand and 38 from the U.S. The remaining 52 participants joined from around the ASEAN region.
- The workshop materials and recordings were used to inform incoming members of the three Thai co-hosts' offices on the various issues and solutions in the 6 GHz spectrum sphere.

- **83%** of surveyed respondents indicated that they felt the workshop met their objectives.
- **83%** of surveyed respondents felt that the workshop will have a positive impact on the development of next-generation devices.
- **83%** of surveyed respondents indicated that the workshop helped promote the adoption of international best practices and standards of the 6 GHz spectrum band allocation.
- Thai government officials, including Mr. Chaiwut Thanakamanusorn, Minister of MDES, Ms. Ajarin Pattanapanchai, Permanent Secretary of MDES; Mr. Trairat Viriyasirikul, Acting Secretary-General of NBTC; and Mr. Puchapong Nodthaisong, Secretary-General of ONDE, attended the workshop and delivered opening or closing remarks in which they discussed their appreciation for the collaboration of public and private sectors in the U.S. and Thailand, and acknowledgment that opening up 6 GHz spectrum for wide use will bring significant benefits and opportunities for technology development.
- The workshop panelists advocated for the allocation of the 6 GHz spectrum band for license-exempt/unlicensed by taking a multi-faceted approach, incorporating perspectives from varied stakeholders including regulators, standard developers, network service providers, multinational corporations with cutting-edge technologies, end-user/consumers, and more.
- Regulators from the U.S. and South Korea addressed their recent experience and the critical nature of making all 1,200 MHz of the spectrum in the 5.925 – 7.125 GHz (6 GHz) band available for unlicensed use by wireless devices, which can accelerate the development of new technologies such as AR/VR, Internet of Things, telemedicine, and more, as well as enhance the overall competitiveness of a country.
- Providing an overview of their core business offerings, representatives from U.S. industries introduced potential investment and market opportunities of next-generation Wi-Fi, empowered by the 6 GHz spectrum, in different application scenarios, such as in enterprise and consumer uses, both indoor and outdoor, and in both urban vs. rural environments. They also reiterated the importance of harmonization to the U.S. and international consensus-based standards and the benefits of compatibility of services across borders.
- The speakers concluded that the opportunity cost of delaying the development and implementation of 6 GHz band-related policies is substantial. The speakers argued that a delay of one year in decision-making can put a country behind in building the infrastructure landscape necessary for innovation by at least three years, which will result in even longer delays in follow-up efforts. As such, they posit that the Thai government and other regulators in the region must take action as quickly as possible, while keeping their domestic conditions in consideration.

Workshop 4: U.S.-Indonesia Healthcare IT Standards and Solutions Workshop

On July 26 and August 2, 2022, ANSI coordinated with the Indonesia Ministry of Health (MOH) to present the U.S.-Indonesia Healthcare IT Standards and Solutions Workshop, sharing technical advice and best practices in digital transformation in healthcare, good regulatory practices and government procurement, standards harmonization, as well as new technologies and innovations in the healthcare sector in Indonesia and the U.S. The virtual workshop took place online via Zoom.

Highlights from the workshop are as follows:

- Many Indonesian government officials from the co-organizer, the Indonesia Ministry of Health (MOH), attended the workshop and delivered remarks or presentations during various sessions.
- Representatives from U.S. industries introduced cutting-edge health technologies in different application scenarios, such as telehealth/telemedicine, cloud computing, and big data capture and analysis leveraging artificial intelligence.
- The workshop reached a total of 120 unique participants from the U.S., Indonesia, and throughout the ASEAN region, and included participants from both the public and private sectors.
- **94%** of respondents indicated that they felt the workshop met their objectives.
- **94%** of respondents indicated that the workshop will positively impact the pace of regulatory development in healthcare technology.
- **94%** indicated that the workshop demonstrated positive improvements in standards development through use cases of medical devices and advanced technologies for healthcare.
- Many Indonesian government officials from the co-organizer, the Indonesia Ministry of Health (MOH), attended the workshop and delivered remarks or presentations during various sessions, including Kunta Wibawa Dasa Nugraha, S.E, M.A., Ph.D, Secretary General; Setiaji Setiaji, Chief of Digital Transformation Office, Ismiyati Surata, Head of Section for Certification and Supervision of Production Facilities, Directorate of Medical Device Supervision; Daniel Oscar Baskoro, Chief Operating Officer of Digital Transformation Office; and Bonanza Perwira Taihitu, Director of Global Health and Health Technology, Health Policy Development Agency.
- The representatives from the Indonesian national standardization body (Badan Standardisasi Nasional - BSN) and the Singapore Ministry of Health also joined the respective panel discussions on the latest development in standards for medical products in Indonesia, as well as the design and implementation of a regulatory sandbox for health technologies.
- From various angles, public and private stakeholders from both Indonesia and the U.S. exchanged their insights on the key principles of digital transformation in the healthcare sector, addressing the challenges in the current healthcare system, engaging the private sector, and empowering small business and tech startup via innovative methods, such as regulatory sandbox, in the post-pandemic era.
- The workshop also addressed the industry's concern about the new local content requirement in the public procurement policy for medical devices carried out by the Indonesian government, which would create trade barriers for foreign businesses, and bring negative impacts on domestic players.
- Providing an overview of their core business offerings, representatives from U.S. industries introduced cutting-edge health technologies in different application scenarios, such as telehealth/telemedicine, cloud computing, and big data capture and analysis leveraging artificial intelligence. They also reiterated the importance of privacy protection and data security with the benefits for the patients at heart.

Workshop 5: U.S.-Philippines Cold Chain Standards and Innovation Workshop

On October 18-19, 2022, ANSI coordinated with the Bureau of Philippine Standards (BPS) and the Board of Investments (BOI) under the Department of Trade and Industry Philippines (DTI) to present the U.S.-Philippines Cold Chain Standards and Innovation Workshop and discussed the current status of cold chain logistics and agribusiness in the Philippines, in addition to the relevant standards and regulations supporting the development of energy-efficient and modern cold storage and transportation facilities. The virtual workshop took place online via Zoom.

Highlights from the workshop are as follows:

- Many Filipino government officials from the co-organizers (BPS and BOI) and other departments attended the workshop and delivered remarks or presentations during various sessions.
- Representatives from U.S. industries and standard development organizations introduced global and U.S. standards and best practices in cold chain management and refrigeration systems, including the Global Cold Chain Alliance (GCCA), the American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE), the International Institute of Ammonia Refrigeration (IIAR), and Xylem Inc., etc.
- The workshop reached a total of 52 unique participants from the U.S., Philippines, and other ASEAN countries, and included participants from both the public and private sectors.
- **89%** of surveyed respondents indicated that they felt the workshop met their objectives.
- **78%** of surveyed respondents thought that the workshop will help accelerate regional and international harmonization.
- **89%** of surveyed respondents indicated that the workshop is likely to encourage the adoption of standards and regulations to improve the safety, security, and efficiency of critical cold chain systems.
- Many Philippines government officials from the co-organizers (BPS and BOI) and other departments attended the workshop and delivered remarks or presentations during various sessions to introduce the Filipino efforts and initiatives to transform and upgrade the cold chain facilities, including Ferdinand L. Manfoste, Assistant Director, and Ma. Teresita G. Del Rosario, Chief Trade-Industry Development Specialist at the Standards Development Division, both from the Bureau of Philippine Standards (BPS); Raquel Echague, Director of Resource-Based Industries Service at the Board of Investments (BOI); and also Atty. Patrick T. Aquino, CESO III, Director of the Energy Utilization Management Bureau at the Philippines Department of Energy (DOE).
- U.S. experts from standards development organizations (SDOs) and private companies shared their expertise and best practices to help reshape the cold chain infrastructure to be more sustainable, safe, and cost-efficient. They also addressed the critical concerns that the Filipino industry raised, and offered future follow-up capacity-building and collaboration opportunities for Filipino stakeholders.

Workshop 6: ASEAN-U.S. Electric Vehicle Workshop on Technical Standards

On January 18-19, 2023, ANSI coordinated with the ASEAN Secretariat and the U.S. Department of Transportation to present the ASEAN-U.S. Electric Vehicle Workshop on Technical Standards. As part of the U.S.-ASEAN Electric Vehicle Initiative, this workshop engaged technical experts from ASEAN and the United States to share the latest developments in critical technologies and insights around standards and

policies that support the scaling and sustainable development of the EV industry in the ASEAN region. This virtual workshop took place online via Zoom.

Highlights from the workshop are as follows:

- With the support of the co-organizer, the ASEAN Secretariat, many relevant government officials from the ASEAN countries and the U.S. attended, spoke at, or moderated sessions at the workshop, including three officials from the Ministry of Transportation of Indonesia, and experts from the U.S. Department of Commerce and National Highway Traffic Safety Administration (NHTSA).
- The sessions’ speakers included experts from multiple countries across the region, including Indonesia, Malaysia, and the Philippines.
- Representatives from U.S. industries and standard development organizations (SDOs) introduced global and U.S. standards and best practices in the region, including representatives from SAE International, UL Solutions, National Electrical Manufacturers Association (NEMA), ANSI EV Standards Panel, Argonne National Laboratory, National Highway Traffic Safety Administration (NHTSA), and the American Automotive Policy Council (AAPC).
- The workshop reached a total of 300 unique participants from the U.S. and ASEAN countries, and included participants from both the public and private sectors. The participants’ base locations include Brunei, Cambodia, Indonesia, Japan, South Korea, Laos, Malaysia, Myanmar (Burma), Papua New Guinea, the Philippines, Singapore, Thailand, and Vietnam, with most of the participants from the Philippines (65), Indonesia (58), and Thailand (34).
- **92%** of respondents felt that the workshop will have a positive impact on regulatory development necessary to foster electric vehicle (EV) technology advancement and innovation.
- **89%** thought that the workshop will help spur the adoption of international standards and best practices in the ASEAN region.
- **89%** of those who responded felt that the workshop would lead to more interoperable and smarter EV charging infrastructure.

DEVELOPMENT IMPACT ASSESSMENT

As listed in the contract, the STCP is intended to achieve the following development impacts:

Category	Indicator	Description	Anticipated Outcome
Human Capacity Building	Human Capacity Development	The STCP will provide workshops and training for government officials and industry representatives on standards, conformity assessment, and related best practices.	500 participants trained
Promoting Effective Markets and Governance	Supporting International Best Practices	The STCP will help Indo-Pacific region countries develop standards and conformity assessment processes that are in line with international best practices.	Y

To summarize, the STCP achieved its intended development impacts as follows:

Category	Indicator	Results
Human Capacity Building	Human Capacity Development	<ul style="list-style-type: none"> • 1338 participants trained (exceeds target of 500) • Robust participation from both public and private sectors is in particular a positive outcome consistent with effective standards, conformity assessment and related best practices.
Promoting Effective Markets and Governance	Supporting International Best Practices	<ul style="list-style-type: none"> • All STCP workshops focused on the importance and relevance of international standards and/or conformity assessment practices. • The workshops on 5G, 6 GHz spectrum allocation, and healthcare also focused specifically on good regulatory practices like public consultation, incorporation of international standards into regulation, and conformity assessment schemes that do not create burdensome requirements for industry.

From a development perspective, the STCP achieved results for each intended indicator. In particular, the workshops had a positive development impact on the following:

Human Capacity Development

With more than 1300 attendees across the six workshops, it is without a doubt that the STCP has been successful in providing training and actionable knowledge transfer to public and private sector stakeholders across the Indo-Pacific region. Each workshop featured U.S.-based standards developing organizations (SDOs) and businesses, which provided detailed and timely insights on standards, conformity assessment, and related best practices in the respective sectors. These experts also provided their presentations and related workshop materials for ANSI to share with workshop attendees. Additionally, ANSI worked directly with government officials within the host countries, as well as private sector stakeholders in the U.S. and Indo-Pacific, to ensure that the workshop design included the most relevant international standards and best practices. Building expertise within the government and the private sector is crucial to improving a country’s standards and regulatory landscape, and by extension its economic development. In line with the U.S. Standards Strategy and accepted international best practices, in the organization of the workshops ANSI prioritized attracting a mix of public and private stakeholders in the audience, and the results indicate positively that it was successful.

Supporting International Best Practices

ANSI prides itself on its work to champion standards and conformity assessment that are internationally recognized and developed through industry-led, consensus-based systems. Each STCP workshop was designed to include agenda items to address the importance of internationally harmonized standards and conformance practices in respective sectors, and the potential jeopardy to international trade and domestic economic development caused by unique national standards and conformance requirements. Specific time slots were also allocated in all the workshops to facilitate detailed discussions and

collaborations between the host countries and the U.S. stakeholders on current and future standards, conformity assessment processes, industry approaches, and international best practices. Some workshops, such as the U.S.-Thailand 6 GHz Spectrum Workshop, also invited certain third countries in the region that have more advanced development and earlier adoption of relevant standards to share their experience and lessons learned to set examples for the host country. ANSI coordinated with the speakers and other public and private stakeholders to ensure that the information discussed is valuable, up-to-date, and actionable, so that the audience can benefit from the workshop takeaways and develop related follow-up activities.

The section on Regulatory Changes and Impacts provides more details about specific regulatory or best practice impacts.

EVALUATION RESULTS

Overall, the workshops under the STCP Program successfully achieved USTDA’s objectives and the development impact requirements to facilitate dialogues and cooperation between the U.S. and the host countries on issues related to standards development, technical regulations, and conformity assessment policies and procedures in key sectors. With the support of the USTDA and the co-organizers in the host countries, ANSI designed and executed each workshop to make sure the critical topics that reflect the benefit and interest of the U.S. business were addressed and discussed with the right stakeholders. Participant feedback was collected after each workshop to measure the satisfaction, impact, and information to help improve future workshops.

In addition to the feedback received from the participants after each workshop, ANSI also conducted outreach via multiple rounds of emails and virtual meetings in February 2023 to the participants who provided substantive responses in the post-event surveys, in order to collect the latest information and feedback from participants to help assess the recent development and impact since the workshops. Among the 134 participants that ANSI reached out to via at least two email attempts, 17 replied via email or participated in phone calls with the ANSI staff. Their insights are reflected in the Regulatory Changes and Impact and the U.S. Commercial Opportunities sections of this report.

Below is a summary of the survey responses across the workshops:

Workshop	Survey Response Rate	Met Goals and Objectives	Had Positive Impact/ Promoted Int. Standards and Best Practices	Improved Specific Aspects in the Sectors
1	11%	84%	75%	90%
2	17%	100%	95%	80%
3	16%	83%	83%	83%
4	30%	94%	92%	94%
5	17%	89%	78%	78%
6	41%	85%	92%	89%
Average	22%	89%	86%	86%

Below are the detailed feedback and ratings from each workshop:

Workshop 1: U.S.-Thailand Cybersecurity and Data Protection Standards Workshop

65 participants or approximately 11% of workshop participants filled out an AAR questionnaire, which was distributed via email to participants following the workshop, with three reminders sent. Highlights from the questionnaire responses include:

- **84% of all respondents** indicated that the workshop met their objectives in attending.
- **75% or more of U.S. respondents** believe that the workshop will improve or greatly improve international best practices, national cybersecurity strategies, and advanced technology in Thailand.
- **Over 90% of U.S. respondents** believe the workshop will at least somewhat improve all five topics, including personal data protection, information and digital policy, and data governance.
- **88% of Thai respondents** are either moderately involved or very involved in standards development; this positively confirms the target audience of workshop attendees.
- Overall, a majority of the feedback highlighted positive results from the objectives of increased learning, knowledge, and understanding of PDPA implementation cybersecurity and data protection standards largely met. Key takeaways included: the exchange of perspectives from practitioners, understanding differences between Thai and U.S. standards, understanding the PDPA, and learning about new technologies such as cloud computing, as well as overall global trends. Furthermore, the workshop also highlighted areas that remain unclear in terms of the PDPA implementation of data protection and cybersecurity standards.
- Generally, respondents highlighted that they believe the workshop will have a positive impact on Thai data protection and cybersecurity policies, through sharing knowledge and experiences, increasing the understanding of policymakers on how to align standards across markets.

Workshop 2: U.S.-Vietnam 5G Standards Workshop

22 participants or approximately 17% of workshop participants filled out an AAR questionnaire, which was distributed via email to participants following the workshop, with three reminders sent. Highlights from the questionnaires include:

- **100% of all respondents** indicated that the workshop met at least some of their objectives for attending the workshop. 85% indicated that the workshop met most of their objectives.
- **95% of all respondents** believed that the workshop will at least somewhat improve the adoption of cybersecurity practices in 5G and 5G standards in Open RAN.
- **71% or more of all respondents** believed that the workshop will improve or greatly improve international best practices and advanced technology.
- **Over 80% of all respondents** believed the workshop will at least somewhat improve all five topics: international best practices, 5G standards and Open RAN, spectrum allocation and licensing, cybersecurity in 5G, and advanced technology.

- **87% of Vietnamese respondents** are either moderately involved or very involved in standards development; this positively confirms that the workshop included the correct target audience for the workshop.
- Three U.S. industry partners indicated they are following up with some of the workshop participants.
- Overall, a majority of the feedback highlighted positive results from the perspective of increasing education, knowledge, and understanding of various aspects of 5G standards and implementation. Key takeaways included: the exchange of perspectives from practitioners, understanding differences between Vietnamese and U.S. standards and 5G policy, and learning about the nature and features of Open RAN, as well as overall global trends and challenges.
- Generally, respondents highlighted that they believe the workshop will have a positive impact on 5G policies as they relate to standards, through sharing knowledge and experiences, increasing the understanding of policymakers on how to align standards across markets.

Workshop 3: U.S.-Thailand 6 GHz Spectrum Workshop

24 participants, or approximately 16% of workshop participants, filled out an AAR questionnaire, which was hosted online on ANSI's sli.do platform. Links to the questionnaire were shown in the closing slide show on both days of the event, put in the Zoom Chat for all participants, and distributed via email to participants following the workshop, with two reminders sent. Highlights from the questionnaires include:

- **83%** of respondents indicated that they felt the workshop met their objectives.
- **83%** of respondents felt that the workshop will have a positive impact on the development of next-generation devices.
- **83%** of respondents indicated that the workshop helped promote the adoption of international best practices and standards of the 6 GHz spectrum band allocation.
- **78%** thought that the workshop positively demonstrated relevant use cases and application of advanced technologies.
- **78%** indicated that the workshop demonstrated the positive social and economic benefits of allocating the 6 GHz band for license-exempt use.

Workshop 4: U.S.-Indonesia Healthcare IT Standards and Solutions Workshop

36 participants, or approximately 30% of workshop participants, filled out an AAR questionnaire, which was hosted online via Google Forms. Links to the questionnaire were shown in the closing slide show on both days of the event, put in the Zoom Chat for all participants, and distributed via email to participants following the workshop, with two reminders sent. Highlights from the questionnaires include:

- **94%** of respondents indicated that they felt the workshop met their objectives.
- **92%** of respondents felt that the workshop will have a positive impact on the adoption of standards and new technologies in the healthcare sector.

- **94%** of respondents indicated that the workshop will positively impact the pace of regulatory development in healthcare technology.
- **92%** thought that the workshop will have a positive impact on standards development in public health financing data management.
- **94%** indicated that the workshop demonstrated positive improvements in standards development through use cases of medical devices and advanced technologies for healthcare.

Workshop 5: U.S.-Philippines Cold Chain Standards and Innovation Workshop

9 participants, or approximately 17% of workshop participants, filled out an AAR questionnaire, which was hosted online via Google Forms. Links to the questionnaire were shown in the closing slide shown on both days of the event, put in the Zoom Chat for all participants, and distributed via email to participants following the workshop, with two reminders sent. Highlights from the questionnaires include:

- **89%** of respondents indicated that they felt the workshop met their objectives.
- **78%** of respondents felt that the workshop will have a positive impact on the adoption of standards and new technologies in the cold chain sector in line with international best practices.
- **78%** of respondents indicated that the workshop will positively impact the investment environment in the Philippines.
- **78%** thought that the workshop will help accelerate regional and international harmonization.
- **89%** indicated that the workshop is likely to encourage the adoption of standards and regulations to improve the safety, security, and efficiency of critical cold chain systems.

Workshop 6: ASEAN-U.S. Electric Vehicle Workshop on Technical Standards

122 individuals, or approximately 41% of all workshop participants, filled out an AAR questionnaire, which was hosted online via Google Forms. Links to the questionnaire were shown in the closing slide displayed on both days of the event, included in the Zoom Chat for all participants, and distributed via email to participants following the workshop, with two reminders sent. Highlights from the questionnaires include:

- **85%** of respondents indicated that they felt the workshop met their objectives.
- **92%** of respondents felt that the workshop will have a positive impact on regulatory development necessary to foster EV technology advancement and innovation.
- **84%** felt that the workshop will lead to increased application of new and innovative technologies in the EV supply chain.
- **89%** thought that the workshop will help spur the adoption of international standards and best practices in the ASEAN region.
- **89%** of those who responded felt that the workshop would lead to more interoperable and smarter EV charging infrastructure.
- **88%** indicated that the workshop is likely to encourage standards development for battery disposal and recycling.

REGULATORY CHANGES AND IMPACTS

Workshop 1: U.S.-Thailand Cybersecurity and Data Protection Standards Workshop

Since the workshop, much work has been done in Thailand to align with the recently passed Cyber Security Act of Thailand B.E. 2562 (2019) and its future implementing regulations and requirements. Due to the sweeping nature of the reform, few new regulations have been promulgated so far since its adoption, instead, most regulatory discussion has been focused on bolstering the law, discussing amendments to it, and delegating authority on related matters to the **Data Protection Authority of Thailand (PDPC)**. According to the feedback from a Thailand government agency in February 2023, there have been a series of public consultations between the PDPC and U.S. business stakeholders to provide and discuss feedback on draft regulations relating to data privacy. Additionally, the PDPC has organized a number of awareness-building engagements about data protection to ensure that stakeholders understand and can utilize it to their advantage. Several aspects of the cyber security law have also been highlighted for renewed enforcement and expanded requirements.¹

With the recent adoption of the ASEAN cross-border data transfer mechanism, Thai regulations remain aligned with the ASEAN requirements. Thai government stakeholders are seeking to ensure that ASEAN and the Thai requirements will also be compatible with the recent initiative of the Global Cross-Border Privacy Rules (CBPR) on interoperability in the future.

There have also been additional follow-up round tables with the leaders of the National Cybersecurity Council and the private sector to maintain internal coordination so that sectoral regulators do not require divergent cybersecurity requirements across sectors. Thai public and private stakeholders also are maintaining engagement with the U.S. and other international organizations to ensure that Thai approaches to cybersecurity are aligned with internationally recognized standards and emerging practices in like-minded countries.

Workshop 2: U.S.-Vietnam 5G Standards Workshop

Following the workshop, there have been several new regulations or standards issued in Vietnam addressing 5G directly or its related infrastructure and band allocation, according to feedback received in February 2023. These include:

- National technical regulation on hybrid 5G mobile communication network terminal equipment - Radio access part QCVN 129: 2021/BTTTT
- National technical regulation on electrical safety requirements for terminal equipment connecting to telecommunications and information technology networks QCVN 22: 2021/BTTTT
- National technical regulation on 5G mobile communication base station equipment - Radio access part QCVN 128:2021/BTTTT
- National technical regulation on stand-alone 5G mobile communication network terminal equipment - Radio access part QCVN 127:2021/BTTTT

¹ <https://www.bangkokpost.com/thailand/general/2369148/nca-set-to-boost-cyber-security-laws>

- National technical regulation on quality of Internet access services on 5G terrestrial mobile telecommunications network QCVN 126:2021/BTTTT

The above documents can be downloaded at <https://www.mic.gov.vn/mra/Pages/TinTuc/131803/Quy-chuan-ky-thuat-quoc-gia-do-Bo-TTTT-ban-hanh.html>.

Additionally, Vietnamese regulators are currently developing new amendments to the Telecommunications Acts 2009, which would better relate to 5G deployment and emerging issues. These amendments will target a slew of new regulations, such as those which impact licensing. The amendment process is expected to be completed near the end of 2023 or early 2024.

Workshop 3: U.S.-Thailand 6 GHz Spectrum Workshop

The Thailand government has been exploring the license-exempt 6 GHz spectrum allocation and utilization following the timeline that the **National Broadcasting and Telecommunication Commission (NBTC)** shared in the workshop: 5.925 GHz – 6.425 GHz (lower band) will be available for unlicensed use by Q4 2022, and the 6.425 GHz – 7.125 GHz (upper band) will be decided after Q4 2023, after conducting a more in-depth study from the International Telecommunication Union (ITU) World Radiocommunication Conference (WRC-23) in later 2023. The regulations for the lower band (those that NBTC indicated as targeted for Q4 2022 release) are expected to receive final approval from the NBTC in February 2023 before entering into force within the first quarter of 2023. NBTC is also exploring opportunities, new business models, and technology transfer from the U.S. for the possible adoption of both the lower and upper bands.

As part of this roll-out and consultation period, several public and private sector roundtables and comment periods have occurred.² While many organizations, have continued to work with the government on the lessons learned from the workshop, most notably how the current unlicensed spectrum remains too limited causing industries to move slowly in adopting beneficial automated machinery that uses wireless technology, they have acknowledged that much of the work is still in the initial phases.³

Workshop 4: U.S.-Indonesia Healthcare IT Standards and Solutions Workshop

According to feedback ANSI received since the workshop was held in August 2022, the Indonesian regulatory environment remains difficult to engage with for U.S. firms. In late 2022, Indonesia started implementing a policy to periodically “freeze” the importation of products that the government believes can be locally manufactured in sufficient quantities for use in public hospitals. This follows a June 2021 import suspension of 79 (mostly low complexity) medical technology product categories that Indonesia believes can be manufactured locally.

Further complicating the regulatory compliance environment, the wide-ranging Halal Law of 2014 has recently been updated to target the healthcare sector.⁴ President Joko Widodo recently signed Presidential Regulation 6/2023 on mandatory halal certification for medicine, biological products, and medical devices under the 2014 Halal Law. The regulation, which took effect on January 19, 2023,

² <https://www.nbtc.go.th/News/publichearing/55601.aspx?lang=th-th>

³ <https://droidsans.com/wifi-6ghz-available-soon-thailand>

⁴ <https://dinsights.katadata.co.id/read/2023/01/25/indonesia-applies-halal-certification-for-drugs-biological-products>

reemphasizes the phased implementation of halal certification for medical products and set a new timeline for these products. The regulation requires medicine and medical-related products and medical devices sold in Indonesia must be certified to be free of pork derivatives or anything else forbidden by Islamic law. Compliance applies to all business processes including materials, manufacturing process, storage, and packaging. Medicines, biological products, and medical devices originating from materials that are prohibited can be circulated and traded in the country with the obligation to include information as non-halal. It should be noted that although Halal Law implementation to date has focused on the food and beverage industry, for many medical products, certifying these products to meet halal “requirements” cannot be done, as no standards currently exist to do so.

While U.S. public and private sector stakeholders have actively participated in monthly roundtable discussions on this topic and other non-tariff barrier issues, they have noted a general reluctance by regulatory agencies to reduce protectionist policies. In the follow-up conducted in February 2023, relevant stakeholders mentioned the moves from Indonesia to elevate their position in international standards development by leading the charge on developing and implementing domestic halal standards which are intended to become international standards. For example, during the Halal 20 (H20) event that was held on November 17-19, 2022 in Semarang, the National Standardization Agency of Indonesia explained that Indonesia’s halal standards can be accepted by other countries that are also members of IHAF (International Halal Accreditation) since there is a mutual recognition and multilateral agreement among accreditation bodies.

Indonesia has also recently passed new regulations requiring healthcare facilities to transition from physical to digital records by the end of 2023.⁵ At the same time, the government has also passed a new set of regulations around data protection which will include this digitized healthcare data.⁶

Workshop 5: U.S.-Philippines Cold Chain Standards and Innovation Workshop

Despite domestic political changes since the STCP workshop took place, the Philippines is still making headway in the cold chain and logistics sector. After a delayed start attributed to the COVID-19 pandemic, the implementation of the Cold Chain Industry Roadmap is underway and the government is still highly invested in modernizing its cold chain sector. The Roadmap aims to increase the country’s current cold storage capacity by 10% to 15% annually, or an additional 50,000 pallets annually. The country’s current storage capacity is 500,000 tons for food products. There are 151 Department of Agriculture–accredited cold storage warehouses, most of which are in Metro Manila (National Capital Region) with 45, Central Luzon with 30, and Calabarzon with 24.

In the feedback provided by the Philippines government in February 2023, a few Filipino government agencies and local business have signed a Memorandum of Understanding (MOU) to develop a cold chain integrated supply chain solution in the Philippines to establish a much-integrated tool in promoting investment in the cold chain industry, a milestone in the implementation of the Cold Chain Industry Road Map. Several of the organizations which attended the events have also pointed to other potential regulatory changes or standards adoption. Other groups have indicated that they have taken onboard lessons learned from the event and may have future policy recommendations, but not at the moment. Similarly, a Philippines government agency reported that it was heavily interested in the discussions and indicated that they felt the event would have significant impacts on the adoption of updated regulations

⁵ <https://www.healthcareitnews.com/news/asia/indonesia-officially-requires-its-healthcare-facilities-implement-emrs>

⁶ <https://www.huntonprivacyblog.com/2022/09/23/indonesia-enacts-its-first-data-protection-act/>

and more inclusive standardization processes, but have not as of yet put forward any new regulations or standards.

The Philippines government is also working on the following drafts to adopt the international standards related to the cold chain as national standards:

- DPNS ISO 23412:2021 Indirect, temperature-controlled refrigerated delivery services — Land transport of parcels with intermediate transfer (ISO standard published 2020)
- DPNS ISO 20854:2021 Thermal containers - Safety standard for refrigerating systems using flammable refrigerants - Requirements for design and operation (ISO standard published 2019)

Workshop 6: ASEAN-U.S. Electric Vehicle Workshop on Technical Standards

Although there has been little time between the workshop and this final report, many of the participants have indicated potential impacts and regulatory changes to come. While attendees from every country involved discussed these changes to some extent, both public and private sector participants from the Philippines were particularly optimistic about the effect of this workshop on the early stages of regulatory development in the country. On the public side, Filipino government agencies have indicated that the event has given them a lot of information to synthesize and introduce to ongoing discussions in the government around EV regulations, particularly as a way to counter Chinese influence in the country. While no regulations have been developed at this time, they have indicated that discussions are ongoing. On the private sector side, companies and industry groups have highlighted similar points, in particular, that the event is very timely given the current status of government regulations, and that the information provided will be of particular use when presenting the case from their perspectives. Another important area to monitor for potential future regulatory impacts, as well as cooperation with the U.S., is on Corporate Average Fuel Economy (CAFE) development.

U.S. COMMERCIAL OPPORTUNITIES

Workshop 1: U.S.-Thailand Cybersecurity and Data Protection Standards Workshop

According to the U.S. industry, Thailand is a top performer amongst developing Asian countries making strong efforts towards embracing the digital economy.⁷ While a digital gap remains and only 67% of Thai people reported using the internet in 2019, the Thai government is counting on the digital economy to lift the country to higher income levels through several programs geared at enhancing digital skills and infrastructure.⁸ Much of the growth in digital infrastructure is due to the explosion of e-commerce during COVID-19 lockdowns. However, organizations and companies face major challenges in this transition, requiring adjustments to rigid structures, in addition to major investments in resources. According to a survey conducted by Deloitte,⁹ the top three challenges for digital transformation are talent gaps, lack of digital culture, and organizational silos. This highlights major knowledge gaps and the need for capacity-building efforts to bring technical capacity and awareness to the Thai population. These gaps are most

⁷ <https://www.export.gov/apex/article2?id=Thailand-telecommunications>

⁸ <https://www.bangkokpost.com/business/1992755/a-better-digital-future>

⁹ <https://www2.deloitte.com/us/en/insights/topics/digital-transformation/digital-transformation-strategy-digitally-mature.html>

evident in companies affected by digital disruption, such as telecoms and financial services. Overall, the vast majority of industries are set to experience digital disruption or transformation to a certain extent.

According to the International Trade Administration, U.S. Department of Commerce, telecommunications is viewed as the best prospect sector in Thailand including the following leading sub-sectors: Internet of Things (IoT), Mobile Security Solutions, Cloud Computing, Telecommunication Infrastructure, and Network Management. Growth in the information, communications, and technology (ICT) sector will be stimulated by strong government support and its plans to create a digital economy. The value of Thailand's digital economy is expected to surge to USD\$37 billion in 2025, according to the "e-Economy Southeast Asia Spotlight 2017" report.¹⁰

Even with the new emphasis the government has put on developing robust cyber security frameworks and regulations, the public and private sectors in the country are still missing critical parts to ensuring both adherence to existing regulations as well as alignment with modern standards. In particular, government agencies and other critical infrastructure is particularly out of alignment and will need robust support from outside organizations in both human capacity development as well as to roll out modern physical and digital infrastructure.¹¹ Spending on software across the board in Thailand reached almost USD\$1 billion last year, with a year-on-year growth of over 20%, highlighting the high demand in the country for products and services the U.S. is particularly well placed to provide.¹²

Most productive prospective commercial relationships:

Due to the regulatory and economic structures of Thailand, the most productive potential relationships U.S. organizations can seek would be with government organizations, such as the **National Cyber Security Agency (NCSA)**, for both government contracts as well as to better address regulatory challenges. The NCSA has begun signing MoUs with foreign private sector firms such as Huawei,¹³ and has been seeking more to help promote exchanges of information on cyber security and best practices as well as research and human resources development.¹⁴

Workshop 2: U.S.-Vietnam 5G Standards Workshop

Vietnam has one of the fastest-growing digital economies in the Southeast Asia region, acting as a frontrunner and early adopter of 5G networks. Global standards and recognition of international best practices will be vital to coordinate 5G efforts across the region, as well as to facilitate an open regulatory environment for utilizing 5G wireless capabilities in vertical industries. This workshop, organized in partnership with the Ministry of Information and Communications (MIC), allowed Vietnamese and U.S. stakeholders to discuss the importance of 5G standards in facilitating trade and investment cooperation.

The success of 5G as a global wireless broadband platform, as well as an incentive for device manufacturers and software developers to keep improving the systems for mobile connectivity, depends on the technology standards being utilized by the global market. Vietnam is one of the earliest countries in Southeast Asia to successfully pilot 5G technology. Nonetheless, the path to commercialization still

¹⁰ <https://www.nationthailand.com/noname/30339480>

¹¹ <https://www.bangkokpost.com/business/2461752/agency-assesses-thailands-organisational-preparedness>

¹² <https://www.computerweekly.com/news/252529197/Thai-enterprises-spend-more-on-software-amid-growing-digitalisation>

¹³ <https://www.nationthailand.com/business/40018541>

¹⁴ <https://www.bangkokpost.com/tech/2376388/ncsa-appoints-new-cyber-chief-amid-security-push>

poses difficulties. The number of 5G subscriptions in Vietnam is forecasted to reach 6.3 million in 2025, according to Cisco.¹⁵

Overall, Vietnam has a history of making positive contributions to the utilization and promotion of international standards, around 60% of Vietnam's national standards are harmonized with international and regional standards.¹⁶

In fact, currently, major mobile carriers in Vietnam such as Viettel, VNPT, Mobifone are conducting commercial trials and 5G services and are aiming to launch 5G services in 2023. The initial developments to support such a network has been completed early this year between **Nokia** and **Viettel**, with the deployment of the first dense wavelength-division multiplexing (DWDM) network operating at 600G per wavelength in Vietnam.¹⁷ Efforts and discussions around band allocation are continuing with a target of a full rollout in the country this year.

To support these rollouts, a large number of reverse trade missions have been conducted by Vietnamese officials to the U.S. to deepen commercial relationships as well as gain a more clear understanding of the necessary regulatory environs.

Most productive prospective commercial relationships:

While the rollout has already begun, the potentially most productive area for U.S. firms to target is the development and deployment of the supporting infrastructure for 5G.¹⁸ To support the development of this infrastructure Vietnam has already invested about USD\$70 million in 5G, while some other groups have poured in USD\$2-10 billion. It is further estimated that to complete a launch of 5G on a large enough scale, it requires 30,000-70,000 5G base transceiver stations, with each costing over USD\$43 million.

Workshop 3: U.S.-Thailand 6 GHz Spectrum Workshop

Wi-Fi technologies play an important role in the global digital economy, and the new generation of Wi-Fi will empower more rapid and significant development in relevant industries. According to the 2021 report of Wi-Fi Alliance, the global value of Wi-Fi is estimated to be USD\$3.3 trillion in 2021, increasing to USD\$4.9 trillion by 2025, taking into consideration factors such as consumer and business communication needs, technology developments, access to additional spectrum, and the economic impact of a global pandemic.¹⁹ Wi-Fi supports almost 30 billion connected devices globally, and will be the connection point for over 70 percent of mobile data traffic by 2023. According to Cisco Annual Internet Report (2018–2023) White Paper, globally, Wi-Fi speeds from mobile devices will triple by 2023, and Wi-Fi 6 hotspots will grow 13-fold from 2020 to 2023 and will be 11 percent of all public Wi-Fi hotspots by 2023.²⁰ In 2020, ASEAN countries spent over USD\$110 billion on information and communications technology (ICT) goods and

¹⁵ <https://english.mic.gov.vn/Pages/TinTuc/139998/Vietnam-s-5G-subscriptions-projected-to-hit-6.3-million-in-2025--Cisco.html>

¹⁶ <https://en.nhandan.vn/scitech/sci-tech/item/9184902-around-60-of-vietnam%E2%80%99s-national-standards-are-harmonised-with-international-and-regional-standards-says-official.html>

¹⁷ <https://www.nokia.com/about-us/news/releases/2023/02/15/nokia-and-viettel-successfully-complete-deployment-of-the-first-dwdm-network-operating-at-600g-per-wavelength-in-vietnam/>

¹⁸ <https://vietnamnet.vn/en/hopes-gaining-ground-for-5g-commercialisation-in-2023-2108243.html>

¹⁹ https://www.wi-fi.org/download.php?file=/sites/default/files/private/Global_Economic_Value_of_Wi-Fi_2021-2025_202109.pdf

²⁰ <https://www.cisco.com/c/en/us/solutions/collateral/executive-perspectives/annual-internet-report/white-paper-c11-741490.html>

services, and that spending is expected to grow more than 6 percent over the next four years. Additional spectrum capacity is needed for Wi-Fi to continue being a key technology enabler for next-generation connectivity and applications, such as the Internet of Things (IoT), advanced manufacturing, AR/VR technology, telemedicine, digital healthcare, smart agriculture, and broadband access for underserved and remote communities.

However, challenges still remain in ensuring that Thailand and most ASEAN governments will allocate the whole 1200 MHz in 6 GHz for unlicensed use given the strong pushback and counter-proposal from telecom vendors, GSMA, and competing countries like China. More collaboration and information exchanges with like-minded countries in the region, such as Japan and Korea, are of great importance for the U.S. stakeholders in order to promote the unlicensed use of the 6 GHz spectrum band and develop relevant business opportunities in the regional markets.

Most productive prospective commercial relationships:

With the expanded spectrum capacity enabling more use cases and vertical applications over Wi-Fi networks, more business opportunities will be created for U.S. technology suppliers and application developers. The full unlicensed band will help promote U.S. technologies and investments in the region as the U.S. is the key supplier in the Wi-Fi value chain. U.S. companies are the leading technology developers and manufacturers of the chipsets, devices, equipment, solutions, and applications that enable Wi-Fi connectivity, are highly active in standards-setting forums for Wi-Fi technology, and hold the largest position in Wi-Fi intellectual property (IP). Many large U.S. companies will benefit from the policy decision of the Thailand government. In the meantime, small-to-medium-sized enterprises (SMEs) that develop the components, consumer products, and applications will also realize increased business opportunities from the policy decision. The perspectives of the new generation of Wi-Fi in both enterprise and consumer scenarios are very promising for U.S. companies in the Thai market, such as heavy-duty autonomous vehicles and system operations for industrial uses, or consumer tech products such as cloud-based gaming, higher-quality teleconferencing, electric vehicle, wireless XR, 8K video streaming, smart security devices with HD videos, and high-density deployment mesh network.

Since Thailand is leading the efforts in the region as a pilot to allocate the 6 GHz spectrum, more countries, such as Malaysia and Vietnam, are likely to follow the same paths, which is expected to bring even more business opportunities for U.S. companies and increase the U.S. exports of products, services, and technology transfers in a broader geographic coverage.

Workshop 4: U.S.-Indonesia Healthcare IT Standards and Solutions Workshop

Indonesia's economy is expected to grow at between 4.5-5.3 percent in 2023 – one of the highest among G20 members – bringing Southeast Asia's largest economy back to pre-pandemic growth.²¹ As part of this growth, the government's annual spending on healthcare has skyrocketed, increasing spending on important sub-sectors such as the medical devices industry, which was valued at USD\$4.5 billion in 2019. The majority of this, USD\$2.8 billion, was from imports. Indonesia mainly imports sophisticated medical instruments, such as PET-CT scanners and ICU equipment, and exports low-tech equipment, such as gloves and syringes. Additionally, the pharmaceutical industry is dominated by generic drugs (70 percent) valued at more than USD\$700 million.²²

²¹ https://www.bi.go.id/en/publikasi/ruang-media/news-release/Pages/sp_2432222.aspx

²² <https://www.aseanbriefing.com/news/indonesia-sectors-to-watch-for-in-2023/>

On January 25, 2023, the U.S. Trade and Development Agency (USTDA) announced that it has awarded a grant to Indonesia's Ministry of Health (MoH) for a feasibility study and pilot project to develop a national image and data repository (NIDR). The NIDR will allow healthcare providers to reach, diagnose and treat up to 25 million patients in remote and rural communities across Indonesia using a cloud-based centralized warehouse for patient information. The MoH selected Illinois-based GE Healthcare IITS USA Corp. to perform the assistance.

USTDA's pilot will initially focus on cardiology treatment through electrocardiogram (ECG) readings at 10 hospitals in the greater Jakarta region, providing a baseline for a larger data aggregation and clinical collaboration across Indonesia. When fully implemented, the NIDR will enable the retrieval of images, data, and medical information from patient profiles that are accessible through smart devices, allowing real-time diagnostics of ECG readings for clinics without access to cardiology specialists.

Most productive prospective commercial relationships:

In order to comply with new regulations to completely digitize medical records across the country by the end of 2023, much support will be required from outside firms which U.S. organizations seem particularly primed to provide.²³ While some hospitals are on track to reach this goal, due to the existing low digitization across the country and previously less stringent regulations,²⁴ demands will be high for organizations that can provide up-to-regulation hardware and software as well as capacity development for existing staff.²⁵ Following this digitization, organizations are likely to seek out further software and hardware that can integrate with the newly input patient data.

Workshop 5: U.S.-Philippines Cold Chain Standards and Innovation Workshop

Globally, the logistics sector has a market cap of \$8.6 trillion, of which the Asia-Pacific region accounts for \$3.9 trillion.²⁶ As a fast-growing Asia-Pacific country, the Philippines' GDP currently stands at \$361.5 billion; additionally, it had a GDP growth rate of more than 6% annually pre-pandemic.²⁷ This high growth rate, coupled with ever-increasing modernization and development across the country has made it a prime target for U.S. exports in the region, with the U.S. exporting USD\$11.7 billion in goods and services last year. Between the U.S. and the Philippines, the bilateral transport services market exceeds USD\$550 million.²⁸ Currently, the Philippines has a cold chain holding capacity for roughly 500,000 tons of goods, which could double in the next few years. Additionally, recent analysis has shown that the cold chain logistics industry itself could grow 8% to 10% annually over the next 5 years.²⁹

While the cold chain is an undeniably important part of global and domestic trade, it is not without its challenges in both implementation and operation. The largest challenge in the Philippines is the lack of robust, reliable, and energy-efficient infrastructure as the backbone of the industry, including refrigerated and secure storage, and extensive land and maritime transportation to meet the diverse economy and consumer demands among varied islands. The issue is further exacerbated in rural areas due to the development gap between urban and rural areas, which is also a major bottleneck for the supply chain

²³ <https://www.healthcareitnews.com/news/asia/indonesia-officially-requires-its-healthcare-facilities-implement-emrs>

²⁴ <https://insightplus.bakermckenzie.com/bm/healthcare-life-sciences/indonesia-new-medical-records-regulation-whats-new/>

²⁵ <https://www.dealstreetasia.com/stories/pe-vc-summit-vice-minister-health-325001>

²⁶ <https://www.statista.com/statistics/1069868/total-global-logistics-market-size-region/>

²⁷ <https://data.worldbank.org/>

²⁸ <https://www.bea.gov/>

²⁹ <https://www.pna.gov.ph/articles/1157939>

from farm to table. These logistics and infrastructure issues compound and result in problems with spoilage and unsafe storage of both agricultural and medicinal products. The severe losses and waste occur early in the supply chain before any further value addition can occur, massively increasing prices for consumers.³⁰

Recognizing the importance of a robust cold chain, and reflecting a shift in trade, the Philippine government has set out to craft new regulations, programs, and other governmental actions targeting the sector as part of the government's industry roadmap.³¹ These guidelines aim to develop the sector into a more sustainable and green industry while increasing the scope and efficiency of the sector overall. In particular, the strategies focus on creating more robust systems to support the storage and transportation of products from the country's large agricultural center. While this is of course aiming to increase the export and import capabilities of the country, it also seeks to reduce food insecurity throughout the country by creating efficient linkages between agriculturally rich and poor areas.³² In February 2022, the government enacted an MOU to develop a pilot program in Luzon aimed at increasing capacity for the storage and transport of priority agricultural products including meat, produce, fish, and dairy.³³

While it has been less than one year since the completion of the workshop, that does not mean that the industry has not continued moving in the meantime. Since the event, there have been several small and large-scale events put on by both the **Cold Chain Alliance of the Philippines (CCAP)**³⁴ and the **Cold Chain Innovation (CCI) Hub**³⁵ which have included local and international stakeholders. It should be noted that while these events have included some participation from U.S.-based firms and organizations, the majority of international firms are not U.S.-based. Additionally, both organizations have highlighted potential work areas and government proposals in the sector that range from small-scale technical assistance³⁶ to larger infrastructure projects. Together, these diverse projects and events offer a wide range of opportunities for U.S. organizations to become engaged in the country – even for smaller firms with little outstanding relationships in the region. Smaller organizations in the U.S. should be particularly eager to participate as the Filipino regulations and standards are rather closely aligned with the U.S. and the lack of a large language barrier means that much less initial investment may be needed to get started in the country.

The country's cold chain sector as a whole is also on the rise and is only seeing more government attention in recent years to bring it up to modern standards and expand the country's capacity to reduce waste in its burgeoning agriculture sector. Recent research has shown that the logistics sector in the country is likely to see more than 8% growth over the next few years³⁷ and already the lack of adequate facilities has begun to have an effect. For example, onion prices have rapidly increased in recent years, and the government has been working closely with farmers to increase their yields and agreeable land; however,

³⁰ "Evaluating the Food Cold Chain in the Philippines," & *Final Project Completion Report: High Level Public -Private Forum on Cold Chain to Strengthen Agriculture & Food's Global Value Chain*, Agricultural Technical Cooperation Working Group. December 2015

³¹ <https://www.pna.gov.ph/articles/1173341>

³² https://ccaphils.org/ccapnew/narticles/bc_articles.php

³³ <https://boi.gov.ph/govt-private-sector-ink-mou-to-fast-track-philippine-cold-chain-industry-development/>

³⁴ <https://ccaphils.org/ccapnew/>

³⁵ <https://cci-hub.org/>

³⁶ <https://r744.com/co-financing-available-for-natural-refrigerant-cold-chain-demo-projects-in-philippines/>

³⁷ <https://www.prnewswire.com/news-releases/the-philippines-logistics-market-is-expected-to-grow-at-a-cagr-of-8-2-2022p--2027f-owing-to-the-rapid-improvement-in-the-logistics-infrastructure-by-the-government-ken-research-301739128.html>

both the public³⁸ and private³⁹ sectors in the Philippines acknowledge much more work needs to be done in cold storage facilities to ensure that these benefits are captured.

Most productive prospective commercial relationships:

While the potential projects are currently in their primary inception phases, the most productive commercial opportunities for U.S. organizations will likely come from the Filipino government itself. In particular, the **Philippines Department of Transportation** has indicated they have several projects in the pipeline as part of the Cold Chain Logistics Project and in accordance with the Industry Roadmap. Relevant U.S. businesses and SDOs are encouraged to participate and contribute to the projects by providing know-how and technologies, and collaborating with local partners to get ahead of the game with first-mover advantages.

Workshop 6: ASEAN-U.S. Electric Vehicle Workshop on Technical Standards

In support of climate targets and reducing carbon emissions, both the U.S. and ASEAN member states have looked to scale up the production and use of EVs. In 2021, the Biden Administration set a goal⁴⁰ for half of all new vehicles sold in the U.S. in 2030 to be zero-emissions vehicles, in order to cut U.S. greenhouse gas emissions in half. The Administration also released an EV Charging Action Plan⁴¹ to support the development and deployment of a national network of 500,000 EV chargers. The ASEAN EV market was valued at USD 498.93 million in 2021 and is expected to reach USD 2,665.3 million by 2027 by the analysis of Mordor Intelligence.⁴² According to the International Renewable Energy Agency,⁴³ 20 percent of all vehicles in the region will be electric by 2025, and there is even more potential for growth as countries in the region build up the domestic capacity to participate in the global supply chain. Some ASEAN countries, such as Indonesia and Thailand, have already outlined the framework and goals to promote the adoption of EVs. There is also a collective push toward regional standardization of charging infrastructure to enable cross-border travel and reduce the fragmentation of charging networks across different countries.

Most productive prospective commercial relationships:

With a more than 30% year-to-year projected growth⁴⁴ in the EV industry in Asia, there is a wide range of highly productive potential relationships for U.S. industry stakeholders to enter into. Discussions with members of regional governments as well as private sector stakeholders however highlight the vast importance of E2W products and infrastructure in the region. As such, U.S. stakeholders would be best served to develop commercial relationships with U.S. firms currently operating in the region or with U.S. partner country organizations, in order to develop and deploy E2W products and infrastructure.⁴⁵

³⁸ <https://newsinfo.inquirer.net/1720553/fwd-marcos-jr-raises-lack-of-cold-chain-facilities-for-onions>

³⁹ <https://www.bworldonline.com/agribusiness/2023/01/30/501604/cold-chain-industry-projects-8-10-capacity-growth-in-2023/>

⁴⁰ <https://www.whitehouse.gov/briefing-room/statements-releases/2021/08/05/fact-sheet-president-biden-announces-steps-to-drive-american-leadership-forward-on-clean-cars-and-trucks/>

⁴¹ <https://www.whitehouse.gov/briefing-room/statements-releases/2021/12/13/fact-sheet-the-biden-harris-electric-vehicle-charging-action-plan/>

⁴² <https://www.mordorintelligence.com/industry-reports/asean-electric-vehicle-market>

⁴³ <https://www.csis.org/blogs/new-perspectives-asia/southeast-asia-hopes-become-next-ev-hub>

⁴⁴ <https://www.meticulousresearch.com/product/asia-pacific-electric-vehicle-market-5236>

⁴⁵ <https://www.mordorintelligence.com/industry-reports/asia-pacific-electric-vehicle-market>