

Approaches to Standards Cooperation with ASEAN and the Relevance to Aid for Trade*

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| Contents |

I. Introduction	IV. Case Analysis
II. Literature Review	V. Discussion
III. Research Methodology	VI. Conclusion

| Abstract |

One of the main goals of ASEAN to enhance connectivity and economic integration is to harmonize standards and regulations, and implement MRAs. Developed countries have been providing support to address challenges faced by ASEAN associated with the harmonization of standards and regulations. While there is a clear relationship between standards and development assistance to trade, the explicit relevance of standards to Aid for Trade (AfT) is under-explored. This study conducts a comparative analysis of the approaches that different countries adopt for standards cooperation with ASEAN. The purpose of this study is to examine how standards are utilized to support trade and development of ASEAN and how cooperation is

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positioned in the context of AfT. Cases of the EU, Germany, U.S., Australia, and South Korea are evaluated to investigate how major countries cooperate with ASEAN in the area of standardization. We found that standards cooperation approaches are geared towards the harmonization of standards and regulations, and capacity building. These measures are relevant to AfT in that they contribute to the achievement of trade related goals including trade facilitation and the reduction of technical barriers to trade, and thus corresponding to the AfT categories ‘trade policy and regulations’ and ‘productive capacity building’. Besides cooperation in traditional industries, initiatives on digital trade have emerged as a new area for cooperation that can promote ASEAN’s competitiveness in the new trade environment. This study contributes to the theoretical discussions on AfT, identifies practical challenges, and makes suggestions for future standards cooperation with ASEAN.

▪ Key words: Standards, ASEAN, Aid for Trade, Trade Facilitation, Harmonization

I . Introduction

The Association of Southeast Asian Nations (ASEAN) aims at enhancing connectivity within the region through the ‘Master Plan on ASEAN Connectivity (MPAC) 2025’. MPAC focuses on sustainable infrastructure, digital innovation, seamless logistics, regulatory excellence, and people mobility. The work on standards¹⁾ fits into the strategic area

1) According to the ISO/IEC Directives, standard is defined as a “document established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context”. The WTO adopts this definition and makes a differentiation that standards are voluntary and technical regulations are mandatory documents that “lay down product characteristics or their related processes and production methods”.

of attaining regulatory excellence. The aim of the strategy is to implement good regulatory practice focusing on the harmonization of standards, development and implementation of Mutual Recognition Arrangements (MRAs),²⁾ and the harmonization of regulations (ASEAN 2016). These measures are important since they can circumvent trade barriers caused by the need to comply to different national standards or technical regulations by conducting conformity assessment³⁾ and can thus facilitate the intra-regional and international movement of goods.

The ASEAN Consultative Committee on Standards and Quality (ACCSQ), which is under the purview of the ASEAN Economic Ministers (AEM) has worked on the harmonization of member states' national standards with international standards and on the implementation of MRAs to achieve its final goal of having "one standard, one test, accepted everywhere". Despite the efforts, an evaluation of the standards and conformance (S&C) initiatives implemented in selected sectors revealed that ASEAN faces challenges in technical capacity, physical infrastructure, and governance (Prasetya & Intal Jr. 2015). Testing laboratories and the accreditation body lack competence and small and medium-sized enterprises (SMEs) lack the capability to conform to standards. Inadequate physical infrastructure including testing facilities, transport and IT infrastructure is another major challenge. Complex standardization processes, lack of clarity of a regulatory framework, and the lack of stakeholder communication have been identified as governance problems.

Developed countries have been providing assistance to ASEAN to tackle some of the stated challenges related to the harmonization of

2) States party to MRAs recognize and uphold legal decisions taken by competent authorities in another member state. It allows the results of conformity assessments carried out in one country to be recognized in another country.

3) Conformity assessment procedures are used to determine that relevant requirements in technical regulations or standards are fulfilled. They include procedures for testing and inspection.

standards and technical regulations. They provide assistance that is in line with their own national or regional interests. Many of them have been taking an ASEAN-wide approach to technical cooperation and capacity building in the area of standards, which is considered as a feasible alternative to the national or bilateral approach that requires, for example, the establishment of national laboratories that are not economically viable (Jachia 2009). Such assistance can be associated with the notion of Aid for Trade (AfT), which is aimed at “helping developing countries to build the supply-side capacity and trade-related infrastructure that they need to assist them to implement and benefit from World Trade Organization (WTO) Agreements and more broadly to expand their trade”.⁴⁾

While a number of technical assistance and capacity building initiatives have already been implemented more than a decade ago as an assistance for trade development, initiatives and data related to standards have been captured under the scope of Technical Barriers to Trade (TBT) and Sanitary and Phytosanitary (SPS) measures of assistance despite the fact that standards-related capacity building goes beyond TBT and SPS (Jachia 2009). Even in case studies, there has been limited research in evaluating cases of development assistance for trade that are related to standards with Zoo and Lee (2014)’s study being an exception. Case studies on standards in the context of development have been focused on how governments use standards to ‘catch-up’ or to promote their national innovation systems at the international level (Choung et al. 2012; Gao 2015; Wang et al. 2014).

In the midst of increasing cooperative initiatives between developed and developing countries that tackle questions of standardization and trade, a comparative analysis of the approaches that different countries

4) WTO (2005), “Ministerial Declaration,” § Paragraph 57, https://www.wto.org/english/thewto_e/minist_e/min05_e/final_text_e.htm. (accessed on February 18, 2021)

adopt for standards cooperation can show the following: what role do the standards play to support trade and development of developing countries; what kind of institutional arrangements are made; and how the different approaches taken show the values that are grounded in pursuing AfT. By examining standards cooperation with ASEAN, this article will identify the goals and types of standards cooperation in relation to AfT measures. Demands of ASEAN are not confined to traditional industries but also involve emerging areas such as the fourth industrial revolution (4IR), digital economy, and digital trade. This article captures both traditional and emerging areas of cooperation with ASEAN. We intend to provide implications on the downsides and upsides of the ongoing cooperation and make suggestions for future standards cooperation with ASEAN.

The following section provides a review of the literature on the relationship between standards and AfT. Then, the research methodology is presented. It is followed by the analysis of cases on standards cooperation. Discussion follows regarding cross-case comparisons and the paper concludes with a summary and implications.

II. Literature Review

1. Relevance of standards to development assistance in trade and innovation

Standards and standardization refers to a standards infrastructure that combines metrology, standardization, conformity assessment, certification, and quality management when addressed in the context of economic development (Kim & Lee 2018). A standards infrastructure that combines these norm-setting institutions can support developing countries to participate in international trade more actively if the institutions are

equipped with technical and organizational capabilities. However, since developing countries may lack capabilities that are necessary to develop and implement standards, and also lack access to relevant information, the need to provide technical assistance from the aspects of standards and technical regulations to facilitate trade has been stressed (Kim & Lee 2018). This shows that standards can be integrated into the initiatives on AfT.

Besides the discussion led by Kim and Lee (2018) on the importance of standards in the context of AfT, there are a few studies that make a connection between standards and AfT. Jachia (2009) focused on AfT that is geared towards standards by taking a look at technical assistance and capacity building in the area of standards. It is argued that the assistance in trade-related standards for developing countries should go beyond the scope of making improvements to the infrastructure, enhance compliance to technical regulations and international standards, and enable developing countries to participate in the standards development process as full players. To accomplish these goals, the article suggested to provide assistance in strengthening developing countries' participation and representation in works related to standards in the WTO and standards developing organizations (SDOs). In addition, it advised to assist firms and institutions in enhancing market access through better compliance to complex technical requirements and to promote the use of standards to support firms' movement up the global value chain.

Zoo and Lee (2014) explored the growing importance of standards and standardization in AfT through cases of AfT programs led by the EU and the United States by applying the policy design model. The study found that despite the differences in strategy and epistemology, the standards-related AfT projects are transforming from the provision of direct legal and regulatory assistance for the implementation of the WTO TBT Agreement towards comprehensive capacity building for the private

sector to reinforce quality improvement and innovation. There is a transition in the method of carrying out AfT programs by diversifying areas along the value chain and enabling developing countries to heighten their engagement in international trade.

Other studies explored the relationship between innovation and standardization in developing countries. These are broader in context compared to the studies that connect standardization in developing countries to AfT. Zoo et al. (2017)'s review found that innovation in developing countries is facilitated through different types of standards.⁵⁾ It found that the roles of the government and the organizations that support technologies and industries are significant since they complement the weak technological capabilities of other actors in the national innovation system.

Studies also focused on the effects that standards have on trade. Jansen (2010) illustrated that the international harmonization of standards and the recognition of foreign standards encouraged by the WTO Agreement can have both positive and negative welfare effects. The study suggested that developing countries' involvement in international standard setting bodies should be encouraged. Maertens and Swinnen (2009) quantified the effects of standards on fruit and vegetable exports in Senegal and found that exports grew sharply despite tighter standards. Standards positively altered the welfare mechanism through the restructuring in the supply chain. Mergenthaler et al. (2009) showed that the implementation of quality assurance programs, which includes voluntary international standards, improves the international market access for horticultural processing firms in Vietnam. Using data from The World Bank Technical Barriers to Trade Survey, Wilson and Otsuki (2004) provided that firms in developing countries perceive standards and

5) The types of standards are variety reduction standards, minimum quality and safety standards, and compatibility and interface standards. Each type of standard is respectively related to innovation as scaling, proving, and coordinating.

technical regulations as one of the important factors affecting a firm's operation and ability to export. Standards developed in the International Organization for Standardization (ISO) were the most commonly used international standards by firms to align with the WTO requirements.

Research is lacking on standards in various sectors other than the agricultural sector, which is a major export industry for developing countries (Zoo et al. 2017). The development process of standards compared to the adoption of them, the use of standards in diverse sectors besides those used to ensure quality and safety, and the explicit relevance of standards to AfT are under-explored. There is a current gap in the literature that links standards to development assistance in trade.

2. Standards under the Aid for Trade category

AfT enables the dissemination of knowledge to support the improvement of standards infrastructure in developing countries. However, the scope of AfT is not limited to standards and regulations but it is categorized into different areas. In this section, we summarize the categories and define their relationship to standards. The categorization will be used to comparatively examine standards cooperation initiatives with ASEAN.

The Organisation for Economic Co-operation and Development (OECD) and the United Nations Industrial Development Organization (UNIDO) group and measure AfT into categories and proxies. They make a differentiation between project-type and program-type interventions. The WTO Task Force on Aid for Trade defines that projects and programs are part of AfT if the activities have been identified as trade-related development priorities in the development strategies of the partner country. It concludes that the major categories in <Table 1> should be included to measure the flows of AfT (OECD/WTO 2019).

<Table 1> Categories of Aid for Trade and their relevance to standards

(Unit: USD million)

Aid for Trade Category	Examples	UNIDO category	Amount (in 2017)	Share in total Aid for Trade	Relevance to standards (Zoo)
Trade policy and regulations	providing technical assistance to develop trade strategies, negotiate trade agreements, and implement their outcomes	- trade policy development - legal and regulatory framework	1,424.3	2.4%	Very High
Trade-related infrastructure	building roads, ports, and telecommunications networks to connect domestic markets to the global economy	- physical trade infrastructure	32,870.3	56.9%	Low
Productive capacity building (trade development activities)	supporting the private sector to exploit their comparative advantages and diversify their exports (productive capacity building activities that contribute to trade development)	- supply capacity - trade promotion capacity building	23,488.3	40.7%	High
Trade-related adjustment	helping developing countries with the costs associated with trade liberalization such as tariff reductions, preference erosion, or declining terms of trade	- trade facilitation - trade-related financial services	0.8	0%	Low
Sum			57,783.8	100%	

▪ OECD/WTO (2019), UNIDO (2017),
Zoo & Lee (2014) with adjustments by the authors

<Table 1> summarizes the categories, examples, and their relevance to standards. The categories defined by the WTO Task Force on AfT are ‘technical assistance for trade policy and regulations’, ‘trade-related infrastructure’, ‘productive capacity building (including trade development)’, ‘trade-related adjustment’, and ‘other trade-related needs’ as shown in the first column. In the OECD Development Assistance Committee (DAC) aid activity database (CRS), which is a database covering 90% of all Official Development Assistance (ODA), data on the flows of AfT is provided. The CRS does not provide data sources that are an exact match to the above categories but provides proxies under four headings, which are ‘trade policy and regulations’, ‘economic infrastructure’, ‘building productive capacity (BPC)’, and ‘trade-related adjustment’. Trade development activities, which are BPC activities that contribute to trade development, are separately identified. Out of all ODA amounts reported, these four categories given as proxies are the only ones that can be identified as AfT (OECD/WTO 2019). The amount is shown in the fourth column.

UNIDO also identifies key areas of trade capacity building.⁶⁾ Of the 14 categories set by UNIDO, ‘trade policy development’ and ‘legal and regulatory framework’ correspond to the first category. ‘Physical trade infrastructure’ corresponds to the second category, ‘supply capacity’ and ‘trade promotion capacity building’ matches the third category. ‘Trade facilitation’ and ‘trade-related financial services’ are consistent with the fourth category. <Table 1> shows the correspondence between WTO, OECD, and UNIDO categories. Unlike the OECD categorization, UNIDO keeps a separate category that encompasses the standards infrastructure. It is categorized as ‘compliance support infrastructure and services’,

6) UNIDO (2017), “Trade Capacity Building Resource Guide - Interactive Web Tool,” <https://www.unido.org/resources/publications/advancing-economic-competitiveness/trade-capacity-building-resource-guide-interactive-web-tool>. (accessed on February 10, 2021)

which is particularly for standards, accreditation and certification, testing and calibration, and inspection services.

Although the relevance to standards can be identified, there are inherent limitations in quantitatively measuring the impact that the use of standards or involvement in standardization has on a developing country's economy and trade. This can be attributed to the fact that there is not much data available that can accurately connect activities related to standardization to AfT categories.

III. Research Methodology

This study employs a multiple-case study design (Yin 2009). The case study method is used to investigate how major countries cooperate with ASEAN in standardization and how such activities are positioned in the context of AfT. A comparative approach is taken to generate cross-case evaluations on the similarities and differences of AfT measures. Selected cases involve standards cooperation carried out by countries or regions that have been actively engaged with ASEAN. Cases were selected on the basis of desk research and inquiry on project or program-based cooperation. The most important criterion is that it has to be a project or program exclusively for standards or the project or program should have a component on standards. They also should be carried out with ASEAN member states.

The cases in this study fit WTO Task Force on AfT's definition of projects and programs that are a part of AfT since activities involving standardization have been identified as one of the priorities to facilitate intra- and inter-regional trade of ASEAN in its 'MPAC 2025' and the ASEAN Economic Community Blueprint (AEC Blueprint). They are an integral part of ASEAN's strategy for economic integration and trade

development.⁷⁾

The selected cases are ‘ASEAN Regional Integration Support from the EU (EU ARISE Plus)’, Germany Physikalisch-Technische Bundesanstalt (PTB)’s ‘Improving Quality Infrastructure in ASEAN’, ‘ASEAN-USAID Inclusive Growth in ASEAN through Innovation, Trade and E-Commerce (ASEAN-USAID IGNITE)’ by the U.S., ‘ASEAN-Australia Digital Trade Standards Initiative’ by Australia, and ‘International Standards Infrastructure Cooperation Program (ISCP)’ of Korea. The case of Japan was included as other cases due to the limited data accessibility and the limitation in grouping various measures led by different entities into a single scheme. Each case analysis goes by the following order: overview of the program (e.g., goals, approach, leading actor, fund, duration); relevance to standards; and relevance to AfT. Relevance to standards is examined based on the standards-related activities and outcomes. Relevance to AfT is examined based on the categorization of AfT.

We collected data from multiple archival sources. Archival data was retrieved from official documents published by ASEAN’s counterpart organizations (e.g., EU ARISE Plus, Standards Australia, PTB), documents published by ASEAN (e.g., ASEAN framework documents), fact sheets, brochures, and official websites. Analysis of archival data was supplemented with interviews conducted with experts that have been participating in the selected standards cooperation programs in the EU, U.S., and Australia as leaders and officers to increase the validity and reliability. They were communicated face-to-face or via e-mail. Experts working for EU ARISE were interviewed in Jakarta, Indonesia where the ASEAN Secretariat and the EU ARISE office are located. Information on

7) In 2015, AEC 2025 (2016-2025) was adopted as a successor to AEC 2015 (2008-2015) laying out strategic measures to achieve ASEAN’s vision of a highly integrated and cohesive economy; a competitive, innovative, and dynamic ASEAN; enhanced connectivity and sectoral cooperation; a resilient, inclusive, people-oriented, and people-centered ASEAN; and a global ASEAN (ASEAN 2015).

Korea's ISCP was obtained from the authors' participation in the program. Ongoing matters that are discussed internally or documents that are not accessible by the public could not be reflected in this paper.

IV. Case Analysis

1. European Union: ARISE Plus

(1) Overview

EU's cooperation with ASEAN for regional integration has its origin in the program called 'ASEAN-EU Programme for Regional Integration Support (APRIS)', which was carried out in two phases (APRIS I and APRIS II) over an eight-year period that lasted until 2010. It was followed by ARISE (2013–2017). The newest program is ARISE Plus that lasts for five years (2017–2022). EU executes long-term programs that have continuity in their content and goals. All programs strive for the facilitation of ASEAN's economic integration by supporting the implementation of the AEC Blueprint. More specifically, the common goal is trade facilitation and removal of non-tariff barriers.

ARISE Plus is funded by EU's contribution of 22.5 million euros over five years. The funding agency is the European Commission (EuropeAid) that obtains the resources from the European Development Fund. The program is managed by a contract between the EU and a Consortium led by Application Européenne de Technologies et de Services (AETS). The Delegation of the EU, the ASEAN Secretariat, and the relevant sectoral bodies are collectively responsible for the implementation and evaluation of the program. The premise is in Jakarta, Indonesia where the ASEAN Secretariat is located at.⁸⁾

The program is composed of four components: trade facilitation and transparency; standards and conformity assessment; customs, transport, and ASEAN Customs Transit System; and ASEAN economic integration monitoring and statistics (ARISE Plus 2018). Standards cooperation is managed as one of the main components. It also manages projects at the bilateral level with six member states.

(2) Relevance to standards

The standardization component is aimed at supporting the development of the quality infrastructure and related policies, the harmonization of standards and regulatory regimes, and the adoption of ASEAN MRAs. They are collectively targeted at the reduction of technical barriers to trade. These are related to trade since the ASEAN-wide adoption of standards that are aligned with international standards conforms to the rules of the international trade regime and the mutual acceptance of conformity assessment results via MRAs intends to facilitate intra-regional trade. ARISE Plus specifically focuses on the pharmaceutical sector and food safety in agriculture-based sectors. The ACCSQ and its Product Working Groups (PWGs) are the main counterparts.

So far, ARISE Plus has gained outputs regarding the general support for developing the quality infrastructure and policies, and also the sectoral support to establish integrated regulatory frameworks. Through ARISE Plus, 'ASEAN General Principles for Harmonisation of Regulatory Regimes' has been drafted (ARISE Plus 2019). For specific sectors, an 'ASEAN Food Safety Regulatory Framework Agreement' has been developed and a 'Framework for Pharmaceutical Regulation in ASEAN' has embarked on its development (ARISE Plus 2020). These regulatory frameworks are

8) ASEAN's contribution to the program is the provision of an adequate office space (10m²/person) within the Secretariat building.

based on harmonized international standards and measures. Along with these regulatory frameworks on food safety and pharmaceuticals, MRAs are available for implementation. These MRAs enable inspection, certification, and reports on food hygiene, good manufacturing practices and bioequivalence study of medicinal products to be mutually accepted among ASEAN member states based on conformity assessment procedures carried out according to commonly agreed standards.⁹⁾ An MRA on certification and a harmonized accreditation scheme for organic agriculture products are also being developed. EU organizes a series of workshops to enhance coordination among ASEAN sectoral working groups under the ACCSQ including the prepared foodstuff and pharmaceutical PWGs and working groups from the agriculture and health sectors.

(3) Relevance to AfT

ARISE Plus is a program that fits into AfT under the category ‘trade policy and regulations’ in which ASEAN member states are provided with technical assistance to develop and implement standards-related trade policies and regulatory frameworks including those on harmonized regulations and MRAs. ‘Productive capacity building’ that helps promote trade is carried out through workshops that are held to support ASEAN’s development and implementation of MRAs and harmonized standards or technical requirements in the main sectors including prepared foodstuff, organic agriculture, and pharmaceuticals. Standards cooperation is demand-driven in that the sectoral focus is decided according to the demands of ASEAN. APRIS and ARISE have focused on cosmetics,

9) The MRAs that have been published and ready for implementation are ‘ASEAN Sectoral MRA for Inspection and Certification Systems on Food Hygiene for Prepared Foodstuffs’, ‘ASEAN Sectoral MRA for Good Manufacturing Practice Inspection of Manufacturers for Medicinal Products’, and ‘ASEAN MRA for Bioequivalence Study Reports of Generic Medicinal Products’. The latter two MRAs will be integrated into the regulatory framework for pharmaceuticals.

electrical and electronic equipment, and automotive sectors.¹⁰⁾ ARISE Plus shifted the focus to prepared foodstuff and pharmaceutical products according to the request made by the ACCSQ. These areas are all categorized as priority sectors of ASEAN's standards and conformance strategy led by the ACCSQ. A project steering committee consisting of both EU and ASEAN representatives reviews work plans and progress reports to ensure the program's implementation.

2. Germany: Improving Quality Infrastructure in ASEAN

(1) Overview

Germany supports ASEAN member states to strengthen the quality infrastructure. Quality infrastructure indicates all the processes necessary to guarantee product quality and ensure customer protection. It covers standards, technical regulations, legal metrology, accreditation, testing, and certification. The project targets trade facilitation and the reduction of non-tariff barriers to trade by strengthening the quality infrastructure so that ASEAN's products, services, capital, and workforce move seamlessly within and outside ASEAN (PTB n.d.-a; Müller et al. 2018). This can be done by accelerating compliance with the agreed regional guidelines and the implementation of harmonized standards. The project was expected to contribute to the economic integration and regional harmonization as stated in the AEC Blueprint.

The lead executing agency is PTB, which is the National Metrology

10) The measures and outcomes of ARISE Plus are built upon the achievements of the predecessor such as ARISE and APRIS. For instance, the implementation of the 'ASEAN Cosmetics Directive' and the transposition of the directive into the national regulation of member states were supported by the EU's APRIS (EU Delegation 2013). The implementation of the 'ASEAN Sectoral MRA for Electrical and Electronic Equipment' and the 'Agreement on the ASEAN Harmonized Electrical and Electronic Equipment Regulatory Regime' were also outputs of APRIS.

Institute of Germany, with the ASEAN Secretariat as the executing agency. The project is funded by the Federal Ministry for Economic Cooperation and Development (BMZ) that coordinates Germany's development cooperation. PTB collaborates with other organizations such as the German Corporation for International Cooperation GmbH (GIZ) and the ARISE Plus program. The project is structured into a three-phase model.¹¹⁾ There is a geographic focus on Cambodia, Laos, and Myanmar (CLM) in strengthening their quality infrastructure capabilities. It is important to note that Germany simultaneously carries out projects with ASEAN as a whole and with specific countries bilaterally. For instance, it engages in quality infrastructure projects with Cambodia and Myanmar.¹²⁾ In Indonesia, quality infrastructure projects are executed for particular sectors such as the energy, photovoltaic, and food sectors.¹³⁾

(2) Relevance to standards

Germany's approach is related to standards in the broader context of building the quality infrastructure. Nonetheless, there are activities and outcomes directly associated with standards. While phase three is continuing its mission, the external evaluation of phase two returned good and satisfactory levels of the project's relevance, effectiveness, impact, efficiency, and sustainability (Müller et al. 2018).

ACCSQ is the main partner for the implementation of the project. Strengthening the capacities of ASEAN's regional bodies by working

11) Phase two was executed between the years 2015 and 2018, while phase three started in 2019 and lasts until 2021.

12) They are Strengthening Quality Infrastructure in Cambodia (2018-2020) and Strengthening Quality Infrastructure in Myanmar (2015-2021).

13) They are Strengthening Quality Infrastructure for the Energy Sector (2016-2020), Strengthening Quality Infrastructure for the Photovoltaic Sector (2020-2023), and Quality Assurance in Environmental and Food Analysis II (2017-2020).

with the existing structures of the ACCSQ and its working groups (WGs)¹⁴⁾ was the approach taken to make quality infrastructure improvements (PTB n.d.-b). International experts provided consultancy services to the WCCSQ WGs and short terms experts provided specialized training and seminars.

As a result, effective outcomes in standards, conformity assessment, and legal metrology were achieved. Support regarding the harmonization of requirements for prepackaged goods and training in the control of those goods was provided in accordance with international best practices. The project also supported the Joint Sectoral Committee on Electrical and Electronic Equipment under the ACCSQ via the implementation of ASEAN-wide harmonized standards or technical regulations including the 'ASEAN Guide on Good Regulatory Practice' and the 'ASEAN Harmonized Electrical and Electronic Equipment Regulatory Regime'. In addition, PTB collaborated with EU ARISE in drafting the guideline for 'ASEAN Food Reference Laboratory Network' that can help harmonize food safety surveillance systems.¹⁵⁾ Phase two additionally contributed to the capacity building of national accreditation bodies by setting up 'National Accreditation Focal Points' that can provide internationally recognized accreditation services. To enable the actual implementation of regionally harmonized guidelines at CLM countries, personnel at the national policy and regulatory bodies are provided with technical training seminars.

There was also a project explicitly on standards named the 'Standards in the South East Asian Food Trade' from 2015 to 2018. Commissioned and funded by the BMZ, it was primarily carried out in CLM, Indonesia, and the Philippines to promote the development of standards in the food

14) The main stakeholders were WG 1 Standards and MRAs, WG2 Conformity Assessment, WG 3 Legal Metrology, Joint Sectoral Committee on Electrical and Electronic Equipment, and the Prepared Foodstuff PWG.

15) This activity is coordinated in the ASEAN Food Testing Laboratory Committee (AFTLC) that operates within the Prepared Foodstuff PWG.

sector so that national standards can be harmonized with ASEAN-wide standards on good agricultural practice (GAP), the ASEAN Standard for Organic Agriculture (ASOA), and Global GAP in the long run.¹⁶⁾ Emphasis was also put on training private inspectors and state supervisory bodies to conduct risk-based inspections.

(3) Relevance to AfT

Germany's projects are relevant to 'trade policy and regulations' and have properties connected to 'productive capacity building'. The ACCSQ WGs and relevant stakeholders, especially those of CLM, gain support in terms of the development and implementation of regionally harmonized guidelines related to quality infrastructure that are ultimately aimed at facilitating intra-regional trade and increasing global competitiveness. The project also provides assistance in the implementation of ASEAN-wide harmonized standards. Implementations of harmonized guidelines and standards that conform to international best practices are not only facilitated at the regional level but also at the national level targeting national bodies in the CLM countries. In addition, the cooperation on human resource development demonstrates the 'productive capacity building' aspect of the projects.

3. U.S.: ASEAN-USAID IGNITE

(1) Overview

Before IGNITE, the U.S. supported ASEAN's economic integration through the 'ASEAN Connectivity through Trade and Investment (ACTI)'

16) GIZ, "Standards in the South-East Asian food trade," <https://www.giz.de/en/worldwide/28747.html>. (accessed on March 1, 2021)

that lasted until 2018.¹⁷⁾ Both funded by the United States Agency for International Development (USAID), these development cooperation programs are aimed at facilitating trade and accelerating the implementation of the AEC Blueprint. ACTI provided technical assistance for the harmonization of business standards in priority sectors to reduce the barriers to trade and investment (USAID 2015).

IGNITE is a joint project of the USAID, the U.S. Department of State, and ASEAN built upon the achievements made by ACTI. The implementing partner of IGNITE and the predecessor ACTI is Nathan Inc., which is a consulting firm.¹⁸⁾ It is a five-year program (2018-2023) with a fund of \$15 million. The key purpose of the program is to provide a better environment to promote cross-border trade that benefits both the U.S. and ASEAN (USAID 2020).

(2) Relevance to standards

The main objective of IGNITE is highly relevant to standardization in that it aims to expand the implementation of standards, rules, and procedures that are harmonized with international standards in order to facilitate cross-border trade for goods and services. In addition, it aims to promote digital services that are aligned with international standards. IGNITE provides technical assistance in largely three components: trade facilitation; digital economy; and science, technology, and innovation

17) ACTI was carried out from 2013 to 2018 with a funding level of \$14.4 million. It was built upon the 'ASEAN Development Vision to Advance National Cooperation and Economic Integration (ADVANCE)' program launched in 2007. ACTI helped the creation and operation of the ASEAN Single Window that enables seamless cross-border movement of goods through electronic data submission for cargo clearance. ADVANCE provided support for ASEAN's integration in political, economic, and socio-cultural aspects (USAID 2015).

18) The Chief and the Deputy Chief of the Party affiliated with Nathan Inc. are based in Jakarta, Indonesia.

(USAID 2020). Assistance in the area of standards is not composed as an independent component like EU ARISE Plus, but standards are covered within all components. IGNITE is particularly focused on enhancing regulations and harmonizing standards in digital services and data governance. The following measures are the foundation for promoting ASEAN's digital-enabled trade. These works are executed by seeking agreement from the ASEAN Coordinating Committee on Electronic Commerce (ACCEC) and ASEAN sectoral bodies.

IGNITE supports ASEAN's initiatives on digital data governance. The 'ASEAN Framework on Digital Data Governance' was endorsed in 2018 by the ASEAN Telecommunications and Information Technology Ministers Meeting (TELMIN). IGNITE provides support for the implementation of this framework that can enhance data flows and protection based on harmonized global standards. It also supports personal data protection by providing assistance for the implementation of the 'ASEAN Framework on Personal Data Protection' adopted in 2016 so that member states can implement privacy frameworks and achieve cross-border interoperability of data protection and privacy regimes (USAID 2019b).

IGNITE supports ASEAN's approach in taking an integrated approach to the regulations on digital economy. The 'ASEAN Digital Integration Framework' endorsed in 2018 urges member states to adopt regulatory frameworks that use common global standards and rules, develop open application interface (API) standard with financial institutions, and develop national digital identification systems, which are all essential for digital payment that enables seamless cross-border digital trade (ASEAN 2019). IGNITE provides technical support to implement this framework through the development of the 'ASEAN Digital Integration Index' by monitoring how the framework and its action plan are implemented (USAID 2019a).

(3) Relevance to AfT

IGNITE's activities fall under 'trade policy and regulations', providing technical assistance for trade facilitation and promotion of a digital economy. It is more focused on providing assistance for the implementation of relevant ASEAN frameworks on digital economy and trade that have already been endorsed by ASEAN member states rather than on the development of new frameworks or trade policies. Focused on digital services, digital data governance, and data protection, IGNITE contributes to fostering trade that is digitally enabled within and outside ASEAN.

4. Australia: ASEAN–Australia Digital Trade Standards Initiative

(1) Overview

The 'ASEAN–Australia Digital Trade Standards Initiative' was announced at the ASEAN–Australia Special Summit in March 2018. It was developed through a collaboration between the ACCSQ, ACCEC, the Australian Government's Department of Foreign Affairs and Trade (DFAT), Department of Industry, Innovation and Science (DIIS), and Standards Australia. Standards Australia leads the initiative with coordination and oversight from the ASEAN Secretariat. The initiative attempts to promote standards harmonization, technical alignment, and regulatory cooperation by adopting and using international standards related to digital trade developed by ISO/IEC JTC 1 (Standards Australia 2018a).¹⁹⁾ There is also an underlying motive on the Australian side to reduce the costs of exporting and importing for domestic businesses

19) ISO/IEC JTC 1 is a joint technical committee titled 'Information Technology' in which the ISO and the International Electrotechnical Commission (IEC) develop information technology standards applicable across domains (ISO/IEC 2020).

through the use of harmonized international standards.²⁰⁾ The emphasis on digital trade arose because international standards are important to ensure interoperability and open data flows in the midst of growing cross-border data flows and trade in digital services.

The initiative initially conducted focus groups consisting of stakeholders from the ASEAN member states and Australia to discuss the strengths, challenges, and opportunities in digital trade and international standards. Additionally, a survey was conducted to understand the current knowledge (e.g., awareness, barriers, priorities) of digital trade and international standardization. Potential priority areas for cooperation in digital trade were proposed based on those findings (Standards Australia 2018a). Since then, workshops led by Standards Australia in collaboration with the national standards bodies (NSBs) of ASEAN member states are regularly being carried out to seek measures to increase the participation of ASEAN in the international standardization related to digital trade and drive the adoption of digital trade standards.²¹⁾

(2) Relevance to standards

The initiative is exclusively designed for standardization activities. The activities are centered on raising awareness, capacity building, increasing ASEAN NSBs' engagement in international standardization, and increasing the adoption and use of international standards on digital trade. Direct participation in international standardization is important for ASEAN to develop standards that are relevant to their markets, promote knowledge

20) DFAT (2018), "Australia and ASEAN driving digital trade," <https://www.dfat.gov.au/news/news/Pages/australia-and-asean-driving-digital-trade>. (accessed on March 2, 2021)

21) Standards Australia, "ASEAN-Australia Digital Trade Standards Initiative," <https://www.standards.org.au/engagement-events/international/asean-australia-digital-trade>. (accessed on March 15, 2021)

about international best practices, and avoid barriers to trade. However, ASEAN member states currently have varying levels of membership in ISO and IEC, meaning that there are countries that are not full members of these major SDOs that set standards.²²⁾ There are even more variations in the membership of ISO/IEC JTC 1 and its numerous sub-committees in which most ASEAN member states are observing members or non-members that cannot participate in drafting and voting procedures.

So far, potential priority areas have been identified and recommendations have officially been made. They lay the foundation of proceeding to a long-term program on digital trade standards cooperation in the future. The primary areas that emerged in the initial concept phases are data, e-transactions, logistics, and trust, which are topics that are covered in ISO/IEC JTC 1 sub-committees (Standards Australia 2018a). Specific areas that ASEAN member states have advantages in and thus can be potential priority areas are continuously being explored in the implementation phase.

One of the most significant outcomes is that the initiative led to the establishment of the Digital Trade Standards and Conformance Working Group (DTSCWG) under the ACCSQ (Standards Australia 2018b). Before the initiative, there were only WGs on products in the ACCSQ.²³⁾ In other words, there were no WGs that covered the idea of trade in services, digital goods, or data flow. Since establishing a new WG is not an easy administrative task and a non-product working group is unprecedented, the establishment of the DTSCWG is a significant result.

22) Singapore, Thailand, Indonesia, Malaysia, Philippines are full members in the ISO and IEC. Vietnam is a full member in the ISO and an associate member in IEC. Brunei, Cambodia, Laos, Myanmar are correspondent members in the ISO and affiliate country members in IEC.

23) Under the ACCSQ, there are PWGs for pharmaceuticals, automotive products, rubber-based products, medical devices, traditional medicines and health supplements, and prepared foodstuff.

DTSCWG is where coordination on digital trade standards and conformance within ASEAN and with other external partners besides Australia will take place.

In the second phase in 2019 known as the inception phase, capacity building workshops for stakeholders (e.g., NSBs, government bodies, industries, technology experts) were held in Singapore, Cambodia, and Indonesia. The workshops were delivered to support the recommendations on raising awareness, institutional strengthening of NSBs, and capacity building in the area of digital trade standardization and addressed specific issues including e-commerce, emerging technologies (e.g., artificial intelligence, blockchain), and cybersecurity (Standards Australia 2019). In the 2021 implementation phase, workshops led by Standards Australia were continued to enhance the understanding on the importance of ASEAN's involvement in the development, adoption, and dissemination of digital trade standards.

(3) Relevance to AfT

The initiative has contributed to the creation of a new WG on digital trade standards having an impact on the regulatory environment. Furthermore, it has delivered multiple workshops for establishing the foundation of digital trade standards cooperation. In this sense, the initiative is linked to 'trade policy and regulations' and 'productive capacity building'. The initiative contributed to building a reliable infrastructure directly associated with both standards and trade. It is unique in that it explicitly focuses on the digital dimension of trade, which is an emerging area of interest to ASEAN. ASEAN is increasingly developing new regulatory frameworks on digital integration such as the 'ASEAN Digital Integration Framework' and is engaging in multilateral trade policy discussions involving digital trade and cross-border

e-commerce issues such as the Regional Comprehensive Economic Partnership (RCEP). Capacity building activities are found through workshops on standards and technical areas that invite stakeholders from diverse backgrounds including government departments, regulatory authorities, business and industry organizations, researchers, consumers, and NSBs. The initiative incorporates a demand-driven approach for cooperation. It gained direct input from ASEAN stakeholders through survey and focus groups about awareness, barriers, opportunities, and challenges to digital trade.

5. Korea: ISCP

(1) Overview

ISCP is a technical assistance and capacity building program that was launched in 2011 by the Korean government. The Korea Agency for Technology and Standards (KATS) within the Ministry of Trade, Industry and Energy (MOTIE) implements this program to support the advancement of standards infrastructure of partner developing countries in the areas of metrology, standardization, and conformity assessment. ISCP is designed exclusively for standards cooperation. The main goals are to enhance standards capacities and strengthen cooperative relationships with standards organizations of partner countries (KSA 2016). Each project is carried out bilaterally with developing countries including ASEAN member states. ISCP is project-based in which the contracted project is selected and evaluated each year. There are in-depth projects that last for several years and there are also short-term projects or one time training sessions. The number of projects and the budget vary each year. The average budget is 1 billion Korean won per year (approximately \$800,000/year) for about 10 projects yearly. For in-depth

projects only that were carried out from 2015 to 2021, approximately 3.7 billion won was allocated. The actors that execute the projects are mostly Korean testing institutes and laboratories.²⁴⁾ The Korean Standards Association (KSA), a nonprofit public corporation under the auspices of MOTIE, organizes and manages the processes of the projects.

(2) Relevance to standards

Cooperation takes place in the form of joint in-depth projects that are customized to the needs of the partner countries. These projects include the enhancement of systems for standardization, conformity assessment, and metrology (e.g., national product safety systems, national systems of legal metrology) and the establishment of joint testing laboratories in the partner country. The former involves activities to support the development of standards and to improve or revise technical regulations and legislation. The latter involves the supply of testing equipment and the construction of a physical infrastructure that are usually buildings of testing facilities capable of performing conformity assessment in compliance to Korean, international, or national standards. Capacity building activities in the form of invitational programs (114 people invited from 33 countries in 2014–2018) and on-site programs are implemented to share knowledge and train staffs (senior executive officers, managers, engineers) on policy making, standardization system, legal metrology, conformity assessment, and testing capabilities. Experts are occasionally dispatched to partner countries.

During the last five years (2014–2018), ISCP was completed in 22 countries. These partner countries include ASEAN member states such

24) They include Korea Testing Certification (KTC), Korea Apparel Testing and Research Institute (KATRI), Korea Conformity Laboratories (KCL), Korea Testing & Research Institute (KTR), FITI Testing and Research Institute (FITI), and Korea Association of Standards & Testing Organizations (KASTO).

as Cambodia, Laos, Vietnam, Indonesia, Myanmar.²⁵⁾ Non-ASEAN countries such as Mongolia, Brazil, Peru, Paraguay, Columbia, Ethiopia, and Kyrgyzstan are also partner countries. The sectors in which cooperation is carried out vary for each country. In-depth projects with ASEAN are centered on traditional industries such as construction, textiles, and electrical and electronic products. The addition of more projects with ASEAN member states is inseparable from Korea's 'New Southern Policy' declared in 2017, which is a diplomatic initiative seeking comprehensive cooperation with ASEAN and India. Examples of successful cases include the establishment of a Vietnamese certification system (V-Mark) that resembles the Korean system (K-Mark) and the establishment of a joint testing laboratory for textiles in Myanmar.

(3) Relevance to AfT

ISCP incorporates 'trade policy and regulations', 'trade-related infrastructure', and 'productive capacity building' categories of AfT. ISCP bilateral projects support partner countries to improve technical regulations and laws, to build physical infrastructure that are mainly testing laboratories enabling them to go through conformity assessment procedures that help connect to the global market, and to build capacity through theoretical and practical training activities. In terms of UNIDO's categorization, ISCP

25) Projects with Cambodia were carried out on the enhancement of legal metrology and conformity assessment systems, quality management system for textiles, and electrical and electronic product safety system. The project with Laos was on the development of the product safety system and the prepackaged product certification system. Projects with Vietnam were carried out every year from 2013 to 2019. They were focused on the establishment of the legal metrology and prepackaged product certification systems. There were also projects to support cooperation on standards, testing, and certification in the construction industry, textile industry, for electrical and electronic products, and for energy efficiency. Projects with Indonesia were focused on the textile and geotextile. Myanmar projects have been centered on textile products and construction materials.

provides ‘compliance support infrastructure and services’ for standards in that the projects are specifically targeted at improving the standards infrastructure in developing countries including ASEAN member states. The area of cooperation is selected through an in-depth consultation using a self-developed tool called the National Standards Capability Analysis Framework (NSCAF).²⁶⁾ NSCAF determines the priority area and the validity of implementing a project based on the demands and circumstances of the partner country.

6. Others

Other countries such as Japan engage in broad activities related to building the quality infrastructure. Japan announced the ‘Partnership for Quality Infrastructure’ in 2015 in which the Government of Japan promotes investment in quality infrastructure. The plan was to provide approximately USD 110 billion dollars in collaboration with the Asian Development Bank (ADB) to develop quality infrastructure in Asia over five years (MOFA 2015). Thus, it covers Asia in general through the mobilization of multiple funding sources in Japan and with other organizations like the ADB. The infrastructure projects are building physical infrastructure like bridges. This is comparable to building the quality infrastructure encompassing standards, technical regulations, and conformity assessment procedures.

Japan’s standards cooperation with ASEAN is difficult to group into a single title of project or program since there have been many activities like workshops delivered by different entities. Objectives of Japan’s activities in ASEAN are to promote trade and investment between the two by supporting capacity building and the implementation of ISO, IEC, and

26) NSCAF is a quantitative evaluation tool that helps measure a country’s overall capacity based on its standardization system, standardization strategy, testing capabilities, human resources, and equipment.

Japanese Industrial Standards (JIS) standards (JISC 2019). Japan Industrial Standards Committee (JISC) has been managing many workshops in ASEAN to cooperate on the development and dissemination of standards, and capacity building. The topics of these workshops are related to ISO, IEC, JTC 1, and ACCSQ PWGs. Japan International Cooperation Agency (JICA) conducted workshops on electrical and electronic equipment to share knowledge on the development of standards, regulations, and testing capacity regarding safety requirements. The Association for Overseas Technical Cooperation and Sustainable Partnerships (AOTS) conducted workshops with participants from ASEAN on the dissemination of the concept, standards, regulations, and conformity assessment regarding Zero Energy Buildings. The Japan-ASEAN Integration Fund (JAIF) project on 'Capacity Building for Conformity Assessment for Information Technology Equipment (ITE) in ASEAN Member States' supported by the Government of Japan is aimed at enhancing capacities on product safety and electromagnetic compatibility of information technology equipment.²⁷⁾ Through workshops, field study, and technical conferences, the technical infrastructure and competencies on laboratory testing, inspection, certification, and accreditation are anticipated to be enhanced based on the application of procedures and guides that are regionally and internationally accepted. Japan's activities including workshops held by agencies like JISC can be classified as 'productive capacity building' and 'trade policy and regulations'.

27) JAIF (2019), "Capacity Building for Conformity Assessment for Information Technology Equipment (ITE) in ASEAN Member States," <https://jaif.asean.org/project-brief/capacity-building-for-conformity-assessment-for-information-technology-equipment-ite-in-asean-member-states/>. (accessed on June 20, 2021)

V. Discussion

In this section, we compare the different standards cooperation approaches explained in Section IV. <Table 2> summarizes the approaches by country. The approach is either project-based or program-based and the scope can be ASEAN-wide, focused on CLM countries, or bilateral. The focus sector is traditional industries or digital economy and trade. The targeted strategy of MPAC 2025, which includes sustainable infrastructure, digital innovation, seamless logistics, regulatory excellence, and people mobility, determines the relationship with ASEAN's strategy for economic integration and development. The goals and types of cooperation are relevant to AfT. Standards area means metrology, standardization, testing, and quality (MSTQ). It helps identify whether a project or program focuses on standardization itself or involves the broader idea of quality infrastructure. Method of operation can be in the form of an establishment of a physical site, operation of ad hoc based workshops, and use of experts.

First, we address the goals and types of cooperation. The commonality of standards cooperation approaches is that they are geared towards the harmonization of standards, regulations, and conformity assessment procedures, which is one of the primary goals pursued by ASEAN to achieve regional integration and the free flow of goods and services. The key activity is to provide support in the process of harmonization with international standards and best practices. ASEAN does not develop ASEAN regional standards like the EU that develops European standards (EN) adopted by one of the three recognized European Standardization Organizations (ESOs).²⁸⁾ Thus, the method of harmonizing different

28) The ESOs are the European Committee for Standardization (CEN), the European Committee for Electrotechnical Standardization (CENELEC), and the European Telecommunications Standards Institute (ETSI).

national standards of ASEAN member states is agreeing on the adoption of international standards, then making it available to all member states. To enable products to conform to these harmonized standards, enhancements in the certification systems and the operation of laboratories and testing facilities are necessary so that conformity assessment can be done accordingly. This is why regulatory assistance goes in tandem with capacity building.

These measures can collectively be classified into providing support to standards-related trade policy. In other words, measures on regulatory assistance, harmonization, capacity building are implemented to achieve trade related goals including trade facilitation. Conformance to international standards improves the quality and safety of products and services to match the expectations of the global market and thus can contribute to the increase in ASEAN's global competitiveness. Standards cooperation also adheres to the interests of the EU, U.S., Germany, Australia, and Korea that promotes trade with ASEAN based on international standards, which are widely adopted in these developed countries.

As it has been identified in Zoo and Lee (2014)'s study, the high relevance of AfT categories on 'trade policy and regulations' and 'productive capacity building' to standards are found to be consistent in our study. These AfT categories are the most frequently identified in standards cooperation with ASEAN. Most countries provide regulatory or technical assistance to ASEAN combined with capacity building. Korea's projects are unique in that they can be categorized under 'trade-related infrastructure'. Physical infrastructure such as testing laboratories can contribute to the enhancement of the quality infrastructure in ASEAN. It is also in the interest of the Korean side since Korean testing laboratories can expand their presence in ASEAN and Korean products can enter the ASEAN market at ease.

A common approach taken by the EU and the U.S. is that they provide assistance in the development and implementation of ASEAN frameworks that are aimed at the harmonization of technical requirements and higher level policies such as the regulatory regimes and directives. Implementations of sectoral MRAs, which are integrated into the regulatory regime, are also supported. The EU cooperated with ASEAN stakeholders, particularly the ACCSQ, to prepare regulatory frameworks and MRAs on cosmetics, automotive, electrical and electronic equipment, food, and pharmaceutical sectors. EU works at different levels ranging from higher level strategy to the details at lower levels. One of its priorities is to prepare policies or higher level frameworks and make them operate in a coordinated fashion so that they can bring the ASEAN market together. The U.S. works on the implementation of ASEAN frameworks focused on the promotion of the digital economy. These are also grounded in the use of harmonized standards. Thus, they are closely related to the activities on harmonization previously mentioned.

Although countries cooperate with ASEAN by supporting the development and implementation of ASEAN's regulatory regimes and MRAs, activities are centered on the adoption of existent standards than the development of new standards that are to be integrated in those regulatory frameworks. This corresponds to Zoo et al. (2017)'s study, which found that the literature on developing countries was skewed towards the adoption of standards than the development of standards. As aforementioned, this can be a practical approach since ASEAN does not develop its own regional standard and its emphasis on harmonization is based on international standards like ISO and IEC standards. Australia takes a slightly different approach in that it intends to bring ASEAN into the scene of standards development. Through capacity building measures, Australia seeks to increase ASEAN stakeholders' ability to participate in the technical committees on digital trade in international SDOs so that

Australia and ASEAN can jointly participate in such committees. Thus, it is directed towards both the development and adoption of standards.

Second, we discuss the program or project-based approaches of cooperation. The EU and the U.S. both pursue program-based cooperation whereas the others are project-based. Projects in the context of development assistance are “a series of activities aimed at bringing about clearly specified objectives within a defined time period and with a defined budget” (European Commission 2004). Infrastructure building, dispatch of experts abroad, invitational training, and the combination of these fit in the scope of ODA projects. Programs are understood as a package of projects that have a macro-level objective. The program-based approach stresses the ownership of the recipient country and the importance of the donor’s role in coordinating a variety of its own projects (Lee 2010). The EU has undergone two phases of APRIS (APRIS I and II) and two phases of ARISE (ARISE and ARISE Plus). EU has been supporting ASEAN’s economic integration for more than 20 years. The U.S. went from ADVANCE, ACTI to today’s IGNITE. They have the common goals of facilitating trade, investment, development, and economic integration of ASEAN, which is aligned with the AEC Blueprint. Australia and Korea’s approaches are project-based, but they are significant in terms of their specificity on standards.

<Table 2> Comparison of the standards cooperation approaches

Cooperating country	Approach and scope	Sector	Targeted strategy of MPAC	Goal of cooperation	Type of cooperation	Standards area (MSTQ)	Method of operation
EU	• Program-based approach • Standardization is a major component of the program • Regional (ASEAN-wide) and bilateral	• Traditional industries (e.g., food safety in agriculture-based sectors, pharmaceutical sector)	• Regulatory excellence • Seamless logistics	• Trade facilitation • Reduction of technical barriers to trade • Implementation of the AEC Blueprint	• Harmonization of standards and regulations • Development and implementation of MIRAs • Capacity building • Relevance to AFT: 'trade policy and regulations', 'productive capacity building'	• Standardization • Testing • Quality	• Establishment of a permanent office inside the ASEAN Secretariat • Workshops • Use of experts (key and non-key experts)
Germany	• Project-based approach • Regional (ASEAN-wide), CLM, and bilateral	• Traditional industries (e.g., prepackaged foods, electrical and electronic equipment)	• Regulatory excellence	• Improvement of the quality infrastructure • Trade facilitation • Reduction of non-tariff barriers to trade • Implementation of the AEC Blueprint	• Harmonization of standards and regulations (and their national implementations) • Capacity building • Relevance to AFT: 'trade policy and regulations', 'productive capacity building'	• Metrology • Standardization • Testing • Quality	• Use of experts (consultancy and training services)

Cooperating country	Approach and scope	Sector	Targeted strategy of MPAC	Goal of cooperation	Type of cooperation	Standards area (MSTQ)	Method of operation
U.S.	• Program-based approach • Standardization is covered in all components of the program • Regional (ASEAN-wide)	• Digital economy (e.g., digital payment, digital data governance, data protection)	• Digital innovation • Regulatory excellence • Seamless logistics	• Trade facilitation (promotion of cross-border digital trade) • Implementation of the AEC Blueprint	• Harmonization of standards and regulations • Relevance to AFT: 'trade policy and regulations'	• Standardization	• Chief and Deputy Chief of the Party affiliated with the implementing partner are based in Jakarta, Indonesia
Australia	• Project-based approach • Project is exclusively for standards cooperation • Regional (ASEAN-wide)	• Digital trade (e.g., data, e-transactions, cybersecurity)	• Digital innovation • Regulatory excellence	• Trade facilitation (promotion of cross-border digital trade)	• Establishment of a new WG in ACSQ • Harmonization of standards and regulations • Increase participation in international standardization • Capacity building • Raising awareness • Relevance to AFT: 'trade policy and regulations', 'productive capacity building'	• Standardization	• Workshops • Focus group sessions • Survey • Use of experts

Cooperating country	Approach and scope	Sector	Targeted strategy of MPAC	Goal of cooperation	Type of cooperation	Standards area (MSTQ)	Method of operation
South Korea	• Project-based approach (with individual countries as counterparts) • Project is exclusively for standards cooperation • Bilateral	• Traditional industries (e.g., construction material, textile)	• Regulatory excellence • Physical infrastructure	• Improvement of standards infrastructure	• Infrastructure development (joint testing laboratories) • Regulatory assistance for developing standards and regulations • Capacity building • Relevance to AFT: 'trade policy and regulations', 'productive capacity building'	• Metrology • Standardization • Testing • Quality	• Invitation to Korea • On-site programs • Workshops • Dispatch of experts to ASEAN member states
Japan	• Project-based approach • Standardization is covered in workshops and project • Regional (ASEAN-wide) and bilateral	• Traditional industries (e.g., electrical and electronic equipment) and ICT (e.g., information technology equipment)	• Regulatory excellence	• Promotion of trade and investment • Improvement of standards infrastructure	• Technical assistance for developing standards and regulations • Capacity building • Relevance to AFT: 'trade policy and regulations', 'productive capacity building'	• Standardization • Testing • Quality	• Workshops • Field study • Technical conferences

Program-based cooperation has benefits such as the continuity of cooperation that enables both sides to achieve long-term goals. In addition, the longevity and continuity strengthen trust between the parties involved. Programs allow bilateral and regional approaches to ASEAN to be integrated into achieving a unified goal of AfT. Since program-based cooperation lasts for quite a long period, it is operated by establishing physical presence in ASEAN. An office for EU ARISE is located in the ASEAN Secretariat and the key members of ASEAN-USAID IGNITE are based in Jakarta where the ASEAN Secretariat is as part of the U.S. Mission to ASEAN. Having physical presence enables direct communication, prompt responses, and easy coordination with ongoing activities in ASEAN. On the other hand, project-based cooperation can flexibly be adapted to the demands of each ASEAN member state that have different levels of economic and industrial development. However, there is a risk that they may end as a one-time project, which may hinder the achievement of sustainable outputs and outcomes.

While both modes have their pros and cons, it is essential to take a demand-driven approach regardless of the mode. The EU is known for initiating cooperation with ASEAN in new sectors where there is expressed demand and request from ASEAN. The most recent achievement of ARISE Plus in the food sector is grounded in the request that was made by ACCSQ in that sector. Australia made efforts to discover the needs of ASEAN in digital trade through surveys and focus groups. Korea comes up with in-depth projects by using its own tool NSCAF. Demand-driven cooperation is beneficial in eliciting active participation from ASEAN in the area of cooperation that is in their best interest. This can have a positive effect on the relevance and impact indicators during the final evaluation. Demand-driven approach can also help identify new areas of cooperation and avoid duplicate activities.

Third, we discuss the differences in sectoral focus. Australia's approach is unique in terms of the key sector of cooperation. Most of the previous efforts in standards cooperation were focused on traditional industries, especially the priority areas identified by ACCSQ. This is in line with the demand of ASEAN and its existing institutional structures of the ACCSQ. While ASEAN is highly interested in 4IR and topics such as digital trade and e-commerce, they have been less explored in standards cooperation. ASEAN's service trade is on the rise, but cooperation in standards is concentrated in products. Therefore, cooperation in the area of digital trade and 4IR is important from the perspective of AfT. Australia initiated joint activities on digital trade and the U.S. is engaged in supporting ASEAN to promote digital transactions and integration. They match MPAC's strategic initiative on digital innovation. This initiative involves the support for enhanced data management and improved open data use in ASEAN (ASEAN 2016). Australia's approach is different from other countries in that it proposed and executed a new type of standard cooperation. A new WG was established in ACCSQ. This is different from the dominant approach in which support is provided in existing institutional arrangements within ASEAN. Whether the establishment of a new WG that is outside the boundary of the existing PWGs in the ACCSQ yields positive results shall be revealed in future evaluations.

Fourth, there is another major difference between countries in terms of the supporting organization that leads the program or project. In the EU, Germany, the U.S., and Japan, the agency responsible for ODA either has the leadership or provides the funds. In Australia and Korea, the NSBs are in charge of the project. Standards Australia and KSA in Korea are the NSBs that manage standards development domestically and are represented in formal international SDOs. The former type has the advantage of securing the funds needed to carry out long-term

cooperation. The latter type has an advantage in utilizing its expertise in standardization activities.

Last, we address some challenges associated with standards cooperation with ASEAN in the context of AfT. ASEAN is an association of countries with great diversity. ASEAN member states have a considerable degree of variations in, for instance, economic development, technology development, and geographic characteristics. Their status in developing standards for diverse sectors and participating in international SDOs also differs substantially. Thus, some member states need more assistance in making regulations and capacity building related to standardization, while others are highly advanced requiring less support. Due to this reason, countries may find it practical to engage in project-based cooperation bilaterally with certain member states. ASEAN-wide cooperation can be deemed more suitable for devising higher level policies and frameworks or for emerging technology areas. This makes it challenging for countries to find new fields to cooperate in. Major fields of interest are already occupied by ongoing projects. The less explored area is emerging technologies. However, this topic is diverse and broad in scope. On top of that, emerging topics cannot be covered within the existing mechanism of ACCSQ for ASEAN-wide standardization. The question arises as to whether new WGs should be added each time a new topic is covered in the ACCSQ. If cooperation in convergence industries comes into play, coordination with other ministries of ASEAN is necessary. These issues should be addressed to further promote standards cooperation that makes contributions to AfT.

The analysis on standards cooperation with ASEAN shows that the adoption of international standards into the harmonized ASEAN standard is dominant. The necessity of increasing connectivity within and outside ASEAN requires ASEAN to respond to new technological developments and advance its role in the global value chain. To support a more active

role of ASEAN, it is recommended that more support is provided to increase the participation and representation of ASEAN in international standardization so that member states can go a step further from being adopters of standardization. For instance, ACCSQ WG 1 on Standards and MRAs holds meetings with ISO to identify international standards in priority sectors that can be considered for ASEAN harmonization and to promote participation in relevant technical committees as P-members or O-members. ACCSQ and ISO also discuss areas of collaboration in emerging technologies such as smart manufacturing.

VI. Conclusion

This study examined the standards cooperation with ASEAN by major developed countries. We found that the goals and types of cooperation in standards are closely related to AfT. ASEAN can align their interests and objectives of trade facilitation, reduction of technical barriers to trade, and regional economic integration through standards cooperation with major developed countries. Support for the harmonization of standards and regulations, development and implementation of ASEAN-wide regulatory frameworks and MRAs are the major activities that contribute to the ASEAN goal of achieving better connectivity and integration. They correspond to the AfT categories ‘trade policy and regulations’ and ‘productive capacity building’ that have previously been defined to have a high relevance to standards. Activities specifically on standardization are focused on the adoption of standards already developed in SDOs like ISO and IEC. Countries examined in this paper take a mix of program-based and project-based approaches to standards cooperation, which have both advantages and disadvantages. Program-based cooperation is beneficial in achieving long-term goals based on continuity and trust. Nonetheless,

regardless of whether an approach is program or project-based, the important point is that it should lead to sustainable outcomes and positive impacts. Workshops and training sessions can be stepping stones and can be utilized throughout the cooperation process in different phases, but it is important to make use of the opportunities of standards cooperation to elicit the participation of regulators and standards setters in order to aim for the higher level initiatives. So far the sectoral focus was on traditional industries and the fields identified as ASEAN's priority areas for development. Future-oriented cooperation in emerging areas can provide new opportunities for both parties. Cooperation in emerging areas should be aligned to the needs and strategies of ASEAN in digital innovation. New fields will increasingly become relevant to AfT and standards will be the essential building block for AfT in such emerging areas.

This study contributes to the theoretical discussions on AfT by exploring past and ongoing cooperative measures in standardization and connecting it with previous research on AfT. It has practical implications on identifying the challenges and future prospect for cooperation with ASEAN. There were limitations in obtaining sufficient information from a diverse pool of projects and gaining insights from interviews conducted with diverse stakeholders. Further research can be conducted to extend the findings of this study by exploring how standards cooperation impacts stakeholders in the public and private sectors and what relationship it has with development assistance in trade.

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| 국문초록 |

아세안과의 표준 협력 방식과 무역 원조와의 관련성에 관한 연구

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본 논문은 표준이 아세안의 무역과 개발을 지원하는 데에 어떤 역할을 하는지 알아보기 위해 주요 선진국의 아세안 대상 표준협력 방식을 무역을 위한 원조(AfT)와 연관지어 비교분석하는 것을 목표로 한다. 주요 선진국은 아세안이 표준 및 기술규제의 조화와 관련하여 마주하는 문제들을 해소할 수 있도록 표준협력을 수행해왔다. 표준과 AfT 사이에 유의미한 관계가 있으나 이에 관한 연구가 학술적으로 많이 이루어지지 않았다. 이에 본 논문은 EU, 독일, 미국, 호주, 한국의 아세안 대상 표준협력 프로그램 또는 사업을 문헌조사와 관계자 인터뷰를 통해 AfT의 관점에서 분석하였다. 아세안과의 표준협력은 주로 표준 및 기술규제의 조화와 역량 강화 측면에서 추진되고 있고, 이는 아세안이 무역 관련 목표를 달성하는 데에 기여함으로써 AfT 범주 중 ‘무역 정책 및 규제’, ‘생산적 역량 강화’에 부합하는 것으로 나타났다. 그러나 이는 선진국 중심으로 제정된 표준을 채택하는 데에 집중되어 있다. 협력 분야 측면에서는 전통산업 외에 디지털 무역과 같은 새로운 분야가 부상하는 것으로 나타났다. 본 논문은 아세안과의 표준협력 당면 과제 및 아세안의 수요에 기반한 협력 추진 방향에 대한 시사점을 제시한다.

▪ 주제어: 표준, 아세안, 무역원조, 무역원활화, 조화