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Recategorization of South Korea's ICT ODA to Southeast Asia:
An Analysis of General and Multi-Area ICT ODA

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Abstract

This research examines the ODA patterns between South Korea's partnering countries in Southeast Asia during 2015-2019. The partnering countries are six nations in Southeast Asia designated under KOICA's 3rd Mid-Term Strategy for International Development Cooperation (2021-2025) (Cambodia, Lao PDR, Indonesia, Myanmar, the Philippines, and Vietnam). The research aims to differentiate the cross-cutting traits of ICT projects by dividing them into two categories: General ICT and Multi-Area ICT. By doing so, the study organizes and recategorizes the existing ICT ODA projects into one group that focuses on the infrastructural and general technology-based aspect of ICT development and the other group that focuses on the integration with other sectors like agriculture, health, education, etc. Furthermore, the research analyzes the domestic ICT policies of the six partnering countries and compares the national focus given by the relevant ministry from 2015 to 2019. National Development Reports, Government Action Plans, and official news reports were observed to indicate the national agenda towards ICT development within the respective nation. Through the analysis, it was noticeable how some countries focused on 'General ICT' development, others toward 'Multi-Area ICT' development, and some countries focused on both. Ultimately, the ICT ODA statistics from EDCF and OECD are recategorized into the two groups and the ODA patterns by each group are compared with the policy analysis to conclude whether the ICT ODA patterns were consistent with the recipient country's policies. Thereby, this research concludes how Indonesia, Lao PDR, and Vietnam's ICT policies matched the ICT ODA patterns between South Korea while Cambodia, Myanmar, and the Philippines did not. Yet, all six countries expressed consistent, strong interest and need for ICT development within the recent five years which notes the potential South Korea can play as a donor country in the future for both General and Multi-Area ICT ODA.

Keyword: Information Communication Technology (ICT), Official Development Aid(ODA), Southeast Asia, Cross-cutting, General ICT ODA, Multi-Area ICT ODA

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List of Abbreviation

Abbreviation	Definition
ASEAN	Association of Southeast Asian Nations
AIM	ASEAN ICT Masterplan 2020
CRS	Creditor Reporting System
EDCF	Export-Import Bank of Korea
EU	European Union
FDI	Foreign direct investment
GDP	Gross domestic product
GNI	Gross National Income
ICT	Information Communication Technology
ITU	International Telecommunication Unit
KAIST	Korea Advanced Institute of Science and Technology
KISDI	Korea Information Society Development Institute
KIST	Korea Institute of Science and Technology
KISTEP	Korea Institute of Science and Technology Evaluation and Planning
KOICA	Korea International Cooperation Agency
MDG	Millennium Development Goals
MOFA	Ministry of Foreign Affairs
ODA	Official Development Aid
OECD DAC	Organization for Economic Cooperation and Development Development Assistance Committee
PPP	Public Private Partnership
SDG	Sustainable Development Goals
S&T	Science and Technology
STEPI	Science and Technology Policy Institute
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Program

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Chapter 1. Introduction

1.1. Background

Official Development Assistance (ODA) is a form of government aid focused on providing economic development in developing countries. ODA needs to consist of three elements:

1) Facilitated by an official institution (official agent, government, etc)
2) An aim of economic development as the main objective
3) At a concessional financial term

ODA can be done through bilateral or multilateral forms. Organization for Economic Cooperation and Development (OECD) defines bilateral aid as those undertaken directly by the donor country to the recipient country. When an OECD Development Assistance Committee (DAC) country is providing ODA programs to a developing country is a case in point. OECD maintains a list of 150 developing countries that are the recipients of DAC donor's aid (Gulrajani, 2016). Only the aids that are given towards the listed developing countries can be considered ODA under the definition of OECD. Multilateral aid, on the other hand, is done through an international organization such as the United Nations (UN) or OECD where an institution is conducting parts of the activities for development. Additionally, operations with non-governmental organizations, Public-Private Partnerships (PPP), and global funds in contributing to development aid programs can be categorized as multilateral aid.

The Republic of Korea[1] has been a member of the OECD DAC since 2010. Throughout that period, South Korea has been an active donor country,

[1] This paper will refer to the Republic of Korea also as Korea, South Korea.

assisting the international society to achieve the Sustainable Development Goals (SDGs) through the expansion of ODA. Currently, the Republic of Korea is the 15th largest donor country with an average of 2.64 billion USD on ODA spending in 2019 (OECD, 2019). The government announced its goal to increase ODA to 0.2% of gross national income (GNI) by 2020 but due to the pandemic, the goal did not reach its objective. However, although the economic challenges associated with the COVID crisis impacted South Korea's ODA plans, the government is committed to doubling the ODA rates for Association of Southeast Asian Nations (ASEAN) member states by 2022 and increasing the ODA spending to 0.3% of GNI by 2030.

Furthermore, South Korea has been a leading country in terms of ICT (Information Communication Technology) development as the government acknowledged the importance of ICT early on. Since 2000, there was an expediential increase in ICT ODA expenditure according to KOICA (Korea International Cooperation Agency) statistics. Before ICT ODA was less than $3 million USD but after, the general ODA rates and the proportion of ICT ODA increased significantly (KOICA, 2021). Simultaneously, the Korean government established government institutes that focus on science and technological development in accordance with national economic development. For instance, Science and Technology Policy Institute (STEPI) initiated research on science and technology before concepts like ICT development and digital advancement were discussed internationally. Government-funded research institutes such as KIST (Korea Institute of Science and Technology), KAIST (Korea Advanced Institute of Science and Technology) cooperated with government policies to integrate scientific discovery and development as a part of national development. It

successfully utilized ICT as means for economic and social development and thus became a success story for developing countries, especially countries of Southeast Asia. The New Southern ODA Policy Partnership is a case in point as it emphasizes 'Inclusive Digital Partnership' between South Korea and ASEAN nations in the ICT sector.

In the past, scientific innovation was an element of national development, specifically for the developed countries. However, now scientific innovation is not limited to the development of wealthy nations and is considered an essential element for developing nations to develop. The biggest reason for this change of perspective is because scientific innovation was no longer for the sole purpose of economic development but also is understood to resolving social issues. 'Social Innovation' was coined as the new terminology for utilizing scientific development and resolve social matters such as inequality, unemployment, and education. This is not to say that scientific innovation is irrelevant to economic development but after the 2008 Global Financial Crisis, EU member states initially discussed how scientific advancement should acquire the social needs of the society as this new direction of technology will lead to innovative results that can assist to overcome the financial difficulties from the crisis. Since then, the impact of ICT is not limited to the discovery of new technology but rather the ripple effect when existing technology is expanding to different areas, groups within a country. The SDGs have been a guiding principle in terms of international development and with the 4th industrial revaluation, the importance of technology, scientific discovery, and innovation grows. ICT has become an element and necessary tool to reach the development goals. Its cross-cutting characteristic has led ICT to expand development into other areas such as health, education, agriculture, and more. This

shows the shift in paradigm not only in terms of international development but also in terms of science and technology (S&T) innovation.

1.2. Significance and Purpose of Research

With the interdisciplinary trait of ICT and the broad range of technology such as artificial intelligence, big data, drones, blockchain, and more, ICT has become an element utilized in all industries to stimulate development and connect different sectors. At the same time, the negative consequences of 'digital divide' have accelerated the divergence within and among countries. Naturally, the importance of utilizing ICT to reduce the inequality gap in the international community has been mentioned repeatedly in the international dialogues, with Korea being an active voicing member.

The Korean government announced the 'New Southern Policy' in November of 2017 and in August of 2018, the policy control tower, 'Presidential Committee on New Southern Policy' was established. Board members were consisting of vice-ministers from the Ministry of Defense, Economy and Finance, Foreign Affairs, Interior and Safety, and Commerce, Industry and Energy. This new attempt showed the administration's willingness to incorporate diverse areas of government ministries when making new policies towards Southeast Asia relations. This also shows the significance that Korean diplomacy has towards the region. With the New Southern Policy, KOICA announced to increase ODA funds to double the amount towards six partnering groups in Southeast Asia: Vietnam, Laos, Myanmar, Cambodia, Indonesia, and the Philippines. Specifically, KOICA addressed to increase its KRW 87 billion worth ODA fund to KRW 180.4 (USD 151 million) by 2023 (Lee, 2019).

In the recent 3rd Mid-Term Strategy for Development Cooperation Plan (2021), the Korean government announced its updated development cooperation strategies for the next five years (2021-2015). The plan showed 'Innovative ODA' as one of the four strategic goals. The plan illustrates Korea focusing on ICT, S&T, public administration as sectors to strengthen with the partnering countries. Also, it emphasizes 'Package Projects' where government, civil society and corporations (foreign investment) cooperates within an ODA project related to fostering ICT, social ventures, startups in the recipient country (Ministry of Foreign Affairs, 2021). To summarize, there are three things to notice in the status quo. First, there is an increasing understanding of the necessity of ICT technology in countries. Second, developing countries like ASEAN are expressing their needs to prioritize ICT development but do not have the resources. Third, South Korea emphasizes diplomacy with ASEAN nations through the New Southern Policy by establishing presidential committees and allocating ample amount of funds to do so. Thus, the matter of ICT needs in Southeast Asia, and the willingness to cooperate and assist the resources and expertise from South Korea coexists.

However, there is lacking research regarding ICT in international development, ODA and within the preexisting literature regarding ICT aid, it does not have a specific regional focus. Specifically, there is lacking research examining ICT ODA in South Korea which this thesis hopes to contribute. Thus, this research has three goals. First, it will recategorize the preexisting 'ICT ODA' data. Currently, the vagueness of 'ICT' makes it difficult to have a consensus on the definition of 'ICT' and 'ICT ODA'. This explains how KOICA does not have a separate category for ICT-related aid programs and OECD CRS only includes telecommunication, ICT access, and usage by households and individuals, ICT

access and usage by businesses as units under 'ICT'. Therefore, through reclassifying South Korea's ICT ODA into two groups (General and Multi-Area), this research will indicate existing ICT ODA patterns toward partnering Southeast Asian countries. Second, this research aims to analyze the ICT needs of the six partnering countries through observing the respective ICT policies. By observing the ICT masterplans and development plans, the country's ICT needs will be classified into the same two groups (General and Multi-Area). Third, the two classification will be observed for a connection between the classifications. Thus, if a country's ICT needs and ICT focus in ODA is matching, it will show how ICT ODA is reflecting policy needs.[2] On the other hand, if the two is not matching, it will show ICT ODA not reflecting the needs of the partnering country. Through the three goals, this research aims to contextualize 'ICT' and assist the future assessment in ICT ODA effectiveness and direction between Southeast Asian partnering countries.

This research framework carries significance as it has not been done before and thus provides a new perspective on classifying ICT ODA projects with relevant national policies. Throughout the span of 2015-2019 timeframe, 1040 Cambodian ICT ODA projects, 807 Indonesian ICT ODA projects, 861 Lao ICT ODA projects, 768 Myanmar ICT ODA projects, 768 Filipino ICT ODA projects and 1444 Vietnamese ICT ODA projects were collected and recategorized for analysis.

[2] This research acknowledges South Korea's 'Year N-2 Preliminary Review System' when proceeding with ODA projects. For instance, an ODA project in 2017 would have gone through processes of project issuance two years prior in 2015. However, this research aims to provide a comprehensive view of ICT ODA projects within the six designated nations. Thus, an ODA project in 2017 will be analyzed of whether its impact of its proceedings matched the national ICT policy focus of the same year.

1.3. Research Question and Design

The research question is as follows:

Did ICT ODA patterns between South Korea and partnering countries reflect the needs indicated in the domestic policies throughout 2015-2019?

The research is conducted through literature reviews, analysis of data from KOICA Open Data Portal, EDCF Korea ODA Information Portal, and OECD.Stat CRS Data (Timeframe: 2015-2019). The countries selected for analysis are KOICA's six main partnering nations in the Southeast Asian region; Cambodia, Indonesia, Lao PDR, Myanmar, the Philippines, and Vietnam (KOICA, 2021). The designated countries are referred from KOICA's 3rd Mid-Term Strategy for International Development Cooperation Plan (2021-2025).

This research methodology contains four steps. First, the six partnering country's ICT policies were analyzed and classified whether the focus refers to 'General' or 'Multi-Area'. Second, total of 5,811 ODA project data were examined through the OECD CRS data and EDCF Korea ODA data. Third, the ICT ODA projects were recategorized into 'General' or 'Multi-Area' by country. Lastly, the country's policies and ICT ODA focus were observed to see whether they matched. Through this process, the research aims to discover a connection between the six country's ICT policies and their ICT ODA project numbers.

1.5. Overview of Chapters

Chapter 1 is a brief overview of the background, research purpose, significance, research questions, and methodology. Chapter 2 introduces the

analytical framework of the thesis. Literature regarding ICT and development, ICT categorization is collected and reviewed followed by the introduction of the thesis's overall framework of analysis which introduces the recategorization of ICT ODA by CRS codes. Chapter 3 explains the digital environment of the six partnering countries by observing the ICT infrastructure (internet penetration rate, fixed-broadband subscriptions, mobile phone subscriptions) and partnering country's respective domestic policies about ICT. The aim of Chapter 3 is to comprehend the specific needs of the partnering countries through domestic policies, agreements, official documents, etc. Chapter 4 analyzes the ODA between South Korea and six partnering countries throughout 2015-2019. Through the recategorizing framework, two forms of ODA (General ICT ODA and Multi-Area ICT ODA) will be observed for patterns or trends. The aim of Chapter 4 is to comprehend whether ODA patterns match the needs portrayed in the domestic policies. Specifically, in countries that show a higher emphasis on General ICT, is this shown through a higher General ICT ODA between South Korea? Similarly, in countries that show a higher emphasis on Multi-Area ICT, is this reflected through a higher Multi-Area ICT ODA between South Korea? Lastly, Chapter 5 consists of a summary, limitation, and further additional research that can be added in the future.

Chapter 2. Analytical Framework

1.1. Literature Review

1.1.1. ICT and development

In 2000, the UN Millennium Development Goals (MDGs) were established, with a total of eight goals for the international society to achieve by 2015. MDGs embodied a strong mandate where countries should participate in eradicating poverty, achieving universal primary education, gender equality, reducing child mortality, improving maternal health, combatting HIV/AIDS and other diseases, ensuring environmental sustainability, and developing global partnership (UN ICT Task Force, 2003). Only Goal 8, Target 18 (In cooperation with the private sector, make available the benefits of new technology, especially information and communication) directly mentioned ICT as a goal but this acknowledgment of the 'digital divide' initiated the discourse of ICT's social-economic impact and its consequences. International organizations voiced how ICT can be tools for development as they are not limited to sophisticated, costly computers but the spectrum includes radio, television, telephone, and other past forms of communication medium (UNDP, 2003). In the early 2000s, ICT was understood as the catalyst for all the MDG goals and as the platform for reducing the inequality gap by expanding the impact of social infrastructures. Although ICT wasn't the panacea for all development goals, the research examined how advances in ICT (Internet, landlines, cellphones) led to narrowing social and economic inequalities and creating new opportunities in the labor, economic, education, health sectors (World Bank, 2003). The approach to reach MDGs could be done in two ways; increasing the resources allocated to the goals or increasing the efficiency of the

available resources already allocated (Jayasuriya and Wodon, 2003). In both cases, the international society accepted how ICT can contribute to both methods as it can accelerate the process of finding, sourcing, and accumulating the resources while also improving the management of the existing resources.

The three indicators UN selected in terms of measuring Goal 8, Target 18 were telephone lines and cellular subscribers per 100 population, personal computers in use per 100 population, and Internet users per 100 population. The 2015 UN MDG report explains how ICT has contributed to the precipitous expansion in the improvement of people's lives and narrowing inequality. Solely when observing the mobile-cellular subscriptions and Internet users rates, both had a rapid increase due to technological progress, and the population covered by 2G network grew to be 95% of the population (UN, 2015). However, an important point to indicate was the unequal distribution of ICT access between developed nations and developing nations. One-third of the population in developing nations had access to the Internet while 82% of the population had access in developed nations. An estimate of 450 million people living in rural areas of developing nations had no mobile signal (UN, 2015). ODA was emphasized as a solution as developing nations did not have the public resources and DAC states could start a financial flow where investments could be made in establishing ICT infrastructure and sustainable development.

Post-2015 development goals, also coined as Sustainable Development Goals (SDGs) embraced the influence of ICT and directly or indirectly emphasized the role of ICT as a stimulator for reaching the newly 17 goals by 2030. When observing the 17 goals and 169 targets, ICT is not directly indicated in the goals but is mentioned in the targets and indicators. Table 1 reflects the acknowledgment

of ICT used as means of accomplishing goals in cross-cutting sectors.

Goals	Targets	Indicators
1.End poverty in all its forms everywhere	1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance.	1.4.1 Proportion of population living in households with access to basic services (Basic services include basic information services and having broadband internet access)
4.Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.	4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill
5. Achieve gender equality and empower all women and girls	5.b Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women.	5.b.1 Proportion of individuals who own a mobile telephone, by sex
9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	9.b Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities 9.c Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020	9.b.1 Proportion of medium and high-tech industry value added in total value added 9.c.1 Proportion of population covered by a mobile network, by technology.
17. Strengthen the means of implementation and revitalize the Global Partnership for	17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge-sharing on mutually agreed terms, including through improved	17.6.1 Fixed Internet broadband subscriptions per 100 inhabitants, by speed

Sustainable Development	coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism 17.8 Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology.	17.8.1 Proportion of individuals using the Internet

Table 1: ICT Related Goals, Targets and Indicators in SDGs (Source: UN)

Recently, the crosscutting trait in ODA projects is addressed in the DAC marker system. The system aims to monitor and compare the official development measures of the OECD DAC countries and to measure whether the policy objectives are put into practice (OECD, 2014). A development measure has a 'principal objective' and a 'significant objective' and markers are assigned to the specific development measure. The markers target cross-sectoral development objectives such as Gender equality (GG), Participatory development/ Good Governance (PD/GG), Trade development (TD), Adaption to climate change (KLA), Environmental protection and resource conservation, ecological sustainability (UR), Combating desertification (DES), Biodiversity convention (BTR) (OECD, 2014). The system identifies development measures to have multiple objectives due to the cross cutting traits and thus the marking system allows comparing and tracking the member state's progress towards the objectives. This recent progress indicates how certain development objectives such as ICT development holds a broad spectrum in development objectives and engaging stakeholders. Unfortunately, the DAC marking system does not include ICT related objectives.

The abovementioned goals, however, does explain the international understanding of ICT as a catalyst of national development. In academia, the correlation between the ICT and development started in the late 1950s as the Modernization theory claimed that economic and social modernization could lead poor countries to development. Information technology and communication science were exceptionally important as it is considered important for developing countries to learn and transfer knowledge from modernized western nations. Science and technology are the catalysts for development and developing countries needed to adapt for effective use of human resources and social capital (Wright, 2015). Subsequently, much literature provided discourse upon the relationship between ICT and economic and social development in the case of developing countries.

Hargittai (1999) explained the positive correlation between ICT and development: ICT has the potential to play an important role in the economy as well as in the social sector to reduce inequality, poverty, etc. Schreyer (2002) elaborated on how ICT can influence economic growth in three aspects. First, introducing ICT goods and services in the economy can contribute to economic growth. Second, ICT capital can be invested in the production of other goods and services. Third, ICT investment can raise productivity which ultimately benefits the investors and owners. Specifically, in the context of developing countries, Baliamoune-Lutz (2003) illustrated how ICT diffusion can support economic growth during the 'leapfrogging' process. Within 47 selected developing nations, Baliamoune-Lutz found that with increasing access to mobile phones, Internet led to a higher per capita income. Aroa and Athreye (2002) explained how the ICT market can enhance the value of human capital and raise the quality of corporate

traineeship. In the specific case of India, the author noticed the ICT sector grew the importance of trained education, and labor and naturally as a result, the local firms adopted the organizational practices to match those of the ICT-advanced, developed nation. This change in the labor market has the possibility to give long-term benefits for a developing country's industrialization and economic, social growth. Furthermore, international organizations such as the World Bank or ITU produce policy papers that collect country cases when observing the trends and relationship between ICT access and FDI, financial investment. Research shows data on the increase of ICT access in developing countries and also the increase of FDI and when ICT creates an accessible market environment, foreign investors bring multinational corporations (mostly from Europe or the United States) into the developed countries which stimulate the economy. Although this cannot be overgeneralized, as developing nations have different economic, social, historical, and cultural backgrounds that affect their national development process, the collected country cases presented the potential correlation between ICT and development.

On the other hand, literature coexists to explain the ambiguous link between ICT development and overall growth in developing countries. Seo and Lee (2006) argue the existing digital gap between countries influences the progress of digitalization. ICT can accelerate the progress but only to a certain extent as the underlying infrastructure and social context is stagnate compared to developing countries. Potentially, without domestic policies that change the social structure, it can rather widen the digital gap between nations. Morales-Gomez and Melesse (1998) cautiously explain the consequences ICT can bring when used for short-term ends in the developing country. The research explains how developing

countries do not have the socio-cultural foundation can that fully absorb the change ICT brings. It casts doubt whether installing landlines and distributing computers in local villages will, at a macro-level, provide sustainable access to basic human necessities of housing, income, knowledge, employment. Moreover, Avgerou (1998) explains how ICT does not directly resonate with creating economic growth in developing countries because they are met with institutional matters such as creating new economic policies and organizational changes to meet new ICT and telecommunication innovation. For an organic change to occur in the economy, a developing country should adapt to local needs and changes prior to following the pressures from ICT services. Specifically, in the case of the Internet, Forestier, Grace, and Kenny (2002) conducted research on how it can be 'Pro-poor' due to its inevitable characteristics. Compared to the traditional form of communication, the Internet (and also associated ICT means) is expensive, requires higher skill and education to operate, is predominately operated in English, and needs electricity, mass users, and skilled labor for sustainable usage. All of these traits do not suit the situation in developing countries.

1.1.2. ICT ODA Categorization

By purpose	ODA for ICT	ODA by ICT	ODA with ICT
Details	Independent ICT ODA aimed at supporting the development of ICT sector, such as establishing infrastructure related to information and communication, policy advice and capacity building, etc.	ODA aimed at improving processes and facilitating benefits to more beneficiaries through ICT utilization in other areas such as e-learning, e-farming, e-health, and FinTech.	ODA with ICT internalization in projects, such as the inclusion of IT elements in medical systems as a factor for the establishment of hospital facilities.

Table 2: Categorization of ICT ODA by Purpose (Source: Kang, 2016)

ICT ODA categorization by purpose was established by KISDI[3] with the aim to organize the cross-cutting traits of ICT and the influence ODA has towards recipient countries. Table 2 explains the three purposes of ICT ODA: ODA for ICT, ODA by ICT and ODA with ICT (Kang, 2016).

First, ODA for ICT is the most 'pure' form of ICT ODA where ICT development is the sole purpose for ODA projects. Projects like telecommunication development, facilitating ICT infrastructure can be examples where independently, the ICT sector is the main focus of development in the recipient country (Kang, 2016). Second, ODA by ICT is when ICT is utilized as means to assist and enhance the effectiveness of the ODA projects. ICT fastens the procedural steps within the project or creates new methods to effectively execute results. E-learning, e-farming, FinTech are examples where IT technology was the medium to effectively reach impact to the recipients (Kang, 2016). Third, ODA with ICT shows the cross-cutting traits of ICT as it is not directly linked with ICT development or use of ICT as a medium for effectiveness. Rather, ICT is internalized in the ODA project as an

[3] A government research institute that aims to collect and analyze informatio n regarding IT policy, regulation, and communication

element. Infrastructural projects are examples where developing roads, electricity, telecommunication is inevitable and through the process, IT development is part of the process (Kang, 2016).

This categorization enables broadening OECD's original categorization of ICT ODA which solely focused on the telecommunication sector. Thus, before, it was difficult to collect data regarding the status of 'ODA by ICT' and 'ODA with ICT'. However, by categorizing ICT ODA into three purposes, it reflected the cross-cutting traits of ODA and the included ODA projects that incorporated both ICT and agriculture, education, fishery, health, etc. Also, this reflected the reality where ODA projects from the ICT sector strongly connected or integrated with ODA projects from other sectors. In sum, 'ICT ODA categorization by purpose' improved the limitations that the original OECD categorization entailed.

2.2. ICT ODA Recategorization Framework

S&T, ICT sectors are acknowledged as crucial parts of ODA. Despite the recognition, there has not been an international consensus on a concrete definition of ICT. This thesis aims to define the scope of ICT as:

- Information and Communication Technology (ICT) ODA:
  - Telecommunications Statistics
  - ICT Access and Usage by Households and Individuals
  - ICT Access and Usage by Businesses
- **Science and Technology ODA**: ODA that is in relation with Science and Technology such as Traineeship, R&D, Capacity Building.

This thesis will divide ICT ODA into two groups; **General ICT ODA** and **Multi-area ICT ODA**. The first category of 'Information and Communication

Technology (ICT)' ODA will be classified as 'General ICT ODA' (further details in Table 3).

ODA Category	Sector	Specific Category	CRS Code
Economic Infrastructure & Services	Communication	Communication policy and administrative management	22010
		Telecommunications	22020
		Radio/television/print media	22030
		Information and communication technology(ICT)	22040

Table 3: General ICT ODA Specifics (Source: OECD CRS)

The second category of 'Science and Technology ODA' will be classified as 'Multi-area ICT ODA' (further details in Table 4).

ODA Category	Sector	Specific Category	CRS Code
Social Infrastructure& Services	Health(General)	Medical education/training	12181
		Medical research	12182
	Basic Health	Health Personnel Development	12281
	Population Policies/Programmes & Reproductive health	Personnel development for population and reproductive health	13081
	Water Supply & Sanitation	Education and training in water supply and sanitation	14081
Economic Infrastructure& Services	Transport & Storage	Education and training in transport and storage	21081
	Energy	Energy education/training	23081
		Energy research	23082
Production Sectors	Agriculture	Agricultural education/training	31181
		Agricultural research	31182

	Forestry	Forestry education/training	31281
		Forestry research	31282
	Fishing	Fishery education/training	31381
		Fishery research	31382
	Industry	Industrial development	32120
		Small and medium sized enterprises(SME) development	32130
		Cottage industries and handcraft	32140
		Agro-industries	32161
		Forest industries	32162
		Textiles, leather and substitutes	32163
		Chemicals	32164
		Fertilizer plants	32165
		Cement/lime/plaster	32166
		Energy manufacturing (fossil fuels)	32167
		Pharmaceutical production	32168
		Basic metal industries	32169
		Non-ferrous metal industries	32170
		Engineering	32171
		Transport equipment industry	32172
		Technological research and development	32182
Multi-sector / Cross cutting	Multi-sector / Cross cutting	Environmental education/training	41081
		Environmental research	41082

		Multisector education/ training	43081
		Research/scientific institutions	43082

Table 4: Multi-Area ICT ODA Specifics (Source: OECD CRS)

The reasoning for differentiating ICT ODA into two categories is for a precise assessment of ICT ODA projects as there is no overarching definition for ICT due to the broad understanding and utility. Currently, OECD views ICT ODA within the four sectors under 'Communication' category (Table 4). On the other hand, the Export-Import Bank of Korea (EDCF) manages the *'ODA Statistical Data System'* where ODA data is categorized by agency, time period, sector, recipient country. In terms of sector, EDCF follows the CRS coding system where ICT ODA is classified under code 220. For KOICA, the organization has its independent categorization system where ODA sectors are divided into seven parts (Health Services, Education, Public Administration, Agriculture, Technology & Environment & Energy, Emergency Support, Others).

There is a clear difference in relevant organization's definition of 'ICT ODA'. The existing differences in defining ICT as an ODA category lead to the ambiguous assessment of ICT projects and difficulties in monitoring the ODA projects that acquire ICT elements. The international society has addressed how ICT is a cross-cutting issue as it is frequently applied to areas of education, agriculture, and health. However, through the OECD CRS code categorization, the ODA projects that utilized ICT or have internalized ICT elements are not visible in the dataset, making it harder for precise assessment (Kang, 2016). By differentiating 'General ICT ODA' (ODA for ICT development solely) and 'Multi-Area ICT ODA' (ODA by ICT and ODA with ICT elements), it first enables

incorporating ICT ODA beyond the telecommunication sector. 'Multi-Area ICT ODA' includes cross-cutting projects of ICT which is neglected in the current OECD categorization of ICT ODA. Second, this categorization contributes to the precise diagnose of ICT ODA in the recipient country. Categorization in Table 2 holds limitations as the difference between 'ODA by ICT' and 'ODA with ICT' is ambiguous and difficulties in setting the criteria between the two groups lead to further ambiguity in the assessment of ICT ODA towards recipient nations. However, this new categorization integrates 'ODA by ICT' and 'ODA with ICT' under 'Multi-Area ICT ODA' and focuses on the practical analysis between the ICT technology implementation (General ICT) and ICT integration in other sectors (Multi-Area ICT). Overall, the scope of the recategorization is illustrated in Table 5. This framework contributes by taking into account the existing OECD CRS and KISDI's ICT ODA categorization methods and combines the categories for a precise and detailed assessment.

ICT ODA	**General ICT ODA**		+	**Multi-Area ICT ODA**	
	OECD CRS code 220	Other ODA projects that focus on the infrastructural ICT traits (ODA for ICT)		ODA by ICT	ODA with ICT

Table 5: General and Multi-Area ICT ODA Scope

This research will apply the recategorization illustrated above to analyze the ICT ODA patterns in six partnering countries in Southeast Asia. By differentiating ICT ODA into two groups, the framework will assess the current patterns shown in ICT ODA in the respective countries and analyze whether the ICT needs (further elaborated in Chapter 3) match the outcomes through ICT ODA.

Chapter 3. ICT Policy in Partnering Countries

The 4th Revolution revolutionized the use of information and communication technology internationally and under the influence of a global pandemic, COVID-19 stimulated this necessity of virtual engagement within developing countries. The Southeast Asian region was not an exception. Digital technology contributed to 14% of growth rates in low and middle-income countries from 1995-2014 (USAID, 2019). Digital trade in Southeast Asia doubled in 2018 (OECD, 2019). As Southeast Asia experienced economic growth through technological advancement, governments acknowledged the necessity of ICT and enhancing connectivity through ICT access.

With the growing emphasis, the six countries have shown improvement in e-government service, telecommunication infrastructure, and human capital according to the UN Public Administration Program (UNPAN)'s E-Government Development Index (EGDI) (The report is biannually addressed to the UNDESA)[4]. EDGI measures the e-government development status of UN member states.

[4] EGDI consists of three components: 1) Online Service Index (OSI), 2) Telecommunication Infrastructure Index (TII), 3) Human Capital Index(HCI). OSI is measured through emerging information services, enhanced information services, transactional services and connected services. TII is measured through fixed-telephone subscriptions per 100 inhabitants, mobile-cellular telephone subscribers per 100 inhabitants, percentage of individuals using the Internet, wireless broadband subscriptions per 100 inhabitants and fixed (wired)-broadband subscriptions per 100 inhabitants. HCI is measured through adult literacy, gross enrollment ration, expected years of schooling, and mean years of schooling.

	EGDI (2020) (Rank/193)	EGDI (2018) (Rank/193)	EGDI (2016) (Rank/193)	Changes in Ranking
Cambodia	0.5113 (124)	0.3753 (145)	0.2593 (158)	↑21
Indonesia	0.6612 (88)	0.5258 (107)	0.4478 (116)	↑19
Lao People's Democratic Republic	0.3288 (167)	0.3056 (162)	0.3090 (148)	↓5
Myanmar	0.4316 (146)	0.3328 (157)	0.2362 (169)	↑11
Philippines	0.6892 (77)	0.6512 (75)	0.5766 (71)	↓2
Vietnam	0.6667 (86)	0.5931 (88)	0.5143 (89)	↑2
World Average	0.5988	0.5491	0.4922	
Asia (Region) Average	0.6373	0.5779	0.5132	

Table 6: E-Government Development Index (2016-2020), (Source: UN E-Government Knowledgebase 2016, 2018, 2020)

In sum, the rankings of the partnering countries were average or below average (Highlighted blue indicates above average, highlighted red indicates below average). However, most countries showed an upward rates of development in terms of rankings (Lao PDR and the Philippines shown a decline in terms of rankings but this is not significant enough compared to the average increase of rankings). This illustrates that although the structural online services, ICT technology, and human capital are not sufficient, the countries are showing improvement and the willingness to develop.

In this chapter, the ICT needs of the six partnering countries will be compared and analyzed. The needs are defined in two aspects; the ICT environment and the ICT domestic policies. First, the ICT environment refers to the ICT infrastructure structured such as fixed-broadband, mobile-broadband, internet penetration, etc. The traits reflect the level of ICT development in the present and the country's progress in developing the ICT-related infrastructure. Second, the ICT domestic policies reflect the government's understanding of future ICT development and the incorporation of ICT-related policies in government development goals/plans. By distinguishing the ICT needs into two parts, this chapter assesses whether ICT

needs exist in the partnering countries.

3.1. ICT Environment Comparison

Southeast Asia differs in terms of economic development, history, religion, language, and social structure. This results in a digital divide within the region regarding access to ICT technology such as mobile phones and the Internet. However, there is a general trend of rising Internet usage among individuals in the region, and despite the COVID-19 lockdowns, ICT was able to provide access to necessities such as food, education, entertainment, and healthcare. According to the Google e-Conomy Southeast Asia 2020 report, 8 out of 10 citizens viewed ICT-related technology as helpful during the global pandemic and it also assisted small businesses to operate through e-commerce platforms (Google, 2021).

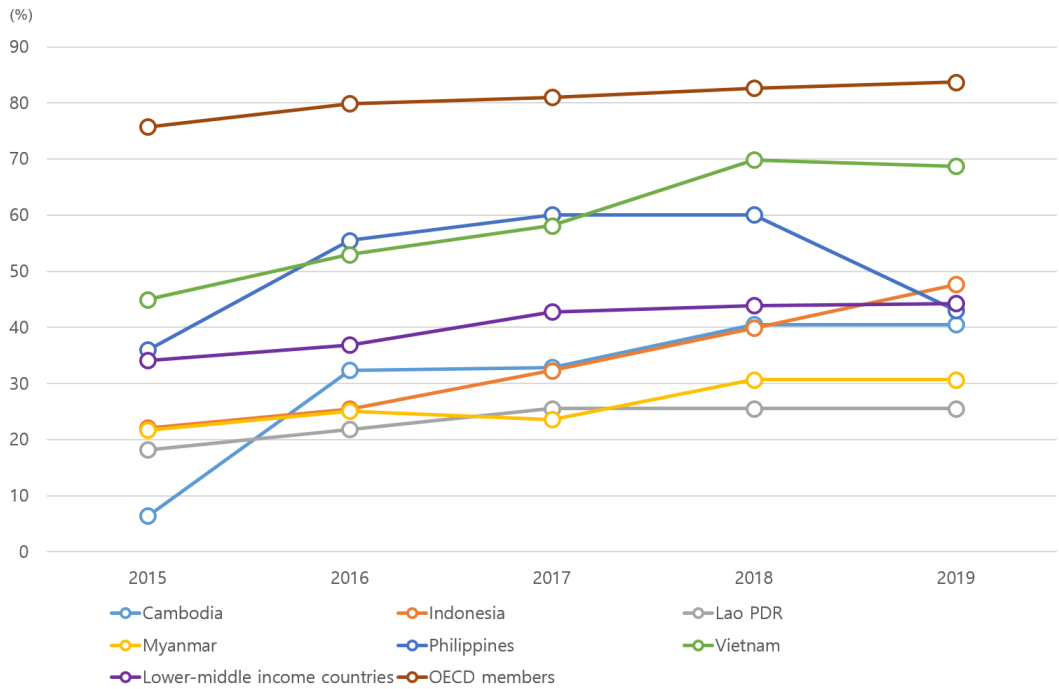

Figure 1: Percentage of Individuals Using the Internet (2015-2019) (Source: ITU, OECD)

Figure 1 illustrates the percentage of individuals with access to the Internet among the six Southeast Asian nations. All six countries have an increase in percentage throughout the five years. When comparing the countries to the average rate of lower-middle-income countries, the Philippines and Vietnam were above average, Indonesia was below the average till 2019 and the rest of the countries (Cambodia, Lao, Myanmar) were below average. This shows the digital divide within the region as Vietnam had 68.7% of the population using the Internet while Lao had 18.2%.

	Country	**Internet Penetration Rate (%) (December, 2020)**	**GNI per capita (2018)**	**Income classification**
Partial Usage Cluster (35% - 80%)	Philippines	77.7	USD 3653	Lower- middle income
	Vietnam	72.9	USD 1952	Lower- middle income
	Indonesia	71.1	USD 4321	Upper-middle income
	Cambodia	69.5	USD 1192	Lower- middle income
	Myanmar	52.1	USD 1518	Lower- middle income
	Lao PDR	49.4	USD 1546 (2016)	Lower- middle income

Table 7: Classification of Countries by Internet Penetration Rate (Source: internetworldstats.com, World Bank Data, OECD)

However, when the countries are compared with OECD member states, all six countries were below the OECD average rate of 83.69% in 2019. Table 7 presents the six countries' Internet penetration rate and the respective GNI per capita and income classification. All six countries were categorized under 'Partial Usage Cluster' but there was an approximately 28% gap between the highest and lowest Internet penetrated country. The gap exists regarding the Internet and in

GNI as well. Thereby, this explains the correlation between the country's economic development and the Internet penetration rate although the causality is left to be undetermined.

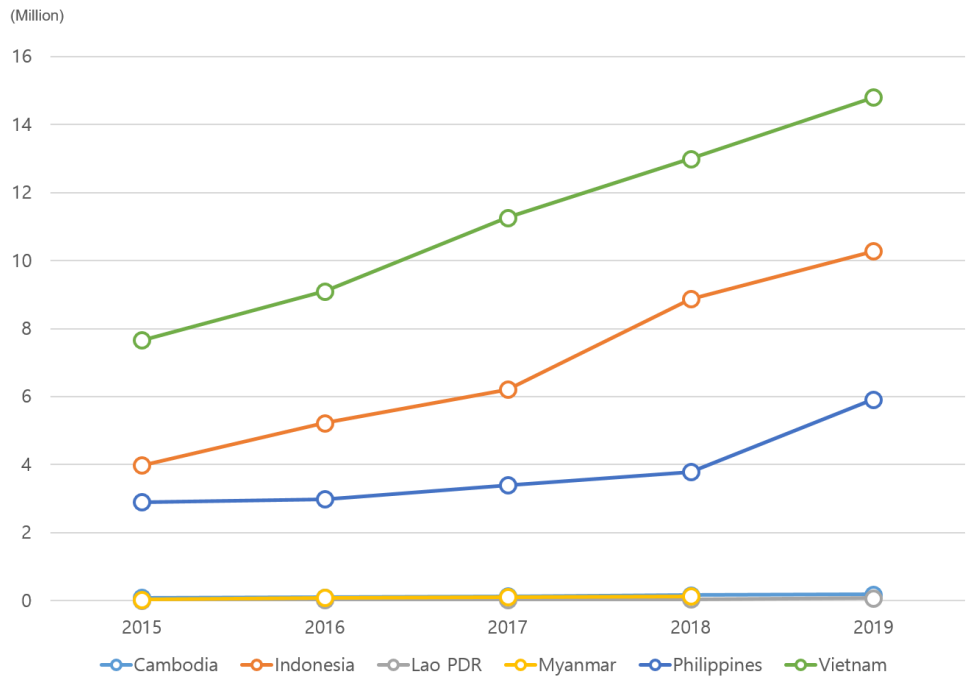

Figure 2: Fixed-Broadband Subscriptions[5] (2015-2019) (Source: ITU)

Fixed-broadband is high-speed data transmissions that include cable, fibre optics, and wireless technology. It does not include mobile connections but rather internet connections that are sourced from a fixed location. Regarding fixed-broadband subscriptions, Figure 2 presents, among the six countries in 2019, Vietnam having the highest rate of 14 million, Indonesia second high of 10 million, and the Philippines of 5.9 million. Lao, Myanmar, Cambodia both show drastically low rates as the three countries lack the ICT infrastructure greatly. Some experts

[5] Fixed-broadband subscriptions refers to fixed subscriptions to high speed access to public Internet at downstream speeds equal to or greater than 256 kbit/s. It excludes subscriptions that have access to data communications via mobile-cellular networks s uch as the Internet. (ITU)

suggest that in ASEAN, fixed broadband subscription rates do not translate to ICT penetration as in many cases, a household or an office will subscribe to a router and connect multiple devices for their family members and employees. This trend is frequent in developing countries as fixed broadband is costly and not accessible for individual use.

Fixed broadband speed is also an indicator for ICT accessibility as faster speed and connection tend to lead to higher internet engagement and activity within a region. Malaysia ranked the highest with an average speed of 67.15 Mbps and Myanmar ranked the lowest of 12.66 Mbps (Ookla, 2019). Vietnam, Lao PDR, the Philippines, Indonesia, and Cambodia were in between. Similar to the subscription rates, the gap between the highest and lowest-ranked countries was significant. Most countries are met at a deadlock where the adoption of a high-speed Internet through fixed broadband is met with high costs which burden the general public's accessibility.

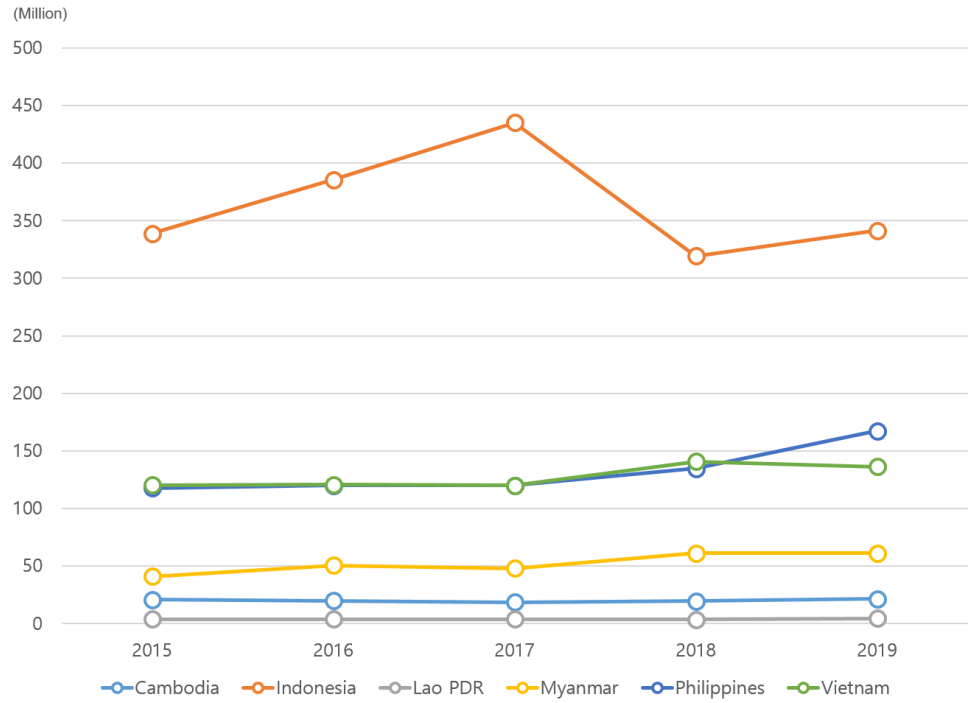

Figure 3: Mobile Cellular Subscriptions[6](2015-2019) (Source: World Bank Data)

Figure 3 illustrates the mobile cellular subscription rates from 2015 to 2019 among the six partnering Southeast Asian nations. Similar to the fixed-broadband subscriptions, a significant gap exists between Indonesia and Lao PDR. Also, in comparison to the fixed-broadband subscription rates, the mobile cellular subscription rates do not see a rapid incline while Indonesia and Vietnam experienced a decline in 2017, 2018. However, when comparing the absolute numbers, mobile subscription rates are significantly higher in most countries than fixed-broadband subscription rates, especially in emerging economies. When considering the minimal fixed broadband penetration rate, it can be concluded that wireless broadband has been the main stimulator for rising Internet accessibility in the Southeast Asian region. Another noticeable trait is that all indicators had a

[6] Mobile cellular subscriptions applies to all forms of mobile cellular subscriptions that offer oral communication.

significant gap between the highest and lowest country, indicating the existing digital divide in the region.

Throughout the ASEAN's ICT Masterplan, it illustrates great emphasis on finding a strategy for bridging the digital divide and creating infrastructural development. This shows the acknowledgment and willingness of the countries to engage in enhancing their digital environment. However, the implementation of these initiatives becomes a domestic issue and Southeast Asian nations face financial and practical incumbents to start from the bottom up. Countries understand the correlation of higher Internet penetration with relations to competitive market conditions but do not have the government funds to make it a priority in their national agenda. For instance, Cambodia, Lao PDR, and Myanmar, the three lowest-ranking countries in terms of Internet penetration and fixed broadband subscriptions, do not have landing stations which forces them to rely on low-capacity connections. These countries have low international bandwidth[7] which gives restraint on Internet accessibility and enforces higher subscription prices. This phenomenon of upstream affordability is adjusted through increases in the supply of infrastructure (landlines, landing stations) which requires an abundance of capital and expertise, both of which developing countries lack.

3.2. Country's ICT Policies

Cambodia

With the partnership of the Korea Institute of Science and Technology Evaluation and Planning (KISTEP), 'ICTopia Cambodia' (Cambodia ICT

[7] A measurement of the amount of information that can be sent between computers (Cambridge Dictionary)

Masterplan 2020) is a part of the ODA Project partnering with KOICA and the Royal Government of Cambodia. This framework was adopted in 2014 by the Cambodian government to strengthen the information and telecommunication technology sector. ICTopia is a coined term combining the two words: 'ICT' and 'Topia' (in Greek means place). This represents the creation of a community with ICT providing comfortable and desirable qualities. The masterplan consists of four strategic goals; Empowering people, Ensuring connectivities, Enhancing capabilities, and Enriching e-Services.

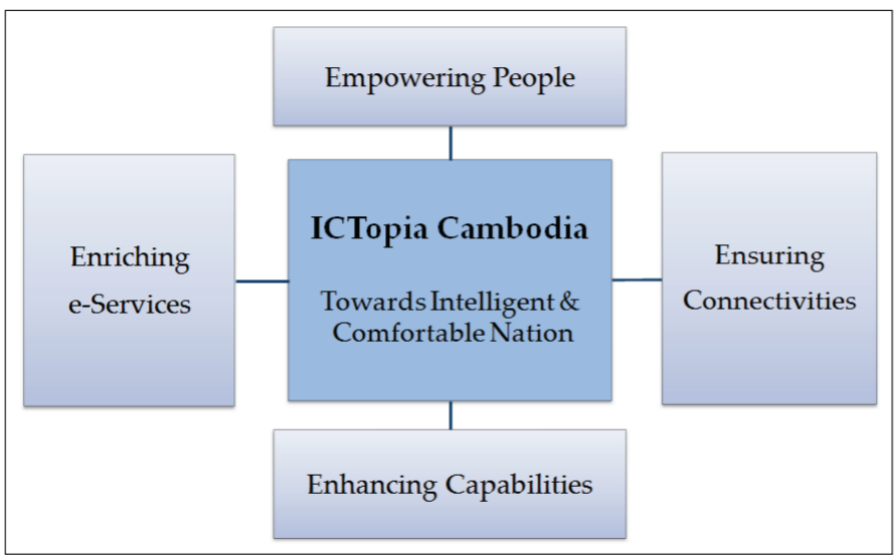

Image 1: 'ICTopia Cambodia' Strategic Points
(Source: Cambodia ICT Masterplan 2020)

Firstly, 'Empowering People' consists of increasing ICT human resources and e-Awareness. Second, 'Ensuring Connectivities' focuses on three parts: National ICT Infrastructure, Legal Framework, and Cyber Security. Third, 'Enhancing Capabilities' focuses on the three areas of ICT Industry, ICT Standards and ICT R&D. Lastly, 'Enriching e-Services' consists of improving e-Government Services, e-Public Services, e-Economy Services, and e-Education Services. By

focusing on the four main areas, the practical use of ICT can set up for a higher quality of life for the citizens and the community (KOICA, 2014).

The National Strategic Development Plan (NSDP) and Industrial Development Policy (IDP) are the two recent development policies established in cooperation with the government and relevant ministries. The 2019-2023 National Strategic Development Plan (NSDP) is part of the 'Rectangular Strategy' from Cambodia's Ministry of Planning. By establishing NSDP under the four vision of Growth, Employment, Equity, and Efficiency, it was initiated in 1998 and has been updated/ remodeled every five years. The most recent 2019-2023 NSDP outlines the priority of moving from Lower-Middle Income Country status to Upper-Middle Income Country status in 2030 and gaining 2016-2030 Cambodian SDGs. The latest NSDP is based on the Rectangular Strategy Phase IV (RS IV) as a framework for prioritizing 'Good Governance, Macroeconomic Balances and Growth and Diversification.' In the report, under '*Chapter 4: Economic Diversification'*, the emphasis of ICT technology development and preparation for the digital economy is shown. For instance, in column 4.101 of the report illustrates

To implement the RGC 's priority policies for the Sixth Legislature of the National Assembly, the Ministry of Posts and Telecommunication (MPTC) will continue its prioritized efforts in line with the rapid progress of the telecommunications, information and communication technology activities.

- *Continuing to expand the **telecommunications backbone infrastructure** to remote rural areas and potential economic and tourism potentials through (1) building fiber optic networks to all the provinces and districts that fill the ICT and (2) building a submarine fiber optic network from the Kingdom of Cambodia to China and developing the Greater Mekong Sub region-based telecommunications infrastructure.*

Additionally, it mentions the methods to strategically focus on the changes due to the fourth industrial revolution. In column 4.116 of the report, it illustrates

- *Further updating and implementing the telecommunication and ICT*

development policy, Master Plan for Information and Communication Technology as well as Law on Telecommunication, and relevant regulations, along with the development and implementation of a long-term ICT strategic framework.

- *Further strengthening and expanding the development of necessary supporting infrastructures, including ICT infrastructure, domestic postal and express delivery infrastructure and logistics and electronic payment infrastructure while assessing the possibility of developing a national internet gateway.*
- *Developing education and training program by focusing on the broad use of digital technology and incorporation of the use and awareness of digital technology into the academic curriculum, in line with market demand, along with the establishment of partnership mechanism between businesses and universities and vocational training institutions to create new digital skill development and training programs*

Furthermore, the report explains the responsibility of the associated ministries (Ministry of Post and Telecommunication, Ministry of Commerce, Ministry of Information, Ministry of Industry and Handcraft) to promote ICT development and to mainstream the awareness and promotion of the use of ICT in the Cambodian society.

The Industrial Development Policy (IDP) 2015-2025 is a 10-year industrial development strategy that focuses on transitioning from an agricultural economy to a skill-focused, knowledge-based economy. This policy recognizes ICT as the means to address the weaknesses in the industry such as geographically being urban-centered, low sophistication in manufacturing, and an imbalance concentration on garments and food processing. Through IDP, the government hopes for the structural transformation of the domestic economy through acquiring ICT technology and strengthening global competitiveness.

Overall, the Cambodian government emphasizes constructing an ICT infrastructure that can stimulate the domestic market. The focus is on developing ICT itself and improving accessibility, affordability so that citizens located in rural areas can obtain access to the digital sphere. The application of ICT is also

addressed but is indicated as the next step when structural formations are set in place to improve productivity.

Indonesia

Indonesia, the biggest economy in ASEAN, acknowledges how ICT usage can play an important role in boosting productivity and strengthening national competitiveness. Initially, Indonesia's Telecommunication Sector Policy (1999) and the Telecommunication's Law no.36 (1999) became the starting point for liberalizing the access to telecommunication for ICT development. Since then, the government has continuously launched projects/plans that aim to improve national accessibility and digital connectivity. Moreover, the Coordinating Team for ICT Development (Indonesian Telematics Coordinating Team, TKTI), established in 2000, takes on the responsibilities to give policy recommendations on future ICT development. TKTI cooperates with the government to address issues of priority in the five-year ICT Action Plan.

The government of Indonesia issued a Long-term National Development Plan of 2005-2025 which highlights the main areas of focus in terms of national development. For gradual growth, the government established the First Medium-Term Development Plan (2005-2009), Second Medium-Term Development Plan (2010-2014), Third Medium-Term Development Plan (2015-2019), and Fourth Medium-Term Development Plan (2020-2024), all of which play a crucial step towards gradual national development. In the third and fourth development plan, ICT is frequently indicated by emphasizing the role of the multi-stakeholders (government, corporations, research institutions) to cooperate for stronger digital connectivity. The most recent Fourth Medium-Term Development Plan (2020-

2024) portrays ICT as the stepping stone to transition into an efficient economy that can reach the standard of living equivalent to a middle-income country by 2025. Telematics network services and the importance of access to the general public are illustrated as the fundamentals for consolidating sustainable development.

Indonesia has prior attempts to implement these objectives such as the 'Palapa Ring Project' which is at aims to support constructing a National Optic Fiber Backbone (NOFB) throughout seven cities (Bok, 2009). This government-initiated project had a successful turnout as the Internet speed and accessibility significantly boosted, giving municipal regions the infrastructural support to develop e-government and e-procurement. In 2019, the project was completed with recognizable results as 4G internet service was accessed to over 500 rural regions and affordable 3G internet access could be provided to inhabitants. Similarly, Go Digital Vision 2020, a government launched project, aims for a sustainable digital economy by assisting citizens in the agriculture and fishery sectors to have access to the digital market. Bank Rakyat Indonesia (BRI) and Bank Central Asia (BCA) partnered with the government to assist the digital transformation of financial platforms and further e-commerce elements. Through this project, the value chains are equipped with IoT sensors, autonomous machines, and analytics resulting in higher productivity in labor and production in agricultural sectors. Furthermore, landowners and production managers could better monitor, allocate and measure the environment, leading to the development of new products and increasing sales (Fernando, 2019).

In 2014, the government announced Indonesia Broadband Plan (IBP) (2015 - 2019) to provide fixed broadband access to all Indonesian provinces and have

80% broadband access to rural institutions by 2019. To achieve the goal, Indonesia faced infrastructural obstacles of needing to construct towers, antennas, cable, and other telecommunication operators. The lack of shared infrastructure leads to disparity among operators. Some have the capital to construct their antennas and towers while others need to share with other operators. As serval operators single operate the majority of the infrastructure (such as cable network, ducts, and towers), the access and price for access are monopolized (Tabor and Yoon, 2015). The Indonesian government understood the importance of local governments in facilitating the future ICT environment as they need to create a blueprint for citizens to access WIFI and broadband at a reasonable price.

With continuous efforts from the government and partnering institutions, Indonesia is proactive towards building a digital-friendly society. The need for further expansion of ICT infrastructure exists is as the government engages with bilateral, multilateral aid programs to improve the ICT environment. Domestically, the government facilitates active public-private partnerships (PPP) in ICT projects and initiatives such as Indonesia National Single Window (e-tax and e-customs services), social welfare smart cards (digital transition of health care, welfare, and public education), and electronic identity cards.

Overall, the Indonesian government has shown emphasis on developing ICT itself through plans of constructing cable networks, WIFI areas and cooperating with telecommunication operators to widen the spectrum of ICT access. Additionally, the government acknowledges the cross-cutting sectors and manages to incorporate ICT in industrial development to increase efficiency and effectiveness in operations. Ultimately, Indonesia aims for economic development as the main objective as shown in the development plans. Consequently, ICT is

seen not only as technology but also as a tool to stimulate other industries.

Lao PDR

Lao PDR government acknowledges the need for digital openness and accepting ICT technology but there are significant constraints that stymie the country from its goals. Low-quality training of labor, unstable connectivity of broadband, trade barriers, and weak infrastructure are serval components to Lao's slow development in ICT. Despite the hurdles, the government is initiating efforts in national policies and projects to foster a digital-friendly society.

The Ministry of Post and Telecommunication (MPT) is the leading government sector to establish policies and strategies regarding national ICT development. MPT has initiated the ICT Vision towards 2030, 10-year Development Strategy (2016-2025), the 2nd 5-year Development Plan of Post and Telecommunications Sector (2016-2020). All of the following policies and recommendations focus on the three main points. First, accessibility. The current disparity in Laos regarding access to information and telecommunication is substantial which explains the urgent need for ICT services that can bridge the gap. Policies constantly mention the implementation of ICT as a bridge for remote regions and inhabitants. Second, affordability. For wider accessibility, the cost of ICT services should be affordable for citizens and MPT has adjusted the spectrum fees to ensure higher affordability. Furthermore, currently, MPT is undergoing the process to give tax incentives for ICT service users (and operators) in rural areas. The income inequality is high compared to ASEAN member states which makes affordable prices crucial in order for a wider spectrum of reaching its users. Third, ensuring strong infrastructure. The National Internet Gateway Project (2008),

National Telecommunication Transmission Network (2011) are projects that focus on providing the structural foundation for ICT services to work.

Despite the domestic efforts, Laos currently undergoes various challenges as there is a severe lack of the necessities to establish a stable foundation. First, the basic infrastructure (structural and legal) that can assist Internet, fixed-broadband, and mobile networking services is limited. This explains the extremely low fixed broadband Internet growth rate when compared to the expansion of mobile broadband Internet services. The market condition is rigid for new players to increase broadband coverage as legal regulations tightly control the entry of foreign operators. World Bank announced Lao PDR having an above-average ICT service price compared to its neighboring countries Thailand and Vietnam. Due to limiting the entry of foreign operators (leading to less competition in the market), the prices of the services are stagnant for years. Assessments made by UNCTAD illustrate how alternation in telecommunication regulations would increase the speed and accessibility of ICT while lowing the costs, creating an affordable price for the public to access. Moreover, there are limited trained human resources and IT skillsets that the government can utilize in the long term. (Taifur, 2009). Although the government strategies showcase the ambitious attempt to provide specialized training customized to ICT usage and ICT-literature, the reality is different. Ministry of Education and Sports, Ministry of Industry and commerce have addressed digital literacy as an agenda to be considered in previous reports but there weren't any tangible outcomes. Rather public institutions like the Lao E-Government Center collaborates with ministries for pilot projects on increasing ICT-learning in classrooms.

Thus, the Lao PDR government emphasizes the construction of ICT

infrastructure through government projects, strategies, programs, etc. The country comprehends ICT as the means to overcome the underdeveloped ICT environment and to do this, the basic construction that supports the ICT services is the national priority.

Myanmar

Myanmar, despite the nation's ICT utilization since 1981, still is considered an ICT greenfield. The government addressed the urgency for ICT utilization for national development and the first national ICT Master Plan was created in 2004. With an emphasis on e-governance, Myanmar's 1st Phase ICT Masterplan (2005-2010), 2nd Phase ICT Masterplan (2011-2015), 3rd Phase ICT Masterplan (2015-2020) lays the gradual steps for Myanmar to transition to a digitally-operated government (E-government). Since March of 2005, Myanmar received approximately USD 11 billion amount of aid from Korea's Economic Development Cooperation Fund (EDCF) to construct Myanmar's e-government systems (NIPA, 2017). The 1st stage (2005-2010) focused on standardizing the e-government level with those of ASEAN member states. The 2nd stage (2011-2015) aimed to become the leading country amongst ASEAN member states. The 3rd stage (2016-2020) aimed for being the leading country amongst the less developed country groups.

With its ambitious aim, Myanmar's government ministries such as the Myanmar Computer Science Development Council (MCSDC), Ministry of Communication and Information Technology (MCIT), Post and Telecommunications Department and Ministry of Information (MOT) work under the government to arrange policies and national initiatives with espousing to a strong national digital roadmap. Currently, Myanmar's ICT policy is directed by

the Ministry of Transport and Communications (MoTC), and its most latest Universal Service Strategy for Myanmar (2018-2022) extend telecommunication accessibility to 90%, internet penetration to 85%, and high-speed internet to at least 50% of the population.

Despite the ministries' continuous efforts, however, Myanmar's National ICT plans are considered underdeveloped and the lack of legal and regulatory ICT framework blocks future development (UNCTAD, 2006). Government-centered ICT ministries lack check and balance within the national ICT system, leading to a rigid ICT policy in terms of Internet spectrum, accessibility, foreign market entry, and pricing. This intensified in 2007 with the occurrence of the Saffron Revolution[8]. Since then, the government's restriction in the digital sphere strengthened as ICT-service providers became strictly state-owned and heavily regulated. Startups, technology control centers, internet cafes transitioned into government-run platforms and foreign firms such as Alcatel Shanghai Bell Company were employed to block content from Youtube, Gmail, Google, CNN, and other international sites. The lack of legal regulations led the limitations to be justified and continue under 'national security purposes'.

In sum, Myanmar's national ICT masterplans emphasize creating e-government and utilizing ICT to effectively assist public administrative procedures. As the ICT masterplan and its implementations are mainly decided by the government, the emphasis is towards enhancing efficiency within the national system.

[8] The Saffron Revolution (2007.08.15-2008.10) is a political protest from the Myan mar public that showed the public resistant towards government's dictatorship. The c ivil resistance was taken down by the government with many of the protesters arres ted, detained and exiled. Consequently, international attention of news outlets like C NN, BBC, ultimately pressured the government to stop the human rights violations.

The Philippines

With the Philippines' growing number of internet, mobile phone users, the government actively engages in creating ICT policies and initiatives that complement this phenomenon. Government efforts to integrate ICT into public procedures show in 2016 when the Department of Information and Communication Technology (DICT) was established. This shows the government's aspirations to arrange ICT as an important role in open governance and also use the role of ICT in a nation-building process. Duterte administration has made bold mandates that encourage the development of ICT interoperability[9]. The enactment of the Republic Act(RA) 11032, RA 11055 (National ID Law) are examples.

Moreover, the latest works of DICT, the E-Government Masterplan (EGMP) 2022, is the successor of EGMP 2013-2016 and aligns accordingly with the ASEAN ICT Masterplan 2020 (AIM). Through digital transformation, the masterplan lays out plans to develop elevated ways of fostering economic trade both domestically and internationally (especially among ASEAN nations). Differences from the previous EGMP 2016 is how EGMP 2022 includes various stakeholders and formed focused group discussions where groups were able to formulate an area of focus that can be added to the EGMP 2022. Unlike before, this added change welcomed private sectors and ICT corporations to share their viewpoints regarding facilitating a digital environment and to contribute their practical knowledge and know-how in the Philippines (DICT, 2019). Image 2 illustrates the eight areas of focus for EGMP 2022.

[9] Interoperability is defined as the ability of information systems, devices and organizations to access data. To have strong interoperability, a strong platform that withholds the transactions of the exchange of information is necessary. (Source: UNESCAP)

Image 2: Areas of Focus in the EGMP 2022
(Source: EGMP 2022 Abridged Version)

In a broader scope, the Philippine Development Plan 2017-2022 is a social-economic-focused agenda under the Duterte Administration that overviews the nation's goals for development prosperity. Part 4, Chapter 14 (Vigorously Advancing Science, Technology, and Innovation) highlights the importance of ICT in fostering the national economy and the recognition it needs to further stimulate innovation and national connectivity. Especially, ICT development is seen as a priority to undergo further research in the S&T department (NEDA, 2017). Page 224 of the Philippine Development Plan, *Subsector Outcome 3: Creative capacity for knowledge and technology generation, acquisition and adoption enhanced* illustrates:

Improvement of internet connectivity by putting in place a robust ICT infrastructure, particularly the national broadband infrastructure, will be given priority to boost productivity in research and other STI activities. The government is preparing for the rollout of its fiber optic cable network under the "Convergence Program" to link national government agencies in a fiber-optic network and shared resources.

Despite the positive attempts to focus on implementing ICT projects, studies show

that the Philippines/ bureaucratic culture and lack of governance in overseeing ICT policies can be a crucial barrier in the long run. For an effective operation, new leadership should be appointed to manage and monitor the ICT programs at a municipal level (Magno, 2018).

Additionally, when compared to other ASEAN member states, the Philippines has been lagging in terms of ICT infrastructure, although the government has increased its expenditure since 2012. There is a significant increase in Internet coverage but ICT infrastructure is lacking in accessibility and quality when compared to ASEAN member states. One of the aims was standardization so that ICT services in the Philippines could be standardized and meet the levels of other ASEAN member states. Also, through reallocation of the dispersed ICT services, the government hopes to provide a stronger connection to a broader spectrum throughout the region. In August of 2011, the National Telecommunications Commission selected Japan's ISDB-T(Integrated Service Digital Broadcasting-Terrestrial) as the standard for Filipino broadcasting, as it was capable to transmit a significant amount of data within a shorter timeframe. Also, the system was more affordable and was transmittable on phones which made it inclusive towards a larger population (NIPA, 2012). This was a monumental transformation as, since the 1940s, the Philippines' broadcasting industry was solely operating in analog broadcasting. This change shows the government's efforts to disseminate the centralized information and utilizing the system in enhancing efficiency in traffic management, natural disasters warning systems, track gasoline consumption, etc. Similarly, the ICT Reference Framework 2018-2025 (Decision 950/QD-TTg) was issued in August of 2018 to prioritized the implementation of ICT in urban cities and ultimately establish smart cities and

smart management. The framework includes developing services such as smart waste management, lighting systems, smart grids, etc (Dharmaraj, 2019).

With numerous policies and initiatives, the Filipino government actively engages in ICT agendas to establish an integrated digital eco-system. The policies tend to focus on ICT usage in government procedures to enhance efficiency not only in public administration but also in areas of education, health, agriculture, etc to increase productivity and boost the national economy. The state strongly acknowledges ICT to improve the accessibility among households and strengthen trade and exchange of services within the region.

Vietnam

Vietnam has the strongest growth rate in the ICT market in comparison to ASEAN member states with an average of 8% between 2016 to 2020 (ATIC, 2021). In terms of ICT usage, Vietnam is on a continuous increase. Compared to the 0.3% of internet penetration rate in 2000, it rose significantly in the next five years to 12.7% (World Bank, 2021). With over 68.7% of the population has access to the internet, government policies, development plans cater towards enhancing the ICT technology connectivity and competitiveness in the region. Specifically, Vietnam has strong competitiveness for outsourcing in the ICT sector as foreign firms are attracted to the competitive labor costs, increasing middle class with growing ICT access and geographical location (Outsource Asia, 2020). Naturally, this stimulates the domestic ICT market as Vietnam firms are influenced by fintech, blockchain, IoT, and smart management and are encouraged to implement the technology in diverse sectors.

Vietnam’s emphasis on the IT sector for socioeconomic growth first started

in 2000 when Directive 58 from the Communist Party pushed IT development as a national priority throughout 2000-2010. There were four main targets for these initiatives: 1) Elevating telecommunications and Internet Infrastructure, 2) Developing IT human resources, 3) Developing a software industry, 4) Developing a hardware industry. This laid the foundation for expanding the national ICT infrastructure through developing the National IT Masterplan (2002-2005).

'The National Information and Communication Development Strategy 2021-2030' is the latest government initiative that the Ministry of Information and Communication of Vietnam announced to focus on during the 2019 Vietnam CEO summit (NIPA, 2019). Compared to the 2010 Development Strategy, emphasis was brought on e-governance, e-business, and establishing an 'E-Vietnam' that can pioneer a strong ICT infrastructure for the ASEAN region. Specifically, the government aimed to prepare for the arising opportunities brought by the Fourth Industrial Revolution and accelerate a sturdy digital economy that can stimulate Vietnam's growth model. The strategy mentions establishing a high connected 3G, 4G network system to reach a high level of connectivity of a high-income country by 2020.

Additionally, Vietnam simultaneously aims to develop ICT-incorporated sectors such as agriculture, healthcare, environment, and security. In the National Development Programme Tech 2020, the application of ICT with biotechnology, automation technology, and materials technology are highlighted (Habaradas and Mia, 2020). ICT is described as a tool that can equip the existing technology and by doing so, it aims for the country to be technological advances and high tech. The Ministry of Education and Training (MOET) utilized ICT when facilitating their policies since 2009 (The year 2009-2009 was coined the 'Year of ICT). MOET's

Directive 40 and 55 highlight the roles of ICT in building an efficient, safe, and friendly learning environment. The policies took a multi-dimensional approach as the implementation of hardware (constructing computers, developing e-content, assessing the necessary tools within a classroom) and software (training of educators, adding computing in the secondary curriculum) were done simultaneously.

Overall, Vietnam's National IT Masterplan, National Development Strategy both show the importance of establishing a strong ICT infrastructure as the foundation for national development. The government is focused on establishing not only the technological aspects of ICT but also the legal, regulatory matters in terms of telecommunication, privacy, and national security. Simultaneously, the government pushed to develop ICT in association with other sectors to highlight the cross-cutting trait of ICT.

3.3 Summary

Southeast Asia's potential to develop as a strong digital nation is proven to be true when observing the ICT-related statistics. The region has a growing internet user rate, rising internet penetration rate, fixed broadband subscription rate, and mobile broadband subscription rate. Despite the progress seen through numbers, the absolute level of ICT development is low when compared with OECD member countries. Additionally, there exists a gap in terms of the level of ICT development between member countries.

Respectively, all six countries presented their willingness and need to focus on ICT-related development through domestic development plans, establishing relevant ministries, and funding projects. However, countries' specific

priorities in terms of ICT differed. Cambodia and Lao PDR prioritized ICT infrastructure and established government broadband plans, internet cafes, and centers to enhance the accessibility of ICT. As for Cambodia and Lao PDR, the countries are in a nascent stage of ICT development so the national priority is to diversify the ICT industry by expanding telecommunications and promoting ICT use.

Myanmar and the Philippines rather focused on the cross-cutting issues of ICT and enhancing ICT access in other sectors such as public administration. E-governance was the reoccurring term in both country's development plans regarding ICT and as the country aims to raise efficiency and productivity, ICT has been the most promising tool to utilize. Both countries implemented ICT-related frameworks that are initiated by multiple authorities which to collaborate the range of ICT impact to diverse areas.

Indonesia and Vietnam show a balance of emphasis on both sides of ICT as the government continued to conduct broadband plans and infrastructural projects in rural areas while allocating a significant amount of funding towards the S&T sector that incorporates ICT. The rapid growth of ICT in Vietnam and Indonesia can be explained through the rise of the tech-savvy young generation who are active users of smartphones and social media. Thus, the government aims to widen broadband access through infrastructure construction so that structural barriers in rural, remote areas can be diminished. Also, the two countries' economies are experiencing rapid growth which becomes the momentum to further initiate ICT development in other sectors such as health, agriculture, education, etc.

Chapter 4. Examining South Korea's ICT ODA to Partnering Countries under Recategorization

4.1 South Korea's ICT ODA with Partnering Countries (2015-2019)

	2015		2016		2017		2018		2019	
Total ODA Projects	1,055		1,230		1,243		1,312		1,404	
Total ICT ODA Projects	142		154		173		227		298	
Total ICT ODA projects between partnering countries in Southeast Asia	53		66		68		82		106	
	Cambodia	13	Cambodia	16	Cambodia	11	Cambodia	18	Cambodia	20
	Indonesia	8	Indonesia	7	Indonesia	14	Indonesia	18	Indonesia	23
	Lao	5	Lao	9	Lao	9	Lao	15	Lao	19
	Myanmar	11	Myanmar	14	Myanmar	15	Myanmar	15	Myanmar	20
	Philippines	4	Philippines	8	Philippines	6	Philippines	5	Philippines	9
	Vietnam	12	Vietnam	12	Vietnam	13	Vietnam	11	Vietnam	15

Table 8: South Korea's ICT ODA Status (Source: EDCF ODA)

From 2015 to 2019, the ICT ODA projects between Republic of Korea and Partnering Countries were analyzed through the OECD CRS (Creditor Reporting System) data and the EDCF ODA data portal. Unidentified data or missing information were crossed checked through official reports from the participating ministries or institutions. By examining over 5,800 ODA project data, total of 347 ICT ODA projects were collected and classified into two groups: General and Multi-Area.

Table 8 illustrates Korea's ICT ODA progress throughout the period from 2015 to 2019. The total amount of ODA projects, as well as ICT ODA projects, increased (in the case of ICT ODA, the amount doubled in 2019). Among South Korea's ICT ODA projects, approximately 30% of the ICT ODA were towards partnering nations in Southeast Asia. This proves the increase of ODA and cooperation in the ICT sector between South Korea and the six partnering nations. Especially the Moon administration's launch of 'New Southern Policy' escalated the increase of digital ODA in Southeast Asia.

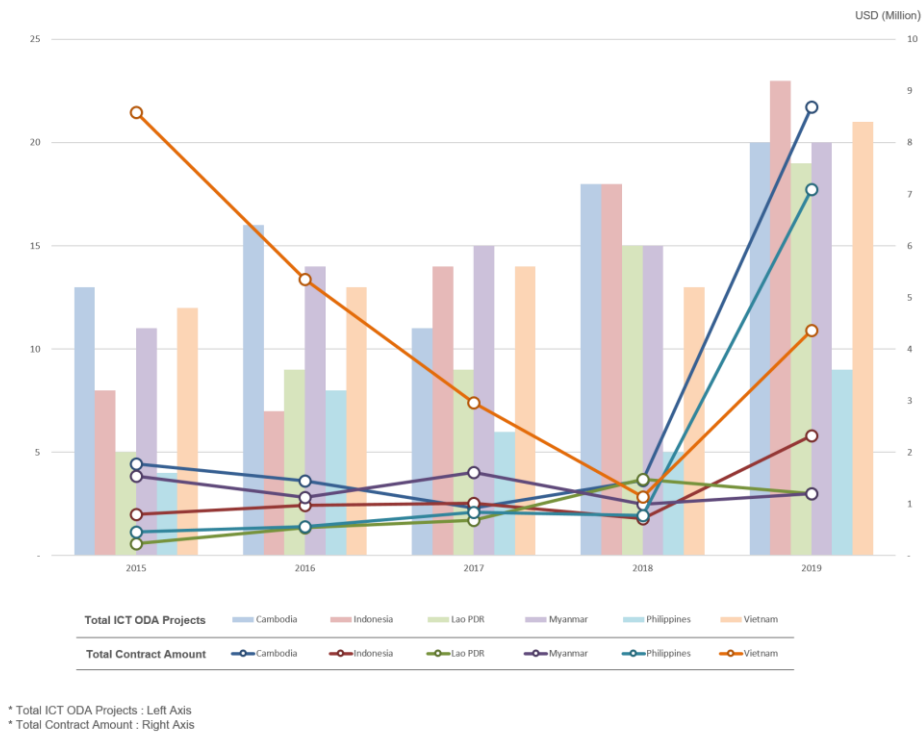

Figure 4: Comparison of Total ICT ODA Projects and the Total Contract Amount[1011] in Partnering Countries (2015 -2019)

[10] The table compares the total contract amount because the thesis attempts to analyze Korea's ODA contribution among the partnering countries. Thus, ODA contribution is the dependent variable in this paper.

[11] Vietnam's total contract amount is on a decline till 2018. The General ICT ODA r emained consistent but Multi-Area ICT ODA in 2015 was regards to industrial constr

When comparing the partnering countries, the total of ICT ODA projects has increased throughout the period. In 2019, Indonesia had the most ICT sector ODA projects in total (23) and the Philippines had the least (9). Countries like Indonesia, Lao PDR, and the Philippines more than doubled the amount of ICT ODA projects in 2019 when compared to 2015, which portrays the Korean government's attempt to issue more ICT sector-related ODA in partnering recipient countries.

		2015	2016	2017	2018	2019
Cambodia	Total ICT ODA (project numbers)	202	225	186	192	235
	Total ICT ODA (%)	13 (6.4%)	16 (7.1%)	11 (5.9%)	18 (9.375)	20 (8.51)
Indonesia	Total ICT ODA (project numbers)	149	148	134	156	220
	Total ICT ODA (%)	8 (5.36%)	7 (4.72%)	14 (10.44%)	18 (11.53%)	23 (10.45%)
Lao	Total ICT ODA (project numbers)	137	163	155	182	224
	Total ICT ODA (%)	5 (3.64%)	9 (5.52%)	9 (5.80%)	15 (8.24%)	19 (8.48%)
Myanmar	Total ICT ODA (project numbers)	144	160	162	173	232
	Total ICT ODA (%)	11 (7.63%)	14 (8.75%)	15 (9.259%)	15 (8.67%)	20 (8.62%)
Philippines	Total ICT ODA (project numbers)	138	158	144	141	187
	Total ICT ODA (%)	4 (2.89%)	8 (5.06%)	6 (4.166%)	5 (3.54%)	9 (4.81%)
Vietnam	Total ICT ODA (project numbers)	254	272	269	292	357
	Total ICT ODA (%)	12 (4.72%)	12 (4.41%)	13 (4.83%)	11 (3.76%)	15 (4.20%)

Table 9: Percentage of ICT ODA Projects in Comparison to Total ICT ODA Projects

When comparing the numbers of total ODA projects in partnering countries and the percentage of total ICT ODA projects, Table 9 explains the project numbers from 2015 to 2019. There are two significant traits. First, the number of ICT ODA projects increased in all countries in total. When comparing the project number in 2015 and 2019, an overall increase shows South Korea's dedication to ODA in the ICT sector. Second, the total ICT ODA percentage

uction and infrastructural development whereas in 2018, it was mostly Knowledge Sharing Programs (KSP) such as dispatch of volunteers and workshops

increased 1.5~2 times throughout the period in most countries (All countries except for Vietnam). This pattern shows that not only in absolute numbers but also comparatively, the importance of ICT in ODA is acknowledged by the donor and recipient country.

4.1.1 General ICT ODA Status

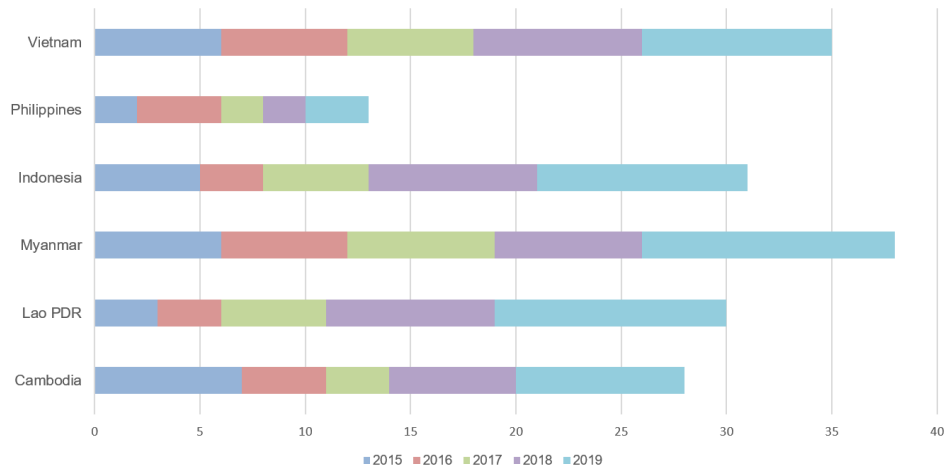

Figure 5: General ICT ODA Projects in Partnering Countries (2015-2019)

As illustrated in Figure 5, Myanmar has the highest amount of General ICT ODA projects (38) were conducted in total throughout the time frame. Whereas, this was not the case for the Philippines as the country had the lowest case of General ICT ODA projects (13).

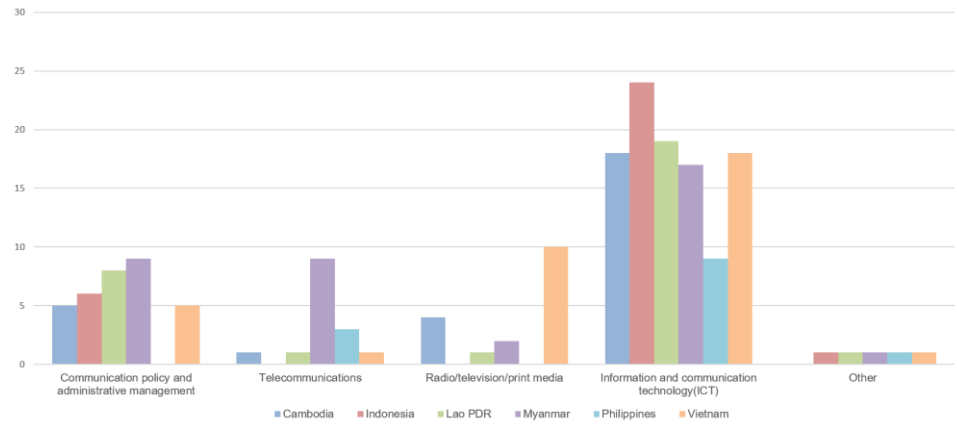

Figure 6: General ICT ODA by CRS Code in Partnering Countries (2015-2019)

Figure 6 portrays the four main sectors that were categorized under 'General ICT ODA'; Communication policy and administrative management (22010), Telecommunications (22020), Radio/Television/Print media (22030), and Information and communication technology (22040). 'Others' include ICT Expert Training Program for recipient countries' government ministries or relevant professionals in the ICT sector. ICT (2204) had the highest amount of ODA projects in all six partnering countries whereas, for other sectors, the total project numbers varied among countries. The ICT ODA projects include Advisors Volunteers for ICT (Myanmar, Indonesia), Data administration and maintenance for staff (Cambodia), Global ICT Convergence Master's Degree Program, Information and Communication Technologies for Meteorological Services, Information Access Center, IT Volunteers (Cambodia, Indonesia, Lao, Vietnam), etc. Thus, with the rising interest and necessity of ICT in partnering countries, the ODA projects of Korea met the region's needs and interests.

4.1.2 Multi-Area ICT ODA Status

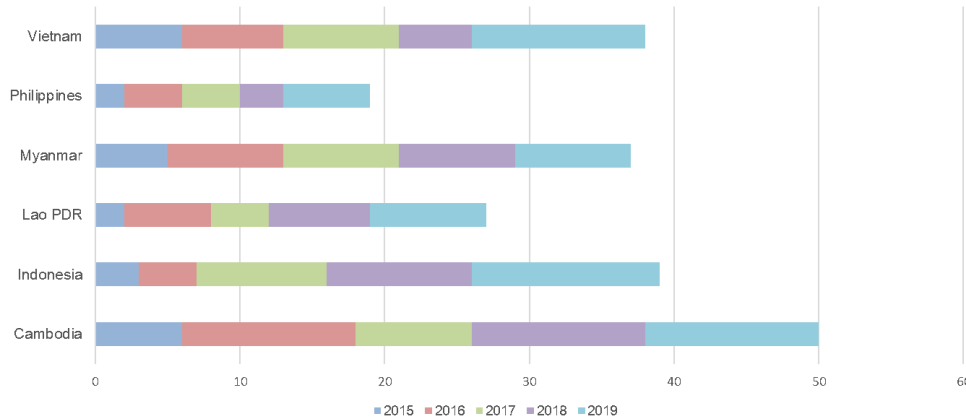

Figure 7: Multi-Area ICT ODA Projects in Partnering Countries (2015-2019)

Figure 7 portrays the Multi-area ICT ODA projects in six partnering countries from 2015 to 2019. In the multi-area, Cambodia had the highest amount of ODA projects (50) and the Philippines had the lowest amount (19). Gradually, all countries had over a double increase when comparing the 2015 ODA with the 2019 ODA.

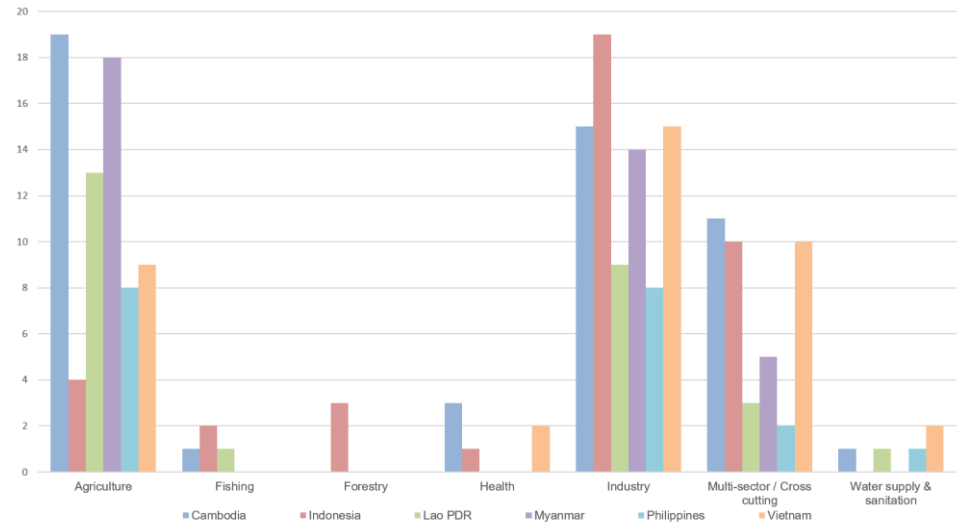

Figure 8: Multi-Area ICT ODA Sector in Partnering Countries (2015-2019)

Figure 8 illustrates the sectors categorized under multi-area ICT ODA and the diversification of the ODA projects per partnering country. Overall, most countries have shown the highest in the 'Industry' and 'Agriculture' sector. 'Industry' sector categorized projects include Establishment of IT-based Job Incubation Center (Cambodia), Industrial Technology ODA program (Indonesia, Vietnam), Feasibility study for the establishment of the remote service center (Laos), Improvement of Meteorological Satellite Data Analysis and Application Competence (Myanmar, Philippines), etc. 'Agriculture' projects include Training for smart agriculture (Cambodia), Training workshop on Eco-friendly Agricultural technology (Lao, Myanmar, Vietnam), Technical capability enhancement on Mechanization and handling of fruits and vegetables (Philippines), etc. The 'Cross-Cutting' sector includes environmental research and education or research/scientific institutions where most countries engaged through KOICA volunteer programs, K-innovation programs (Vietnam), and Scientific and Technological Support Programs (Myanmar, Indonesia). In terms of 'Fishing',

‘Forestry’, ‘Health’, and ‘Water supply and Sanitation’ sector, the variation differed among countries. Thus, the finding shows the cross0cutting traits of ICT as it was utilized as an element to foster ODA projects in areas of agriculture, health, environment, and education. Considering the six partnering countries’ prioritization in economic development and a higher standard of living, ODA projects were focused on industrial development and agriculture; the two industries that the region had the relative advantage of in the market and had the highest willingness to incorporate technology.

4.2 Match between Partner's policy focus and ICT ODA patterns

4.2.1 Overall Patterns of ICT ODA

Six partnering countries of South Korea have shown increasing ICT ODA in both General and Multi-area sectors. Despite the slight decrease in 2017-2018, ICT ODA projects and total ODA projects increased overall. According to Table 8, total ODA projects increased by 33.08%, total ICT ODA projects increase by 109.8% from 2015-2019.

Throughout the five years, serval patterns are noticeable. First, diverse institutions took part in ICT ODA. The Ministry of Science and ICT was not the only actor taking part in ICT ODA although, in General ICT ODA, it is one of the leading institutions. KOICA predominately held a significant amount of projects (119) and the Ministry of Science and ICT was second (21). Ministry of Economy and Finance, EDCF and Gyung-gi local government also participated which shows the partnership of different stakeholders in ICT ODA. In terms of Multi-Area ICT ODA, the institutions that took part were much diverse in comparison to General

ICT ODA. The leading institutions were KOICA (109), the Ministry of Agriculture, Food and Rural Affairs (31), the Ministry of Trade, Industry and Energy (21). Other institutions include the Ministry of Science and ICT, the Ministry of Culture, Sports and Tourism, the Ministry of Health and Welfare, Korea Forest Service, Ministry of Oceans and Fisheries, etc. ICT ODA is not centered by the Ministry of Science and ICT but diverse ministries cooperated towards the aid management. For instance, Busan Global Center led the 'Training for Smart Agriculture' project where government officials from Myanmar attended lectures on new technology regards to urban agriculture, eco-friendly future agriculture, and smart farm technology used in Busan. Korea Institute for Advancement of Technology (KIAT) led the 'Strategic Country Technology Cooperation' which established a TASK (Vietnam Technology Advice and Solution from Korea) Center. Vietnam's TASK center aimed to enhance efficiency in supply chain management by utilizing ICT in supply chains and professional training of local youths with regards to the technology.

Second, there is an increase in Public-Private Partnerships(PPP) in the Multi-Area ICT ODA sector. Although small, there has been a consistent increase in PPP which can be about the continuing emphasis of the PPP model in international development cooperation. PPP has been a new model of ODA as new donor countries (China, India, South Africa, etc) utilized it to raise the effectiveness of aid practices and this challenged the traditional ODA model used by the OECD DAC countries. Since 2014, official UN reports emphasized the role private sectors can play in international development cooperation in terms of risk management (diversification) and finding the common ground where private demands can meet through achieving public goods (Lu and Zetao, 2019). PPP in South Korea started

in 2010 from grant-type aids and has continued to increase with the rising emphasis on ICT. Developing ICT infrastructure requires a significant amount of funds and the traditional model of ODA holds limitations where capital movement is rigid and insufficient. Thus, the PPP model is suitable for implementing ICT ODA projects without meeting the limitations of the traditional ODA model. Considering the rising trend, PPP in ICT ODA is estimated to increase in the future.

4.2.2 Partnering Country's ICT policy focus and ICT ODA patterns

The six partnering countries have an emphasis in terms of ICT development that is reflected in their policies. As mentioned in Chapter 3, each country's policy focus can be summarized in Table 10. When comparing the domestic policies to the ICT ODA patterns, some countries' ICT priorities were met while some did not.[12]

[12] This report considered ' balanced' ODA allocation as when the project difference between the two groups is less than 5.

Country	General/ Multi-Area ICT	Affiliated Agreement/ Policy
Cambodia	General ICT	- Cambodia ICT Masterplan 2020 - 2019-2023 National Strategic Development Plan - Industrial Development Policy 2015-2025
Indonesia	Both	- The National Internet Gateway Project - National Telecommunication Transmission Network
Lao PDR	General ICT	- Long-term National Development Plan of 2005-2025 - Palapa Ring Project - Go Digital Vision 2020 - Indonesia Broadband Plan
Myanmar	Multi-Area ICT	- 3rd Phase ICT Masterplan (2015-2020) - Universal Service Strategy for Myanmar (2018-2022)
Philippines	Multi-Area ICT	- E-Government Masterplan 2022 - Philippine Development Plan 2017-2022 - ICT Reference Framework 2018-2025
Vietnam	Both	- The National Information and Communication Development Strategy 2021-2030 - National Development Programme Tech 2020 - National IT Masterplan

Table 10: Partnering Country's ICT ODA Related Policies and Traits

First, Cambodia's ICT ODA increased throughout 2015 to 2019. Table 11 illustrates Cambodia's overall ICT ODA growth and the allocation of projects by sector throughout the years. The project numbers of general ICT ODA (28) were lower in comparison to Multi-area ICT ODA (50). The widespread of multi-area ICT ODA projects did not match the Cambodian policies that emphasized establishing ICT infrastructure, telecommunication broadband, and services in the region. However, within the General ICT category, the ICT sector was the highest which shows partial reflection the policy's priorities.

General/ Multi-Area	Sector	Year (Total)					
		2015 (13)	**2016 (16)**	**2017 (11)**	**2018 (18)**	**2019 (20)**	Total
General	Radio/ TV/ Print media		1	1	1	1	28
	ICT	5	3	2	4	4	
	Telecommunications				1		
	Communication Policy and administration management	2				3	
Multi-Area	Agriculture	3	7	3	3	3	50
	Fishing					1	
	Health	1	1	1			
	Industry	1	2	2	6	4	
	Water Supply & Sanitation					1	
	Multi-Sector	1	2	2	3	3	

Table 11: Cambodia's ICT ODA

Second, Indonesia had an evident increase in ICT ODA when compared to Cambodia. Considering that Indonesia emphasized both General and Multi-Area ICT ODA, the numbers in Table 12 show focus on Multi-Area ICT ODA (39). However, General ICT ODA was not neglected as it also had a constant increase of ODA throughout the years. Indonesia's policies consistently mentioned economic development, utilizing ICT for raising efficiency and productivity which explains the higher numbers of the 'Industry' sector in multi-area ICT. Still, in comparison to Indonesia's policies, the ODA data does not show a balance between the two groups.

General/ Multi-Area	Sector	Year (Total)					
		2015 (8)	**2016 (7)**	**2017 (14)**	**2018 (18)**	**2019 (23)**	Total
General	Information Services					1	31
	ICT	4	3	4	6	7	

	Communication Policy and administration management	1		1	2	2	
Multi-Area	Agriculture	1	1	1		1	39
	Fishing			1	1		
	Forestry			1	1	1	
	Heath					1	
	Industry	2	3	5	4	5	
	Multi-Sector			1	4	5	

Table 12: Indonesia's ICT ODA

Third, Lao PDR showed an increase in ICT ODA projects. Lao's government emphasized constructing ICT-related infrastructure as the national priority which reflects the higher project numbers in the 'ICT' category. In Table 13, General ICT ODA is slightly higher than multi-area which matches the priorities elaborated in government reports but the difference wasn't significant to differentiate the concertation between the two groups.

General/ Multi-Area	Sector	Year (Total)					
		2015 (5)	**2016 (9)**	**2017 (9)**	**2018 (15)**	**2019 (19)**	Total
General	Information Services					1	30
	Radio/ TV/ Print media					1	
	ICT	2	1	4	5	7	
	Telecommunications				1		
	Communication Policy and administration management	1	2	1	2	2	
Multi-Area	Agriculture	2	4	2	3	2	27
	Fishing				1		
	Industry		2	1	2	4	
	Water Supply & Sanitation					1	
	Multi-Sector			1	1	1	

Table 13: Lao PDR's ICT ODA

Fourth, Myanmar's policies focused on utilizing ICT in different sectors

but when observing the ICT ODA project numbers, it is difficult to conclude that ODA focused on the 'Multi-Area' category. There is roughly a balance in the ratio of general to Multi-Area ICT ODA projects. Myanmar emphasized e-government and developing an electronic administrative process through ICT but when observing the ODA projects, it was slightly geared towards broader ICT development or incorporation of S&T in ICT training. Overall, however, the difference between the two groups was not significant enough.

General/ Multi-Area	Sector	Year (Total)					
		2015 (11)	**2016 (14)**	**2017 (15)**	**2018 (15)**	**2019 (20)**	Total
General	Information Services					1	38
	Radio/ TV/ Print media	1	1				
	ICT	3	3	3	3	5	
	Telecommunications	2	2	2	2	1	
	Communication Policy and administration management			2	2	5	
Multi-Area	Agriculture	4	5	3	3	3	37
	Industry	1	2	4	4	3	
	Multi-Sector		1	1	1	2	

Table 14: Myanmar's ICT ODA

Fifth, the Philippines had the lowest total of numbers but the ODA data reflected the government's focus on 'Multi-Area' ODA. ODA projects that focused on utilizing ICT in diverse areas of agriculture, industry, water supply and sanitation, etc were conducted yearly and were consistent. However, limitations existed as the Filipino policy frequently emphasized e-governance and e-administration which could not be found in the ODA dataset. Thus, 'Multi-Area' ODA reflected the general ICT priorities of the Philippines but specifically, the

target areas were not consistent.

General/ Multi-Area	Sector	Year (Total)					
		2015 (4)	**2016 (8)**	**2017 (6)**	**2018 (5)**	**2019 (9)**	Total
General	Information Services					1	13
	ICT	1	3	2	1	2	
	Telecommunication	1	1		1		
Multi-Area	Agriculture	1	3	2	1	1	19
	Industry	1		2	2	3	
	Water Supply & Sanitation		1			1	
	Multi-Sector					1	

Table 15: Philippines' ICT ODA

Lastly, Vietnam's emphasis on both 'General' and 'Multi Area' ICT ODA is not reflected in project numbers as there is a higher ratio towards 'General' ICT. Vietnam's development plan emphasizes the diverse utility of ICT in fields of agriculture, health, science and technology R&D and this is reflected in the diverse ODA projects such as 'Improvement of Meteorological Satellite Data Analysis R&D', 'Vietnam's IT training in communication policy and administrative management', 'Agricultural machinery Enhancement and Pilot Provision', etc. But overall, when observing Table 16, ODA projects under the sub-category 'ICT' ranked the highest overall.

General/ Multi-Area	Sector	Year (Total)					
		2015 (12)	**2016 (12)**	**2017 (13)**	**2018 (11)**	**2019 (15)**	Total
General	Information Services					1	35
	Radio/ TV/ Print media	2	3	1	2	2	
	ICT	4	2	4	4	4	
	Telecommunications				1		
	Communication Policy and administration management		1	1	1	2	

Multi-Area	Agriculture	2	3	1	2	1	28
	Health			2			
	Industry	4	3	4	1	3	
	Water supply & Sanitation					2	

Table 16: Vietnam's ICT ODA

4.3 Summary

As summarized in Table 17, only the Philippines' ICT ODA patterns reflected the respective national policies. The Philippines' ICT policies emphasized Multi-Area categorized sectors and ICT ODA projects showed similar patterns. Specifically, ODA projects were regarding the 'Industry', 'Agriculture', 'Water Supply & Sanitation' categories which were the areas emphasized in ICT Reference Framework 2018-2025.

However, Cambodia, Indonesia, Lao, Myanmar, and Vietnam's ICT ODA patterns were either not reflecting the respective domestic policies or were not distinctive enough to conclude as a reflection of the domestic agenda.

Country	ICT Policy Focus	General ICT ODA project(s)	Multi-Area ICT ODA project(s)	ICT ODA Focus	Match
Cambodia	General	28	50	Multi-Area	X
Indonesia	Both	31	39	Multi-Area	X
Lao PDR	General	30	27	Balance	X
Myanmar	Multi-Area	38	37	Both	X
Philippines	Multi-Area	13	19	Multi-Area	O
Vietnam	Both	35	28	General	X

Table 17: Summary of Matching ICT Policy and ICT ODA

Chapter 5. Conclusion

5.1 Findings

In 2010, the South Korean government issued an 'Advancement Plan of International Development Cooperation' which expressed the government's significant commitment as an OECD DAC country to engage in ODA. The three main points highlighted in the advancement plan are 'Developing Development Cooperation Contents', 'Effective Restructuring of Aid Systems', and 'Strengthening the Participation of International Activities'. Since this plan ICT ODA has been part of the first advancement point (Developing Development Cooperation Contents) as it allocated ICT as a focus sector in ODA for recipient countries. Unlike before when ICT ODA was considered low profit due to the high capital it requires for infrastructure, now ICT is an area where Korea had a comparative advantage to share the country's knowledge and technology with recipient nations that were in need (Lee, 2014). The research focused on six partnering countries in Southeast Asia (Cambodia, Indonesia, Lao PRD, Myanmar, Philippines, and Vietnam) and whether the ICT ODA between South Korea reflected the aspects addressed in the country's national policies. The framework of dividing ICT ODA into two groups, General and Multi-Area, was able to provide a new perspective in observing Korea's ICT ODA patterns with the partnering six countries. By analyzing policies, observing the ICT ODA projects, the findings are able to answer the research question raised.

The findings conclude that the priorities differed by country and overall, three groups were found; countries that prioritized 'General' ICT development, countries that prioritized 'Multi-Area' ICT development, and countries that had a balanced focus on both. The first group includes Cambodia and Lao PDR as the

countries emphasized the need to reconstruct the national ICT infrastructure for faster access and utility. The two countries hold the willingness to facilitate ICT development but the current technology and digital environment do not support it. Thus, the two nations focus on building the foundation for basic level access and connectivity to the general public for further engagement and construction in the future. The second group includes Myanmar and the Philippines as the two emphasized utilizing ICT in government services and parts of the social sector such as agriculture, education, health, etc. Overall, e-governance and digital connectivity through ICT is the nations' priority as illustrated in their national agenda and initiatives. The last group includes Indonesia and Vietnam which had ongoing projects in both General and Multi-Area sectors. The rapid growth of the ICT environment in the nation and the general domestic economy could explain this finding as out of the six partnering nations, Indonesia and Vietnam is the most stable and growing economy. The two governments have the funds and potential (growing internet penetration rate, mobile subscription rate, EGDI rate) to focus on developing both ICT infrastructure and ICT utilization in other sectors. All six countries, however, shared commonalities in reflecting the ASEAN agenda towards ICT development as the countries presented the importance of ICT development

	General ICT		**Multi-Area ICT**	
	Policy	**ODA project**	**Policy**	**ODA project**
Cambodia				
Indonesia				
Lao PDR				
Myanmar				
Philippines				

Vietnam				

through national plans, projects, and agenda.

Table 18: Comparison of ICT Policy and ICT ODA project matching

When examining whether the policy focus matched the ODA project numbers, it is found that the Philippines' ICT ODA projects reflected their national ICT priorities. As Table 17 illustrates, the country emphasized 'Multi-Area' ODA, specifically utilizing ICT to develop e-governance and enhancing connectivity in multiple social sectors. Similarly, the ODA data shows the reflection of the national agenda, 'Multi-Area' project numbers were higher than 'General' projects.

On the other hand, the five countries' ODA data were not consistent with their respective national policies. Specifically, Cambodia's national agenda emphasized 'General' ICT but the ODA data had a strong focus towards 'Multi-Area' ICT. Indonesia's national policies had a balance of emphasizing both 'General' and 'Multi-Area' ICT but the ODA data did not show a balance but rather an emphasis towards 'Multi-Area'. Lao PDR's policies prioritized 'General' ICT development and the ODA data showed a higher rate of 'General' ICT ODA. However, the difference between the two groups was not significant enough. Myanmar's national policies emphasized 'Multi-Area' ODA development and although small, the ODA data showed higher number towards 'General' ICT ODA. Vietnam's national agenda emphasized the development of both 'General' and 'Multi-Area' ODA but the ODA data showed an emphasis towards 'General' ICT ODA.

5.2 Limitation and Future Research

There are limitations to consider in this research. First, the research relies

on sources such as reports from the government, international organizations that were translated to English. Thus, sources through field research (interviews) would provide practical data regarding the partnering country's ICT environment, the government's priorities in developing ICT, etc. However, due to the scope of the research and the pandemic, field research was not possible. Instead, sources were cross-referenced and ODA statistics was checked from multiple ODA data portals. Through this process, the sources of the data utilized in this thesis are credible and highly accurate.

Second, in terms of indicating whether a country's policies are focused on 'General ICT' or 'Multi-Area ICT', various reports and government documents were overviewed. However, because there is no explicit indicator/index that measures the policy focus, the indication was based on the mentioning of ICT related keywords in documents and reports, analyzing ICT related domestic projects descriptions and plans and through this, a comparison between the countries was made to classify whether the country focused on 'General ICT' or 'Multi-Area ICT'. Limitation exists as there isn't a consensus on the specific criteria regarding 'General ICT' focused policy and what that entails. Further discourse about this matter should be discussed upon international organizations and relevant institutions for future indication on a country's ICT policy.

Third, this research limits the period to 2015-2019 because 2020 was a unique year for ODA. COVID-19 had a direct influence on ODA in terms of budget, project implementation, and sustainability. The global pandemic affected the country's economy and adjustments were made due to lockdowns and border control. South Korea is not an exception as the supplementary budget of KRW 7.6 trillion was reallocated from concessional loans and volunteer programs (that were

suspended due to the lockdown in most countries) (Kim, 2020). The new budget catered towards health and humanitarian assistance towards resilience against COVID-19. With the pandemic continuing to influence countries globally, the ODA patterns found during 2015-2019 need to be updated. Furthermore, the pre-COVID findings in this research cannot be generalized to the current ODA patterns in the post-pandemic era. The pandemic led to severe lockdowns, recessions, government turmoil, and ultimately the role of ICT changed within the society. Therefore, the needs and government priorities on how ICT should be utilized within the nation should be reexamined post-COVID.

In terms of future research, this thesis focuses on the ICT demands of the partnering country and whether South Korea ODA was able to effectively curate ODA projects consistent with those needs. This literature does not focus on the 'effectiveness' of the ODA projects due to the difficulties of field research and the broadness of scope. Additionally, the literature focuses on whether the ICT needs match with the ICT ODA patterns but does not focus on the explanation for the patterns that did not match. This can be further engaged upon the reasons why certain ICT needs did not match with the ICT ODA patterns. Furthermore, whether 'matching' of the patterns is correlated to the ICT ODA effectiveness can be conducted through future research.

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KISDI: http://www.kisdi.re.kr/kisdi/jsp/fp/kr/main.jsp?main_flag=Y
KOICA: https://koica.go.kr/koica_kr/933/subview.do
NIPA: https://nipa.kr/main/index.do
OECD Stats (CRS): https://stats.oecd.org/
OECD Library: https://www.oecd-ilibrary.org/
Statista: https://www.statista.com/statistics/487965/internet-penetration-in-southeast-asian-countries/
The Republic of the Union of Myanmar, Ministry of Information: https://www.moi.gov.mm/moi:eng/
UN SDGs: https://unstats.un.org/sdgs/metadata/

Appendix

Appendix 1. Total ICT ODA projects collected : Cambodia

Project Number	Reported Year	Reported Institution	Recipient Country	CRS Code	Project Name(Korean)	Project Name(English)
2019030701509	2019	KOICA	Cambodia	2019158187	캄보디아에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Cambodia for Information and communication technology (ICT)
2019030304369	2019	KOICA		2019158186	캄보디아에 정보통신기술 관련 WFK-대한민국 IT봉사단 파견	IT Volunteers in Cambodia for Information and communication technology (ICT)
2019030204313	2019	KOICA		2019158185	캄보디아에 정보통신기술 관련 WFK-과학기술지원단 파견	Techno Volunteers in Cambodia for Information and communication technology (ICT)
2019030101984	2019	KOICA		2019158184	캄보디아에 정보통신기술 관련 NGO봉사단 파견	NGO Volunteers in Cambodia for Information and communication technology (ICT)
2018030155443	2018	KOICA		2018123315	캄보디아에 정보통신기술 관련 NGO봉사단 파견	NGO Volunteers in Cambodia for Information and communication technology (ICT)
2018030754978	2018	KOICA		2018125446	캄보디아에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Cambodia for Information and communication technology (ICT)
2018030356163	2018	KOICA		2018125197	캄보디아에 정보통신기술	IT Volunteers in Cambodia for Information and communication

					관련 WFK-대한민국 IT봉사단 파견	technology (ICT)
2018030255962	2018	KOICA		2018124645	캄보디아에 정보통신기술 관련 WFK-과학기술지원단 파견	Techno Volunteers in Cambodia for Information and communication technology (ICT)
2018030747234	2017	KOICA		2017078101	캄보디아에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Cambodia for Information and communication technology (ICT)
2018030241911	2017	KOICA		2017077899	캄보디아에 정보통신기술 관련 WFK-과학기술지원단 파견	Techno Volunteers in Cambodia for Information and communication technology (ICT)
2016070367970_004	2016	KOICA		2016031086	석사학위-전기전자공학 및 ICT 융합기반 창업역량 강화(`16-`17)	Master's Degree Program in Techno-Entrepreneurship Competency based on EE&ICT Convergence
2016070367969_004	2016	KOICA		2016031073	석사학위-글로벌 ICT 융합(`16-`17)	Master's Degree Program in Global ICT Convergence with Management and Public Policy
2016KOICA-V343	2016	KOICA		2016002347	캄보디아에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Cambodia for Information and communication technology
2015070319531_020	2015	KOICA		2015016067	석사학위 - 글로벌 ICT 융합(15-16)	Global ICT Convergence Master’s Degree Program
2015070319289	2015	KOICA		2015014997	캄보디아 CDC 데이터베이스 운영관리(13-15)	Data Administration and Maintenance for staff of the Cambodia Rehabi

2015070319251	2015	KOICA		2015014960	캄보디아 상원 정보통신 교육(13-15)	Information Technology Training Programs for the staff of the Senate of
2015KOICA-V903	2015	KOICA		2015017109	봉사단파견_WFK-퇴직전문가_캄보디아 _22040_T4_N4_M4_F0	Dispatch of Volunteers_Senior_Cambodia_22040_T4_N4_M4_F0
2015KOICA-V340	2015	KOICA		2015016546	봉사단파견_해외봉사단_캄보디아 _22040_T16_N4_M5_F11	Dispatch of Volunteers_KOICA_Cambodia_22040_T16_N4_M5_F11
2018030655847	2018	KOICA		2018124827	캄보디아에 라디오/ 텔레비전/ 인쇄 매체 관련 WFK-퇴직전문가 파견	Senior Volunteers in Cambodia for Radio/television/print media
2018030641991	2017	KOICA		2017077961	캄보디아에 라디오/텔레비전/인쇄매체 관련 WFK-퇴직전문가 파견	Senior Volunteers in Cambodia for Radio/television/print media
2016KOICA-V907	2016	KOICA		2016029818	캄보디아에 라디오/ 텔레비전/ 인쇄 매체? 관련 WFK-퇴직전문가 파견	Senior Volunteers in Cambodia for Radio/television/print media
201911111744	2019	Ministry of Strategy and Finance		2019130494	(19/20 KSP 건설인프라 정책자문III) 캄보디아 2020년 디지털 방송 전환 준비를 위한 주파수 관리 강화방안	(19/20 KSP Policy Consultation III) Digital Switch Over in Cambodia in 2020

2018040154890	2018	KOICA		2018123654	기상위성자료 활용능력 향상과정(2016-2018) 3차년도	Improvement of Meteorological Satellite Data Analysis and Application Capacity
201919111147_040	2019	Ministry of Science and Technology Information and Communication		2019162200	2019년 개도국 정보통신방송전문가 초청연수	ICT Expert Training Program
201719100911_003	2019	Ministry of Science and Technology Information and Communication		2019130155	2019년 개도국 정보통신방송 정책자문 사업	ICT Development Consultation Program
201719100856_002	2019	Ministry of Science and Technology Information and Communication		2019130121	2019년 해외IT정책결정자 협력채널 운영	Korea IT Learning Program
20151810029_007	2015	(Former) Ministry of Science, ICT and Future Planning		2015007776	2015 개도국 정보통신방송 정책자문 및 협력사업	ICT Development Consultation Program
2012050063626	2015	KOICA		2012016785	캄보디아 ICT 마스터플랜	The Establishment of Cambodia’s ICT Masterplan

					수립사업 (12-14/200만불)	
2017040150406	2017	KOICA		2017078362	SLA 구상 이행을 위한 감염병 관리 전문인력 양성 (1)	Infectious Disease Field Management Training Program for Safe Life for All
20141470003	2016	Local Province (Ullsan)		2016005982	자매우호도시 의료진 초청 연수	Providing training program to medical professionals of sister and friendship cities
20151600012_005	2015	Local Province (Busan)		2015008005	자매도시 관계자 초청 국제 연수 - 의료	Busan Sister Cities Medical Training Program
201919110985_004	2019	Ministry of Science and Technology Information and Communication		2019130131	국제환경연구소 개도국 지원 프로그램	The aid program of the International Environmental Research Institute for developing countries
201917911789_007	2019	Ministry of Agriculture, Food and Rural Affairs		2019130532	아시아 개도국 농산물 안전성 관련 관계관 초청연수	Seminar on agricultural products safety management in Asia
201917911134_004	2019	Ministry of Agriculture, Food and Rural Affairs		2019130601	아시아 종자산업 발전을 위한 역량강화 연수	Asia Seed Industry Development Training
201817904044_005	2018	Ministry of Agriculture, Food and Rural Affairs		2018128148	아시아 개도국 농산물 안전성 관련 관계관 초청연수	Seminar on agricultural products safety management in Asia

201717900352_006	2018	Ministry of Agriculture, Food and Rural Affairs		2018128136	아시아 종자산업 발전을 위한 역량강화 연수	Asia Seed Industry Development Training
20161790123_007	2016	Ministry of Agriculture, Food and Rural Affairs		2016005080	아시아 종자산업 발전을 위한 역량강화 연수	Asia Seed Industry Development Training
20141790030_011	2016	Ministry of Agriculture, Food and Rural Affairs		2016009199	아시아 개도국 안전성관련 관계관 초청연수	Seminar on agricultural products safety management in Asia
20151790064_004	2015	Ministry of Agriculture, Food and Rural Affairs		2015007458	ICT 기반 농업생산성 향상 사업	ICT d improvement livelihoods of the poorest on rural areas
20131790004_012	2015	Ministry of Agriculture, Food and Rural Affairs		2015007307	아시아 종자산업 발전을 위한 역량강화 연수	Training for Seed Industry Development in Asian Countries
20141790030_009	2015	Ministry of Agriculture, Food and Rural Affairs		2015007217	아시아 개도국 안전성관련 관계관 초청연수	Seminar on agricultural products safety management in Asia
2018040149684	2018	KOICA		2018123431	(전남) 친환경 농업기술 (`16-`18), 3차년도	A training workshop on Eco-friendly Agricultural technology
2017040155294	2017	KOICA		2017078395	(전남) 친환경 농업기술	A training workshop on Eco-friendly Agricultural technology
2016070367972_016	2016	KOICA		2016031118	석사학위-식량안보 및 농업	Master's Degree Program in Food Security and Agricultural Development

					기술역량강화(`16-`17)	
2016070367881_010	2016	KOICA		2016003059	(전남) 친환경 농업기술	Eco-friendly Agricultural Technique Improvement
201916066217	2019	Local Province (Busan)		2019162946	스마트 농업 연수	Training for smart agriculture
201716000526_006	2017	Local Province (Busan)		2017083957	ODA 관계자 초청 연수	Busan International Training Program
20161600007_004	2016	Local Province (Busan)		2016005791	2016 ODA관계자 초청 국제연수[농업]	Busan International Training Program 2016
20161270004_006	2016	Local Province (Jeollanam-do)		2016005993	친환경 농업기술 연수	Eco-friendly agricultural technique improvement
2018030241914	2017	KOICA		2017077902	캄보디아에 농업 연구 관련 WFK-과학기술지원단 파견	Techno Volunteers in Cambodia for Agricultural research
2016140000029	2016	Ministry of Foreign Affairs		2016008602	캄보디아 감자생산기술 향상 연구역량 강화(2016/280백만원/APP 1-1/단국대학교 천안캠퍼스 산학협력단)	Improving Research Capacity for Potato Production Technology in Cambodia
201916066221	2019	Local Province (Busan)		2019162950	해양수산 연수	Training for marine fisheries
2019010100064	2019	KOICA		2019133137	캄보디아 산학연계 비즈니스 인큐베이팅 체계 구축 사업(`19-`23/700만불)	Establishment of IT based Job Incubation Center in Cambodia
2018040151905	2018	KOICA		2018124184	중소기업 정책 역량강화 과정(ASEAN 중동 CIS/`17-	SME Policy Sharing

					`19/2차년도)	
2017040153734	2017	KOICA		2017078386	중소기업 정책 역량강화(중동CIS)	SME Policy Sharing Program
201918011288	2019	Ministry of Trade, Industry and Energy		2019130836	캄보디아 식품가공 분야 생산현장 애로기술지도	Technology Advice and Solutions from Korea (Cambodia-Food Processing)
201818004042	2018	Ministry of Trade, Industry and Energy		2018128199	캄보디아 식품가공 분야 생산현장 애로기술지도	Technology Advice and Solutions from Korea (Cambodia-Food Processing)
2015140319011	2016	KOICA		2015004779	낙엽 접시 제조 및 기계 보급	Making disposable plate from fallen leaves
2015140319011	2015	KOICA		2015017148	낙엽 접시 제조 및 기계 보급	Making disposable plate from fallen leaves
2018030256111	2018	KOICA		2018124677	캄보디아에 농수산물 가공업 관련 WFK-과학기술지원단 파견	Techno Volunteers in Cambodia for Agro-industries
2016070367952_07	2016	KOICA		2016030853	IAEA 공동연수 - 방사성동위원소 및 방사선 기술 활용 역량강화	KOICA-IAEA Joint Training Program - Fundamentals of Radioisotopes and Ra
2018030256112	2018	KOICA		2018124678	캄보디아에 엔지니어링(기계공업) 관련 WFK-과학기술지원단 파견	Techno Volunteers in Cambodia for Engineering

2018040152327	2019	KOICA		2018124625	석사학위-과학기술융합(2018)	Master`s Degree Program in Convergence Science and Technology for ASEAN Government Officials(2018)
2018040152184	2019	KOICA		2018124419	석사학위-전자 및 ICT융합 기반 창업역량강화(2018)	Master`s Degree Program in Techno-Entrepreneurship Competency Based on EE-ICT Convergence(2018)
2018040152327	2018	KOICA		2018124625	석사학위-과학기술융합(2018)	Master`s Degree Program in Convergence Science and Technology for ASEAN Government Officials(18-20)
2018040152184	2018	KOICA		2018124419	석사학위-전자 및 ICT융합 기반 창업역량강화(2018)	Master`s Degree Program in Techno-Entrepreneurship Competency Based on EE-ICT Convergence(`18-`20)
2017040157427	2017	KOICA		2017078413	기상위성자료 활용 능력 향상	Improvement of Meteorological Satellite data Analysis and Application Competence
2018030241917	2017	KOICA		2017077905	캄보디아에 환경연구 관련 WFK-과학기술지원단 파견	Techno Volunteers in Cambodia for Environmental research
201914611451_011	2019	Ministry of Food and Drug Safety		2019162295	아시아 개도국 농축수산물 안전관리 역량강화	Enhancing Safety Management Competence of Agro-Livestock and Fishery Products for Asian Developing Countries
2019030204315	2019	KOICA		2019158179	캄보디아에 연구/ 과학연구소 관련 WFK-과학기술지원단 파견	Techno Volunteers in Cambodia for Research/scientific institutions
2018040154848	2018	KOICA		2018124026	과학기술 전략 개발(2018)	High Level STI Policy and Strategy Development(2018)

2018030255970	2018	KOICA		2018125010	캄보디아에 연구/ 과학연구소 관련 WFK-과학기술지원단 파견	Techno Volunteers in Cambodia for Research/scientific institutions
2016KOICA-V856	2016	KOICA		2016004134	캄보디아에 연구/ 과학연구소 관련 WFK-과학기술지원단 파견	Techno Volunteers in Cambodia for Research/scientific institutions
2016KOICA-V348	2016	KOICA		2016002352	캄보디아에 연구/ 과학연구소 관련 해외봉사단 파견	KOICA Volunteers in Cambodia for Research/scientific institutions
2015070319294	2015	KOICA		2015015002	캄보디아 국가 과학기술 정책, 기획 및 전담기구 운영 관리	Science and Technology Policy, Planning, and Management of National Rese
201916811068	2019	Office of Government Policy Coordination		2019130393	국제기술혁신협력사업 (캄보디아)	K-innovation ODA program (Cambodia)
201816804206	2018	Office of Government Policy Coordination		2018127911	국제기술혁신협력사업 (캄보디아)	K-Innovation ODA program (Cambodia)
201718100170_04	2017	Ministry of Science and Technology Information and Communication		2017084234	2017년 개도국과학기술지원사업(기관간 과학기술협력)	(2017) Scientific and Technological Support Program for Developing Countries (Institute Cooperation)

Appendix 2. Total ICT ODA projects collected : Indonesia

Project Number	Reported Year	Reported Institution	Recipient Country	CRS Code	Project Name(Korean)	Project Name(English)
2018040152115	2019	**KOICA**	Indonesia	2018124432	석사학위-정보통신정책 역량강화(2018)	Master`s Degree Program in Information and Communication(2018)
2017040139051	2019	KOICA		2017078455	석사학위-정보통신정책 역량강화(2017)	Master`s Degree Program in Information and Communication(2017)
2018040152115	2018	KOICA		2018124432	석사학위-정보통신정책 역량강화(2018)	Master`s Degree Program in Information and Communication(2018)
2017040139051	2018	KOICA		2017078455	석사학위-정보통신정책 역량강화(2017)	Master`s Degree Program in Information and Communication(2017)
2017040139051	2017	KOICA		2017078455	석사학위-정보통신정책 역량강화	Master`s Degree Program in Information and Communication
20151810029_006	2015	(Former) Ministry of Science, ICT and Future Planning		2015007824	2015 개도국 정보통신방송 정책자문 및 협력사업	ICT Development Consultation Program
201919111147_041	2019	Ministry of Science and Technology Information		2019162199	2019년 개도국 정보통신 방송전문가 초청연수	ICT Expert Training Program

		and Communication				
2019040103725	2019	KOICA		2019157762	자연재해 조기경보시스템	Early Warning System for Natural Disasters
2019040101397	2019	KOICA		2019157310	ICT를 이용한 기상업무 향상과정	Information and Communication Technologies for Meteorological Services
2019030701519	2019	KOICA		2019158124	인도네시아에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Indonesia for Information and communication technology (ICT)
2019030401937	2019	KOICA		2019158123	인도네시아에 정보통신기술 관련 WFK-중장기자문단 파견	Advisors Volunteers in Indonesia for Information and communication technology (ICT)
2019030303081	2019	KOICA		2019158122	인도네시아에 정보통신기술 관련 WFK-대한민국 IT봉사단 파견	IT Volunteers in Indonesia for Information and communication technology (ICT)
2018040151729	2018	KOICA		2018123980	ICT를 이용한 기상업무 향상과정	Information and Communication Technologies for Meteorological Services
2018030356164	2018	KOICA		2018124977	인도네시아에 정보통신기술 관련 WFK-대한민국 IT봉사단 파견	IT Volunteers in Indonesia for Information and communication technology (ICT)
2018030455764	2018	KOICA		2018124712	인도네시아에 정보통신기술 관련 WFK-중장기자문	Advisors Volunteers in Indonesia for Information and communication technology (ICT)

					단 파견	
2018030754992	2018	KOICA		2018124190	인도네시아에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Indonesia for Information and communication technology (ICT)
2017040151548	2017	KOICA		2017078379	ICT를 이용한 기상업무향상과정(아시아)	Information and Communication Technologies for Meteorological Services
2018030747250	2017	KOICA		2017078113	인도네시아에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Indonesia for Information and communication technology (ICT)
2016KOICA-V357	2016	KOICA		2016002318	인도네시아에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Indonesia for Information and communication technology
2015070319531_017	2015	KOICA		2015016068	석사학위 - 글로벌 ICT 융합(15-16)	Global ICT Convergence Master's Degree Program
2015KOICA-V905	2015	KOICA		2015017111	봉사단파견_WFK-퇴직전문가_인도네시아_22040_T1_N0_M1_F0	Dispatch of Volunteers_Senior_Indonesia_22040_T1_N0_M1_F0
2015KOICA-V352	2015	KOICA		2015016558	봉사단파견_해외봉사단_인도네시아_22040_T10_N1_M5_F5	Dispatch of Volunteers_KOICA_Indonesia_22040_T10_N1_M5_F5
06ED00013	2017	EDCF		2006861033	국가정보통신교육원 건립사업	National ICT Human Resources Development Project
10ED00019	2017	EDCF		2010024959	경찰청 무선통신망 구축사업	Integrated Trunked Radio System for Indonesian National Police Project

06ED00013	2018	EDCF		2006861033	국가정보통신교육원 건립 사업	National ICT Human Resources Development Project
10ED00019	2018	EDCF		2010024959	경찰청 무선통신망 구축 사업	Integrated Trunked Radio System for Indonesian National Police Project
IDN-012-2006	2016	EDCF		2006861033	국가정보통신교육원 건립 사업	National ICT Human Resources Development Project
IDN-012-2006	2015	EDCF		2006861033	국가정보통신교육원 건립 사업	National ICT Human Resources Development Project
10ED00019	2019	EDCF		2010024959	경찰청 무선통신망 구축 사업	Integrated Trunked Radio System for Indonesian National Police Project
06ED00013	2019	EDCF		2006861033	국가정보통신교육원 건립 사업	National ICT Human Resources Development Project
20161130028	2016	Local Province (Gyeonggi-do)		2016004257	인도네시아 ICT 융합 신기술 분야 글로벌 인재양성을 위한 역량 강화 초청연수	Special training to foster global human resources in the fields of ICT new technology and convergence technology in Indonesia.
201917011023_005	2019	Ministry of Health and Welfare		2019130745	이종욱 펠로우십 프로그램	Dr LEE Jong-wook Fellowship Program
201917911789_006	2019	Ministry of Agriculture, Food and Rural Affairs		2019130533	아시아 개도국 농산물 안전성 관련 관계관 초청연수	Seminar on agricultural products safety management in Asia

201717900183_001	2017	Ministry of Agriculture, Food and Rural Affairs		2017084145	아시아 개도국 농산물 안전성 관련 관계관 초청연수	Seminar on agricultural products safety management in Asia
20141790030_009	2016	Ministry of Agriculture, Food and Rural Affairs		2016005040	아시아 개도국 안전성관련 관계관 초청연수	Seminar on agricultural products safety management in Asia
20141790030_012	2015	Ministry of Agriculture, Food and Rural Affairs		2015007323	아시아 개도국 안전성관련 관계관 초청연수	Seminar on agricultural products safety management in Asia
201911511264	2019	Korea Forest Service		2019130792	국제임업연구센터(CIFOR) 부담금	Providing Mandatory Contribution for CIFOR
201811504022	2018	Korea Forest Service		2018127661	국제임업연구센터(CIFOR) 부담금	Providing Mandatory Contribution for CIFOR
201711500253	2017	Korea Forest Service		2017083729	국제임업연구센터(CIFOR) 부담금	CIFOR and NIFoS collaborative research on Socio-economic and environmental outcomes of Bioenergy Production on Degraded Land Indonesia
201818204431_002	2018	Ministry of Oceans and Fisheries		2018128240	연안도서국 수산기술교육 및 정책연수과정	Fisheries Education Technology Policy Training Program
201718200272_003	2017	Ministry of Oceans and Fisheries		2017084269	연안도서국 수산기술교육 및 정책연수과정	Fisheries Education Technology Policy Training Program
201718000808	2017	Ministry of Trade, Industry and		2017084221	인도네시아 공작기계 테크니컬센터 설립 지원 타	FS for Indonesian Machine Tools Technical Center Establishment Support

		Energy			당성조사	
20151800015	2015	Ministry of Trade, Industry and Energy		2015008096	산업자원협력개발지원사업	Industrial Technology ODA Program
2019030701520	2019	KOICA		2019158119	인도네시아에 엔지니어링(기계공업) 관련 해외봉사단 파견	KOICA Volunteers in Indonesia for Engineering
2019030701132	2018	KOICA		2018123267	인도네시아에 엔지니어링(기계공업) 관련 해외봉사단 파견	KOICA Volunteers in Indonesia for Engineering
2016070367895_04	2016	KOICA		2016003207	제조업 생산성과 효율향상을 위한 생산공학기술	Production engineering technology for improving manufacturing productivity
201918011294	2019	Ministry of Trade, Industry and Energy		2019130832	인도네시아 공작기계 테크니컬센터 설립 지원	Project for establishment of machine tools technical center in Indonesia
201718005501	2017	Ministry of Trade, Industry and Energy		2017064601	ASEAN(태국, 인도네시아) 금형분야 생산현장 애로기술지도	Technology Advice and Solutions from Korea (ASEAN: Thailand, Indonesia - Dying and Molding)
2019030701521	2019	KOICA		2019158117	인도네시아에 수송기계 산업 관련 해외봉사단 파견	KOICA Volunteers in Indonesia for Transport equipment industry

2019030700838	2018	KOICA		2018123808	인도네시아에 수송기계 산업 관련 해외봉사단 파견	KOICA Volunteers in Indonesia for Transport equipment industry
2018030747254	2017	KOICA		2017078117	인도네시아에 수송기계 산업 관련 해외봉사단 파견	KOICA Volunteers in Indonesia for Transport equipment industry
2016KOICA-V361	2016	KOICA		2016002322	인도네시아에 수송기계 산업? 관련 해외봉사단 파견	KOICA Volunteers in Indonesia for Transport equipment industry
2018040152328	2019	KOICA		2018124624	석사학위-과학기술융합(2018)	Master`s Degree Program in Convergence Science and Technology for ASEAN Government Officials(2018)
2017040149921	2019	KOICA		2017078472	석사학위-과학기술융합(2017)	Master`s Degree Program in Convergence Science and Technology for ASEAN Government Officials(2017)
2018040152328	2018	KOICA		2018124624	석사학위-과학기술융합(2018)	Master`s Degree Program in Convergence Science and Technology for ASEAN Government Officials(18-20)
2017040149921	2018	KOICA		2017078472	석사학위-아세안 과학기술융합(2017)	Master`s Degree Program in Convergence Science and Technology for ASEAN Government Officials(17-19)
2018030241919	2017	KOICA		2017077907	인도네시아에 기술연구개발 관련 WFK-과학기술지	Techno Volunteers in Indonesia for Technological research and development

					원단 파견	
2017040149921	2017	KOICA		2017078472	석사학위- 아세안 과학기술융합(`17-`19)	Master`s Degree Program in Convergence Science and Technology for ASEAN Government Officials(17-19)
2012010063080	2016	KOICA		2012016801	인도네시아 섬유품질표준 및 품질보증검사 기술협력사업(`12-`14/150만불)	Technical cooperation for establishing Textile quality standard
2012010063080	2015	KOICA		2012016801	인도네시아 섬유품질표준 및 품질보증검사 기술협력사업(12-14/150만불)	Technical cooperation for establishing Textile quality standard
201812403817_07	2018	Korea Meteorological Administration		2018127784	기상예보관 과정	International Training Course on Weather Forecasting for Operational Meteorologists
201812403816_005	2018	Korea Meteorological Administration		2018127774	기상레이더 자료활용능력 향상 과정	International Training Course on Weather Radar Data Utilization
201918211060	2019	Ministry of Oceans and Fisheries		2019138422	인도네시아 해양쓰레기 관리 개선 사업	Strengthening and Improvement for marine litter management of Indonesia
201918211208	2019	Ministry of Oceans and Fisheries		2019138424	인도네시아 치르본의 해양 및 연안 기초조사와	Ocean and Coastal Basic Survey and Capacity Enhancement in Cirebon, Indonesia

					역량강화 사업	
201913810977_002	2019	Ministry of Culture, Sports and Tourism		2019130707	문화예술교육 ODA	Arts and Culture Education ODA
201914611451_010	2019	Ministry of Food and Drug Safety		2019162296	아시아 개도국 농축수산물 안전관리 역량강화	Enhancing Safety Management Competence of Agro-Livestock and Fishery Products for Asian Developing Countries
201916811065	2019	Office of Government Policy Coordination		2019130382	국제기술혁신협력사업 (인도네시아)	K-Innovation ODA Program (Indonesia)
201816804203	2018	Office of Government Policy Coordination		2018127910	국제기술혁신협력사업 (인도네시아)	K-Innovation ODA Program (Indonesia)
2018040154849	2018	KOICA		2018124196	과학기술 전략 개발(2018)	High Level STI Policy and Strategy Development(2018)
201718100170_01	2017	Ministry of Science and Technology Information and Communication		2017084235	2017년 개도국과학기술지원사업(기관간 과학기술협력)	(2017) Scientific and Technological Support Program for Developing Countries (Institute Cooperation)

Appendix 3. Total ICT ODA projects collected : Lao

Project	Reported	Reported	Recipient	CRS Code	Project	Project

Number	Year	Institution	Country		Name(Korean)	Name(English)
2019040103045	2019	KOICA	Lao	2019155545	석사학위-정보통신정책 역량강화(2019)	Master`s Degree Program in Global ICT Policy(2019)
2019030605064	2019	KOICA		2019154330	라오스에 통신 정책 및 행정 관리 관련 WFK-퇴직전문가 파견	Senior Volunteers in Laos for Communications policy and administrative management
2018030656191	2018	KOICA		2018125358	라오스에 통신 정책 및 행정 관리 관련 WFK-퇴직전문가 파견	Senior Volunteers in Laos for Communications policy and administrative management
LAO-009-2011	2016	EDCF		2011001111	라오스 조세정보시스템 구축사업	Establishment of Tax Revenue Information System Project
11ED00012	2017	EDCF		2011001111	라오스 조세정보시스템 구축사업	Establishment of Tax Revenue Information System Project
LAO-009-2011	2015	EDCF		2011001111	라오스 조세정보시스템 구축사업	Establishment of Tax Revenue Information System Project
201919111147_047	2019	Ministry of Science and Technology Information and Communication		2019162193	2019년 개도국 정보통신 방송전문가 초청연수	ICT Expert Training Program
20161810058_004	2018	Ministry of Science and		2018128286	2018년 개도국 정보통신	ICT Development Consultation Program in 2018

		Technology Information and Communication			방송 정책자문	
20151810029_005	2016	(Former) Ministry of Science, ICT and Future Planning		2016005699	2016 개도국 정보통신방송 정책자문 및 협력사업	ICT Development Consultation Program
2018040154892	2018	KOICA		2018123655	기상위성자료 활용능력 향상과정(2016-2018) 3차년도	Improvement of Meteorological Satellite Data Analysis and Application Capacity
2019030705128	2019	KOICA		2019154298	라오스에 라디오/ 텔레비젼/ 인쇄 매체 관련 해외봉사단 파견	KOICA Volunteers in Laos for Radio/television/print media
2019040102546	2019	KOICA		2019131930	국가 측량 및 공간 정보 기관 역량강화	Capacity building for national surveying & mapping organization
2019040101398	2019	KOICA		2019157311	ICT를 이용한 기상업무 향상과정	Information and Communication Technologies for Meteorological Services
2019030701550	2019	KOICA		2019154323	라오스에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Laos for Information and communication technology (ICT)
2019030604263	2019	KOICA		2019154322	라오스에 정보통신기술 관련 WFK-퇴직전문가 파	Senior Volunteers in Laos for Information and communication technology (ICT)

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2019030304370	2019	KOICA		2019154321	라오스에 정보통신기술 관련 WFK-대한민국 IT봉사단 파견	IT Volunteers in Laos for Information and communication technology (ICT)
2019030204320	2019	KOICA		2019154320	라오스에 정보통신기술 관련 WFK-과학기술지원단 파견	Techno Volunteers in Laos for Information and communication technology (ICT)
2019030102008	2019	KOICA		2019154319	라오스에 정보통신기술 관련 NGO봉사단 파견	NGO Volunteers in Laos for Information and communication technology (ICT)
2018030653879	2018	KOICA		2018125154	라오스에 정보통신기술 관련 WFK-퇴직전문가 파견	Senior Volunteers in Laos for Information and communication technology (ICT)
2018030356069	2018	KOICA		2018124972	라오스에 정보통신기술 관련 WFK-대한민국 IT봉사단 파견	IT Volunteers in Laos for Information and communication technology (ICT)
2018030155481	2018	KOICA		2018123549	라오스에 정보통신기술 관련 NGO봉사단 파견	NGO Volunteers in Laos for Information and communication technology (ICT)
2018040151730	2018	KOICA		2018123605	ICT를 이용한 기상업무 향상과정	Information and Communication Technologies for Meteorological Services
2018030755024	2018	KOICA		2018125448	라오스에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Laos for Information and communication technology (ICT)

2017040151549	2017	KOICA		2017078380	ICT를 이용한 기상업무향상과정(아시아)	Information and Communication Technologies for Meteorological Services
2018030747288	2017	KOICA		2017078145	라오스에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Laos for Information and communication technology (ICT)
2018030641994	2017	KOICA		2017077943	라오스에 정보통신기술 관련 WFK-퇴직전문가 파견	Senior Volunteers in Laos for Information and communication technology (ICT)
2018030241923	2017	KOICA		2017077911	라오스에 정보통신기술 관련 WFK-과학기술지원단 파견	Techno Volunteers in Laos for Information and communication technology (ICT)
2016KOICA-V375	2016	KOICA		2016002069	라오스에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Laos for Information and communication technology
2015070319531_012	2015	KOICA		2015016069	석사학위 - 글로벌 ICT 융합(15-16)	Global ICT Convergence Master's Degree Program
2015070319278	2015	KOICA		2015014986	라오스 청년동맹 IT분야 역량강화	IT Capacity Building for Central Lao Youth Union (Laos)
201919110985_003	2019	Ministry of Science and Technology Information and Communication		2019130132	국제환경연구소 개도국 지원 프로그램	The aid program of the International Environmental Research Institute for developing countries

201917911789_005	2019	Ministry of Agriculture, Food and Rural Affairs		2019130534	아시아 개도국 농산물 안전성 관련 관계관 초청연수	Seminar on agricultural products safety management in Asia
201817904044_007	2018	Ministry of Agriculture, Food and Rural Affairs		2018128149	아시아 개도국 농산물 안전성 관련 관계관 초청연수	Seminar on agricultural products safety management in Asia
201817904044_007	2018	Ministry of Agriculture, Food and Rural Affairs		2018128149	아시아 개도국 농산물 안전성 관련 관계관 초청연수	Seminar on agricultural products safety management in Asia
20141790030_010	2016	Ministry of Agriculture, Food and Rural Affairs		2016005042	아시아 개도국 안전성관련 관계관 초청연수	Seminar on agricultural products safety management in Asia
20141790030_007	2015	Ministry of Agriculture, Food and Rural Affairs		2015007325	아시아 개도국 안전성관련 관계관 초청연수	Seminar on agricultural products safety management in Asia
2018040148701	2018	KOICA		2018123772	(전남) 친환경 농업기술(`16-`18), 3차년도	A training workshop on Eco-friendly Agricultural technology
2017040155295	2017	KOICA		2017078396	(전남) 친환경 농업기술	A training workshop on Eco-friendly Agricultural technology
2016070367881_005	2016	KOICA		2016003067	(전남) 친환경 농업기술	Eco-friendly Agricultural Technique Improvement
2015070319526_005	2015	KOICA		2015015989	석사학위과정- 식량안보 및 농업기술 역량강화(15-	Master’s Degree Program on Food Security and Agricultural Development(15

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201916066219	2019	Local Province (Busan)		2019162948	스마트 농업 연수	Training for smart agriculture
201716000526_005	2017	Local Province (Busan)		2017083958	ODA 관계자 초청 연수	Busan International Training Program
20161600007_003	2016	Local Province (Busan)		2016005842	2016 ODA관계자 초청 국제연수[농업]	Busan International Training Program 2016
20161270004_003	2016	Local Province (Jeollanam-do)		2016036840	친환경 농업기술 연수	Eco-friendly agricultural technique improvement
2018040154865	2018	KOICA		2018124024	수산동물 질병관리 및 생산단계 수산물 안전관리 (2018-2020)	Aquatic Animal Disease Control and Safety Management of Fisheries Products in the Production Stage
2016070367952_04	2016	KOICA		2.02E+09	IAEA 공동연수 - 방사성동위원소 및 방사선 기술 활용 역량강화	KOICA-IAEA Joint Training Program - Fundamentals of Radioisotopes and Ra
2016070367895_02	2016	KOICA		2016003197	제조업 생산성과 효율향상을 위한 생산공학기술	Production engineering technology for improving manufacturing productivity
201918066155	2019	Ministry of Trade, Industry and Energy		2019162884	산업개발협력기획_라오스 통합의료기기 원격 서비스센터 구축사업 사전기획	Preliminary Feasibility Study for Establishment of Remote Service Center in Laos

2019030604266	2019	KOICA		2019154290	라오스에 기술연구 개발 관련 WFK-퇴직전문가 파견	Senior Volunteers in Laos for Technological research and development
2018040152331	2019	KOICA		2018124620	석사학위-과학기술융합(2018)	Master`s Degree Program in Convergence Science and Technology for ASEAN Government Officials(2018)
2018040152189	2019	KOICA		2018124416	석사학위-전자 및 ICT융합기반 창업역량강화(2018)	Master`s Degree Program in Techno-Entrepreneurship Competency Based on EE-ICT Convergence(2018)
2018040152331	2018	KOICA		2018124620	석사학위-과학기술융합(2018)	Master`s Degree Program in Convergence Science and Technology for ASEAN Government Officials(18-20)
2018040152189	2018	KOICA		2018124416	석사학위-전자 및 ICT융합기반 창업역량강화(2018)	Master`s Degree Program in Techno-Entrepreneurship Competency Based on EE-ICT Convergence(`18-`20)
2017040157429	2017	KOICA		2017078415	기상위성자료 활용 능력 향상	Improvement of Meteorological Satellite data Analysis and Application Competence
2019019900143	2019	KOICA		2018125085	GGGI 라오스 GCF 능력 배양사업	Strengthening Access to the Green Climate Fund in Lao PDR
2019019900143	2018	KOICA		2018125085	GGGI 라오스 GCF 능력 배양사업	Strengthening Access to the Green Climate Fund in Lao PDR
2018030241926	2017	KOICA		2017077914	라오스에 환경연구 관련 WFK-과학기술지원단 파	Techno Volunteers in Laos for Environmental research

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Appendix 4. Total ICT ODA projects collected : Myanmar

Project Number	Reported Year	Reported Institution	Recipient Country	CRS Code	Project Name(Korean)	Project Name(English)
2019040103046	2019	KOICA	Myanmar	2019155546	석사학위-정보통신정책 역량강화(2019)	Master`s Degree Program in Global ICT Policy(2019)
2018040152121	2019	KOICA		2018124425	석사학위-정보통신정책 역량강화(2018)	Master`s Degree Program in Information and Communication(2018)
2017040149419	2019	KOICA		2017078998	석사학위-정보통신정책 역량강화(2017)	Master`s Degree Program in Information and Communication(2017)
2017040149419	2018	KOICA		2017078998	석사학위-정보통신정책 역량강화(2017)	Master`s Degree Program in Information and Communication(2017)
2018040152121	2018	KOICA		2018124425	석사학위-정보통신정책 역량강화(2018)	Master`s Degree Program in Information and Communication(2018)
2017040149419	2017	KOICA		2017078998	석사학위-정보통신정책 역량강화	Master`s Degree Program in Information and Communication
201919111147_045	2019	Ministry of Science and Technology		2019162195	2019년 개도국 정보통신방송전문가 초청	ICT Expert Training Program

		Information and Communication			연수	
201719100911_004	2019	Ministry of Science and Technology Information and Communication		2019130154	2019년 개도국 정보통신방송 정책자문사업	ICT Development Consultation Program
201719100856_003	2019	Ministry of Science and Technology Information and Communication		2019130120	2019년 해외IT정책결정자 협력채널 운영	Korea IT Learning Program
201718100264	2017	Ministry of Science and Technology Information and Communication		2017084246	개도국 정보통신방송 정책자문(미얀마)	ICT Development Consultation Program with Myanmar
92ED00003	2017	EDCF		2006861020	전화통신망 확충사업	TELECOMMUNICATION NETWORK EXPANSION PROJECT
13ED00009	2018	EDCF		2013002133	IT 인프라네트워크 구축사업	IT Infra-Network Expansion Project
92ED00003	2018	EDCF		2006861	전화통신망 확충사업	TELECOMMUNICATION NETWORK

				020		EXPANSION PROJECT
MYA-001-1992	2016	EDCF		2006861020	전화통신망 확충사업	TELECOMMUNICATION NETWORK EXPANSION PROJECT
MYA-001-1992	2015	EDCF		2006861020	전화통신망 확충사업	TELECOMMUNICATION NETWORK EXPANSION PROJECT
MYA-008-2013	2016	EDCF		2013002133	IT 인프라네트워크 구축사업	IT Infra-Network Expansion Project
13ED00009	2017	EDCF		2013002133	IT 인프라네트워크 구축사업	IT Infra-Network Expansion Project
13ED00009	2019	EDCF		2013002133	IT 인프라네트워크 구축사업	IT Infra-Network Expansion Project
MYA-008-2013	2015	EDCF		2013002133	IT 인프라네트워크 구축사업	IT Infra-Network Expansion Project
2016KOICA-V691	2016	KOICA		2016002493	미얀마에 라디오/ 텔레비젼/ 인쇄 매체 관련 WFK-중장기자문단 파견	Advisors Volunteers in Myanmar for Radio/television/print media
2015KOICA-V691	2015	KOICA		2015016897	봉사단파견_WFK-중장기자문단_미얀마_22030_T2_N1_M2_F0	Dispatch of Volunteers_Advisors_Myanmar_22030_T2_N1_M2_F0
2019040102846	2019	KOICA		2019155499	석사학위-전자 및 ICT융합기반 창업역	Master’s Degree Program in Techno-Entrepreneurship Competency based on EE&ICT Convergence(2019)

					량강화(2019)	
2019040102548	2019	KOICA		2019131101	국가 측량 및 공간정보기관 역량강화	Capacity building for national surveying & mapping organization
2019030701581	2019	KOICA		2019154471	미얀마에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Myanmar for Information and communication technology (ICT)
2019030404252	2019	KOICA		2019154470	미얀마에 정보통신기술 관련 WFK-중장기 자문단 파견	Advisors Volunteers in Myanmar for Information and communication technology (ICT)
2018030755056	2018	KOICA		2018125115	미얀마에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Myanmar for Information and communication technology (ICT)
2018030655862	2018	KOICA		2018124478	미얀마에 정보통신기술 관련 WFK-퇴직전문가 파견	Senior Volunteers in Myanmar for Information and communication technology (ICT)
2017040151551	2017	KOICA		2017078909	ICT를 이용한 기상업무향상과정(아시아)	Information and Communication Technologies for Meteorological Services
2018030747340	2017	KOICA		2017078694	미얀마에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Myanmar for Information and communication technology (ICT)
2016070367969_01	2016	KOICA		2016031	석사학위-글로벌 ICT	Master's Degree Program in Global ICT

7				072	융합(`16-`17)	Convergence with Management and Public Policy
2016KOICA-V285	2016	KOICA		2016002142	미얀마에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Myanmar for Information and communication technology
2015KOICA-V901	2015	KOICA		2015017107	봉사단파견_WFK-퇴직전문가_미얀마_22040_T1_N0_M1_F0	Dispatch of Volunteers_Senior_Myanmar_22040_T1_N0_M1_F0
2015KOICA-V281	2015	KOICA		2015016487	봉사단파견_해외봉사단_미얀마_22040_T11_N0_M7_F4	Dispatch of Volunteers_KOICA_Myanmar_22040_T11_N0_M7_F4
2015070319531_002	2015	KOICA		2015016064	석사학위 - 글로벌 ICT 융합(15-16)	Global ICT Convergence Master’s Degree Program
201919111150	2019	Ministry of Science and Technology Information and Communication		2019130124	2019년 K-Lab 운영 지원 사업(K-Lab Operation Program for developing countries in 2019)	K-Lab Operation Program for developing countries in 2019
201819107443	2018	Ministry of Science and Technology Information and		2018128312	2018년 K-lab 운영 지원 사업	K-Lab Setup and Operation Program for developing countries in 2018

		Communication				
20161810045	2017	Ministry of Science and Technology Information and Communication		2017083522	2017년 K-lab 운영 지원 사업	K-Lab Operation Program for developing countries in 2017
20161810039	2016	(Former) Ministry of Science, ICT and Future Planning		2016005554	개도국 K-Lab 설치 및 운영	K-Lab Setup and Operation Program for developing countries
201917911134_010	2019	Ministry of Agriculture, Food and Rural Affairs		2019130595	아시아 종자산업 발전을 위한 역량강화 연수	Asia Seed Industry Development Training
201717900352_003	2018	Ministry of Agriculture, Food and Rural Affairs		2018128132	아시아 종자산업 발전을 위한 역량강화 연수	Asia Seed Industry Development Training
201717900079	2017	Ministry of Agriculture, Food and Rural Affairs		2017084144	미얀마 종자품질인증 기술 역량강화 사업	Capacity Building for Seed Quality Assurance System of Rice in Myanmar
20161790124	2016	Ministry of		2016004	미얀마 종자품질 인	Capacity Building for Seed Quality Assurance

		Agriculture, Food and Rural Affairs		975	증기술 역량강화 사업	System of Rice in Myanmar
20161790123_008	2016	Ministry of Agriculture, Food and Rural Affairs		2016004967	아시아 종자산업 발전을 위한 역량강화 연수	Asia Seed Industry Development Training
20151790056	2015	Ministry of Agriculture, Food and Rural Affairs		2015007204	미얀마 종자품질 인증기술 역량강화 사업	Capacity Building for Seed Quality Assurance System of Rice in Myanmar
2018040148696	2018	KOICA		2018123769	(전남) 친환경 농업기술(`16-`18), 3차년도	A training workshop on Eco-friendly Agricultural technology
2017040155296	2017	KOICA		2017078931	(전남) 친환경 농업기술	A training workshop on Eco-friendly Agricultural technology
2016070367881_011	2016	KOICA		2016003057	(전남) 친환경 농업기술	Eco-friendly Agricultural Technique Improvement
2015070319526_002	2015	KOICA		2015015987	석사학위과정- 식량안보 및 농업기술 역량강화(15-16)	Master’s Degree Program on Food Security and Agricultural Development(15
2015140319060	2015	KOICA		2015014865	미얀마 농업 기술 교육 역량 강화 (2015-	Professional Farmer Training for Improvement of Agricultural Productivity

					2016/666백만원/APP1-2/목포대/phase 3)	
201916066218	2019	Local Province (Busan)		2019162947	스마트 농업 연수	Training for smart agriculture
20161270004_011	2016	Local Province (Jeollanam-do)		2016005988	친환경 농업기술 연수	Eco-friendly agricultural technique improvement
2014010089411	2019	KOICA		2014019173	미얀마 수확후 기술관리연구소 설립사업 (`14-`19/450만불)	The project for the establishment of Post-Harvest Research Institute in Myanmar
2014010089411	2018	KOICA		2014019173	미얀마 수확후 기술관리연구소 설립사업 (`14-`19/450만불)	The project for the establishment of Post-Harvest Research Institute in Myanmar
2014010089411	2017	KOICA		2014019173	미얀마 수확후 기술관리연구소 설립사업 (`14-`18/450만불)	The project for the establishment of Post-Harvest Research Institute in Myanmar
2014010089411	2016	KOICA		2014019173	미얀마 수확후 기술관리연구소 설립사업 (`14-`17/450만불)	The project for the establishment of Post-Harvest Research Institute in Myanmar
2014010089411	2015	KOICA		2014019173	미얀마 수확후 기술관리연구소 설립사업	The project for the establishment of Post-Harvest Research Institute in

					(14-17/450만불)	
2015070319528_002	2015	KOICA		2015016019	석사학위연수-전기전자 및 ICT 융합기반 창업역량강화(15-16)	HGU-KOICA Master's Degree Program in Techno-Entrepreneurship Competency
201818003884	2018	Ministry of Trade, Industry and Energy		2018128194	미얀마 농기계 분야 생산현장 애로기술지도	Technology Advice and Solutions from Korea (Myanmar-Agricultural Machinery)
2016070367952_09	2016	KOICA		2016030850	IAEA 공동연수 - 방사성동위원소 및 방사선 기술 활용 역량강화	KOICA-IAEA Joint Training Program - Fundamentals of Radioisotopes
2016070367895_08	2016	KOICA		2016003198	제조업 생산성과 효율향상을 위한 생산공학기술	Production engineering technology for improving manufacturing productivity
201718000773	2017	Ministry of Trade, Industry and Energy		2017084212	미얀마 농기계 분야 생산현장 애로기술지도	Technology Advice and Solutions from Korea (Myanmar-Agricultural Machinery)
2018040152332	2019	KOICA		2018124621	석사학위-과학기술융합(2018)	Master`s Degree Program in Convergence Science and Technology for ASEAN Government Officials(2018)
2017040149922	2019	KOICA		2017079002	석사학위-과학기술융합(2017)	Master`s Degree Program in Convergence Science and Technology for ASEAN Government Officials(2017)

2017040142279	2019	KOICA		2017078988	석사학위-전기전자공학 및 ICT 융합 기반 창업 역량강화(2017)	Master`s Degree Program in Techno-Entrepreneurship Competency based on EE&ICT Convergence(2017)
2018040152332	2018	KOICA		2018124621	석사학위-과학기술융합(2018)	Master`s Degree Program in Convergence Science and Technology for ASEAN Government Officials(18-20)
2017040149922	2018	KOICA		2017079002	석사학위-아세안 과학기술융합(2017)	Master`s Degree Program in Convergence Science and Technology for ASEAN Government Officials(17-19)
2017040142279	2018	KOICA		2017078988	석사학위-전기전자공학 및 ICT 융합 기반 창업 역량강화(2017)	Master`s Degree Program in Techno-Entrepreneurship Competency based on EE&ICT Convergence
2017040149922	2017	KOICA		2017079002	석사학위- 아세안 과학기술융합(`17-`19)	Master`s Degree Program in Convergence Science and Technology for ASEAN Government Officials(17-19)
2017040142279	2017	KOICA		2017078988	석사학위 - 전기전자공학 및 ICT 융합 기반 창업 역량강화	Master`s Degree Program in Techno-Entrepreneurship Competency based on EE&ICT Convergence
2017040157431	2017	KOICA		2017078943	기상위성자료 활용 능력 향상	Improvement of Meteorological Satellite data Analysis and Application Competence
201812403816_003	2018	Korea Meteorological Administration		2018127771	기상레이더 자료활용 능력 향상 과정	International Training Course on Weather Radar Data Utilization

2018070154138	2019	KOICA		2019132240	미얀마 시각장애인 정보접근 지원 사업 (2019-2021/286백만원/실로암 인터내셔널)	Information Access Project for the Blind in Myanmar
201914611451_006	2019	Ministry of Food and Drug Safety		2019162300	아시아 개도국 농축수산물 안전관리 역량강화	Enhancing Safety Management Competence of Agro-Livestock and Fishery Products for Asian Developing Countries
2016KOICA-V292	2016	KOICA		2016002147	미얀마에 연구/ 과학연구소 관련 해외봉사단 파견	KOICA Volunteers in Myanmar for Research/scientific institutions

Appendix 5. Total ICT ODA projects collected : Philippines

Project Number	Reported Year	Reported Institution	Recipient Country	CRS Code	Project Name(Korean)	Project Name(English)
201919111147_038	2019	Ministry of Science and Technology Information and Communication	Philippines	2019162202	2019 년 개도국 정보통신방송전문가 초청연수	ICT Expert Training Program
2018040154895	2018	KOICA		2018123656	기상위성자료 활용능력 향상 과정(2016-2018) 3차년도	Improvement of Meteorological Satellite Data Analysis and Application Capacity
2013010080971	2016	KOICA		2013016821	필리핀 통신해양기상위성(COMS) 분석시스템 구축사	Establishment of Communication, Ocean, and Meteorological Satellite(COMS) Analysis System in

					업(`13-`16/400만불)	the Philippines
2013010080971	2015	KOICA		2013016821	필리핀 통신해양기상위성(COMS) 분석시스템 구축사업(13-16/400만불)	Establishment of an Integrated Water Resources Management Information System
2019040102854	2019	KOICA		2019155507	석사학위-전자 및 ICT융합기반 창업역량강화(2019)	Master’s Degree Program in Techno-Entrepreneurship Competency based on ICT Convergence(2019)
2019030701605	2019	KOICA		2019158422	필리핀에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Philippines for Information and communication technology (ICT)
2018030755086	2018	KOICA		2018125452	필리핀에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Philippines for Information and communication technology (ICT)
2018030747371	2017	KOICA		2017078183	필리핀에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Philippines for Information and communication technology (ICT)
2016070367970_001	2016	KOICA		2016031088	석사학위-전기전자공학 및 ICT 융합기반 창업역량 강화(`16-`17)	Master's Degree Program in Techno-Entrepreneurship Competency based on EE&ICT Convergence
2016070367969_001	2016	KOICA		2016031075	석사학위-글로벌 ICT 융합(`16-`17)	Master's Degree Program in Global ICT Convergence with Management and Public Policy
2016KOICA-V419	2016	KOICA		2016002446	필리핀에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Philippines for Information and communication technology
2015KOICA-V409	2015	KOICA		2015016615	봉사단파견_해외봉사단_필리핀_22040_T10_N0_M6_F4	Dispatch of Volunteers_KOICA_Philippines_22040_T10_N0_M6_F4

201711106013	2017	Ministry of Strategy and Finance		2017080839	(17/18 KSP 건설인프라 정책자문III) 필리핀 국가브로드밴드 통신망 구축계획 이행을 위한 법,제도 정비 및 수요촉진방안 마련 지원	Support for the Policy and Regulatory Reforms and Demand Stimulation for the Philippines National Broadband Plan
201919110985_002	2019	Ministry of Science and Technology Information and Communication		2019130133	국제환경연구소 개도국 지원 프로그램	The aid program of the International Environmental Research Institute for developing countries
201717900352_002	2018	Ministry of Agriculture, Food and Rural Affairs		2018128139	아시아 종자산업 발전을 위한 역량강화 연수	Asia Seed Industry Development Training
20161790123_001	2016	Ministry of Agriculture, Food and Rural Affairs		2016005100	아시아 종자산업 발전을 위한 역량강화 연수	Asia Seed Industry Development Training
20131790004_010	2015	Ministry of Agriculture, Food and Rural Affairs		2015007205	아시아 종자산업 발전을 위한 역량강화 연수	Training for Seed Industry Development in Asian Countries
2019010100053	2019	KOICA		2019158589	필리핀 GGGI 미마로파 낙후 농촌지역 기후복원력 강화 지원 사업(`19-`21/500만불)	Climate Resilience and Inclusive Green Growth for Poor Rural Communities
2017040155298	2017	KOICA		2017078397	(전남) 친환경 농업기술	A training workshop on Eco-friendly Agricultural technology

2017040157365	2017	KOICA		2017078250	필리핀 농산물 수확후 품질관리	Technical Capability Enhancement on Mechanization and Postharvest Handling of High Value Fruits and Vegetables (Philippines)
2016070367769	2016	KOICA		2016002872	필리핀 농산물 수확후 품질관리	Technical Capability Enhancement on Mechanization and Postharvest Handling
20161270004_001	2016	Local Province (Jeollanam-do)		2016006008	친환경 농업기술 연수	Eco-friendly agricultural technique improvement
2015070319528_008	2015	KOICA		2015016023	석사학위연수-전기전자 및 ICT 융합기반 창업역량강화(15-16)	HGU-KOICA Master's Degree Program in Techno-Entrepreneurship Competency
201918011286	2019	Ministry of Trade, Industry and Energy		2019130811	필리핀 식품가공 분야 생산현장 애로기술지도	Technology Advice and Solutions from Korea (Philippines-Food Processing)
201818004427	2018	Ministry of Trade, Industry and Energy		2018128219	필리핀 식품가공 분야 생산현장 애로기술지도	Technology Advice and Solutions from Korea (Philippines-Food Processing)
201918011295	2019	Ministry of Trade, Industry and Energy		2019130826	필리핀 금형 솔루션센터 조성 지원	Project for establishment of Mold Technology Support Center (MTSC)
2017040149923	2019	KOICA		2017078473	석사학위-과학기술융합(2017)	Master`s Degree Program in Convergence Science and Technology for ASEAN Government Officials(2017)
2017040149923	2018	KOICA		2017078473	석사학위-아세안 과학기술융합(2017)	Master`s Degree Program in Convergence Science and Technology for ASEAN Government Officials(17-19)
2017040149923	2017	KOICA		2017078	석사학위- 아세안 과학기술	Master`s Degree Program in

				473	융합(`17-`19)	Convergence Science and Technology for ASEAN Government Officials(17-19)
2017040157656	2017	KOICA		2017078419	기상위성자료 활용 능력 향상	Improvement of Meteorological Satellite data Analysis and Application Competence
2016070367750	2016	KOICA		2016002817	필리핀 KOICA-GIZ 협력연수-녹색경제개발(2016)	KOICA-GIZ Joint Capacity Development Program - Green Economic Development
201914611451_004	2019	Ministry of Food and Drug Safety		2019162302	아시아 개도국 농축수산물 안전관리 역량강화	Enhancing Safety Management Competence of Agro-Livestock and Fishery Products for Asian Developing Countries

Appendix 6. Total ICT ODA projects collected : Vietnam

Project Number	Reported Year	Reported Institution	Recipient Country	CRS Code	Project Name(Korean)	Project Name(English)
201919111147_043	2019	Ministry of Science and Technology Information and Communication	Vietnam	2019162197	2019 년 개도국 정보통신방송전문가 초청연수	ICT Expert Training Program
201719100911_001	2019	Ministry of Science and Technology Information and Communication		2019130157	2019년 개도국 정보통신방송 정책자문 사업	ICT Development Consultation Program

201719100856_001	2019	Ministry of Science and Technology Information and Communication		2019130122	2019년 해외IT정책결정자 협력채널 운영	Korea IT Learning Program
201718100263	2017	Ministry of Science and Technology Information and Communication		2017084245	개도국 정보통신방송 정책 자문(베트남)	ICT Development Consultation Program with Vietnam
2018030656115	2018	KOICA		2018124843	베트남에 통신 정책 및 행정 관리 관련 WFK-퇴직전문가 파견	Senior Volunteers in Vietnam for Communications policy and administrative management
20151810029_002	2016	(Former) Ministry of Science, ICT and Future Planning		2016005688	2016 개도국 정보통신방송 정책자문 및 협력사업	ICT Development Consultation Program
2018040154897	2018	KOICA		2018123657	기상위성자료 활용능력 향상과정(2016-2018) 3차년도	Improvement of Meteorological Satellite Data Analysis and Application Capacity
07ED00020	2017	EDCF		2007001429	디지털 방송 인프라 확충사업	Supplying Broadcasting and IT Equipment for Multimedia Center Project
07ED00020	2018	EDCF		2007001429	디지털 방송 인프라 확충사업	Supplying Broadcasting and IT Equipment for Multimedia Center Project
VNM-015-2007	2016	EDCF		2007001429	디지털 방송 인프라 확충사업	Supplying Broadcasting and IT Equipment for Multimedia Center Project

VNM-015-2007	2015	EDCF		2007001429	디지털 방송 인프라 확충사업	Supplying Broadcasting and IT Equipment for Multimedia Center Project
07ED00020	2019	EDCF		2007001429	디지털 방송 인프라 확충사업	Supplying Broadcasting and IT Equipment for Multimedia Center Project
2019030705136	2019	KOICA		2019154516	베트남에 라디오/ 텔레비젼/ 인쇄 매체 관련 해외봉사단 파견	KOICA Volunteers in Vietnam for Radio/television/print media
2016KOICA-V751	2016	KOICA		2016002502	베트남에 라디오/ 텔레비젼/ 인쇄 매체? 관련 WFK-중장기자문단 파견	Advisors Volunteers in Viet Nam for Radio/television/print media
2015KOICA-V754	2015	KOICA		2015016960	봉사단파견_WFK-중장기자문단_베트남 _22030_T3_N2_M3_F0	Dispatch of Volunteers_Advisors_Viet Nam_22030_T3_N2_M3_F0
20151810031_002	2016	(Former) Ministry of Science, ICT and Future Planning		2016005700	개도국 방송환경 개선지원	Support the Improvement of the Broadcasting Environment
201819103784_002	2018	Ministry of Science and Technology Information and Communication		2018128289	개도국 방송환경 개선지원	Support the Improvement of the Broadcasting Environment
2019030701644	2019	KOICA		2019154546	베트남에 정보통신기술 관	KOICA Volunteers in Vietnam for Information and communication

					련 해외봉사단 파견	technology (ICT)
2019030303083	2019	KOICA		2019154545	베트남에 정보통신기술 관련 WFK-대한민국 IT봉사단 파견	IT Volunteers in Vietnam for Information and communication technology (ICT)
2019030205104	2019	KOICA		2019154544	베트남에 정보통신기술 관련 WFK-과학기술지원단 파견	Techno Volunteers in Vietnam for Information and communication technology (ICT)
2018030755135	2018	KOICA		2018125118	베트남에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Vietnam for Information and communication technology (ICT)
2018030255996	2018	KOICA		2018124658	베트남에 통신 정책 및 행정 관리 관련 WFK-과학기술지원단 파견	Techno Volunteers in Vietnam for Communications policy and administrative management
2018030356170	2018	KOICA		2018125331	베트남에 정보통신기술 관련 WFK-대한민국 IT봉사단 파견	IT Volunteers in Vietnam for Information and communication technology (ICT)
2018030747428	2017	KOICA		2017078208	베트남에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Viet Nam for Information and communication technology (ICT)
2018030642003	2017	KOICA		2017077947	베트남에 정보통신기술 관련 WFK-퇴직전문가 파견	Senior Volunteers in Viet Nam for Information and communication technology (ICT)
2018030241938	2017	KOICA		2017077922	베트남에 정보통신기술 관련 WFK-과학기술지원단 파	Techno Volunteers in Viet Nam for Information and communication technology (ICT)

					견	
2017040151553	2017	KOICA		2017078382	ICT를 이용한 기상업무향상 과정(아시아)	Information and Communication Technologies for Meteorological Services
2016KOICA-V922	2016	KOICA		2016029827	베트남에 정보통신기술 관련 WFK-퇴직전문가 파견	Senior Volunteers in Viet Nam for Information and communication technology
2016KOICA-V464	2016	KOICA		2016029711	베트남에 정보통신기술 관련 해외봉사단 파견	KOICA Volunteers in Viet Nam for Information and communication technology
2015KOICA-V445	2015	KOICA		2015016651	봉사단파견_해외봉사단_베트남_22040_T5_N0_M5_F0	Dispatch of Volunteers_KOICA_Viet Nam_22040_T5_N0_M5_F0
2015070319531_007	2015	KOICA		2015016071	석사학위 - 글로벌 ICT 융합(15-16)	Global ICT Convergence Master's Degree Program
2015KOICA-V919	2015	KOICA		2015017125	봉사단파견_WFK-퇴직전문가_베트남_22040_T14_N11_M14_F0	Dispatch of Volunteers_Senior_Viet Nam_22040_T14_N11_M14_F0
201718100372	2019	Ministry of Science and Technology Information and Communication		2019130115	2019년 개도국 정보접근센터 구축	Information Access Center
201819104140_005	2018	Ministry of Science and Technology Information and Communication		2018128304	개도국 정보접근센터구축	Information Access Center

20141810020_08	2015	(Former) Ministry of Science, ICT and Future Planning		2015007882	개도국정보접근센터구축	Information Access Center
2017040150407	2017	KOICA		2017078363	SLA 구상 이행을 위한 감염병 관리 전문인력 양성(1)	Infectious Disease Field Management Trainining Program for Safe Life for All
2018030241935	2017	KOICA		2017077919	베트남에 의료교육 및 훈련 관련 WFK-과학기술지원단 파견	Techno Volunteers in Viet Nam for Medical education/training
201919166122	2019	Ministry of Science and Technology Information and Communication		2019162809	2019년 개도국과학기술지원사업(글로벌문제해결지원, 舊 적정과학기술지원)	(2019) Scientific and Technological Support Program for Developing Countries (ST Innovation Center Support Project)
201919110985_001	2019	Ministry of Science and Technology Information and Communication		2019130134	국제환경연구소 개도국 지원 프로그램	The aid program of the International Environmental Research Institute for developing countries
201917911134_001	2019	Ministry of Agriculture, Food and Rural Affairs		2019130604	아시아 종자산업 발전을 위한 역량강화 연수	Asia Seed Industry Development Training
201717900352_001	2018	Ministry of Agriculture, Food and Rural Affairs		2018128140	아시아 종자산업 발전을 위한 역량강화 연수	Asia Seed Industry Development Training

20161790123_003	2016	Ministry of Agriculture, Food and Rural Affairs		2016005082	아시아 종자산업 발전을 위한 역량강화 연수	Asia Seed Industry Development Training
20131790004_007	2015	Ministry of Agriculture, Food and Rural Affairs		2015007205	아시아 종자산업 발전을 위한 역량강화 연수	Training for Seed Industry Development in Asian Countries
2018040148712	2018	KOICA		2018123773	(전남) 친환경 농업기술(`16-`18), 3차년도	A training workshop on Eco-friendly Agricultural technology
2017040155299	2017	KOICA		2017078398	(전남) 친환경 농업기술	A training workshop on Eco-friendly Agricultural technology
2016070367881_001	2016	KOICA		2016003066	(전남) 친환경 농업기술	Eco-friendly Agricultural Technique Improvement
2015070319526_012	2015	KOICA		2015015991	석사학위과정- 식량안보 및 농업기술 역량강화(15-16)	Masters Degree Program on Food Security and Agricultural Development(15
20161270004_002	2016	Local Province (Jeonnam-do)		2019162304	친환경 농업기술 연수	Eco-friendly agricultural technique improvement
201718000807	2017	Ministry of Trade, Industry and Energy		2017084220	베트남 농기계 개량시범보급	Vietnam Agricultural Machinery Enhancement and Pilot Provision
20161800032	2016	Ministry of Trade, Industry and Energy		2016005884	전략국가기술협력사업	Strategic Country Technology Cooperation
20161800022	2016	Ministry of Trade, Industry and Energy		2016005874	산업통상협력개발지원사업(베트남 농기계 개량시범보급)	Industry and resources cooperative development support program

20161800033	2016	Ministry of Trade, Industry and Energy		2016005896	전략국가기술협력사업	Strategic Country Technology Cooperation
20141800010	2015	Ministry of Trade, Industry and Energy		2015008099	산업자원협력개발지원사업	Industrial Technology ODA Program
20151800011	2015	Ministry of Trade, Industry and Energy		2015008098	산업자원협력개발지원사업	Industrial Technology ODA Program
20151800019	2015	Ministry of Trade, Industry and Energy		2015008078	전략국가기술협력사업	Strategic Country Technology Cooperation Program
20151800020	2015	Ministry of Trade, Industry and Energy		2015008077	전략국가기술협력사업	Strategic Country Technology Cooperation Program
201818006302	2019	Ministry of Trade, Industry and Energy		2019130830	베트남 생산현장 애로기술 지도(TASK) 센터 조성	Vietnam TASK (Technology Advice and Solutions from Korea) Center Establishment and Operation Program
2019030604275	2019	KOICA		2019154508	베트남에 기술연구 개발 관련 WFK-퇴직전문가 파견	Senior Volunteers in Vietnam for Technological research and development
2017040149924	2019	KOICA		2017078474	석사학위-과학기술융합 (2017)	Master`s Degree Program in Convergence Science and Technology for ASEAN Government Officials(2017)
2017040149924	2018	KOICA		2017078474	석사학위-아세안 과학기술 융합(2017)	Master`s Degree Program in Convergence Science and Technology for ASEAN Government Officials(17-19)
2017040149924	2017	KOICA		2017078474	석사학위- 아세안 과학기술	Master`s Degree Program in

					융합(`17-`19)	Convergence Science and Technology for ASEAN Government Officials(17-19)
2017040157658	2017	KOICA		2017078420	기상위성자료 활용 능력 향상	Improvement of Meteorological Satellite data Analysis and Application Competence
2018030642011	2017	KOICA		2017077955	베트남에 기술연구개발 관련 WFK-퇴직전문가 파견	Senior Volunteers in Viet Nam for Technological research and development
201914611451_002	2019	Ministry of Food and Drug Safety		2.02E+09	아시아 개도국 농축수산물 안전관리 역량강화	Enhancing Safety Management Competence of Agro-Livestock and Fishery Products for Asian Developing Countries
2019030604277	2019	KOICA		2019154536	베트남에 연구/ 과학연구소 관련 WFK-퇴직전문가 파견	Senior Volunteers in Vietnam for Research/scientific institutions
2019030204340	2019	KOICA		2019154535	베트남에 연구/ 과학연구소 관련 WFK-과학기술지원단 파견	Techno Volunteers in Vietnam for Research/scientific institutions
2019030600886	2018	KOICA		2018125293	베트남에 연구/ 과학연구소 관련 WFK-퇴직전문가 파견	Senior Volunteers in Vietnam for Research/scientific institutions
2018030256001	2018	KOICA		2018125013	베트남에 연구/ 과학연구소 관련 WFK-과학기술지원단 파견	Techno Volunteers in Vietnam for Research/scientific institutions
2016KOICA-V929	2016	KOICA		2016029831	베트남에 연구/ 과학연구소 관련 WFK-퇴직전문가 파견	Senior Volunteers in Viet Nam for Research/scientific institutions

201919111131	2019	Ministry of Science and Technology Information and Communication		2019130171	KIST 설립 및 운영시스템 전수를 위한 개도국 초청연수	Training Program for Sharing KIST's Establishment and Management Know-hows
201718100170_05	2017	Ministry of Science and Technology Information and Communication		2017084238	2017년 개도국과학기술지원사업(기관간 과학기술협력)	(2017) Scientific and Technological Support Program for Developing Countries (Institute Cooperation)
201916811073	2019	Office of Government Policy Coordination		2019130385	국제기술혁신협력사업 (베트남)	K-innovation ODA program (Vietnam)
201918211070	2019	Ministry of Oceans and Fisheries		2019138430	베트남 운용해양학 연구능력 확충사업	Capacity Building on Operational Oceanography in Vietnam

Abstract in Korean

국문초록

이 논문은 한국의 동남아시아 중점협력국 (캄보디아, 인도네시아, 라오스, 미얀마, 필리핀, 베트남) 공적개발원조(ODA) 양상을 고찰하며, 정보통신기술(ICT) 분야 ODA 재분류를 통해 해당 ODA와 협력국의 수요 일치 여부를 고찰한다.

한국은 국제사회에서 유일하게 원조 수원국에서 공여국으로 전환한 국가이며, 2009년 OECD DAC에 가입 후 본격적인 ODA 사업을 시작했다. 1990년대에 동남아시아 국가 연합(ASEAN)을 중심으로 경제통합이 활발해지며 경제성장 격차 해소를 위한 개발수요가 증가했다. 이후 한국은 ASEAN 특별정상회의를 지속적으로 가지며, 동남아시아 국가들 간의 개발격차 완화에 적극적인 지원을 해왔다. 특히 2021년 초 발표된 제3차 국제개발협력 종합기본계획 (‘21~’25년)을 살펴보면, ODA 규모의 2배 확대와 신남방정책에 맞춘 4대 전략목표 (포용적 ODA, 상생하는 ODA, 혁신적 ODA, 함께하는 ODA)와 12개의 중점과제를 제시했다. 또한 아시아 지역을 중점으로 한 지원정책을 통해 신남방 국가 사업 규모를 7,714억원으로 확장 시키며, 협력국들의 수요에 맞춘 효과적 개발협력 추진을 위해 노력하고 있다. 동시에 4차 산업혁명을 통해 ICT 인프라의 중요성이 강조되고 있고, 개발도상국들은 디지털 격차 (digital divide)로 인해 ICT 인프라 구축 및 기술 습득에 대한 수요가 높아지고 있다.

이를 바탕으로, 이 논문은 첫째, ICT ODA의 정의에 대한 재분류를 제시한다. OECD CRS분류에 따른 ‘ICT’의 분류 사업과 ICT 요소를 지닌 타 분류사업들을 수집 후 이를 ‘일반 ICT’와 ‘융합 ICT’로 재분류 한다. 둘째, 중점협력국의 각 국가개발보고서, 정보통신부의 정책들을 살펴보며 국가의 ICT 수요를 살펴본다. 셋째, 2015년도부터 2019년도 간 ICT ODA 양상을 살펴본 후 재분류를 통해 중점협력국의 수요에 부합하는 ICT ODA 사업이 추진되고 있는지 파악하고자 한다.

이 논문은 ICT ODA의 재분류와 중점협력국의 수요 분석을 통해 ICT의 범분야적 특성을 체계적으로 접근하여, ODA 사업 현황을 종합적으로 분석할 수 있음에 의미가 있다.

주제어: 정보통신기술 (ICT), 동남아시아, 아세안 (ASEAN), 공적원조 (ODA)

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