Master's Thesis of Khulan OTGONJARGAL

Donor's comparative advantage versus recipient needs and priorities

-The case study of DFID and KOICA-

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Abstract

Donor's comparative advantage versus recipient needs and priorities: The case study of DFID and KOICA

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This paper aims to provide a useful framework for Official Development Assistance (ODA) sectoral allocation and aid alignment. The paper studied donors' bilateral ODA allocation compatibility with recipient's priority sectors of receiving development assistance whilst utilizes its country and industry-specific sectoral comparative advantage and competitiveness. One of the factors influencing the decision-making process of ODA sectoral allocation is the comparative advantage and industrial competitiveness of donor countries compared to the other donors of the Organization for Economic Co-operation and Development (OECD). Using donor's comparative advantaged and recipient's comparative priority sectors of bilateral ODA, obtained by applying the Revealed Comparative Advantage (RCA), the paper identified mutually advantaged and prior sectors of both partners' and examined the actual disbursement of sectoral allocation of donors to find out whether it prioritizes its comparative advantaged sectors over recipient preferences in bilateral ODA allocation in case of Korea and the United Kingdom. Moreover, the important feature of this study is adapting the RCA index for the development partners foreign aid sectors using the ODA flow to determine needs in supply and demand of aid across various sectors.

In this study, the findings show that both Korea and the UK allocate a large proportion of their total ODA grant aid to their comparatively advantaged sectors when compared to other DAC donors. Thus, donors take the importance of other donors' allocation patterns as complementary to their ODA and industrial competitiveness. It is evident that donor self-interest predominates in DFID and

KOICA's bilateral grant aid. Further, DFID's ODA allocation aligns better with recipients' priorities than KOICA, and alignment is better when it comes to donors' priority recipients for both case study donors. In this allocation alignment and comparison study, it is revealed that the volume of ODA, fragmentation of sectors, the sectoral policies of donors, as well as the characteristics of traditional and emerging donors are all significant factors that affect the allocation to sectors of comparative advantage for donors.

Keywords: Official Development Assistance (ODA), sectoral aid allocation, aid effectiveness, bilateral ODA, Credit Recording System (CRS), Aid Comparative Advantage, Aid Comparative Priorities, aid alignment, aid compatibility

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Abbreviations

ACA	Aid Comparative Advantage for donor country
ACP	Aid Comparative Priorities for recipient country
CPS	Country Partnership Strategy
CRS	Credit Recording System
DAC	Development Assistance Committee
DFID	Department for International Development of the United Kingdom
GNI	Gross National Income
KOICA	Korea International Cooperation Agency
MDG	Millennium Development Goals
MPS	Mutually Prior Sector (of both partners for allocating ODA)
ODA	Official Development Assistance
OECD	Organization of Economic Cooperation and Development
RCA	Revealed Comparative Advantage
SDG	Sustainable Development Goal
UK	The United Kingdom
UN	United Nations

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I. Introduction

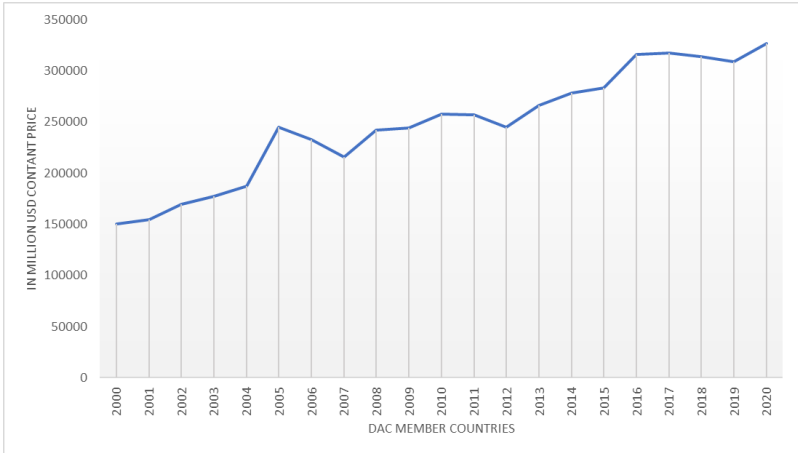
In a recent decade the foreign aid assistance as, Official Development Assistance (ODA) by Development Assistance Committee (DAC) countries of Organization of Economic Cooperation and Development (OECD) has continuously increasing in its volume and with this increases the international community attention draws to the aid effectiveness since the establishment of Paris Declaration on aid effectiveness[1]. OECD DAC statistics show that the OECD DAC member countries have continued to expand their ODA, totalling USD 131.6 billion in 2015 (Net disbursements). It was a decline from the previous year's disbursement of USD 137.6 billion. However, in general, ODA has more than doubled over the past 15 years, with the disbursement increasing from USD 54 billion in 2000 to USD 105.6 billion in 2006 and to USD 128.5 billion in 2010. This ODA volume has shown a rising trend even after the global financial crisis. However, the debate on the effectiveness of foreign aid is as old as the history of foreign aid itself. Based on a World Bank economic review, foreign aid is consistently a positive influence on long-term macroeconomics, and foreign aid contributes significantly to development objectives (Arndt et al., 2015). Moreover, under the effectiveness of aid many researches have questioned whether development assistance is targeting the needs and preferences of development recipient under the relevance and alignment issues. Such as in terms of the humanitarian assistance OECD have conducted a survey from the affected populations in crisis contexts, to interview aid beneficiaries and result shows that recipients need and preferences are not equally considered across developing countries (OECD, 2019b). According to the survey, in Afghanistan, Bangladesh, Haiti, Iraq, Lebanon, Somalia and Uganda find that respondents increasingly perceive that their opinions are being considered. In Somalia, for example, up to 75% of aid recipients reported they are aware of the aid available to them and feel that providers take their opinions into account. Challenges remain, for instance in Lebanon, where only 31% of respondents indicated they are aware of the aid available and just 9% feel that their opinions are considered (OECD, 2019a).

[1] March 2005, see http://www.oecd.org/dataoecd/11/41/34428351.pdf

The primary purpose of ODA is to promote the economic development and welfare of developing countries. From the perspectives of the donor countries, however, their objectives in providing ODA are not all the same since their national agendas and objectives as well as their historical and cultural relationships with developing countries vary. There are largely three types of motives behind the provision of ODA: political and diplomatic motives, economic motives, and humanitarian motives. As a result of globalization, the rising interconnectedness of countries has been viewed as one of the most compelling motives for ODA (KOICA, 2017b). In the research field, there are studies regarding the aid motives of the donor using the aggregated data and others have studied sectoral aid compatibility of donor with the recipient needs using the disaggregated data. Gounder (1994) studied that aid is allocated in consideration of both recipient and donor in case of Australia aid and further argued that recipient needs and donor priorities both explains ODA distribution however, donor self-interest is overweighed the needs of partner country. However, the development of the of researches assessing donor's ODA allocation consistency and compatibility with the recipient needs lacks due to the sector diverse indicators reflecting recipient needs accurately.

This study mainly focuses on donor's self-interest motivation, especially its own comparative advantage, in sectoral allocation and whether the donor country prioritizes its self-interest over recipient preferences. The paper takes the significance of this study on three major ground. First, as mentioned earlier, the foreign aid increases in DAC member countries indicating increased need for development assistance evaluation approach, especially relevance approach should have to be improved as a measurable method to increase the effectiveness. The figure 1 shows the increasing trend of ODA net disbursement volume among the OECD DAC members during the past two decades.

Figure 1 Net disbursement of ODA for DAC donor countries (2000-2020)



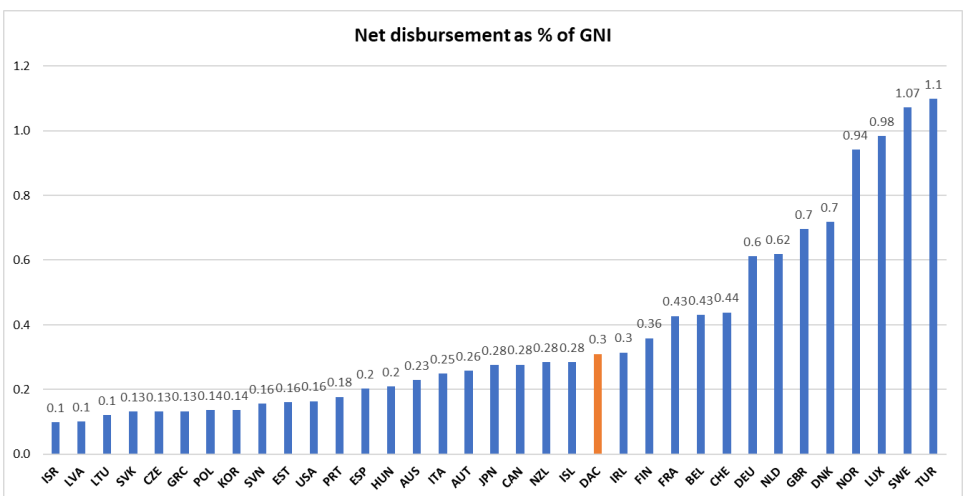
Source: OECD (2021), Net ODA (indicator). doi: 10.1787/33346549-en (Accessed on 11 May 2021).

Second, the sectoral allocation of ODA has been changed over past decades in terms of donor's industry specialization, such as Western donor countries industry specialization in consultancy and social sectors have much developed, and as for response to the global development goals of MDG's and its successor SDG's have reshaped the sectoral priorities of donors. Nevertheless, donor countries differ in disaggregated sectoral allocation as their priority sector and focus recipients are diverse. In contrast to economic infrastructure ODA, the disbursement for social infrastructure and services (e.g. education, health, governance) has shown rapid growth (UN ECOSOC, 2008). The allocation of social and administrative infrastructure has increased significantly from 27 to 40 percent in the last 20 years (Laura, 2014). One of the studies has investigated whether foreign assistance distribution is MDG-sensitive. They used countries' achievement level to assess MDGs, and the results showed that donors allocate more resources and aid towards countries further from achieving the targets (Hailu & Tsukada, 2011). Nevertheless, global goals should not only motivate international donors, but they also influence the priorities and development strategies of recipients' leaders (Seyedsayamdost, 2018). Therefore, given to the fact of shifts in the donor's allocation pattern, there is existing room for study regarding donor's sectoral allocation consistency with the recipient needs.

Third ground of significance for this study is relied on the maximum utility of the scarce resources of foreign aid. Even though DAC and non-DAC member countries

make consistent effort to increase their ODA volume regarding various development needs, - which are poverty, poor welfare and economy of the developing countries, and fragile context areas where the humanitarian assistance needs exist most- the ODA disbursement share in donors GNI is still has not achieved by the large number of donors.[2] According to the OECD 2018 data on DAC members net disbursement relative to their GNI illustrated in figure 2, only few countries has achieved 0.7% of GNI amount equivalent to the net disbursement. Moreover, Sweden, Luxemburg, Norway, Denmark, the UK are the largest donors having disbursed larger share of their GNI as the foreign aid compared with other donors.

Figure 2 OECD donors net disbursement, equivalent to % of GNI in 2018



Source: OECD (2021), Net ODA (indicator). doi: 10.1787/33346549-en (Accessed on 11 May 2021)

As highlighted in the figure, the average share of ODA disbursed in 2018 is equivalent of 0.3% of donor countries gross national income. Thus, indicates resources of foreign aid is still scarce relative to the diversified sectors and recipients of ODA sectoral allocation. Further it is critical and welcomed for a suggestion of efficient aid allocation policy and effective utilization of donor's aid in line with recipient preferences. Several studies have suggested the policy implications of donors to increase its efficiency and effectiveness of sectoral allocation through

[2] For developed countries, the United Nations has recommended that ODA should represent 0.7% of GNI.

specialization of sectors where they have compared advantage and exclusive harmonization among donor countries.

Based on these preliminary observations, this study has questioned that whether donor countries utilize and prefer its comparative advantage and industrial competitiveness in ODA sectoral allocation rather preferring recipient priorities as the core determinant of aid. This paper presents a new approach to evaluate the compatibility of DAC donor's sectoral allocation of ODA with recipients' priority using the Revealed Comparative Advantage (RCA) index. RCA is introduced to estimate the need in supply and demand using the ODA flow which illustrate donor comparative advantaged sector of interest and recipient comparative priority sector of needs when compared to the rest of the donors and recipients respectively. To illustrate further, the index will enable us to obtain the maximum utilization of sectors for both recipient and donor when compared to the other recipients and donors of OECD. It is purposed to determine that whether the foreign aid is allocated towards donor specialized and advantaged sectors or to the prior sectors of recipient country.

Following the primary purpose of the foreign aid, it should be allocated into the sectors in which the recipient has needs meanwhile it have to be consistent with recipient's priority sectors in order to increase the welfare of the recipient and effectiveness of aid. To increase the effectiveness of ODA, donors have agreed to follow the Paris Declaration on aid effectiveness principles and within the five-principles, alignment is one of the important elements in aid allocation. According to the OECD, when evaluating the aid programmes the relevance is crucial criteria which the aid activity is suited to the priorities and policies of the target group, recipient and donor (OECD, 1991). In doing so the analysis for evaluating the consistency of the ODA in a level of sectoral aid is demanding but it is difficult to measure the exact needs and priorities of supply and demand side through various sectors. Therefore, studies have conducted whether donor's allocation is responsive to its development partner's needs and illustrated the actual needs of specific sectors of recipient country. However, these studies are limited in its scope of sectors due to the sector specific indicators. The current study will apply country specific case

through various sectors of ODA to examine donor specific allocation characteristic specially in case of the comparative advantage and priorities. Therefore, country specific comparison analysis on policy and characteristics of the donor is crucial for an attempt to answer the research questions of the study. Donors have their own behaviours in case of the sectoral aid allocation. Hence, a comparison between advanced and emerging donors would allow us to examine how distinct donors utilize comparative advantage and its specialization in aid allocation and how their allocation is aligning with the recipient priority needs and any possible lessons to be learned. The case study donors selected in the paper are DFID and KOICA, the former is the advanced donor agency and the latter is the emerging donor of DAC which has the experience of receiving development assistance at an early stage pf the country's development. Clearly, it is difficult to evaluate the actual needs of recipients, for instance, with only following the international development agenda donors cannot build the development priorities of recipient because each recipient has their own priorities and specific needs and those may have possible to be changed over time. Even national development plans of recipient country are vague in determining priorities due to inclusion of almost all sectors. Therefore, RCA index which applied in this study will help us to prioritize recipient needs using the past ODA received data.

In contrast with ODA alignment, donors aid motives have researched greatly in the past using the aggregated data and most of the former researches have successfully determined the motives of aid (Alesina; & Dollar, 2000; Berthelemy, 2006; Jean-Claude & Ariane Tichit, 2004; Maizels & Nissanke, 1984; Neumayer, 2003a). In contrary to the aggregated data usage, the disaggregated data on aid allocation have also contributed to develop understandings of the sectoral allocation patterns across recipient country and among donor (Akramov, 2006; Bermeo, 2008; Clemens et al., 2004; Nielsen et al., 2010; Thiele et al., 2007).

In March 2005, DAC donors agreed not only to better align foreign aid flows with priorities of the recipient country and to harmonize procedural issues of aid delivery. They also promised to render aid more effective by "eliminating duplication of efforts and rationalising donor activities to make them as cost-effective as

possible"(Peter et al., 2013). Donors "commit to make full use of their respective comparative advantage at sector or country level" recognizing that aid fragmentation diminish effectiveness meanwhile "pragmatic approach to the division of labour can reduce transaction costs"(OECD, 2005). Anecdotally, it is obvious that the donor agencies consider several factors to allocate sectoral aid across recipient countries. In a recent decade, the researches and donors have mentioned that the donor countries should harmonize their sectoral assistance to maximize the effectiveness of aid and better align the sectoral aid through implication of its comparative advantage and sectoral specialization of the implementation agency and the countries industrial advantages.

To the best of our knowledge, this study is the first work to provide donors aid allocation compatibility evaluation using the comparative advantage of donor and comparative priorities of recipients to identify their maximum utilization of sectors that are beneficial for both partners. Furthermore, the study would enable us to examine what factors are enabling the donor to achieve the higher consistency with the recipient preferences whilst utilizing its comparative advantages and specialization and to identify different characteristics of donors' allocation pattern based on the case study, Korea and the United Kingdom.

The rest of the paper organized as follows. Section 2 explores the literature review on sectoral allocation, aid effectiveness and prior studies regarding comparative advantage in foreign aid to build a theoretical background and illustrated research question. In Section 3 of methodology, the new approach of Aid Comparative Advantage index for identifying needs in supply and demand of aid and systematic approach to evaluate donor's sectoral allocation has both illustrated. In section 4 the case study donors' ODA introduced as a background to build a foundation of understanding related with the comparison analysis afterwards. In the section 5 results and implications discussed followed by the limitations of the study in the last section 6.

II. Literature review

i. Overview of Aid Allocation

There is a broad literature on ODA allocation, starting from using the aggregated data to determine the motives of donors when allocating foreign aid. Therefore, understanding individual behaviours of the bilateral donors has been a priority in the development aid allocation literatures. A fundamental question about why aid is given today is less clear than it once was. In 1960, for instance, the United States, France, and the United Kingdom together accounted for over 80 percent of the total of bilateral and multilateral aid. During that era, Cold War and colonialism seemed to be the major drivers of foreign aid. As aid from the major donors stagnated and even decreased in a decade by 50%, other countries whose political motives were perhaps covert stepped in to increase their aid rapidly. Following the Cold war, the foreign aid has been used more as a tool of economic gain. Therefore, there were need of an economic phenomenon that deserves more research and explanation. Understanding individual behaviours of the bilateral donors has been a priority in the development aid allocation literatures. Many literatures have been conducted to determine and explain the allocation motives of aid which is donors' self-interest motives and developmental motives of recipient country, using the aggregated aid data. Many studies have conducted using the recipient side factors as a determinant of the foreign aid. Namely,

These are the demand side of factors that researchers have employed because of the original focus of the Official Development Assistance (ODA) as defined by OECD, it targets the economic development and welfare of developing countries. Despite this, one must realize that demand is only part of the story, because the actual flows must be explained by the interaction between the aid demands of recipients and the aid supplies of donors. Based on the foreign aid disbursement and commitment existing data by donor countries the earlier literature applied supply side approach in determining aid purpose. For example, Dudley and Montmarquette (1976) have theorized the supply side of factor on foreign aid and generalized the idea based on the assumption that the reason people give is usually because they expect a benefit in return. The benefit they exemplified is simply the motivation of aid derived from

political, economic, and charitable consideration of donor countries rather than the altruistic motive of recognition and gratitude of others due to the transfer of public funds from one society to another. More in detail, from the political side the recipient country would approach donor more favourably in supporting its national interests of politics and from the economic expectation of donor the recipient would buy more products they export. The third supply side of motivation of the charitable consideration, as the authors described, it includes possible expectation of an expression of gratitude, or simply evidence that their charity has improved the lives of residents in that country. Then authors further argued that "the supply of foreign aid will be explained by the donor country's demand for foreign aid impact" (Dudley & Montmarquette, 1976, p. 133). To illustrate more on the donor-oriented varaibles, it has been determined that the factors of strategic interests, colonial history, political alliances, and geographical differences have significant effects on the definition of the political interests. Maintaining or expanding a sphere of interest is the political element in the supply-oriented studies (Maizels & Nissanke, 1984). The significance of colonial history was acknowledged by most – aid "favors former colonies partly due to political desire in maintaining their influence on those countries" (Alesina; & Dollar, 2000; Neumayer, 2003a, 2003b). Typically, in this context, donors assist recipients who share their views or are, at the very least, potential political allies. Alesina; and Dollar (2000) used data on UN voting patterns, which reflect political alliances, result was positive for allies of Japan, but not those of the U.S. This may implicate that allocation behaviour is different across donors. Another most used explanatory variable is geographical distance of donor and recipient. Aid from donors that wanted to promote a regional sphere had a negative relationship with geographic differences (Neumayer, 2003a).

Furthermore, donors prioritize their trading partners for their own economic interests. It was found that all the big donors sought to promote their exports through aid and that trade links had a growing impact over time (Jean-Claude & Ariane Tichit, 2004; Neumayer, 2003a). Donors tend to favor their significant trading partners, and large energy or resources exporters in their bilateral ODA allocation (Cho & Kalinowski, 2012; McGillivray & Oczkowski, 1992). To illustrate further, recent study also has shown donor interest dominance in bilateral aid allocation decision, Guillon and

Mathonnat (2018) studied the factors associated with Chinese ODA allocation by sector to African countries. The results suggest that GDP per capita plays a critical role in receiving ODA in the social sector from China, and more health projects were implemented in countries with a larger endowment of natural resources. The paper also shows that UN voting alignment with China and adherence to the One Chine policy is a prerequisite for receiving Chinese assistance.

In this context, it is usually assumed that a donor will assist recipients who are like-minded, or at any rate who are potential political allies. Given to this merit of studies, even though the foreign aid is allocated based on the donor's self-interests its selection of the recipient country would also differ based on the recipient's development needs and merits which are attributable to donor countries. Thus, recent studies have focused more on the socio-economic conditions of recipient countries and their needs and merits. Following the primary intention of the aid to increase recipient welfare and elevate poverty, aid allocation research have started to include the perspectives of both the donor and the recipient in order to systematically analyse such a phenomenon. These motives are observed based on the two general assumptions and variables which can illustrate it. First categories of variables are based on the presumption that foreign aid is allocated to the neediest countries, in its original purpose to eradicate poverty. Second assumption is related with the aid efficiency: if the aid objective is eliminating poverty, aid should be given where it has the potential to impact poverty, which may be subject to the of economic policies and governance in these countries. According to the demand-oriented researches, it mostly used income per capita as an indicator to measure recipient needs, measured in purchasing power parity terms. Ideally, aid should be directed based on recipient needs, with the richer countries receiving less than the poorest. The income gap has generally been associated negatively with aid allocation, specifically more aid is distributed to countries with a lower per capita income (Bandyopadhyay & Wall, 2007; Jean-Claude & Ariane Tichit, 2004; Wall, 1995).

Measuring qualities of development policy is much difficult, for example, (Burnside & Dollar, 2000) introduced variables openness, government deficit, and inflation and they have found that aid has positive impact on development in developing countries with good fiscal, monetary, and trade policies but has small effect in the presence of

poor policies. However, it further pointed that good policies are important for growth but the quality of policy has a very small impact on aid allocation. To develop the indicators used in representing recipient's policy and merits Berthelemy (2006) have introduced social outcome variables to the preceding studies, namely life expectancy at birth, child mortality, literacy rate, and school enrolment ratios but these variables does not showed any robust correlation with aid allocation but gross primary school enrolment to be positively related with aid. Many authors found democracy to be crucial in determining aid. Jean-Claude and Ariane Tichit (2004) stated that "the best way to attract bilateral assistance is to go democratic", particularly in the case of American and Australian assistance. Good economic and social policies were found to be positive determinants of aid. Larger FDI flows were found to attract bilateral aid (Jean-Claude & Ariane Tichit, 2004), while another found no mutual dependence between private flows and bilateral aid and it was moderately associated with trade openness, but not strongly (Alesina; & Dollar, 2000).

While other researches pointed to differences between recipient needs and donor interests concerning ODA allocation motives, (Gounder, 1994) examined Australia's bilateral ODA programs in addition to donor interests. He suggested that Australia, in contrast to other studies, fully considered both donor interests and recipient needs in practice. To study this in further detail, Gounder and Sen (1999) examined bilateral ODA allocations for Australia between 1970 to 1996. Using the both donor interest and recipient need model in regression, the results show that the ODA distribution to Indonesia explains both the recipient's needs and the donor's interests, despite donor interests being more significant than those of the recipient's needs. In addition to the previous study, Hoeffler and Outram (2011) has studied bilateral donors' allocation regarding self-interest, recipient need and merits. The result of the study has found that all bilateral donors distribute aid according to their self-interest and recipient need. However, most bilateral donors likely to take less importance of recipient merits but the UK and Japan were exceptions. Moreover, the latter mentioned two countries resulted to have allocated more aid to countries with higher growth, higher democracy scores, and fewer human rights abuses. This implicates that bilateral donors also implement some sort of selectivity rules based on recipient needs and merits. Nevertheless, in the aid allocation both the characteristics of

recipient's needs and donor's self-interest plays an important role, but they have an unequal effect on the decision-making.

ii. Sectoral ODA allocation Does it goes to areas which recipient has its great needs?

Studies typically measure the responsiveness of aid donors by observing whether they typically target poorer countries. Nevertheless, even among poor countries, recipient needs vary. For instance, some are more in need of clean energy or road infrastructure while others are more in need of health services and education. There are many different factors that has the impact on sectoral allocation of ODA. Based on the prior studies on aid motives, there are possible assumption that donors differentiate in their sectoral allocation but many of them make efforts to consider both sides of preferences. Several literatures have conducted to determine the sectoral allocation motivations and decision-making factors for donor using the both partners sectoral indicators of donor and recipient country. The disaggregated sectoral ODA data provides a better understanding of the specific sectoral aid allocation behaviour of donor with respect to its recipient. However, sectoral aid allocation has been conducted mostly under the aid effectiveness researches of ODA.

Discussion on the allocation of disaggregated aid is scarce and comparatively recent descent when compared to the aggregated data approach. According to Clemens et al. (2004), analyzing disaggregated aid can present important insights into the impact of "short-term" aid on economic growth. The allocation of disaggregate aid has since been studied in various studies. Studies of aid toward various sectors are analyzed based on certain indicators of need and other determinants. (Akramov, 2006; Bermeo, 2008; Kasuga, 2008; Nielsen et al., 2010; Thiele et al., 2007). Using disaggregated aid data has improved insight into how aid allocation is determined. Nielsen et al. (2010) proposed an alternative relationship between recipient needs and donor interests, one in which neither is mutually exclusive. According to the study, donors respond most responsively to the needs of the countries that are most important to

them. Additionally, governance can also be defined as both a capability and a need. If the government of the recipient has a greater role in providing aid in a given sector, that sector becomes more important as a capability than that sector is as a need. The literature on aggregate aid allocation accounts for recipient needs primarily and exclusively by income. Yet disaggregation reveals a more nuanced understanding of how recipient needs are represented considering a different measurement of needs. It is suggested by one study that income level, expressed by the GDP, is not a reliable indicator of recipient need. Because it has the potential to account for a wide range of variations in different areas and cannot represent the recipient-specific demands even countries with similar levels of GDP can also have very different development needs (Nielsen et al., 2010). The indicators of the Millennium Development Goals (MDGs) demonstrated that the aid in the respective sectors met the needs (Nielsen et al., 2010; Thiele et al., 2007). Nevertheless, Kasuga (2008) found no evidence that inter-sectoral allocation reflects need when measured according to national development priorities and was able to explain why it is difficult to find the positive effect of aid on growth by looking at national development priorities.

iii. Aid effectiveness

In addition to aid motive research, development aid effectiveness and impact research has also been prominent in foreign aid literature, yet the no firm answer has reached and elusive. In the recent decades studies regarding effectiveness of aid has been surged. In order to get sustainable development results depends largely on the effectiveness of aid. If a country provides resources to another, then the value and priority of those expenditures need to be considered. A study from the U.S. Congressional Research released earlier this year also concluded that effective foreign aid helps foster democratic transitions by offering election support, supporting judicial and law enforcement reforms and boosting support for human and democratic rights (USAID, 2019). The review by University of South Africa researchers also concludes that there is "significant evidence of the effectiveness of foreign aid on poverty reduction" (Mahembe & Odhiambo, 2019). Access to improved sanitation was positively related to aid in the water supply and sanitation sector, while access to improved water was positively related to aid in the basic

drinking water sector (Thiele et al., 2007). However, in the meantime, there was misallocation between sectors due to insufficient coordination (Kasuga, 2008). Numerous studies have examined the extent to which foreign aid affects economic growth by examining the context in which foreign aid is most effective. Burnside and Dollar (2000) argued that foreign aid raises growth only in a good policy environment of recipient countries driving attention to the soundness of the recipient country's economic policies. Nevertheless, expanded studies with updated statistics have found that there is no strong correlation between soundness of a country's policy and aid's effectiveness in promoting its growth.

Despite the aid impact, aid tying has been one of the considerable issues in area of aid effectiveness. In earlier 1990s international attention had also focused on the tied aid reduction in the development assistance due to its higher reflection of donors commercial and economic interests. However according to the Kim and Kim (2016), the paper focused on the effects of different types of motivation of donor countries and the different types of the aid regime such as the cooperative regime and non-cooperative regime of aid and determined that even with the untied aid recipient country does not fully benefit. Their result suggested that with the efficient cooperative regime of donor, the untied aid with lower exclusivity improves social welfare of both recipient country and donor countries rather in the non-cooperative regime of donor and recipient the welfare of the both partners would be stagnant (Kim & Kim, 2016). Knack and Eubank (2009) shows that the harmonization among donor countries and alignment with the major development issues of recipient countries are the key factors to determine the efficiency of aid. Therefore, researches have demonstrated that the multilateral aid reflects the recipient needs than that of the bilateral aid. Burnside and Dollar (2000) affirms that multilateral aid acts as a better alternative to and more “efficient” than bilateral aid, since it generally reaches countries implementing good policies. Foreign aid is given to compensate for shortfalls in domestic resources when it comes to the multilateral aid while aid serves only donor interests, defined to cover political, security investment and trade interests for the bilateral aid (Maizels & Nissanke, 1984; Yoon & Moon, 2014). As well as the broad scope of the effectiveness issue, the research in this area is diverse. It is possible to divide aid effectiveness literatures on two categories. As illustrated

at the beginning first categories of researches have been focused on the development impact of foreign aid. The remaining have contributed to assessing donor aid allocation based on principles of aid effectiveness.

The five principles of aid effectiveness defined by Paris Declaration (2005) on aid effectiveness are country ownership, alignment, harmonisation, managing for results, and mutual accountability. In addition, the declaration provides 13 indicators of progress, including targets for donors and recipients to meet by 2010. As the OECD shows them, ownership is on top, alignment is in the middle, and harmonization is at the bottom and represents the three principle as a pyramid because of its great potential to affect aid relations on the ground (OECD, 2012, p. 18). Organizing ownership-alignment-harmonization strategy offers a positive image of a world where developing countries are in charge, with donors finding a way to put aside their own priorities, self-interest and rivalry in order to work together and with recipients. Henceforth, donors would take ownership of recipients' development priorities and plans, and recipients and donors would coordinate actions to accomplish them. Even though the word ‘ownership’ was used only in passing, it was noted that the goal should be to ensure that development assistance is delivered in line with partner country priorities (OECD, 2003, pp. 10-12).

Further with the process of aid effectiveness norms foundation, following the Accra Agenda for Action 2008, the Busan Partnership for Effective Development 2011 and the Global Partnership for Effective Development Cooperation in 2011 aid effectiveness concept has metamorphosed. Post Paris initiatives developed cooperation by broadening the actors including, middle income countries, global funds, the private sector, and civil society organisations. Through the follow-up donors pledged to support country ownership of development programs by respecting countries’ priorities, investing in their human resources and institutions, making greater use of their systems to deliver aid, and increasing the predictability of aid flows. Nevertheless, researches regarding aid impacts on the development is much generalized but the sector specific study on alignment and relevance of donor’s sectoral distribution consistency with recipient needs are relatively scarce. In this context Lee (2014), studied donor’s infrastructure aid responsiveness to the

recipient's actual needs using the disaggregated sectoral data. The study used infrastructure quantity, ethnic fractionalization, and macroeconomic stability, infrastructure quality, geographical considerations, and governance as variables determining demand of recipient in infrastructure aid. Moreover, empirical study resulted that while infrastructure aid, in general, was responsive to infrastructure quantity, ethnic fractionalization, and macroeconomic stability, it was less so in infrastructure quality, geographical considerations, and governance. When divided into specific sectors, the need responsiveness becomes substantially weaker, and aid is responsive to either none or the wrong side of needs. The transport sector is allocated regardless of needs, the energy sector is focused on supply needs, and the communications and water sectors are responsive to needs in demand (Lee, 2014).

Nevertheless, looking at the existing research, the different sectors demonstrated varying levels of responsiveness to specific needs. While the energy sector responded to needs in energy, the communications sector was found to be more responsive to military alliances (Nielsen et al., 2010). Most of the alignment evaluation used National development plan priority sectors as an indicator represents recipient needs and preferences. According to recent study on norm of aid effectiveness argued one of the significant problem of recipient country ownership is 'the national development plans lack strategic prioritization and resemble more of a wish list in virtually all possible sectors, also preventing clarity on what is actually owned' (Brown, 2020, p. 13). Even the higher level of ownership recipient countries of Mali and Ghana cases are undermining the meaningfulness of the application of the Paris Declaration. Each country has several contradictory plans without any clear indication of which one corresponds to the actual owned development vision. Several factors have impact on this first lack of government capacity and second, lack of government willingness to prioritize and the last one is there are demands and needs in all sectors. Furthermore, the idea of maximizing aid revenues conflicts with limiting attention to a few areas. Most governments are very reluctant to refuse free money, even if it is not in the interests of their de facto priorities. Therefore, in the evaluation of the alignment with government priority is not considered as a challenge in case of the recipients whose development priorities scope is diverse across all sectors. Aid allocation pattern has been massively studied by the researches

in this field and they have compared different donors in order to gain policy suggestions on effective distribution and an example of a good development results.

In a recent decade either positive and negative impact of fragmentation on effectiveness has been studied extensively. In general, the count of the actual number of sectors where the donor is active and the number of sectors which collectively receive less than 10% of the donors CPA's, assuming that low levels of aid give rise to disproportionately high transaction cost (OECD, 2012). Donors typically channel their aid across a wide range of countries, sectors, and projects (World Bank, 2003). In addition, a proliferation of donors and projects strains and undermines the administrative capacity of recipient governments to manage aid and donor relationships (Knack & Rahman, 2007). It appears that "aid is increasingly fragmented" according to the OECD 2011 report. The Paris Declaration states that "excessive fragmentation of aid at global, country or sector level impairs aid effectiveness" and urging more effective division of labor among donors. However, there are no indicators specified in the declaration. Nevertheless, Knack and Eubank (2009) research on offering new measurement of aid quality of donors based on the four major areas, of which aid selectivity, alignment, harmonization, and specialization. Specially, the study had suggested consistent indicators to evaluate specialization of donor countries. To illustrate moreover, they used seven indicators of specialization which are geographic and sectoral concentration, fragmentation of sectoral aid, and delegation ability of donor to other donors such as multilaterals while conceptualizing the specialization using different indicators. Thus, specialization has a close connection to fragmentation when it comes to bilateral ODAs. Therefore, proliferating donor ODA across sectors would reduce the effectiveness of aid to recipient countries by undermining their ability to manage aid efficiently with donors. Also, foreign aid fragmentation would impair specialization that is consistent with the recipient country priority sectors and further decrease the performance of alignment with recipient preferences and harmonization among development partners. In this way, specialization of donors is significant and it is largely depended on donors' sectoral comparative advantage and expertise.

Peter et al. (2013) assessed that whether bilateral and multilateral donors of foreign aid specialized and coordinated their activities with other donors as agreed in the Paris Declaration of 2005. They argued that recent shifts in aid priorities, such as the rising importance of general budget support, have reduced the fragmentation of aid, however, the aid fragmentation persisted after the Paris Declaration and coordination among donors has even weakened. Furthermore, If the donor countries specialize in similar sectors and gives aid in a few sectors or recipients, in one hand overlaps would increase, for instance, by allocating aid increasingly to needy and well governed countries and this might impair cooperation. On the other hand, more specialization of donors could facilitate cooperation and thus go along with fewer overlaps. They concluded that fragmentation and overlaps are positively correlated, implying that less fragmentation is associated with greater cooperation (Peter et al., 2013). However, it is important to see from both perspectives of positive and negative impact because most countries priority target recipients, sectors, and their ODA volume differ greatly in the disaggregated data.

Contradicting with the previous researches indicating a negative impact of aid fragmentation, the recent study has argued that generalizing fragmentation effect may be misleading by emphasizing that sufficient initial administrative capacity in recipient countries prevents the negative and reinforces the positive effects of fragmentation. The empirical results indicate that differentiation among sectors is crucial because in some sectors, such as primary education, donor fragmentation may have a positive impact on development outcomes (Gehring et al., 2017). The paper further highlighted that fragmentation effect on growth depends on the lack of lead donors, too limited concentration, rather than on the number of donors.

Given to the extant literatures on aid quality measurement it is evident that harmonization among donors and specialization of donor country is correlated and the latter is fundamental as the sectoral selection indicators of donors when allocating ODA across sectors. The important question still exists in general is that how donor's budget on foreign aid should be spent. The literatures in this topic are broad as mentioned earlier and they are mostly based on the demand side aspects which are assuming that the foreign aid should be spent on the poorest condition at

center. This argument is derived from the assumption that aid should have to focus on where it generates the largest marginal utility. According to the OECD evaluations of its member countries allocation, it considers developed countries ODA allocation in relation with recipient's income level, especially ODA flow to the least developed countries. The other supply-oriented researches question that which countries better allocate what kinds of aids at the lowest cost. These studies took importance of division of labor of ODA among donor countries, highlighting the importance of harmonisation principle and international cooperation. But there are no existing researches on evaluation of donor's sectoral specialization pattern feasibility with recipient's preferences.

In summary of broad literatures, aggregated aid data explains allocation motives which is diverse in recipient needs, donor interests, and international goals. Literature on disaggregated aid allocation, however, enhances the understanding and analysis of these factors' relationships and concepts. Also, it provides opportunity to have analysis which improves comprehension of sectoral allocation motives and effectiveness of aid. The supply and demand oriented studies have provided fundamental concept of having the current analysis that both partners preferences are being included in aid allocation with an unequal balance. In the subsequent section, the study will examine its central question, namely donor comparative advantage and specialization in ODA allocation as a theoretical framework of the study.

The current paper argued that sectoral ODA should be allocated to the sectors where both donor and recipient preferences maximized equally where the sectors donor country has a comparative advantage over other donors and recipients' priorities. The assumption is based on the two-fundamental understandings on prior researches. First of all, ODA allocation is based on the complex relationship between supply from donors and demand from recipients, formulated in aid motive literatures. According to the second concept based on aid effectiveness literatures, donors should specialize in sectoral ODA allocation where they have expertise and comparative advantages to better utilize aid, but aligning these preferences with recipients' priority sectors of ODA is more critical to achieve a positive impact on recipients and ensure effectiveness of aid.

iv. Comparative advantage in Bilateral Foreign Aid

The study has conducted based on the theoretical assumption that the foreign bilateral aid is allocated based on the comparative advantage of both recipient and donor. Comparative advantaged sectors are reflecting the need in supply and demand of sectoral ODA allocation. The foreign aid would be efficient if the donors specialize in an ODA sector where they have comparative advantage and at the same time recipient have higher developmental needs and priorities. The comparative advantage research in foreign aid allocation has been relatively scant, despite its importance. However, some aid allocation studies, including Berthelemy (2006), account for possible bandwagon effects by considering aid from all other donors as a determinant of the donor A's aid allocation to the B recipient country. Moreover, he stated that "the assistance of other donors can be considered as complementary to one's assistance. However, the aid granted by other donors could also be considered as a substitute—notably in the case of egoist donors—in which case the correlation between a particular donor's aid commitment and the other donors' aid would be negative" (Berthelemy, 2006, p. 186). Jones (2015) have studied heterogeneity of the donors' aid allocation and determinants of aid allocation across period of time and the result suggested that donors do not act independently when allocating foreign aid. Therefore, in ODA allocation decision country-specific comparative advantage at sector and project level and specialization of donor agency and country are the relatively key element.

This study considered the importance of comparative advantage in two aspects. First, researches had stated that there are not enough resources to tackle even with the most urgent economic issues in developing countries. Thus, it is important not to waste scares resources of foreign aid. The second, aid effectiveness is one of the concerns in development assistance and many donors are making efforts to allocate aid towards the development needs and international goals. Therefore, there are growing needs of researches that help to increase the impact of existing allocation flow. For more efficient ODA allocation using the limited resources, it is significant to study the existing allocation of different donors in terms of their allocation consistency and how the donors specialize in their ODA allocation in line with recipient preferences

and priorities and whether donor's taking their comparative advantage to increase their aid effectiveness across sectors and recipients. According to the study that applied comparative advantage concept to the foreign aid, there is a considerable potential for gains from specialization in bilateral aid and that increased specialization among donors may be possible without great structural changes of foreign aid per recipient country (Dewald & Weder, 1996). They found that the factors of production and the technologies required to produce different foreign aid projects were considered to be internationally immobile, and that comparative advantage rather than absolute advantage determined the efficient pattern of specialization in foreign aid. Since individual maximization rarely achieves Pareto efficiency, the concept requires increased coordination among bilateral donors.

This paperwork wants to demonstrate that comparative advantage is applicable to the foreign aid strategy and policy and its implementation would increase aid effectiveness when it considers the demand side priorities equally. Moreover, individual maximization of sectoral specialization of donor country cannot achieve the great development impact on recipient country. It also has to consider the demand side of specialization, meaning that type of projects can be implemented in a recipient country at lowest cost and the recipient merits, capacity and ownership of different sectors and its priorities are needed to be considered at first. Therefore, including both partners specialization of sectors in ODA allocation is essential to increase the aid effectiveness.

Donor countries contribute a great deal to various sectors, yet their contributions and shares differ greatly. The pattern of sectoral division and specialization, meaning the focus sectors are different with having a great number of recipient country. Even though there are major donors which distribute large share of OECD aid flow, such as the US, Japan, the United Kingdom, there are also increasing number of donor countries identified as an emerging donor and non-DAC donor countries in development assistance, for example, Korea, China, BRICS, Saudi Arabia etc. Given to these facts, there are existing highly overlapping aid flow because of the diversified aid relation between donors and recipients. Thus, showing the significance of the comparative advantage and donor specialization analysis which

would suggest the optimal efficient allocation pattern of donors with the recipient's preferences.

Ever since Ricardo (1817), the concept of comparative advantage has remained one of the most important principles and contributions of international trade theory. In general, the concept states that the worldwide allocation of resources can be improved if countries specialize in the production of those goods and services where they have relatively lowest costs, which is called comparative advantage, and if they trade internationally all goods and services in order to free up the composition of consumption from domestic production. The application of this concept to foreign aid policy is straightforward (Dewald & Weder, 1996). Suppose, for instance, that a donor country has a lower cost of providing foreign aid than other donors in a particular sector. This advantage has been attained because of the country's relatively great industry knowledge and expertise or because the country's development assistance agency has gained substantial expertise in a specific sector and type of aid through the achievement of aid projects. In so far as the donor countries allocate aid to multiple sectors, (demand side) recipients' preferences and needs determine and adjust the aid composition within the various sectors. The optimal pattern of specialization for donors depends on their comparative advantages and marginal benefits to recipient countries of sector aid.

In a recent day, donor's approach of its comparative advantage and its industry specific competitiveness are highlighted as an important factor for determining sectoral aid allocation across different recipients. Also, there are statements which suggest that an emerging donor country to utilize its development experiences and knowledge in the allocation of ODA to share the countries successful experience to the developing world. One of the representatives of this is Korea and its effective use of foreign aid has made the nation a good example of successful assistance that catalyzed socio-economic development (KOICA, 2017b). The study has provided the characteristics of Korea as it focuses on the areas where it has past development experience and comparative advantage. Similar to the trend of DAC donors in that they generally allocate a high level of aid in a sector where they have comparative advantages (Jiyoon, 2013). Moreover, the traditional advanced donor countries are

also might have benefitting from the foreign assistance under the concept of comparative advantage and specialization. While aligning aid to domestic motivations is not new concept, the current political climate has made it more common for donors to explicitly link aid spending to domestic gain.

Donors concentration on strategical development

Donor countries does not only concentrate across sectors where it has self-interest, comparative advantage, and expertise it also develops aid allocation focusing on its strategical development partner countries. Apparently, the originators of several aid programs appear to be influenced by their preferences for economic redistribution and poverty relief, but some foreign governments have clearly used the foreign aid to extract policy concessions without any concern or attention to poverty mitigation. Mostly related to this ground Bermeo (2007), suggested and termed strategic development approach. The scope of the current study does not encompass Bermeo's complete model, but the essential component can be extracted into a simple empirical test. In her study Bermeo argued that foreign aid donors may not only build development or diplomacy in pursuit of their own interests, but rather that they have incentives to maximize both at the same time. The author asserts in this paper that the economic development of strategically important developing countries is a goal of aid donors in itself, which implies that the assistance should be effective. Indeed, the paper has emphasized that:

> If donors are pursuing development in strategically important countries, the resulting allocation would explain why recipients are not chosen impartially but would not explain any perceived ineffectiveness of aid dollars in promoting development. Indeed, donors have a greater incentive to ensure the effectiveness of aid if it goes to countries in which they have a strategic interest in development, rather than being distributed based solely on recipient need (Bermeo, 2007).

Additionally, her argument implies that while a strong relationship between indicators of recipients' strategic importance for donors might not imply that aid does not have a humanitarian intend. When there are multiple recipients offering the same

good, the donor will choose the one with the highest return on investment, meaning the development. A dyadic relationship between development aid and non-development considerations appears to have created an endogeneity problem relating to the relationship between strategic importance and development, which meant that potential developments could have been ignored too easily (Bermeo, 2007).

Regardless of the empirical evidence, Bermeo frames her theory mainly in terms of aid effectiveness, meaning that if donors ought to support development strategically then their development assistance should be most effective in recipients of strategic importance. Theoretically, her work also has significant implications for aid allocation. Furthermore, aid has been particularly driven by the needs of countries which are strategically important for donors, since these are the needs donors have incentives and most motivated to address.

Using this perspective of strategic development focus, the empirical proposition of the current study is that "donor countries ODA allocation is more sensitive to its strategic priority recipients' needs and preferences, where these needs are consistent with the donor comparative advantage and priorities."

v. Research Question

Therefore, this study has questioned and objectives to explore,

Q1: Does the donor's sectoral allocation *align* with the recipient's priorities *in light of the comparative advantage*?

Q2: whether the comparative advantage and specialization of donor country is taken as an important factor in bilateral ODA allocation *over the recipient's preferences*. Furthermore,

Q3: Do donors perform well in ODA allocation that maximizes both recipient's and donor's priority when it comes to *its strategically prior recipient countries*?

Q4: Regarding the donor's different allocation patterns and motivations, what are their differences in utilization of comparative advantage and specialization in ODA allocation from the perspectives of an emerging and traditional donor?

This paper will attempt to answer these questions *by applying a new approach of donor's alignment evaluation with recipient needs and preferences* regarding aid effectiveness. The importance of this study is in the usage of the existing bilateral ODA flow to identify the need in supply and demand, to obtain sectors which would maximize donor and recipient preferences at most, by applying Revealed Comparative Advantage index.

To illustrate further, evaluating the donor's sectoral allocation consistency with recipient priorities, the paper used the Revealed Comparative Advantage (RCA) indices for the measurement of donors' specialized and comparatively advantaged sectors as a need in supply and for recipients comparatively priority sectors of needs in demand. In case of the donor RCA index, it indicates comparative advantaged sectors using the period of ODA flow meaning that donor country has advantage in allocating ODA to its specialized sector compared with other donors. Moreover, it shows a sector that the donor is willing to give ODA compared to the other DAC donors. In contrast, the demand of recipient has estimated using the same calculation of RCA index using its actual flow of total sectoral ODA received during the study time. This attempt to generate recipients' sectoral preferences and priorities based on its ODA receiving behaviour is contingent on the assumption that supply of foreign aid exists when there is a demand which support the allocation process consider recipient needs too. Further, multiple DAC donor's allocation pattern in a certain recipient would represent the major priorities of the recipient, representing the priority sectors of demand. Hence, recipient's sectoral RCA index indicate a sector where recipient has existing needs and priorities of receiving ODA in that sector compared to other recipients receiving pattern. The comparative advantage phenomenon in foreign aid approach is further explained in the methodology section in detail.

III. Research Methodology

i. Aid Comparative Advantage (ACA) and Aid Comparative Priorities (ACP)

By applying the Aid Comparative Advantage indices hence further be called ACA index for the donor country and Aid Comparative Priorities (ACP) index for recipient country, which formed using the RCA index equation, the paper has identified sectors where both donors have a comparative advantage and recipient shows compared priorities and preferences when compared with the rest of the world. Both partners' interests are supposedly maximized by allocating foreign aid in mutually beneficial sectors. ACA in the ODA sector is useful for identifying donor countries' specialization of aid and advantages over other countries. Furthermore, ACP is important to determine recipients' priorities using their preferable sectors compared with other recipient countries. Allocating aid to both partners ACA and ACP index higher sectors can be beneficial in terms of the aid effectiveness by promoting recipient ownership and including both sides interests through the specialization of the donor country and recipients aid attractiveness. Donors' possible allocation of ODA to each recipient was elaborated based on the sectoral ACP and ACA index calculation for all OECD recipients and case study donors. Then these illustrated allocation suggestion sectors are compared with the actual allocation of bilateral ODA respect to each pair of recipient and donor.

Donor countries consider numerous factors in the allocation of foreign aid. However, it is important to align bilateral aid with the needs of beneficiary countries in order to increase their capacity as well as efficiency. Although, in the evaluation of the donor's aid allocation, it is perceived to be completely impossible to accurately measure the donor's allocation consistency with the recipient's actual needs. It is mainly because the most aid sectors have needs for the recipient and are provided by passing through mutual discussions and partnership plans. In this paper, a new methodology is proposed with an aim to analyse whether recipient countries receiving assistance from donors are providing aid to vital sectors in their development needs. The method helps to calculate the sectors of distribution of aid

that may have the greatest mutual preferences that bilateral ODA partners share. The process of evaluating the actual bilateral allocation used a valuation process that divided total ODA amount of donor across four valuation categories, which we will explain at the end of this section. Furthermore, the new index of Aid Comparative Advantage index has been explained.

ii. Revealed Comparative Advantage: Balassa index

In this paper, the index of trade specialization has been obtained as an aid specialization index. The revealed comparative advantage index is an international trade index that determines a country's trade industry specialization and reveals a country's 'strong' sectors by using ex-post data of export flows. The term 'Revealed comparative advantage' was first used and highlighted by Bela Balassa in 1965 which is often called the Balassa index (Balassa, 1965). The Balassa index is shown in the following formula:

Equation 1. $$RCA = \left(\frac{Xij}{Xit}\right) / \left(\frac{Xnj}{Xnt}\right)$$

Where X is export, i – is commodity index, j – is country index, t – is set of countries, n – is set of commodities. The revealed comparative advantage is calculated comparing the share of i sector exports in j country's total exports with the share of i sector in a group of reference n country's total exports.

Applying the RCA index to aid using ODA flow data the general formula has generated and transformed into two separate equations below, of which (ACA) Donor Aid Comparative Advantage of ODA sectors and (ACP) Recipient Aid Comparative Priorities of ODA sector.

Equation 2.1 $$DACA = \left(\frac{Xij}{Xnj}\right) / \left(\frac{Xij}{Xnt}\right)$$

Where the X is ODA amount, i – is commodity index, j – is donor country, n – is total ODA of all sectors, t – is all DAC donor countries.

Equation 2.2 $$RACA = \left(\frac{Xab}{Xnb}\right) / \left(\frac{Xit}{Xnt}\right)$$

Where the X is ODA amount, i – is commodity index, j – is donor country, n – is total ODA of all sectors, t – is all DAC donor countries.

More specifically, if $ACA\ {}^{A}_{b}$ is country B's ACA index for industry a, this is defined as to:

$$ACA\ {}^{A}_{b} = \frac{share\ of\ ODA\ sector\ A\ in\ country\ b\ total\ ODA}{share\ of\ ODA\ sector\ A\ in\ total\ OECD\ ODA}$$

If $ACA\ {}^{A}_{b}$ index is >1, country B said to have a revealed comparative advantage in A sectoral ODA, since this sector is more important for country B than that of the other DAC countries.

iii. Source of Data

ACA and ACP index were derived for 229 ODA sectors of CRS 5-digit for 148 OECD developing countries and 2 case study donor countries for the period 2015-2019.[3]

According to OECD, aid activities were grouped into three-digit broad sector categories, each of which is further classified into five-digit purpose codes. Usage of the CRS 5-digit bilateral grant ODA sectoral data will enable the study to assess the developmental aid priorities of the development partners to estimate maximized sectors of mutual interests and other valuation sectors of the study.

CRS 5-digit sector classification was used in this study because of its in detail sectoral division. Alternative option which is CRS 3-digit may have the distorting evaluation because of its broad classification as mentioned earlier. Also, using 3-digit codes for sectoral studies may have restrictions, since donor aid allocations may simply consider to be highly consistent with recipient country priorities. The study

[3] See the list of recipient countries from Appendix A. "DAC list of recipients"

was conducted using only bilateral grants in the form of aid as two case study agency the KOICA and DFID has grant distribution solely. Only bilateral a country recipient of OECD was included in the calculations and regional recipient data were excluded. Over the past decade, DAC member countries have spent 1.4% of their bilateral assistance in loans and 98.6% in grants (Net disbursements). Although bilateral loans have decreased from the early 2000s, accounting for 10.3% of total disbursements in 2006, they have progressively increased since 2007. By 2015, the loan-to-grant ratio was 16 to 84. Therefore, grants in sectoral ODA are more likely to represent donors' intentions to allocate aid. Aid disbursement data represents the results of compromise between aid demand of recipient country and aid supply of donor country, which depends on recipient's willingness and administrative capacity of receiving ODA. Hence, the disbursement amount of ODA allocation was used in great accordance with the purpose of study.

KOICA has allocated ODA into 141 OECD bilateral recipient country across total 150 purpose code sectors during the study period while the DFID has allocated bilateral grant aid to total 67 recipient country for 120 purpose code sectors between 2015-2019.

iv. What do the ACA and ACP indices indicate?

With the result of each recipient and donors ODA sectoral indices, we will be able to determine and build the patterns of donor's aid priority and advantaged sectors and recipient's prior sectors to match each recipient country's priorities with each donor country priorities and extract into 4 groups of classification of ODA. The foreign aid should have to be allocated towards the recipients' prior and needy sectors in order to help recipients to increase their welfare. These four classifications of ODA allocation will be the criteria and valuation for evaluating the donor's actual sectoral distribution in the period of 2015-2019. The four sectoral classification are mutually advantaged/prior sectors of donor and recipient, donor's advantaged sectors, recipient's prior sectors and less prior sectors for both partners. The ODA sectors divided into four categories are the possible estimated aid sectors which

could result in better allocation of aid and these classifications are estimated for two donors of case study to each of its recipient countries. This approach will help to analyse how different donor countries take importance of its sectoral competitiveness in a recipient country to allocate aid and its compatibility with recipients' priority sectors.

Four classifications of ODA sectors for each pair of development partner's (donor and recipient) indicates that if the actual bilateral aid is allocated to one of those sectors, allocation is more compatible (or not) with the recipients' priorities depending on which category/classification the sector belongs based on the evaluation index.

Revealed Comparative Advantage benchmark is 1 index that indicates the X country has a comparative advantage in industry/sector A if its RCA index is more than 1. In the ACA index, we will also use the benchmark of 1. From the donors' perspective, having more than one ACA index means the donor country has an advantage in sector A compared to the other DAC countries. In other words, for example, donor X allocates a significantly larger amount of aid to sector 'A' in comparison with the rest of the world's allocation to that A sector. Also, it shows that donor country placed importance on sector A while most DAC countries overlooked sector A. Donors allocating aid to sectors of ACA higher than one, which it has a comparative advantage, reveals that donor distributes aid based on its specialization and advantage which it acquired in comparison with other donors. In contrast, aid sectors with below 1 ACA indices are the less advantaged sectors of the donor in allocating aid and other DAC donors have allocated relatively more aid into these sectors and aid concentration is high in amount.

On the contrary, a recipient country's sectors showing ACP index higher than one means that recipient receives more aid in the specific sector compared with other OECD developing recipient countries. This suggests that the sector (ACP > 1) is strategically the prior sector of the recipient which attracts more aid to the recipient than the other developing countries. Critically, it can reflect donor countries' policy on aid allocation, for example, taking importance of A sector in B recipient country not in the other recipients. Therefore, the ACP index for recipient countries has

demonstrated effects from both recipient's priorities as well as donors aid allocation patterns across sectors. The supply and demand of ODA relations can generalize and help to understand the mechanism of different sector allocation that is based on comparative advantage more systematically. ODA is provided by donors to sectors they consider recipient countries need assistance, as well as sectors where their interests intersect. However, the sectoral allocation policy of the donor country will have an influence in the process of allocation of ODA across sectors in each recipient country. The allocation policy is mostly the part of self-interest of the donor country and incrementally related with its regional and sectoral policy or principles on foreign aid allocation. Thus, for example, A recipient country's ODA received in the B sector from the X donor country can have a reducing or increasing effect (diminishing return and increasing return)[4] on the X donor's allocation decision on the same sector's aid to the other recipient countries.

A systematic methodology for identifying both the donors and recipients' ODA sectors of preferences (CRS 5-digit sector classification)

In order to systematically assess the sectoral aid allocation using the ACA indices, four group classification has been generated to classify the aid sectors, refer to figure 3. To have the classification of sector allocation ACA indices are calculated for each sector of CRS 5-digit ODA data for two selected DAC donors, KOICA and DFID, using their total ODA distributed between 2015 to 2019.

After calculating the ACA and ACP indices for the CRS 5-digit sectors of OECD recipients and selected donors of comparison, each pair of partners sectors have matched through classifying it into four section by the benchmark of 1 index, in order to obtain the mutually prior sectors of ODA which indicates most possible sector to allocate ODA including either perspectives of supply and demand. This supports the assumption that 'To maximise the both partners interests in allocation the aid should have to be allocated into the sectors of Mutual Priorities: in the intersection of sectors

[4] Increasing effects on other recipients' aid means that donor countries can take importance of specific sectors in specific countries or regions. Therefore, in some countries or regions donors allocate massive aid to tackle the development issue and aid concentration of sector and country will occur. So, other recipients' aid amount on those sectors, which it has excluded from the donor's purpose area, would decrease. In other words, recipients aid receiving sectors and amount is particularly related with other recipients needs and priorities.

that the donor has comparative advantage and specialization and the recipient's comparatively priority sectors. More in detail, all ODA sectors ACA (KOICA) and the respective recipients' ACP sectors have matched based on the criteria shown in the figure 3 and classified, same procedure of evaluation was made for DFID.

Figure 3 ODA allocation Evaluation classification (calculated by ACA indices)

		Donor	
		ACA > 1	ACA < 1
Recipient	ACP>1	Class 1 Mutual Advantaged Prior Sector	Class 2 Priority sector for Recipient
	ACP<1	Class 3 Only Donor's specialized sector	Class 4 Least Prior Sector for both partners

Source: Author's model

Classification 1. **Mutually Prior Sector**, here in after referred to as (MPS)

ODA allocation in this sector reveals better aid allocation of donors by disbursing more aid into sectors where both ACA and ACP index is higher than 1. Aiding the recipient's prior sectors can also be advantageous for donors when the sector's share of the donor's ODA is high. By doing so, donor countries can specialize in particular sectors in which they have expertise and experience they have gained through continuous implementation of same industrial projects. Moreover, it indicates sectors donor willing to give ODA compared to the other donors and recipient is more attractive to receive ODA in that area based on its needs, priorities, and other

possible criteria of donor. With regard to traditional donors, many DAC countries political shifts and the global economic crisis have prompted a more focused debate on national interests and value for money in foreign aid (Mawdsley et al., 2014). Thus increasing the explicit demand and interest for 'mutual benefits'(Keijzer & Lundsgaarde, 2018).

Classification 2. **Prior sector for (only) Recipient**

In this classification, donor countries allocated ODA only to recipients comparatively prior sectors of foreign aid, even though the donor does not have the sectoral advantage and competitiveness compared to other donors. By allocating a larger share of donor ODA to the sectors where the recipient country has the greatest need for development, the donor is reflecting the most effective allocation of resources to reflect demand needs. On the assumption that ODA has a natural development purpose, it should be allocated where the recipient country needs it most. However, in reality supply-oriented, meaning donor-interest dominance in aid allocation is more noticeable.

Classification 3. (**Only) Donor Comparative Advantaged Sector**

ODA allocation to this classification of sectors illustrate donor country allocated aid more into sectors where it has a comparative advantage and specialization, and not likely to consider recipients' relative priorities. If the donor country disbursed its large share of foreign grant aid to this group of sectors it indicates donor's differentiation of aid from the other DAC donors. As a result, the allocation of ODA is strongly influenced by supply-oriented needs, which are the donor's comparative advantage and sectoral specialization.

Classification 4. **Least Prior sector for both partners**

Anecdotally, giving aid to this classification is not representing either bad or good but rather it is important to analyse whether donor countries allocate aid into the sectors which they do not have any advantages compared to the other countries. Theoretical assumption suggested in this paperwork is that ODA is less likely to be allocated in a sector not prior to both donor and recipient. ODA purpose code sectors included in this group is a sector both recipient and donors share of the sector to their

total ODA disbursed amount is smaller when compared to the world share of the sector. Generally, this means that sectors included in this group are showing lowest demand and supply in need of ODA for specific pair of recipient and donor.

IV. Case study selection

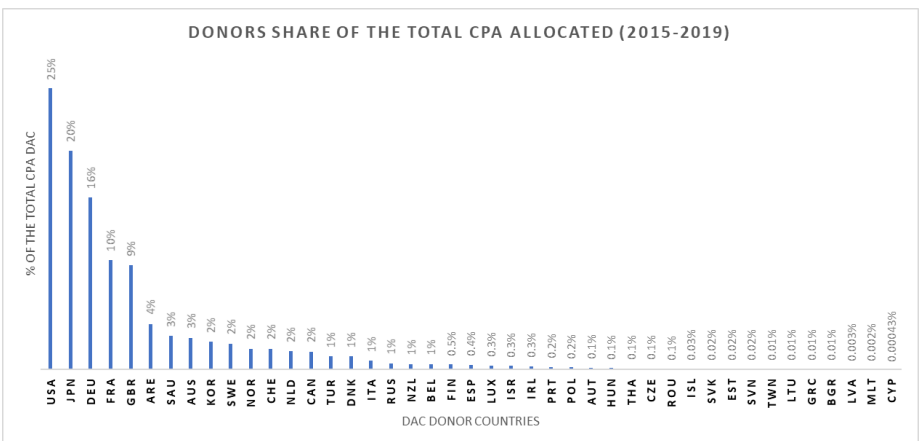
The study applied a new evaluation method of examining donor's consistency with the recipient's priority sectors as explained in the section 3 in detail. Addressing the differences of traditional advanced donor and an emerging donor of DAC members, in terms of their utilization of sectoral comparative advantages in bilateral ODA allocation is important for analysis of whether the comparative advantage phenomenon is crucial in aid allocation decision. Therefore, the paper selected Korea International Cooperation Agency (KOICA) and Department for International Development (DFID) of the United Kingdom, the main implementing body agency of the Republic of Korea (hereinafter referred to as "Korea") and the UK's development assistance abroad. The study has considered two significant criteria for the selection of case study donor. First, the differences of donor country are the significant factor in comparison study, including differences in allocation pattern, volume of total ODA, regional focus area, and their strategic partners and motives of aid selection. Second, donors likely to exhibit their comparative advantages and expertise in ODA allocation, for example, it means a donor whose political and economic ambitions are great. In terms of the second criterion both DFID and KOICA assumed to be greatly reflecting their self interest in the bilateral ODA allocation. Prior studies have shown that DFID sectoral allocation is more concentrated into the countries where the UK has political interests, especially the African region. Also, according to Figure 4, the UK is fifth largest development assistant country among the DAC members, by its share to the total Country Programmable Aid (CPA) of DAC during the time series of 2015-2019. In addition, KOICA shows relatively higher share (2%) of the total CPA of DAC compared with the other emerging and advanced donors.

There is an increasing comparison studies between traditional donors who have managed foreign aid projects for some time and emerging donors whose developmental experiences are different from those of advanced donor countries.

The different development paths for becoming the developed countries have led to donor countries implementing various types of projects, and their perspective on developing aid differs as a result of their varied motivations.

KOICA's ODA has been at the centre of international attention because of its development success as the recipient country. As a result, its aid allocation pattern may differ from the DAC sectoral allocation pattern because of Korea's own development characteristics which may have impact on its ODA allocation in terms of sectoral selectivity and compatibility with recipient country development priorities. Moreover, emerging donor countries are more possible to utilize their industrial advantage and expertise and have a strong self-interest reflection on ODA allocation that would make aid less likely to aligned with recipient priorities. Most of the emerging donor countries have importance of economic and regional strategical interests when allocating aid. However, it does not say advanced and large donors does not utilize their sectoral advantage and specialization in ODA disbursement. Comparing two donors' ODA allocation evaluations will provide us with important insights into how those different countries utilize their own industrial competitiveness and specialization for ODA allocation, and how they meet the needs of the recipient. Under this sub-section, the characteristics of donors' ODA and their sectoral allocation backgrounds are shown for the purpose of comparison.

Figure 4 DAC donors share of the total CPA allocated in 2015-2019



Source: CPA disbursement data retrieved from OECD online database and calculated by the author.

i. Korea ODA overview

As one of the poorest states of the world from 1945 to the 1950s, Korea was helped immensely by the international community's targeted assistance, which enabled Korea to leap forward ahead in economic development. Korea received a variety of aid based on its circumstances, including emergency relief and structural adjustment programs that contributed to its socio-economic development. Thus, Korea's effective use of foreign aid has made the nation a good example of successful assistance that has catalyzed socio-economic development. Under the Ministry of Foreign Affairs, the Korea International Cooperation Agency was established in 1991, in order to increase the efficiency and coherence of the grant programs. Korean ODA policy and programs are coordinated by the Prime Minister's Committee for International Development Cooperation (CIDC). Over 70% of Korean ODA is distributed to its 26 strategically prior partners. The ODA programs to these countries are based on Country Partner Strategies which are established for a period of three years (Jiyoon, 2013). Korean government's ODA provision rapidly increased following Korea's joining of the OECD as a 29th member nation in 1996, reflecting the country's standing as the world's first developing country to join advanced nations. Moreover, Korea is also hosting the G20 Seoul Summit in 2010, and it has played an important role in the adoption of the Seoul Development Consensus. Moreover, the fourth High Level Forum on Aid Effectiveness (HLF-4) was held in Busan in 2011, and Korea once again led the ways in the establishment of the Global Partnership for Effective Development Cooperation (GPEDC), a platform for engaging all development actors in an inclusive manner.

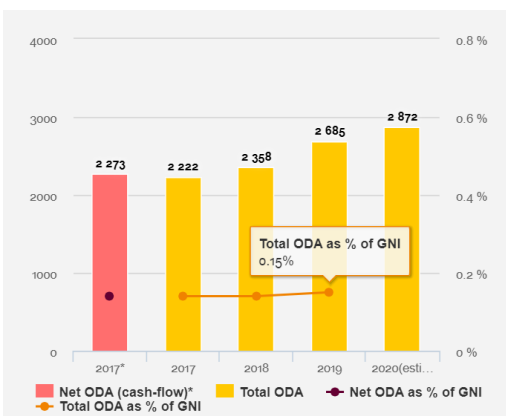
In its ODA white paper, the Korean government states that it is committed to planting seeds of hope throughout the world and sharing Korea's successful development experience with its partner countries while respecting international norms. In promoting collaboration, ODA could be delivered more effectively, harmoniously and systematically, while also reducing fragmentation (KOICA, 2017b).

The Korean ODA has been primarily derived from commercial and diplomatic reasons, thus loans made up more than half of the total. Since 2010, however, the share of grants and loans has remained at 60:40, and in 2018, the ratio changed

slightly to 59:41, due to international efforts to increase untied and concessional aid. Grant aid is primarily provided through projects that promote national development and reduce poverty, such as the establishment of necessary facilities and infrastructures for social and economic development, supplies of equipment, and knowledge transfers; and capacity building programs featuring Korea's development experiences. Every year, Korea's partner countries are offered specialized international volunteer programs with expertise in education, health, rural development, and information technology.

In the decade between 2006 and 2015, Korea showed a sharp increase in ODA, with annual growth rates reaching as high as 17.3%. South Korea spent US$2.5 billion on official development assistance (ODA) in 2019 (current prices), and became the 15th-largest donor. According to Global Aid, this amounts to 0.15% of South Korea's Gross National Income (GNI), ranking it the 25th largest donor. Nevertheless, the country's ODA/GNI ratio was stagnant equal to 0.14% since 2015 showed in figure 5. The bilateral assistance and multilateral assistance stood at 77% and 25%, respectively. The proportion of Korea's untied aid is relatively high among the DAC members but the ratio slightly declined from 62.3% in 2014 to 58% in 2015 (KOICA, 2017b). As of 2018, the least developed countries (LDCs) received 35.2% of the total bilateral ODA (USD 671 million) of Korea, exceeding the average DAC country contribution of 23.8%. Among the countries that received the most bilateral ODA (38%) in 2018, most belonged to low-and middle-income countries.

Figure 5 South Korea's total ODA



Note: US$ millions in 2018 prices Source: https://donortracker.org/country/south-korea

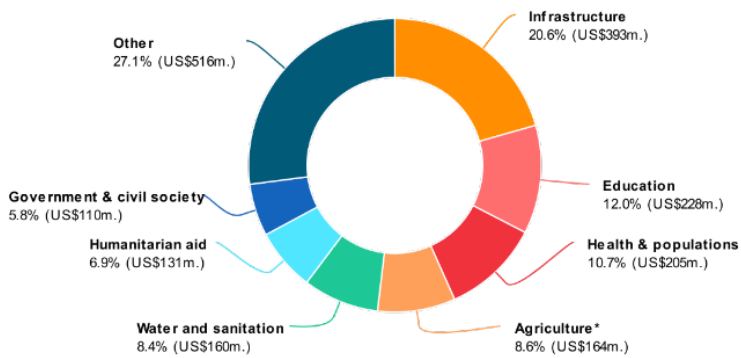
As an effort to become a DAC member country by 2010 Korea has followed the international trend through systemizing its aid planning and adopted international principles on selection, specification, and concentration etc. A comprehensive planning, monitoring, and evaluation process has been implemented and reinforced to enhance efficiency and improve the quality of assistance in Korea and has decreased the number of countries it prioritizes for international assistance to 26 out of its 130-150 recipients.

Korea ODA sectoral allocation

Although Korea's official foreign assistance is meant for humanitarianism and assistance for the economic growth of developing countries, trade and investment have been the main motive of Korean ODA. Therefore, the main recipients of Korea's ODA are Asian countries and 49% of ODA to Asia is disbursed in Southwest and Central Asia. Korean ODA to Asian countries had accounted for over 30% of the country's total ODA. This contributed to over 60% of Korea's total ODA in the 2000s. Aid has been allocated to sectors based on the sector's comparative advantages and developing experiences in fields such as education, agriculture, infrastructure, and telecommunications (Jiyoon, 2013).

A total of USD 108.29 million was allocated in 2015 to cross-cutting issues such as environment, gender equality, and human rights. As a result of policy initiatives and strategies of ODA scale-up with respect to cross-cutting issues, Korea's ODA to the multi-sectoral issues accounted for 27.1% of the total bilateral ODA (US$516m.) in 2018. As of 2018, KOICA's ODA to social & infrastructure services accounted 36.9% of the total bilateral ODA followed by Infrastructures aid 20.6%, Agricultural aid 8.6%. Within the social infrastructure and the service sector, education accounted for (12%) of bilateral assistance, followed by health (10.7%), water supply and sanitation (8.4%) and government and civil society (5.8%). Alongside with the social infrastructure services field economic infrastructure assistance of Korea is great however, it is mainly allocated through concessional loan type of assistance. Thus, it is unlikely to be included as a prior sector for grant aid.

Figure 6. Korea's bilateral ODA by sector, 2018



*Note: OECD CRS disbursements (cash-flow). The total bilateral ODA in 2018 accounted US$ 1907million. *Includes agriculture, forestry, fishing, and rural development Source is from: https://donortracker.org/country/south-korea*

ii. The United Kingdom ODA overview

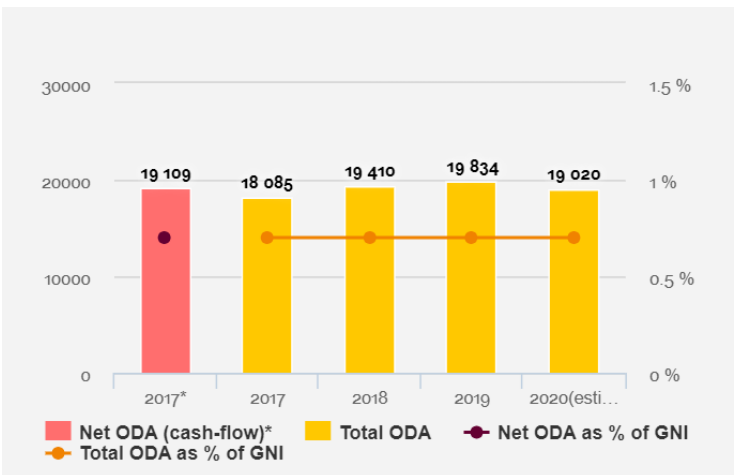
The United Kingdom's economy has a high degree of globalisation and 2% average economic growth rate, but the longer-term outlook is unusually unreliable. The UK economy is driven by the services industry, accounting for close to 80% of GDP, and London is the world's second-largest financial center. According to preliminary OECD data, the UK is the third-largest donor country in absolute terms, spending US$19.4 billion (current prices) on ODA in 2019. It has also been a member of the DAC since 1961. In 2019, the UK was the fifth-largest donor when considering ODA as a proportion of GNI. It has met the United Nations (UN) target of spending 0.7% of its GNI on ODA since 2013 and enacted this target into law in 2015. It is one of six DAC members to direct more than 0.2% of its GNI towards least developed countries. The UK's commitment to international development is critical to its global brand and soft power.

In September 2020, the UK Prime Minister launched the new Foreign, Commonwealth and Development Office (FCDO), formed by merging the former Department for International Development (DFID) with the Foreign and

Commonwealth Office (FCO). Reforms seek to enhance alignment between development and diplomatic efforts in the UK, making a significant change in the country's development assistance policy. Nevertheless, since the present research year is 2015-2019, DFID will be included in this study as the main body of aid implementation. Over the past 20 years, the Department for International Development (DFID) has been the primary government department overseeing the UK's official development assistance. In 2018, it accounted for 75% of UK aid, and the Secretary of State for International Development has been a member of the cabinet. The UK government recently reformed its foreign aid policy and developed strategies to ensure that UK ODAs focus on countries where their development, security, and economic interests coincide. The new strategy will enable UK ODA to tackle seven key global challenges: 1) Climate and biodiversity; 2) COVID-19 and global health security; 3) Girls' education; 4) Science, research, and technology; 5) Open societies and conflict resolution; 6) Trade and economic development; and 7) Humanitarian preparedness and response.

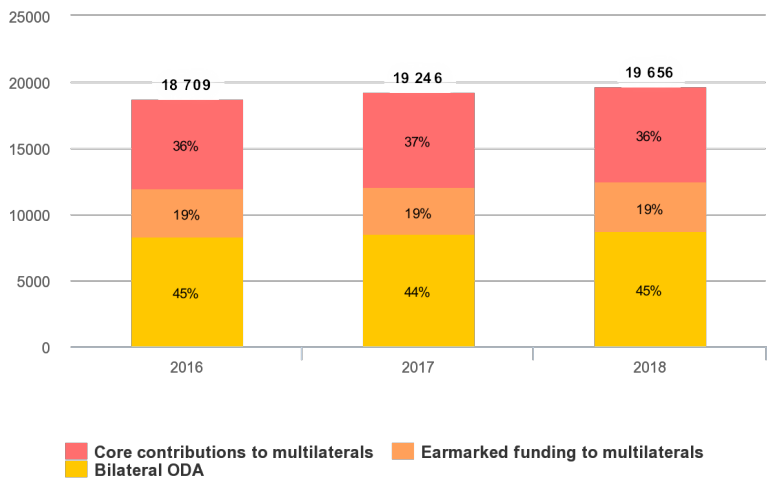
The actual increase in bilateral ODA spent in 2019 accounted for 67.5% of UK ODA Comparatively, over the previous five years (2014-2018), bilateral ODA accounted for 63% of all foreign aid.

Figure 7 The UK's Total ODA, disbursement, in US$ million 2018 prices



Source: derived from the donor tracker online database. / https://donortracker.org/country/united-kingdom/

Figure 8. The UK's ODA by allocation channel, in 2018 prices (US$ million)



Source: https://donortracker.org/country/united-kingdom

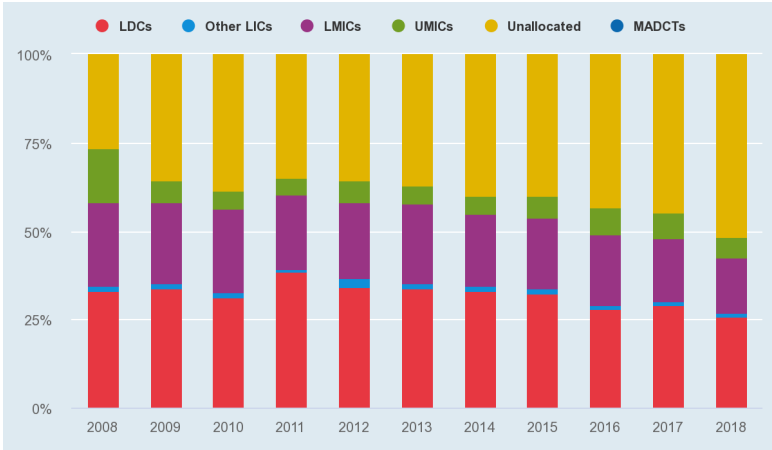
The UK was the 2nd most principled donor in 2017 due to high scores in terms of needs and global cooperation. The former is driven by comparatively high levels of support for conflict-affected countries and forcibly displaced populations; the latter by UK aid for climate finance. DFID has pledged to allocate 50% of its aid to fragile states, and $5.8 billion to climate-related initiatives over five years to 2021. These policies are key to the UK's performance in both areas. UK performance in the overall rankings has dropped from 1st place in 2015 mainly due to dropping scores on the public spiritedness dimension. This metric measure donors' indulgence in the use of aid for domestic purposes, such as assisting own firms or securing political support in international fora rather than in the interests of recipient countries.

DFID sectoral allocation of ODA

In line with the Aid Strategy, DFID has dedicated at least 50% of its bilateral budget to fragile countries over recent years; however, gross bilateral ODA to fragile states decreased by 11% between 2017 and 2018. As part of its overall goal of reducing poverty, the United Kingdom provided 25.8% of its gross ODA to LDCs in 2018. The share of ODA going to middle-income countries has remained stable over the last five years, with 32% of gross bilateral ODA being disbursed in lower

middle-income countries and 12% in upper middle-income countries in 2018 (OECD, 2020).

Figure 9 United Kingdom Bilateral ODA by income group



Note: % of the total Gross disbursement. LDC: least developed country; LIC: low-income country; LMIC: lower middle-income country; UMIC: upper middle-income country; MADCTs: more advanced developing countries and territories. (OECD online database[5])

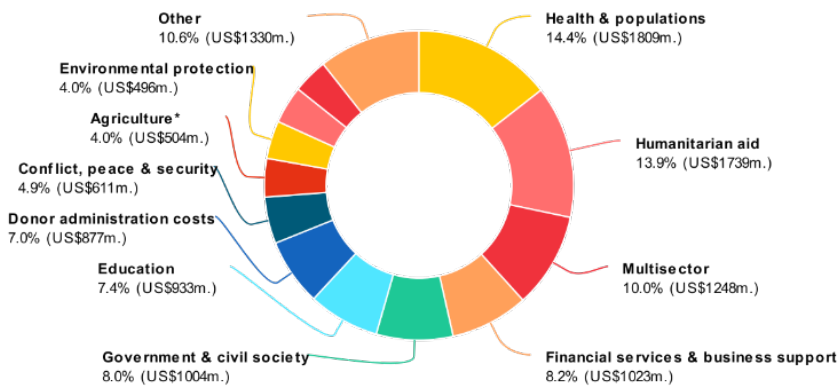
As a result of the UK's strategic priorities, global health and humanitarian assistance accounted for the majority of bilateral aid in 2018. Accordingly, US$1.8 billion (or 14%) of bilateral ODA went to global health, similar to recent years. US$1.7 billion (or 14%) of bilateral ODA went to humanitarian assistance, down from US$1.9 billion (or 16%) last year in 2017. In addition, there were other multi-sector activities (US$1.2 billion or 10%), financial services and business support (US$1.0 billion or 8%), and government and civil society (US$1.0 billion or 8%). Since the UK places a high priority on promoting economic growth and prosperity in its partnerships, financial services and business support received the largest percentage increase in allocation between 2017 and 2018 (US$1.0 billion compared to $0.6 billion in 2017). In 2018, UK ODA flowed US$933 million to education, 4% lower than 2017 and 30% lower than 2016 when the UK gave large amounts to the Global Partnership for Education (GPE) and the Girls' Education Challenge. Support to fragile contexts

[5] Downloaded from: https://www.oecd-ilibrary.org/sites/ff4da321-en/index.html?itemId=/content/component/ff4da321-en#section-d1e41792

reached USD 4.9 billion of gross bilateral ODA in 2018 (39.2% of gross bilateral ODA). 46.5 percent of this amount went to contexts with extreme fragility[6].

According to official UK statistics, 57.3 percent (£5,908m) of UK bilateral aid was allocated to specific countries and regions in 2019. UK bilateral ODA to a specific country or region continues to be allocated to Africa with a proportion of 50.6%. Asia remains the second largest recipient of UK bilateral ODA in 2019 with 41.8% of total ODA, followed by the Americas with 4.1%, Europe with 3.2% and the Pacific with 0.3%.

Figure 10 The UK's Bilateral ODA by sector (2018)



Note: total ODA US$ 12,525. Gross disbursement in 2018 prices. Sources: https://donortracker.org/country/united-kingdom

The UK channelled 35% of its gross bilateral ODA through the public sector in 2018, up from 27.5% in 2016. A large portion of UK bilateral ODA is directed towards social infrastructure, with USD 3.2 billion equal to 45% of the total bilateral ODA. As for social infrastructure and services, health and governance as well as civil society continue to be top priorities, with funding levels increasing since 2015. The

[6] OECD Development Co-operation profiles. Source is from: https://www.oecd-ilibrary.org/sites/ff4da321-en/index.html?itemId=/content/component/ff4da321-en#section-d1e41792

United Kingdom is a global humanitarian donor, and can respond to any crisis, according to different selection criteria.

V. Results and Implications

The donor ODA allocation compatibility evaluation consists four categories of allocation with recipient sectoral priorities as mentioned earlier. Depending on whether the donor allocates bilateral aid to a recipient in a what sector, these four categories determine which sectors will reflect both partners' perspectives, which ones will be only donors' interests dominated, which sectors represent only the recipient's interests in case of no donor comparative advantage and which sectors will be the least important for both partners. In this part, we will introduce the final results of the aforementioned stages of allocation evaluation for KOICA and DFID. As a research question, this paper will further explain the reason for the allocation result and compare the two donors' sectoral allocations.

Table 1 KOICA and DFID sectoral ODA allocation by ACA index priority classification (2015-2019 disbursement)

Allocation evaluation CLASSIFICATION	DFID ODA	KOICA ODA
Mutually prior sector	66%	48%
Donor advantaged sectors	19%	37%
Recipient priority sectors	8%	6%
Least prior sectors for both partners	7%	8%

Note. The data was calculated using the donor and recipient ACA index used to match with the actual sectoral disbursement of the donors and then evaluated allocation preferences based on the four classification. Calculation of the author.

The research result suggest that both countries have allocated most of their ODA share to the sectors which the donor have comparative advantage over other DAC donors. Furthermore, the data demonstrated that two donor countries of the study are distributing aid to their advantaged and specialized sectors and concentrating more on those sectors rather than the recipient's priority and higher demand sectors as calculated by ACP index.

KOICA's 48% of the total ODA, allocated between 2015-2019, is disbursed to the Mutually Prior Sectors (further referred as MPS) of both KOICA and its recipients. As compared to KOICA's result, DFID has allocated the largest share of its total ODA (66%) to the MPS, demonstrating a better consistency with recipient priorities and preferences as indicated in Table 1. It appears that DFID places a high priority on its comparative advantaged sectors when allocating ODA, but these sectors tend to be in line with recipients' more intensive ODA needs. Nevertheless, the bilateral ODA allocation to the only-Donor specialized sectors occupied a comparatively higher share of the total bilateral ODA of the KOICA, which 37% of the total grant aid is not consistent with its recipients advantaged and priority sectors of ACP. Donor only advantaged sector's allocation is comparatively lower in the DFID's ODA, accounting 19% of the total ODA allocated in 2015-2019.[7] This result itself explains the donor's specialized and its own comparative advantaged sectors are more preferable for KOICA's bilateral aid allocation when compared with the DFID. However, DFID's own advantaged sector allocation still exists but it is relatively lower when compared with the KOICA and it also has the 8% of its ODA disbursed to the only recipient country priority sectors with no donor comparative advantages in those sectors. Moreover, totally 74% of the DFID bilateral aid is consistent with its recipient countries priorities. Whereas KOICA's 54%, including both share of Mutually Prior sector and only Recipient's priority sector allocation, of the total grant aid is in line with its recipients compared priority sectors of ODA.

[7] See the donors' ACA index for CRS 5-digit sectors of ODA allocation from Appendix B.

The OECD states that increasing the effectiveness of aid means ensuring that aid helps in improving the welfare of developing countries' poorest citizens. As a result, foreign aid must focus on the development priorities set by these countries. At the heart of this commitment is the conviction that donors do not develop developing countries-developing countries must develop themselves. To enable this to happen, donors and developing countries must establish genuine partnerships, in which they are jointly and mutually responsible for development results (OECD, 2007).

As smaller share of ODA funds is allocated to mutually prior sectors and only the recipients' prior ones, the effectiveness of aid becomes questionable, and synergy between projects is compromised, as recipient countries' needs and priorities are not considered in decision-making. Therefore, if the grant aid is allocated to a sector other than the two previously mentioned, the ownership and capacity of a recipient may diminish since those other sectors are not familiar with receiving aid and haven't been recipients prior to the grant aid.

Although in the recent decade donor's development assistance increased in quantity, especially non-DAC and DAC emerging donor's share of the ODA is growing rapidly, such as, Korea, Turkey, BRICS countries, but the DAC donor's sectoral allocation trends have been changed its direction following the world leaders' international commitments under the UN's Millennium Development Goals (MDGs) established in September 2000 and its predecessor Sustainable Development Goals (SDGs) in September 2015. Aid is driven more by politics than by need, which undermines its effectiveness, even when limited resources are available. The analysis of the ways in which donor countries could utilize their comparative advantages has to focus on how to build systematic policy approaches on sectoral allocation and boost synergy among their projects with their specialized areas for delivering better aid to recipients in a way that meets the recipients' needs.

To find the influential factors behind KOICA's relatively smaller share of ODA allocation in accordance with the recipient prior sector when compared with the DFID is also the major focus of this paper. In doing so, it may provide important lessons for other emerging donors and traditional DAC donors on comparative advantage in accordance with the sectoral allocation and aid effectiveness. Moreover,

it can give us an understanding of the emerging donor KOICA's characteristics of sectoral allocation compared to traditional large donor's approach on ODA allocation.

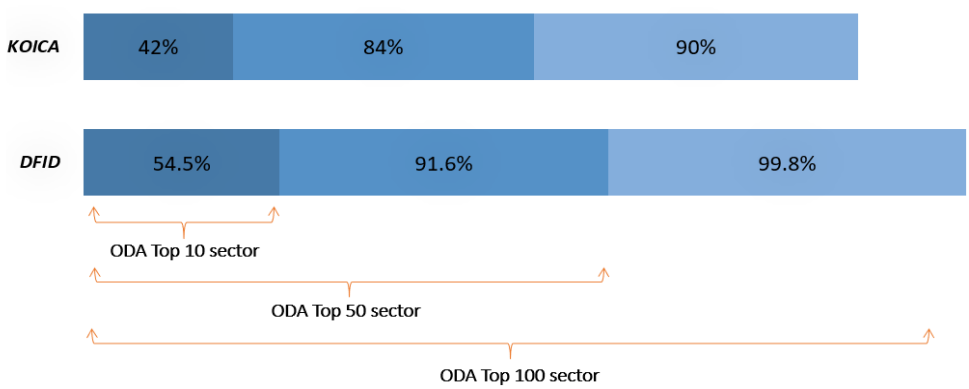
As shown in the evaluation method, only donor advantaged sectors are the sectors where the donor ACA index is more than one 1 at the same time the recipient ACP is less than 1 index. There are a number of factors possible to have an impact of having the result of Table 1, namely factors including the differences among total amount of ODA disbursement of the two donors and their sectoral ODA concentration, and the donor country's bilateral aid allocation policy differences. Analysing the causality of phenomenon may have a greatest contribution to this study in a way of examining and understanding the donor's sectoral ODA allocation behaviours under the given methodology of evaluation. According to the Table 1, the DFID bilateral aid is more likely to be consistent with and reflects the recipient's priorities, in contrast KOICA's approximately little more than one third of sectoral allocation is not consistent with the recipient's prior sectors whilst both donor's disbursed quite large (DFID 66% and KOICA 48%) share of aid to the mutually prior sector, the sectors possibly maximizes both development partners perspectives, priorities and needs. Also, an important implication from the result of evaluation is whether we should consider this allocation pattern as an alternative that can complement other donor's weaknesses, especially traditional donors. Therefore, an in-depth analysis of countries' sectoral concentration patterns, priority recipient allocation patterns, and ODA sectoral policies has been conducted in relation with the result of the donors' allocation compatibility evaluation.

i. **ODA sectoral concentration**:

Donor countries allocates aid different from each other and they each have their own development assistance priorities across countries and sectors and donor's allocation is different in terms of the volume. This paper mainly emphasizes and highlights the phenomenon that other DAC member countries ODA allocation and industry competitiveness would have an influence over a donor to determine its sectoral ODA allocation across countries and they specialize based on their comparative advantages. DFID's total bilateral ODA disbursement is almost 11

times bigger than that of KOICA's total disbursement, respectively, 26231 million US$ and 2407 million US$. According to the OECD CRS data, KOICA allocated bilateral ODA to the total 150 sectors which shows higher sectoral segregation and allocation is broad in terms of the sector when compared with the total amount disbursed. In comparison, the total number of sectors allocated by DFID is 120 relatively lower disaggregation and small number of projects implemented under the aggregated sectors. From the total number of ODA sectors of two donors, it is obvious that DFID bilateral allocation is more concentrated into the few sectors regardless of having the largest amount than that of the KOICA. Also, the sectoral allocation concentration can vary donor by donor in response of recipient development needs and donors prioritize a number of sectors in order to improve the effectiveness of aid disbursed and to be in line with the international development commitments which are aimed at eliminating poverty and promoting sustainable development. Thus, sectoral concentration could have an impact on two donor's aid allocation consistency performance, as introduced in Table 1. Therefore, the following concentration of ODA across sectors have derived from the donor's total disbursement across sectors. According to the two donor's allocations, both have a high concentration of bilateral ODA on a few sectors. (referring to 5-digit code CRS OECD).

Figure 11 Donor's ODA share of its top sectors (% of the total amount)



Note: Used donor's CRS ODA data between 2015-2019 and top sectors calculated share of the of sectors in the total ODA. KOICA has a total of 150 purpose code sectors while DFID's total number of sectors is 120.

The figure shows the top 10 sectoral concentrations of the two donor countries and the result is the same as expected because of their amount of aid in comparison with the total number of the ODA sector. There is a higher concentration of bilateral ODA allocation across sectors in DFID's top 50 sectors, which account for 91.6% of total ODA. Contrary to the DFID, the KOICA's sectoral ODA is fairly evenly distributed across all sectors, with 90% of the aid going to the top 100 sectors.

Thus, higher sectoral concentration in the top sectors could increase the higher accumulation of ODA allocation to the Mutually Prior Sector (ACA and ACP index >1) for both donor and recipient. Furthermore, this can be one of the explanatories for DFID's higher bilateral ODA consistency performance with the mutually advantaged sectors allocation while explaining the reason for KOICA's higher share of ODA allocation to sectors where comparative advantage exists only for the donor. In order to check whether the donor countries' sectoral concentration have an impact on the results of allocation to the ACA higher sectors, it is necessary to prove that the donor's ACA advantaged sectors (ACA>1 index) are matching with the bilateral ODA top sectors when calculated by the share to the total ODA. Following the match of the two priority sectors, one ranked by share order and the other based on ACA's advantages, over 70% of DFID's top 50 sectors of total ODA are the same as ACA's comparative advantaged sectors. Particularly, the top 10 sectors out of 50 are resulted to have the Aid Comparative Advantage when compared with the other donors. This indicates that DFID has sectoral comparative advantage in its top share ODA sectors and these are representing greater share of the total ODA consistent with the recipient priorities. And surprisingly KOICA's data shows that 86% of its top 50 bilateral ODA sectors have the comparative advantage when compared with the other DAC donors, meaning that KOICA's aid disbursed top sectors is more likely to have its own sectoral comparative advantage. In contrast to the DFID result, KOICA's own ODA comparative advantaged sectors do not meet the recipient's specific needs.

Two donor countries data proves that ACA index advantaged sectors can represent their ODA priority sectors. Therefore, it is statistically accurate to determine that higher ODA sectoral concentrations have had a weighty impact on the consistency performance, for example, having higher ODA shares to the mutually priority sectors

of both DFID and its recipient (Table 1). This is because DFID allocates a higher amount of its bilateral ODA to the top 50 sectors out of its 120 ODA disbursed sectors. Identical with DFID, KOICA has allocated almost half of its total grant ODA (48%) to the Mutually Prior Sector (MPS) with recipients and high concentration of prior sectors had great influence to acquire this adequate result.

Although high levels of aid were distributed to its top 50 sectors (84%) and even a greater proportion (86%) of those sectors matched with the Aid Comparative Advantaged sector list, the ODA amount (37%) is not consistent with recipient priorities when compared with DFID. The above phenomenon raises an important question: “Even with two donors having the same high concentration of budget on top sectors, KOICA's ODA allocation to MPS is relatively low, while it allocates almost two-thirds of its ODA to sectors with no recipient priorities”.

Figure 12 indicates the amount of aid distributed by donors to sectors with the ACA higher than one index, regardless of whether the aid is consistent with ACP indexes of recipients. A similar share of both countries' bilateral ODA, 85.4%, was allocated to their comparative advantaged sectors during 2015-2019. If those sectors don't represent recipient perspectives, allocating aid in a way that is largely consistent with its own comparative advantage would lower aid effectiveness. KOICA is allocating 85.4% of the total ODA to the ACA >1 sector but those sectors are less likely to be matched with the recipients advantaged and prior sectors which resulted in 37 percent of its total aid distributed to the solely donor advantaged sector of ACA when compared with 19% of DFID. In comparison with KOICA, DFID gives 85.4% of its total ODA to the strategically prior sectors as well and those sectors are more likely to be the recipient countries advantaged sector that showed 66% of its total ODA is allocated to MPS, in which both ACA and ACP sectoral indices exceed one. It shows that donors place more emphasis on their comparative advantage in aid sectoral allocation, which means that donor may choose project within a sector where other DAC members do not pay much attention in a recipient country and in fields where the donor has particular expertise and specialization.

Figure 12 Donor ODA allocation to the sector where ACA >1

ODA allocation	*KOICA*	*DFID*
ACA >1 sector total Amount (In million USD)	2055.20	22407.5
ACA >1 sector share of the total ODA	**85.4%**	**85.4%**
Total ODA disbursement (In million USD)	2407	26231

Source: Authors calculation using donors' Aid Comparative Advantage (ACA) index, data extracted from OECD CRS.

The greater compliance of DFID's ODA with the recipient ACP index sectors and priorities may differentiate from KOICA in terms of their aid sectoral and regional focus strategy. Furthermore, donors choose focus sectors according to their development assistance policies or to meet their strategic partnerships and general commitments to the international community to allocate scarce resources. Therefore, the donor's compliance issue in this paper is also highly related with the recipient country which the donor country prioritizes when allocating the aid. The allocation pattern of donors across the OECD recipient countries and regions is therefore an important factor to investigate in order to explain the questionable situation that arose after sectoral concentration comparison. The paper assumes that differences in donors' contributions may be due to differences in their priority countries and focus sectors selectivity.

It enables a donor to focus on things that the aid programme already does well (for example the post conflict societies) or give expertise from their domestic experiences, which is best to use the capacity of the donor and to implement well organized projects. Studies have shown that from perspectives of donor, it is not a big deal to focus on your specialization but from the standpoint of the recipient it can have a great impact on the effectiveness of aid as well as development. In both context and

politics, this is fundamentally flawed. The constraints faced by different developing countries vary. Potential solutions vary too – even where the technical problem is similar, domestic political economy and community norms may require different approaches. Moreover, as external agents of change, aid agencies inevitably face additional hurdles, needing to work through interlocutors and with limited information. Given this, to be effective, aid needs to focus first and foremost on what's needed and on what may realistically be achieved in the particular country or region it is being given. Restricting point to this is the problem of the context of an agency or donors' comparative advantage. An agency focusing on what it is good at, for instance, can cause the planning process to divert from what matters and is needed. Furthermore, another context issue could be that developing countries do not have the capacity to absorb the developed donor counterpart's development experience in order to find solutions to the problems that appear to be similar. Given the developing country where the political economy is different and unstable compared with the developed world. The last problem the paper suggesting is that only the donor's comparative advantaged sector focus is a political aspect. Because developing countries use their own domestic companies and firms to distribute and implement aid - a situation where the primary benefits accrue to the donor country - has long been a persistent problem in development. However, this argument relies heavily on the assumption that the aid budget of a donor is largely spent on its home market (Dewald & Weder, 1996).

ii. Bilateral ODA allocation consistency across recipient countries:

Given the different policy of foreign aid and different methods and processes from planning to implement, the donor has a different outcome as well. The ODA sectoral data by across recipient countries shows that two donors distribute its larger share of ODA to its strategically priority recipient countries (hereafter referred to as priority recipients). The top 20 recipient countries of KOICA and DFID received respectively 65% and 83% of their total bilateral ODA allocated between 2015-2019, refer to figure 14 below. Priority countries for bilateral ODA are a significant determinant of sectoral allocation. According to the recent study by Han Na and

Jinhwan (2021), the Korea's Country Partnership Strategy (CPS) priority recipient countries are the significant determinant of the KOICA's sectoral ODA allocation in case of the priority sectoral allocation, including the sectors of education, health, public administration, technology and agriculture. Their finding supports the notion that Korea's ODA allocation has been greatly driven by its political and strategical motivations and it would be the utmost important variable determining the country's sectoral ODA volume. And the study found out that priority country exerts a strong influence on both total ODA flows and its sectoral allocation (Han Na & Jinhwan, 2021).

In this section we will take a deep look at the comparison of both donors' ACA index estimated allocation with the actual ODA allocation for their strategic top recipients. As the top priority countries, the study will refer to 27 priority partners of KOICA's CPS and DFID's top ODA recipients by the share to the total ODA, noting that the DFID has no current official list of bilateral ODA priority countries. The final list of priority ODA partner countries is not yet clear, according to the DFID Bilateral Development Review (BDR) in 2016, it has announced that it will focus on the poorest and most fragile states, such as Middle-East, Sahel area and African region countries and decrease traditional aid to countries that can finance their own development, such as India and South Africa. Thus, it is distributing most of the aid based on the income level of the recipient. The UK Government set out in its Strategic Defence and Security Review that DFID will spend at least 50% of the budget in fragile states and regions in every year of the existing Parliament 2014-2019. And it mentioned a few countries of urgent needs based on the existing crises and poverty responsiveness, as Syria, Nigeria, Somalia, Sudan, Lebanon, Jordan and other countries along Africa's 'arc of stability' (DFID, 2016). The following list is the how the UK Government prioritize its bilateral ODA allocation across recipients, according to the country's ODA strategy review (DFID, 2015):

1. The government will direct more funding to fragile and conflict affected states including Syria and other countries in the MENA region to address current crises, the root causes of migration, and the threats posed to the UK by the ongoing conflict.
2. The government will continue to give strong support to the world's poorest countries. In order to maximise the impact of UK ODA on poverty, it will also

do more to support economic development and prosperity in a broader range of countries which are home to very large numbers of the world's poorest people.

3. The government will also continue to drive development in regions where the UK has close ties, including strong historical, cultural and diaspora links, such as the Caribbean, Africa and South Asia. It will continue to honour its obligations to the Overseas Territories.
4. In allocating aid, the government will carefully consider the fit with its strategic objectives, the level of need, the ability of partner countries to finance their own development, what support they get from others and their future risks, including humanitarian, economic and climate.

According to the UK selection priorities it is obvious that it will focus on the fragile and conflict areas, less income countries, and prior historical related previous colonial countries and it has also emphasized the human capital of the poor countries.

In the case of KOICA, Korea has great political motivations in ODA policies, the government has selected priority countries in development cooperation (currently 24 countries across the world) about every 4-5 years as shown in the table 2. In accordance with the Framework act (Article 8.2.3), the government of Korea has composed the CPS for its priority recipients to enhance effectiveness of ODA and also cultivate its relation with partner countries under the "choice and concentration" principle. In addition, the CPS formulates significant information on sectoral priorities, volume of ODA, mid-term allocations and implementation plans for each priority recipient based on the Strategic Plan for implementing ODA projects (Korea, 2017). As of today, priority recipients have been selected twice, the first time in 2011-2015 and the second time in 2016-2022, namely 26 countries were selected as priority countries for Korea's bilateral ODA in the first round and 24 countries were chosen in the second round.[8] Therefore, CPS 1st round priority countries together

[8] Before formulating the Country Partnership Strategy (CPS) in 2010, there were different priority partner countries for grants and concessional loans. Whereas KOICA had 19 priority partner countries including 8 Asian countries, 3 Latin American countries, 2 CIS countries, 1 Middle East country, and 5 African countries, the EDCF(Economic Development Cooperation Fund) in charge of Korean concessional loans had 17 - 7 countries were in Asia and the remaining 10 countries out of 17 were Mongolia, Bangladesh, Vietnam, Sri Lanka, Indonesia, Cambodia, Philippines, Guatemala, Uzbekistan, and Tanzania, which overlapped with KOICA's (Korean International Development Cooperation Center (KIDC), 2013, pp.58-59.

with the additionally included 3 countries in the second round of plan, Myanmar, Tanzania, Senegal as shown in table 2, were used in this research due to the research period of 2015-2019 which is partially covering the both round years of the CPS.

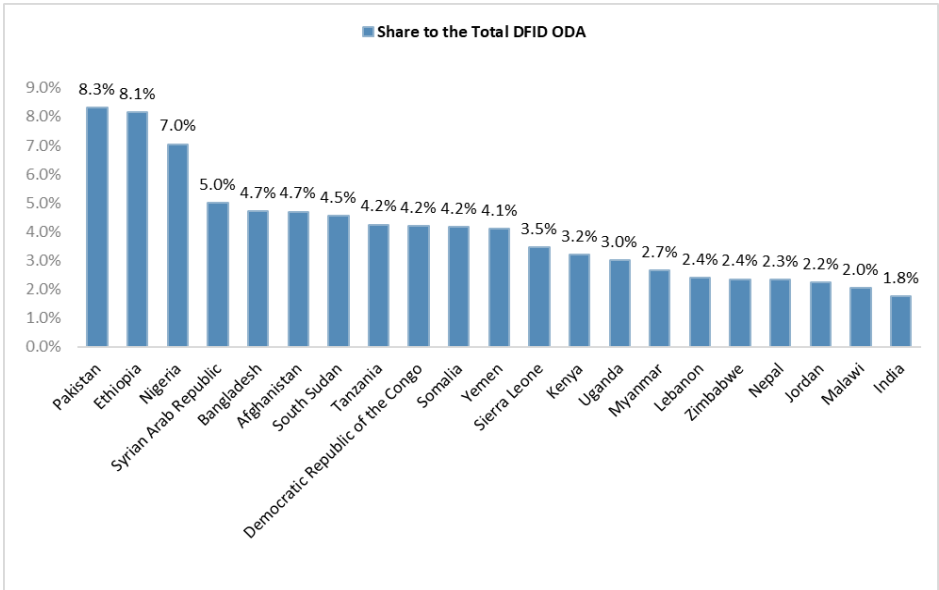
Table 2 KOICA's 1st and 2nd Country Partnership Strategy Priority Countries

Regions	Country Partnership Strategy (2016-2022) total 26 counties	Country Partnership Strategy (2011-2015) total 24 countries
Asia	Bangladesh, Cambodia, Indonesia, Nepal, Philippines, Pakistan, Lao PDR, Mongolia, **Myanmar**, Vietnam Sri Lanka	Bangladesh, Cambodia, **East-Timor**, Indonesia, Laos, Mongolia, Nepal, Pakistan, Philippines, Sri Lanka, Vietnam
Africa	Ethiopia, Ghana, Mozambique, Uganda, Rwanda, **Senegal, Tanzania**	**Cameroon**, **DR Congo**, Ethiopia, Ghana, Mozambique, **Nigeria**, Rwanda, Uganda
Middle east and CIS	Azerbaijan, Uzbekistan	Azerbaijan, Uzbekistan
Latin America	Bolivia, Paraguay, Colombia, Peru	Bolivia, Colombia, Paraguay, Peru
Oceania	-	**Solomon Islands** (1 country)

Note: Countries in bold are referring to the differences between the 1st and 2nd round CPS priority countries. Some countries have excluded from the 1st round and additional countries have added to the 2nd round. Data is extracted from the Korea Development Assistance official website, Country Partnership Strategy. Source: https://www.odakorea.go.kr/eng.policy.CountryPartnershipStrategy.do

The figure 13 indicates that DFID top 21 recipient countries and their share of the total DFID grant aid.

Figure 13. DFID Top 21 recipient countries (2015-2019)

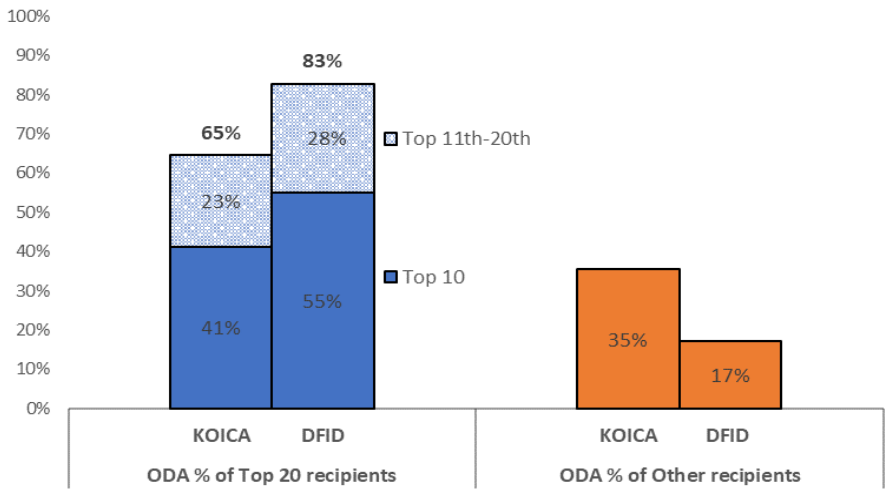


Note: Data is extracted from the OECD CRS and calculated by the author.

Two donor countries have allocated a larger proportion of their bilateral ODA to the top 20 recipient countries. Further, twenty recipients out of 141 bilateral partner countries of KOICA have received 65% of its total ODA from 2015-2019 as shown in Figure 14. Among them, the top 10 countries have received 45% of the total ODA from KOICA, showing larger concentration to the small number of recipients. In addition, KOICA has the principle of allocating 70% of its total ODA to priority countries, but Asia is the only region to account for 41%. Also, DFID has a relatively higher concentration of bilateral recipients, as 83% of the total ODA grants disbursed over the course of 2015-2019 were allocated to only 20 of its 63 recipients. For the case of DFID, the other recipients not included as a prior recipient have received only 17% of the total ODA.

Moreover, the share of the KOICA ODA for 27 recipients of CPS accounts 73%, higher than the top 20 recipients share of 65%. However, data also shows that other 121 recipients that are not a strategic prior country have totally received 35% of the KOICA's total ODA, each receiving a comparatively lower amount of the KOICA's bilateral ODA than that of the priority countries. Relative to the KOICA, DFID's top focus region is Africa which received its 43%.

Figure 14 KOICA and DFID, bilateral ODA spread across recipients /2015-2019/



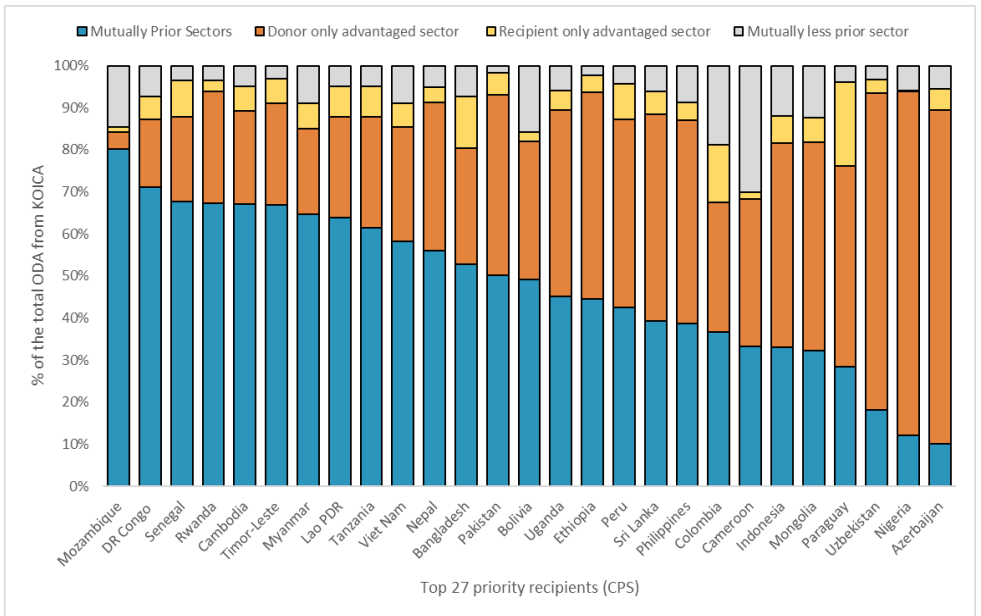
Note: Total number of DFID ODA recipients is 63 and KOICA has a total 141 recipients. Therefore, other ODA recipient in the graph refer to 121 recipient countries of KOICA and 43 recipients of DFID. Data has been extracted from the OECD CRS.

With having the concentration of bilateral ODA amount to the priority recipients, the donors' allocation performance has also significantly related with its ACA allocation performances for the priority recipients. Furthermore, the donor's allocation performance to the MPS, donor advantaged sectors, recipient advantaged sectors and mutually less important sectors depends almost entirely on their sectoral allocation pattern and performance for its priority recipients.

KOICA's bilateral ODA allocation performance to its 27 strategically priority countries are shown in Figure 15. Donors' sectoral allocation was evaluated based on the four categories using each donor and each recipient's Aid Comparative Priority index, explained in detail in the methodology section. ODA allocated towards donor comparative advantaged sectors are not effective in allocation because of the recipient's neglected needs and priorities. Also, in reality as proved by the data ODA allocation to only recipient priority sectors is extremely low even across the top recipients of bilateral ODA. Thus, the mutually prior sectoral allocation is the most beneficial and effective for both development partners because

of its mutual responsibility of maximizing the both recipient and donor preferences on developmental aid.

Figure 15. KOICA's Sectoral ODA allocation performance by priority countries



Note: Bilateral ODA allocation performance has been calculated using the ACA index suggested by this paper. ODA data was extracted from the OECD CRS.

KOICA's ODA allocation in the MPS with the recipient country has accounted for 48% of the total bilateral ODA of KOICA. In detail, MPS allocation to its priority country varies but is relatively low, with less than 50 percent of priority partners receiving ODA from KOICA through the MPS. Thus, the priority countries' lower result also greatly affected the lower performance of KOICA compared with the DFID alongside with the sectoral concentration impact. Further, among the priority recipients, the countries that receive a comparatively higher amount of KOICA's ODA showed less than 40 percent of total ODA allocation consistency with the recipient's ACP prior sectors, of which 39% in Philippines, Sri Lanka, Colombia and 32% in Mongolia, 33% in Indonesia. Further, the CPS countries having the least performance of KOICA's sectoral allocation compatibility are Paraguay, Uzbekistan, Nigeria, Azerbaijan, respectively, 28%, 18%, 12%, 10% of ODA from KOICA is allocated in each partners' MPS. It also demonstrates that even in the priority countries share of total ODA allocation to the sectors where the only donor country

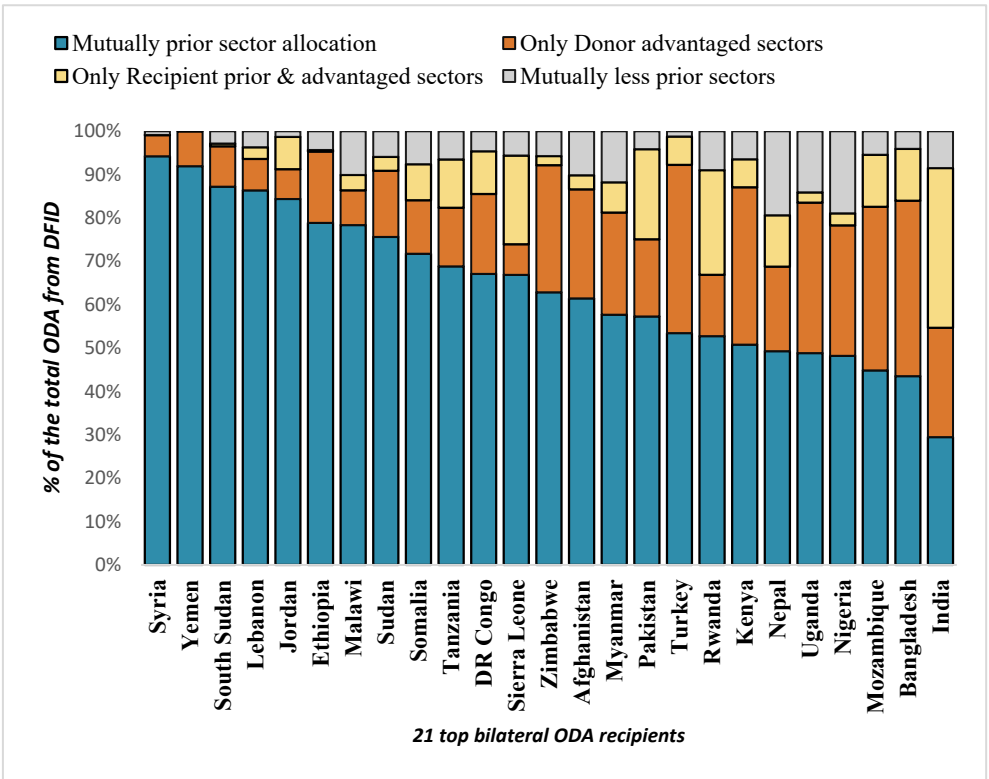
has a comparative advantage is large. Among the 37% of KOICA's donor comparative advantaged sector allocation- where the recipients do not show sectoral priority and demand in that sector- the strategically priority recipients compromise 70% of this type of allocation. This result suggests that even in its top priority countries it allocates ODA highly relevant to its own specialization and comparative advantage rather than considering recipient preferences.

DFID's allocations are much more consistent with the top recipients' priorities and needs when compared to KOICA through utilization of donor specialization. DFID's MPS allocation to its top 21 recipient countries has illustrated in figure 16. In each of the top recipients, DFID has allocated more than 50% of total ODA to the MPS. However, results for Nepal, Uganda, Nigeria are 49% which is below the average and the only India shows the lower share of the mutually prior sector allocation of 29% out of total ODA allocated. Although the mutual prior sector allocation is not fully consisting of the total ODA but the data demonstrates sectoral allocation to the only Recipient prior sector is relatively higher than that of the KOICA's allocation. Strong evidence of DFID's allocation is more based on the recipient priorities and interests can be also observed from graph below, for example, the India is the outlier of the MPS allocation of having 29% of the total ODA from DFID but in contrast it also shows 37% of the ODA disbursed to the India's comparative priority sector (ACP>1) when the DFID has no sectoral comparative advantage in those sectors. Similarly, Sierra Leone, Pakistan, Rwanda, Nepal, Uganda, Nigeria, Mozambique and Bangladesh have high allocations to the recipients' priority sectors with no dominance of donor preferences in relation to the recipients' needs, as these countries are strategically prior recipient of the UK.

Based on the two donors' sectoral allocation performance, it can be seen that the decisions vary according to the sector and recipient, and various factors are contributed in the decision making of disbursement. Nevertheless, in the allocation decision both partners preferences are not considered equally across sectoral allocation. For example, KOICA's ODA sectoral allocation is more taken account of the donor's own interest and industrial advantages as mentioned but at the same

time this allocation would be not as advantageous and beneficial as for donor in the recipient country.

Figure 16. Sectoral ODA allocation performance of DFID by priority countries



Note: Blue and yellow sections indicate the sectoral allocations have consistent with recipient preferences, moreover, these two sections include RACA index more than 1 index. And also, blue and orange sectors allocation represent the donor's interest dominance, where those sectors are DACA more than 1 index. Specifically, blue section is the donor's sectoral allocation to the mutually advantaged and prior sectors of both partners when both RACA and DACA sectors have an index greater than 1.

However, given the aforementioned result which shows large dominance of KOICA's own comparative advantaged sectors in the bilateral ODA allocation. In other words, KOICA is allocating ODA to a sector where a recipient country has the least comparative priorities when compared with the other OECD recipients. Particularly, the least comparative priority sector of the recipient country indicates that DAC donors allocate a large amount of ODA in that sector to other recipients than this recipient. Resulting that a recipient country does not have competitiveness and higher priority compared with other recipients to attract donors ODA in that sector. In addition, the other DAC donors have prioritized other recipients in that

sector over this recipient because their interests and those of others needs in that sector can be influenced. As a result, the recipient may have the lowest comparative priority (ACP<1) for a certain sector compared to other recipients. KOICA has therefore allocated ODA especially to those recipient sectors that lack foreign aid.

As an emerging country this can be an important characteristic of Korea compared with the traditional donors of DAC members. Its fragmentation of the sectoral ODA might have benefitting the recipient country in a way of compensating other donors omitted sectors through its various sectors allocation. It is more appropriate to say that the KOICA's focus of projects is mostly based on its own comparative advantage, expertise and expected to have a positive impact on the both partners of the development assistance not benefiting only the donor country. When the agency implements ODA programs it can utilize its specialized sectors while the both fragmentation of sector and differentiation from other donors in terms of selection of projects can favor recipients. Through the differentiation it means, for example, if the traditional donors sectoral allocation pattern is changing into the social infrastructure and services sector and they are implementing more software projects, the Korea's focus on the same sectors hardware projects could benefit the recipient through effective donor cooperation which highlighted as one of the principles of aid effectiveness under the Paris declaration. For instance, the education sector is one of the much-concentrated sectors within the social infrastructure and services sector and the DAC donors allocate most of the education ODA to the secondary education, primary education, and education policy and administrative management fields. Identical to this pattern DFID allocates most of its educational grant aid to the primary education, secondary education and education policy and management sectors, which are the sectors more based on the software development. Contrary to this traditional donor's pattern, KOICA's allocation is more to the vocational training, higher education, advanced technical and managerial training, and education facilities and training fields – indicating more "hardware" development areas.

In recent decade, development assistance in infrastructure sectors have been decreasing, especially in a physical formation sector, and it is a considerable issue.

As studies by (Lancaster, 1999), the aid to the infrastructure is generally considered to be less fungible than that of the other sectors. Also the infrastructure aid has a short term strong and positive effect on economic development (Clemens et al., 2012). Even the donors assess that investment in infrastructure and facilities in the education sector directly contribute to education achievement (Africa, 2005). According to this, software factors such as teaching methods and training are significant, and those factors can be addressed and fully realized after adequate hardware improvements have been achieved.

However, although DAC donors' aid in the governance area has grown rapidly when compared to their aid in the economic and production sector including agriculture, forestry and fisheries, transport, communication, social infrastructure, industry sector and technological cooperation, which is directly related to growth and production, has decreased. In addition, aid in hardware projects such as infrastructure has rapidly decreased whereas aid in software projects in areas such as legal, institution and consultation have rapidly increased (Jiyoon, 2013). The recent donor reduction in economic infrastructure aid is problematic, especially considering the recent discussions following 2015 on sustainable development and development effectiveness from the Busan Global Partnership. There is also a need to reconsider the trend of low aid levels in agriculture and industry, which are directly related to economic growth and poverty reduction. African countries pointed out that the decrease of aid towards infrastructure, agriculture, water and sanitation is problematic and recommended these sectors be readdressed since they are directly related to economic development (Africa, 2005).

Given these arguments, differentiation of sectoral allocation selectivity and ODA projects from the other DAC traditional donors pattern can be effective if their aggregated sectoral allocation is similar and recipient selectivity is identical. However, most of the donor's priority areas and countries are different from each other but their total number of recipient countries may be large regardless of their priority partners. In addition, another issue related with this hardware sector aid allocation is whether it is fully compensating the other donor's sectoral allocation selection, because infrastructure aid requires huge investment and it is less likely to

be provided through the grant type of aid. Therefore, the amount of the grant ODA provided to the sole purpose for hardware projects relative to the other donor's aid towards software projects are also important aspects for having positive impact of the differentiation which illustrated above.

Table 3 ODA allocation to the Mutually Prior sector by priority donors

		DFID		KOICA	
		Total Amount (In million USD)	% in the total ODA	Total Amount (In million USD)	% in the total ODA
1)	Total bilateral ODA (Grants)	26231.26	-	2406.745	-
2)	Total ODA to the Mutually Prior Sector (MPS)	17429.42	66%	1157	48%
3)	Strategically Prior Recipients total ODA	22191.06	84.6%	1745.914	73%
4)	MPS to the #3 (Priority recipients)	14779.03	56%	882.4756	37%
4.1)	% of 4 to the 2 (Priority recipients share to the total MPS)	84.8%	-	76%	-

Note: Data is extracted from the OECD online database and calculated by the author. 3) Strategically priority recipient countries are referring the CPS priority 27 countries for KOICA and top 21 recipients (share of the total order) of the DFID. 2) MPS refers to the abbreviation of Mutually Prior Sector allocation of the donor, which are prior and advantaged sectors for recipient and donor at the same time.

The DFID shows good responsiveness to the recipients' needs and priorities when it comes to its top recipients of bilateral ODA. Also, the DFID data shows that donor's allocation performance is not critically related with the ODA amount it distributes to each recipient. Due to the fact that some recipients receive lower shares of the total ODA from DFID, the recipients' sectors are 100 percent consistent. DFID bilateral ODA to countries like Central African Republic, Vanuatu, Cambodia, Lesotho, Laos, Chad, and Sri Lanka respectively corresponds to 100% aid allocation

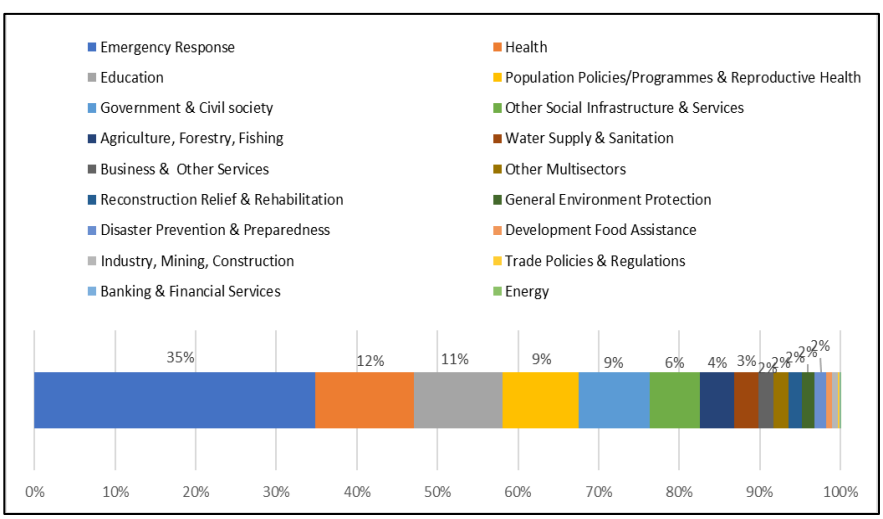
to the mutually prior sectors, regardless of their small percentage share in the UK's grant ODA. This result is because of their total number of ODA sectors disbursed from DFID. These seven countries total number of sectors range one to four purpose code which implicates that the given to a small number of sectors aid may have been spent on a specific project as the needs of recipient country, resulting in increases of the likelihood that the project met with need of recipient. This finding suggests that the good consistency of the donor's sectoral allocation with recipient's priorities are not only because of the volume and it has also impact on the number of sectors that are being a target of ODA disbursement and the fragmentation is critical as well. Moreover, the sectors allocated to the above mentioned seven countries were generally Humanitarian aid which are more responsive to recipients emerging needs to eradicate poverty and combat with the fragile situation, including emergency response aid, rehabilitation of the land after war, and food assistance aid.

Therefore, the data of actual sectoral allocation to a recipient evaluated by the Aid Comparative Advantage index of the bilateral assistance partner implicates that another important aspect of the analysis of the donor's compliance with the recipient in terms of the application of its comparative advantage is the sectoral breakdown (segmentation) of its ODA allocation. In other words, A sector is more likely to be ACP comparative priority for B recipient if the DAC donors allocate more aid to that A sector for B country compared to their allocation to other recipients. As a result of that, the B recipient has received comparatively higher share of its total ODA in A sector than that of the other sectors whilst other developing countries comparatively received smaller share of aid to that sector, specifically, a recipient's A sector share to its total ODA is high and it also accounts higher share of the world's total ODA allocated to the sector. This phenomenon could be a result of several activities and situations of sectoral allocation. For instance, KOICA's top priority region is Asia and it will distribute sectoral ODA in these regional countries for various sectors it has selected as a priority and because of the strategic purpose the donor wants more ODA allocation towards this region and would implement complex development projects further. Contrary to this, if the donor country takes importance of development issues rather than its regional focus, where the sectors it assumed to

have a great need for developing countries, then the donor will select specific countries currently facing those issues more fitting to the DFID case.

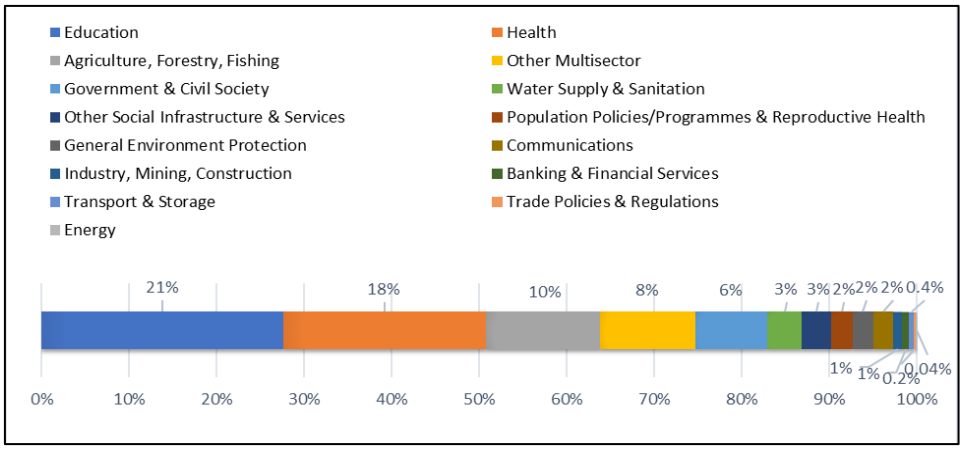
KOICA's ODA allocation to recipients' comparatively non-prior sectors would have critical impact from the donor's policy on ODA allocation. This has been further researched in this study to determine the factors which played a significant role in allocation of donor advantaged sectors regardless of having recipients' priorities and needs. Therefore, the comparison on sectoral ODA allocation characteristics of two donors has been conducted. In figure 17, the breakdown of the (MPS) for the priority recipients of DFID have illustrated. The humanitarian aid is the top bilateral grant ODA accounts 38% of total MPS and 21% of the total ODA distributed during the study years. Emergency response aid of 35% is followed by the health sector (12%), education (11%), and government & civil society, population growth each (9%) and together with the other social sectors infra (6%) the total social infrastructure & services sector aid reached 41% of the MPS with the recipients in the total allocation of DFID. It demonstrates that DFID sectoral ODA is more likely to be consistent with the recipients' priorities if the disbursed sectors are the emergency response and social infrastructure and services.

Figure 17. Sectoral breakdown of Mutually Prior Sector allocation by priority recipients (DFID)



Note: Data was extracted from the OECD CRS database and calculated by the author using the ACA index applied in the paper. Sector code in the figure is referring to CRS 3-digit code disaggregated sectors.

Figure 18. Sectoral breakdown of Mutually Prior Sector allocation by priority recipients (KOICA)



Note: Data was extracted from the OECD CRS database and calculated by the author using the ACA index applied in the paper. Sector code in the figure is referring to CRS 3-digit code disaggregated sectors.

In contrast to the DFID, bilateral grant ODA sectors are compliant with its recipient needs and priorities when the KOICA allocated aid to the specifically education, health, government and civil society sectors under the social infrastructure aid, as well as to other multisector/crosscutting and agriculture sectors, shown in figure 18. The social infrastructure and services sector accounts totally 53% of the total ODA allocated to the MPS, production sector including agriculture, forestry, fishing and industry, mining, construction sectors together account 11%, and other multisector aid including rural and urban development sectors accounted 8% of the total ODA allocated to the mutual priority sector of the donor with the recipient.

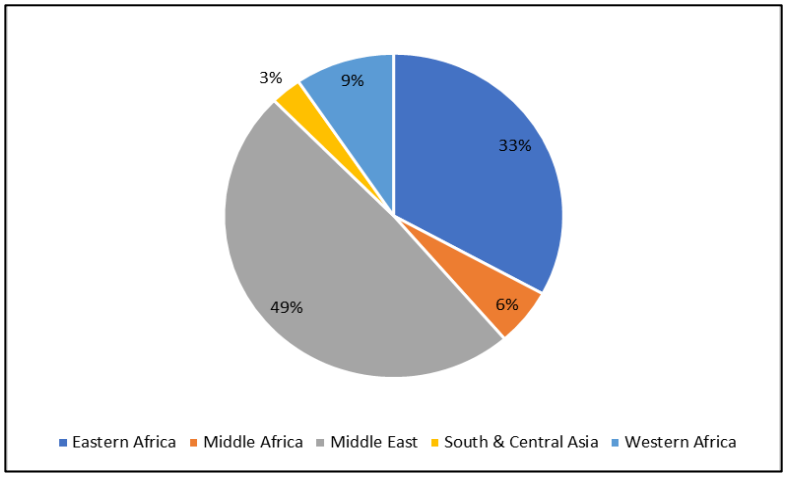
Further the study highlighted the different characteristic points of sectoral priorities of the two donors as humanitarian aids for DFID and the production and cross cutting sectors allocation for KOICA. Moreover, the social infrastructure and services sector has been identically prioritized by both donors by allocating their greater amount of bilateral grant ODA and both showing great consistency with recipient in regarding this sector. The sectoral selection has great relation with the donor's priority countries and regions. Therefore, the regional share of distinctive sectors was

obtained to find out donor countries policy priorities across sectors and countries that have potential relation to the donor's allocation performance result.

The DFID's bilateral ODA allocation is more sector oriented, means the donor selects the priority countries greatly based on their sectoral needs. In focus sector selection DFID's comparative advantage, poverty reduction purpose and fragile context were taken as the great factor. This result can be observed by the following explanations of the data shown in the figure 19 and 20. Among the top 21 recipients of DFID, which accounts 84.6% of the donors total ODA, the donor disbursed its largest share (49%) of the humanitarian aid to the Middle east region (Figure 19) where as it allocates (61%) of social infrastructure aid to the African region[9] shown in Figure 20. However, within the social infrastructure and services sector the Central and East Asian region has received 52% of government sectors ODA of top recipients and 49% in education sectors. In generally, the agency allocated higher share of its top recipients ODA disbursed in 2015-2019 to the Africa region countries, especially in the sectors of Humanitarian aid (33%), water supply and management (59%), population policies reproductive health (49%), Government sector (29%), Education (32%), Health (55%). Africa region received its 51 % of total grant ODA allocated in 2019.

[9] DFID top 21 recipient countries regional classification are: Eastern Africa includes (Ethiopia, Kenya, Malawi, Uganda, Somalia, South Sudan), Middle Africa (DR Congo), Middle East (Jordan, Lebanon, Syrian Arab Republic, Yemen), South & Central Asia (Afghanistan, Bangladesh, India, Myanmar, Nepal), Western Africa (Nigeria, Sierra Leona), from the OECD CRS DFID.

Figure 19. Humanitarian aid shares of regions by top recipient of DFID



Note: The DFID allocation of Mutually Prior Sector with its top 21 recipient country in the Humanitarian aid has calculated by the ACA index and actual ODA allocation consistency

The KOICA's production sector and other multi-sector allocations comply with the priorities of the top recipient and are the sectors that are different from the DFID's MPS sector allocation. KOICA's sectoral ODA allocation to the Far East Asia is large in both production and other multi sectors, accounting for 43% and 49%, respectively. The second largest region receiving ODA in these two sectors is South and Central Asia, followed by Eastern and Western Africa, South America, and Middle Africa, illustrated in figure 21.[10] The figure 22 shows that each regional share of the social infrastructure sectors which was consistent with the recipients ACP index. Consequently, there has been an even distribution across top regions of ODA to the social infrastructure sector, including health sector, population policies, and reproductive health. However, Far east Asian countries show better ODA alignment in the education, government and civil society, and health sectors whereas it shows relatively lower compliance of KOICA's allocation with the region countries needs in the water supply and sanitation sector. Nevertheless, in the health, water and

[10] KOICA's CPS priority 27 recipients by region classification are: Far East Asia including (Cambodia, Indonesia, Philippines, Mongolia, Laos, Timor-Leste, Vietnam), South & Central Asian (Azerbaijan, Bangladesh, Myanmar, Nepal, Pakistan, Sri Lanka, Uzbekistan), Eastern Africa (Ethiopia, Mozambique, Rwanda, Tanzania, Uganda), Western Africa (Nigeria Senegal), South America (Bolivia, Colombia, Paraguay, Peru), Middle Africa (Cameroon, Democratic Republic of Congo),

supply sanitation, population policies and reproductive health, and (education sector, only for Eastern Africa) the KOICA gives great responsiveness to recipients' preferences for Eastern and Western African countries. The KOICA's ODA disbursed to the Middle African region also reflects the preferences of recipients better in the culture and recreation, government and civil society, and reproductive health sector. With respect to the CPS top recipients, the KOICA has disbursed ODA to all prior countries for all the prior sectors included in the MPS allocation sectors. The aid of KOICA is thus fragmented, not only by sector but also by recipients.

According to Korean government plans, the country will gradually increase the amount it devolves to Africa while maintaining its focus on Asia. Specifically, the government is increasing its assistance to least developed countries (LDCs) in Africa by providing humanitarian assistance (Korea, 2017). However, humanitarian aid is not a comparative advantaged sector for KOICA.

Figure 20. DFID top recipients' regional shares by social infrastructure sectors

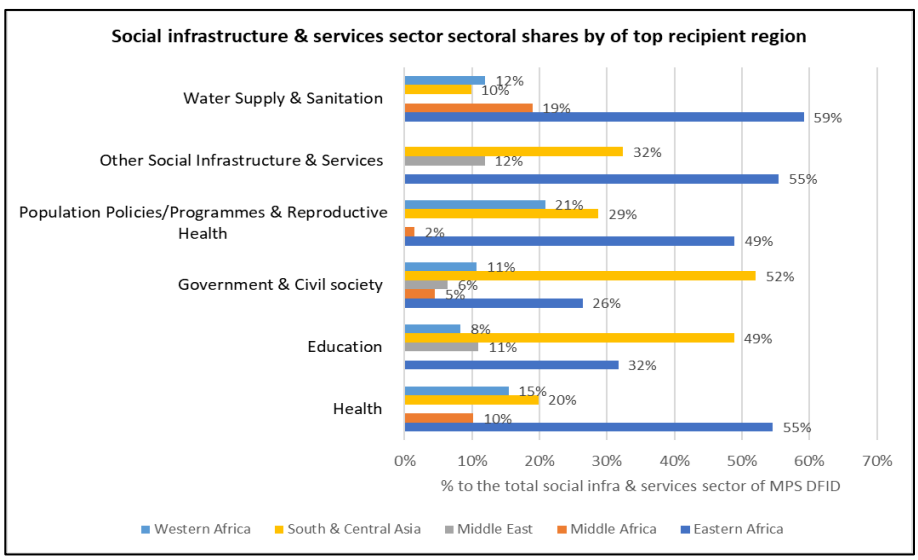
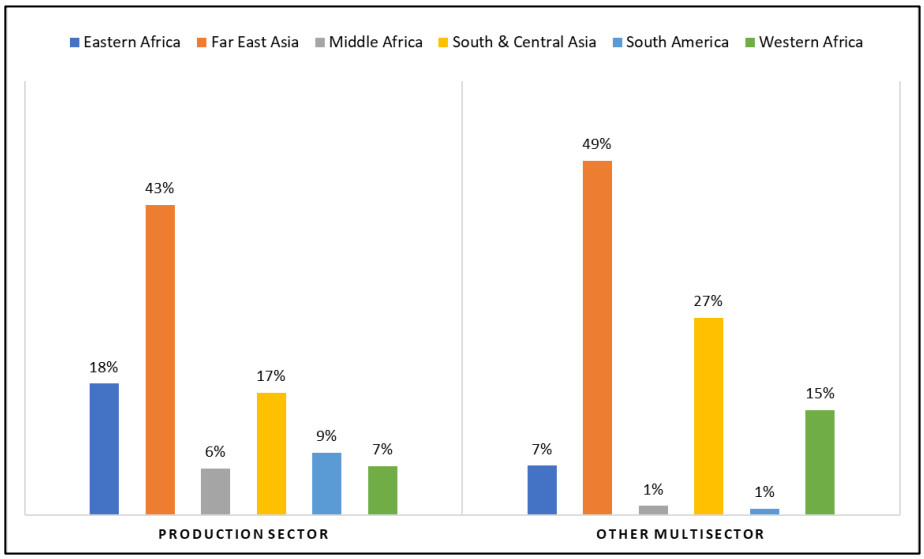
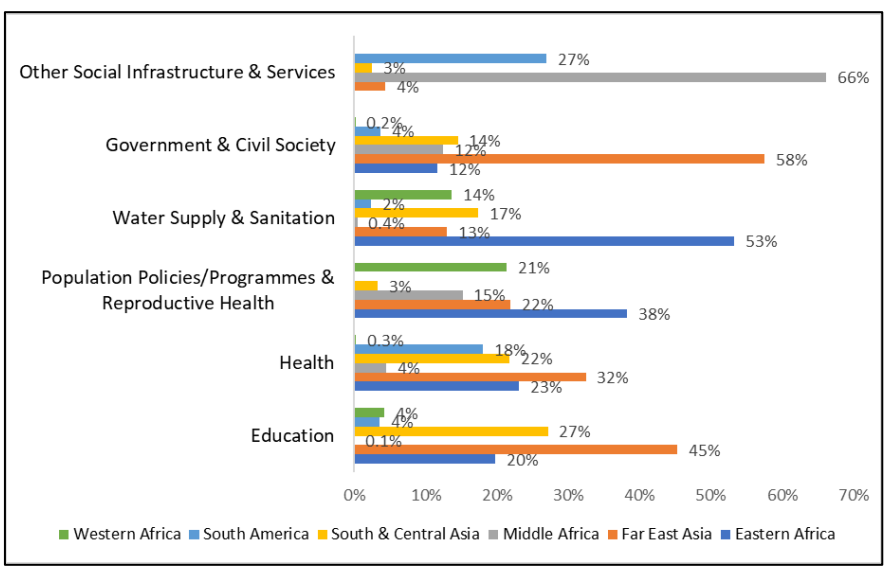


Figure 21. KOICA ODA allocated to CPS priority recipients in production and other multisector/cross cutting



Note: the share of each region is the share of its ODA to each sector, which are included in the Mutually Prior Sector allocation for strategically prior recipients.

Figure 22. KOICA Mutually Prior Sector allocation of Priority recipients by social infrastructure & services sectors



Note: The share of each region represents its share in the sector of the Mutually Priority Sector allocation. Data was calculated by the author using the ACA index sorted sectors and data was extracted from OECD CRS.

iii. KOICA's sectoral allocation characteristics and policies:

The breakdown of the KOICA has identified its focus sectors based on the five main sectors and introduced the Midterm Sectoral Strategy of 2016-2020. KOICA's strategic objectives and projects in the five main sectors are 1) health, 2) education, 3) public administration and governance, 4) agriculture, forestry and fisheries, and 5) technology, environment and energy. These sectors accounted for 82% of the annual spending on agency projects in 2018 (Han Na & Jinhwan, 2021). According to the OECD, the large amount (36.6%) of DAC member countries sectoral allocation is provided to the social infrastructure and services sector in 2018-2019.[11] The social infrastructure and services include health, education, governance and civil society sectors, water and sanitation and the category mainly refers to the efforts to develop human resources capacity and improve the living condition and welfare of recipient countries. Meanwhile, health contributed the most ODA to DAC members during the period 2014-2018 at 20.34 billion USD (13.21%), followed by humanitarian aid at 18.04 billion (11.72%), government and civil society at 13.06 billion (8.48%), and education at 10.89 billion (7.07%) (Nomura et al., 2021). The ODA on social infrastructure has taken its importance in the Millennium Development Goals (MDGs) as it puts a strong focus on social development and on poverty reduction in developing countries, which also affected the allocation pattern of DAC donors.

In the KOICA's bilateral ODA grant aid, social infrastructure and services sector is the top sector accounts 51% of the total grant ODA between 2015-2018, followed by the production sector (15%), other multi-sectors (9%), humanitarian aid (8%), economic infrastructure & services (7%). Among them when shown by the breakdown 3-digit sector code the top 5 sectors are Agriculture, Post-secondary education, Government & civil society, Urban & rural development, and Emergency response sectors. In addition, in terms of DFID ODA grants allocated between 2015 and 2018, the top sector is identical to KOICA (social & infra), which comprises 46%

[11] OECD-DAC, https://www.oecd.org/dac/financing-sustainable-development/development-finance-data/aid-at-a-glance.htm

of total bilateral grant aid, as shown in the aggregated data followed by humanitarian aid (17%), other Multi-sector (15%), Economic infrastructure & services (12%), and the Productions sector (8%). The top five sectors of ODA disaggregated by 5-digit purpose code are emergency response aid, rural and urban development, government and civil society, banking and financing services, and basic health services. The both countries allocate a relatively small share of their ODA grant aid to the general budget support.[12] The comparison of these overall sectors and sectors for MPS allocations shows that donors that disburse a large share of their ODA are more likely to have Mutually Priority Sectors with the recipient.

Among the distinct characteristics of the DFID sectoral allocation compared to KOICA is humanitarian assistance, which is non-sectoral aid such as food assistance, disaster relief, and emergency response, and it accounts for 15% of the DFID bilateral ODA. It suggests that the UK focuses on fragile areas around the world, where foreign aid is needed most in terms of the urgent need in demand. Moreover, the UK has an advantage in this area over other countries as the top bilateral donor of humanitarian assistance. On the demand side, fragile and conflict-prone countries have a growing need for humanitarian assistance, and these countries get the majority of humanitarian assistance from the DAC donors. Accordingly, the major recipients of humanitarian assistance have a higher comparative priority as a result of their reception of aid. In this way, DFID's aid allocation outperformed that of the KOICA, showing that humanitarian assistance is in line with recipients' needs and priorities.

According to the OECD 2020, the UK is widely recognised as a key player in fragile and humanitarian contexts, combining political will with expertise, joint analysis, presence and flexible funding (OECD, 2020). Compared to DFID, KOICA allocates ODA more to sectoral projects rather than non-sectoral aids such as humanitarian aid, budget support, and debt relief. In terms of allocation patterns, the KOICA's ODA allocation reflects the trend of DAC members and its top sector (social infrastructure and services) aligns with DFID's, but the allocation policies for more detailed sectors are different. In a given sector, multiple donors' allocations may vary based on a given country's strategy and policy. Buchert (1995) pointed out that ODA

[12] Refer to Appendix 4

patterns for education are dependent on donor policies and strategies. For example, education ODA in the Netherlands is likely to be provided to low-income countries, but Swedish education ODA projects are instead focused on primary and vocational training. Therefore, within a sector allocation is closely related to a donor country's own strategy and policy on a specific sector. As mentioned earlier before this study has a significance for comparing a traditional and an emerging donor of the development assistance which are the UK and Korea. In that sense, the results comparing the allocation performance of KOICA with the DFID show, the former as an emerging donor is taking more importance of its industry specific competitiveness on a sector in a recipient country when allocating sectoral ODA. According to the development assistance mid-term plan of Korea, KOICA's focus sectors were decided through quantitative and qualitative analysis while considering the opinions of the embassies and recipient countries as well as the industrial competitiveness analysis of Korea (KOICA, 2015). The result analysis of the study shows that the donor's (KOICA's) comparative advantage in a sector relative to the other donor members, which is, in short, industrial competitiveness, have played a significant and more dominant role in the allocation of sectoral ODA to the recipients. Furthermore, KOICA's midterm sectoral strategy plan emphasized the importance of the country's sectoral comparative advantage in its sectoral allocation by noting the importance of the comparative advantage for sector specific strategies. "Given its strong comparative advantage, Korea is well positioned to respond to a wide range of needs in developing countries, in benchmarking, educational assistance and knowledge sharing, and thereby contributing to the SDGs." (KOICA, 2017a, p. 9)

Also, allocation of ODA in those sectors emphasizes the donors (KOICA's) sectoral allocation characteristics when observed from the perspective of donor allocation strategies. A characteristic of KOICA's sectoral allocation that could be exaggerating its lower performance on consistency is the number of projects and 5-digit purpose sectors that are large and wide in scope compared to other donors, especially in the UK (DFID). As can be seen from the sectoral fragmentation of KOICA ODA, the donor distributed aid across the ODA sectors equally as opposed to DFID.

Table 4. ODA sectoral allocation variation of the two donor countries

	DFID	KOICA
***Mean** of ODA sectoral allocation*	497.05	5.07
(% of the sectors to the total ODA)	0.23%	0.30%
Standard deviation	1.90%	1.10%
# of sector 5 digit	120	143
# of Projects implemented (2015-2019)	14810	14401
Annual # of projects (average of 2015-19)	2880	2962

Note: The donors bilateral ODA sectoral data was extracted from OECD CRS data and the variation was calculated using the grant aids between the study year of 2015-2019. Standard deviation is in the percentile because the ODA sectoral data great outliers the sectoral share to the total ODA volume was used in this calculation.

According to the analysis of variations in sectors share of grant ODA between DFID and KOICA, DFID shows high standard deviation (1.9%) from the mean (0.23%) of sectoral shares to the total aid amount as in Table 4. High standard deviation indicates that the data points are spread out over a large range of numbers. While KOICA's standard deviation is 1.1% from the mean of 0.3%, this lower standard deviation indicates that the data points tend to be very close to the average meaning the donor aid amount across sector does not show big differences even in the priority sectors. However, while both donors allocated a large portion of ODA to the most important sectors, DFID's is concentrated to a smaller number of sectors than KOICA's. Additionally, it is apparent that KOICA distributes its bilateral ODA budgets more evenly across a broad range of areas. With its relatively small amount of bilateral grant aid (2406 million US dollars) compared to DFID, allocated between 2015-2019, the number of projects implemented is almost the same, totalling 14810 for KOICA and 14401 for DFID. In table 4, the annual average number of sectoral ODA is 2880 for KOICA and 2962 for the DFID. Moreover, there is a low focus on

priority sectors also due to the large number of projects that are being implemented and these are further contributing to the lack of foreign aid in the most critical areas.

To state the conclusion straightforwardly, a donor's priority region, recipient, sectoral preferences are the important factor of its ODA allocation and its distinctive characteristic of bilateral ODA allocation that utilizing donors' comparative advantage in a selection of focus sector is compensating the sectoral allocation of the traditional and advanced donors' trends, referring DFID in this study. However due to its large fragmentation of the sectors resulted by KOICA's sectoral allocation preference to distribute aid across many sectors as possible not to concentrate specific sector of recipient's prior needs, the ODA sectoral compatibility evaluation have resulted that the agency has preferred its sectoral advantages in a recipient country over the most needed and prior sectors of its recipients when allocating its bilateral grant ODA. This research also suggests that KOICA as an emerging donor in the development assistance community its own specialization, expertise, and comparative advantage of the sector might have more positive impact for the recipient if the sector is fulfilling recipients' great needs and priorities but even its allocation is not aligned with the what recipient country prioritizes the data demonstrated that its differentiation of the sectors are might have benefitting the recipients in a way of compensating other DAC-donors sectoral allocation pattern and diversification of bilateral ODA suggests both pros and cons that should be considered in the future distribution of ODA.

Also, DFID as the traditional and advanced donor of the DAC OECD, changing pattern of its aid towards fragile states and making a valuable contribution to eradicate poverty through excessive increases of its share of humanitarian aid while creating great synergy between the projects and diffusing the cross-cutting context to those existing projects are the significant learn from the agency to the other donors. From the recipient's perspective, sharp increases in a sector and shifts toward international goals (SDGs) may create a reduced opportunity for donor collaboration in allocating sectoral ODA to make aid more effective. Although in overall DFID performed well in maximizing both the recipient needs and its comparative advantaged sectors and expertise.

VI. Conclusion

As questioned in this research, the paper has investigated whether the donor countries prioritize its own comparative advantaged sectors in ODA allocation over recipients' priorities. The evidence from this study suggests that the both donors' comparative advantage and sectoral preferences are considered more than the recipients' priorities in bilateral ODA allocation. Based on this result it supports the earlier study which suggested "bandwagon effect" of aid allocation, the assistance of other donors can be considered as complementary to one's assistance (Jean-Claude & Ariane Tichit, 2004). Donor countries do not act independently when allocating aid (Jones, 2015). However, result further suggests that the donors' allocation differentiate when they maximizing both development partners perspectives in sectoral allocation decision-making. When compared with the UK, Korea's ODA grant aid allocation considers the donor's own comparative advantaged sectors and industrial specialization more than the recipients' preferences of sectoral priorities. Instead, the DFID allocation assessment demonstrated it greatly marginalize the both preferences of donor and recipient.

Through the case study analysis, the paper has demonstrated that sectoral concentration, fragmentation, strategic prior recipients, and donor specific sectoral policy and strategy are important factors in ODA allocation alignment with the recipient needs and plays an important role in maximizing both development partners perspectives in bilateral ODA allocation to increase the effectiveness and mutual responsibility of the foreign aid.

The research highlights the importance of traditional and emerging donors' characteristics, patterns, and functions of ODA allocation to explain differences among donors' utilization of comparative advantage in bilateral ODA allocation. Wide proliferation of ODA across sectors, strategical priority recipient and focus sector concentration are considered as the influential factors of having different consistency. Both donors' bilateral aid disbursement is significantly dependent on priority partners and the ODA segregation is relatively large for KOICA. However, the result highlights that KOICA's own comparative advantaged sectors allocation was dominant even to its strategically prior recipients. Accordingly, the study

suggests KOICA reconsider its ODA allocation policy with the objective of supporting the comparative priorities of strategic partners rather than covering diverse sectors.

Also, the paper demonstrated the assumption that KOICA's policy approach to ODA allocation can be understood as allocating ODA equally and evenly across sectors in its volume even though its ODA proliferation across sector is higher than that of the DFID. Given to the KOICA's relatively low budgets relative with the traditional donors, this could result in greater fragmentation of aid, a deterioration in aid effectiveness, and a decrease in sustainability. KOICA’s priority partners are more diverse including different countries from different regions and half of its total ODA is disbursed to the 50% of the all priority countries, while others half of the priority partners receive far below the 50% share. The KOICA's CPS focus sector indicates that it has different focus sectors for each recipient of CPS, but those are more likely to represent its comparative advantages compared to other DAC donors. Moreover, a distinctive characteristic of the sector allocations of KOICA is its similar levels of ODA in areas such as energy, education, health, water supply, and agriculture. Since Korean aid is sector-allocated, it will provide meaningful results for other donors, given that it adheres to the post-2015 development goals that emphasize integrated development, combining social, economic, and environmental values. Above all, prior to discussing which types and sectors of aid is more effective, the issue regarding traditional donors’ excessive concentration of their recent aid in certain sectors and types needs to be considered first. The aid scale has stagnated due to the recent global economic recession and responding to aid stagnation, the international society is emphasizing the enhancement of aid effectiveness and efficiency through the selection and concentration of aid as well as division of labor among donors. Also, post-2015 discussions put emphasis on linking various types of aid including knowledge, technology, finance and the integration of various sectors. Taking these development discussions into account, individual donors need to select and put their efforts based on their own comparative advantages. It is necessary, however, to work jointly to eliminate excessively similar patterns of donor aid and unequal aid concentrations.

DAC donors' focusing their aid on the "governance" sector and "software" programs reveals issues of unequal allocation among sectors. Furthermore, they lack in aid dedicated to economic development and sectors directly related to development as well as aid which can be incorporated into recipient countries' development strategies. KOICA's allocation into the donor comparative advantaged and specialized sectors may also reveal problems such as its focus on range sectoral allocation which do not take the synergies between the projects into account and limited sustainability of projects and resulting lack of recipient ownership. While the impediments of the KOICA's aid allocation have to be improved and corrected towards the efficiency, its characteristics from other donors can complement problems from traditional donors.

Moreover, the findings of the study also demonstrate the validity of the earlier studies by (Bermeo, 2007; Nielsen et al., 2010) is that the need for aid appears to be more responsive in countries that are most important to donors. The current study is consistent with this assumption in terms of donor responsiveness in maximizing ODA allocation based on recipient priorities. DFID result shows relatively higher alignment of recipient needs in terms of its top recipients.

Most of the growth in ODA to fragile contexts has been in humanitarian assistance, which increased by 144% between 2009 and 2016. The United Kingdom is the second top donor for humanitarian assistance in line with the US, Germany, Japan and ranks in the largest donors in terms of the bilateral disbursement on humanitarian assistance as it allocates 0.2 percent of its GNI to this area. Study findings provided substantial evidence that DFID's high concentration on focus sectors and priority countries, and the main feature of the comparative advantaged sectors are the significant aspect of having larger consistency with the recipient comparative priorities. This represents a profound shift away from the structure of aid that prioritizes donor interests over recipient needs as independent objectives. Especially, the agency's humanitarian aid is fully consistent with the recipient needs as described in the earlier section.

As a result of the comparison analysis the study found that the KOICA's ODA proliferation across sectors has strong explanation to its large amount of

allocation to comparatively advantaged sectors of the donor which are relatively inconsistent with the recipient's priorities. However, the findings of the mutually priority sector allocation of donors and its priority recipients have emphasized that differentiation from the other donor's allocation pattern may create a wide sectoral opportunity of aid for a recipient because KOICA's allocation of ODA is more directed to the hardware projects and sectors where other donors grant aid lacking. The differentiation mentioned in this study is derived from KOICA's sectoral comparative advantages.

The results of this study suggest that a comprehensive study of the sectoral allocations of emerging donors from both the DAC and non-DAC is necessary to better derive understanding of their use of sectoral comparative advantages of donors as a manifestation of self-interest in ODA allocation and as an indicator of supply needs. However, the study has not examined the real impact and effect of donor's preferences of its sectoral comparative advantages when compared with the other donors to allocate sectoral ODA but rather it has focused on what system and what ground is it possible to maximize the both development partners development priorities and preferences in foreign aid allocation.

I believe this methodology of ODA allocation consistency with the recipient needs calculated by both partners' ACA index will contribute to the strategic decision making and effective allocation of the future ODA policy discussions of the DAC member countries and helps to solve the problems to ensure the effectiveness of foreign aid. The adaptation of Aid Comparative Advantage index, which derived from the Revealed Comparative Advantage index, in a foreign aid area will create a more room for understanding of the donor's allocation preferences compared with the other donors and contribute to the future bilateral ODA allocation assessment methodology and improve the versatility of the discussion. Also, the comparison of traditional advanced donor and emerging donors (with the experience as a recipient country) is strongly believed to broaden a conception of donor's comparative advantage utilization in sectoral allocation.

VII. The limitation of ACA index in assessing needs in both a supply and demand context

First of all, prior research has not been done on the use of trade and economic indexes, especially the RCA index, when investigating foreign aid. Also, there are lack of ODA alignment assessments regarding the responsiveness of the donor allocation to recipient needs across variety of sectors. However, many other scholars have conducted researches based on the supply and demand theory of econometric to explain and determine the donors aid allocation motives and patterns. Furthermore, the current study has investigated donor sectoral specialization and comparative advantage as an indicator of self-interest. With the lack of indicators representing each recipient countries diverse sectoral priorities the study has applied similar calculation index to determine recipient comparative priorities and preferences of ODA using the past allocation data, of which CRS 5-digit disaggregated data. Nevertheless, most of the studies used GDP per capita as the determinant of recipient needs in case of sector specific analysis.

Since the purpose of this study is to assess donor allocation compatibility with the priorities of recipients across all sectors of allocation, the study demonstrated that need in demand can be derived from recipients' behaviour when it comes to receiving ODA. However, the ODA disbursement data is not in and out flow from the both side of the development partners, it is a flow only from donors to the recipients. Thus, recipients' ODA receiving behaviour across sectors are determined by the total ODA from the DAC donors to a recipient because of the ACP index calculation. Therefore, recipient Aid Comparative Priorities are the indication and result of different donor's allocation process. Even though, this measurement is not fully reflecting the sector specific needs it demonstrates what sector recipient prioritize most in comparison with the other OECD developing countries. However, this calculation produces the closest result to the most realistic, based on the recipient's ODA data of 5 years from 2015 to 2019. ODA flow, the sectoral allocation, is influenced by different aspects, including donor self-interest, recipient needs, and international development goals, as well as the recipients'

capacity and ability to attract aid in a specific sector. Consequently, the ACP index of recipient sector has limitation in interpretation scope.

The importance of adapting this evaluation method is to examine donors' alignment with recipient needs, in order to determine the most efficient way to utilize the preferences of both development partners, the term suggested as Mutually Priority Sector. Thus, there is further research needs to examine in case of similar emerging donors' level and for several donors' case.

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APPENDIX

APPENDIX A – "OECD RECIPIENT COUNTRY LIST"

TOTAL 148 RECIPIENT COUNTRIES

Afghanistan	Albania	Algeria	Angola	Antigua and Barbuda	Argentina	Armenia	Azerbaijan
Bangladesh	Belarus	Belize	Benin	Bhutan	Bolivia	Bosnia and Herzegovina	Botswana
Brazil	Burkina Faso	Burundi	Cabo Verde	Cambodia	Cameroon	Central African Republic	
Chad	Chile	China (People's Republic of)	Colombia	Comoros	Congo	Cook Islands	Costa Rica
Cote d'Ivoire	Cuba	Democratic People's Republic of Korea	Democratic Republic of the Congo	Djibouti	Dominica	Dominican Republic	Ecuador
Egypt	El Salvador	Equatorial Guinea	Eritrea	Eswatini	Ethiopia	Fiji	Gabon
Gambia	Georgia	Ghana	Grenada	Guatemala	Guinea	Guinea-Bissau	Guyana
Haiti	Honduras	India	Indonesia	Iran	Iraq	Jamaica	Jordan
Kazakhstan	Kenya	Kiribati	Kosovo	Kyrgyzstan	Lao People's Democratic Republic	Lebanon	Lesotho
Liberia	Libya	Madagascar	Malawi	Malaysia	Maldives	Mali	Marshall Islands
Mauritania	Mauritius	Mexico	Micronesia	Moldova	Mongolia	Montenegro	Montserrat
Morocco	Mozambique	Myanmar	Namibia	Nauru	Nepal	Nicaragua	Niger
Nigeria	Niue	North Macedonia	Pakistan	Palau	Panama	Papua New Guinea	Paraguay
Peru	Philippines	Rwanda	Saint Helena	Saint Lucia	Saint Vincent and the Grenadines	Samoa	Sao Tome and Principe
Senegal	Serbia	Seychelles	Sierra Leone	Solomon Islands	Somalia	South Africa	South Sudan
Sri Lanka	States Ex-Yugoslavia unspecified	Sudan	Suriname	Syrian Arab Republic	Tajikistan	Tanzania	Thailand
Timor-Leste	Togo	Tokelau	Tonga	Tunisia	Turkey	Turkmenistan	Tuvalu
Uganda	Ukraine	Uruguay	Uzbekistan	Vanuatu	Venezuela	Viet Nam	
Wallis and Futuna	West Bank and Gaza Strip	Yemen	Zambia	Zimbabwe			

APPENDIX B –1 "DONOR ACA INDEX BY SECTORS LIST: DFID"

Number of sector	Sector code	Purpose Name	Total amount DFID	DFID RCA	Number of sector	Sector code	Purpose Name	Total amount DFID	DFID RCA
1	11182	Educational research	70.32	8.74	**31**	73010	Immediate post-emergency reconstruction and rehabilitation	359.24	2.07
2	33140	Multilateral trade negotiations	2.68	7.72	**32**	31191	Agricultural services	112.42	2.05
3	43050	Non-agricultural alternative development	3.24	6.85	**33**	15150	Democratic participation and civil society	338.70	1.97
4	33130	Regional trade agreements (RTAs)	21.25	6.68	**34**	12110	Health policy and administrative management	539.06	1.95
5	14081	Education and training in water supply and sanitation	26.65	5.93	**35**	74020	Multi-hazard response preparedness	393.51	1.89
6	13081	Personnel development for population and reproductive health	93.21	5.68	**36**	15180	Ending violence against women and girls	45.05	1.86
7	13020	Reproductive health care	988.40	4.98	**37**	31130	Agricultural land resources	98.10	1.83
8	13030	Family planning	488.39	4.90	**38**	12220	Basic health care	783.27	1.81
9	12240	Basic nutrition	614.00	4.86	**39**	12182	Medical research	29.21	1.79
10	11130	Teacher training	242.51	4.83	**40**	15110	Public sector policy and administrative management	1133.01	1.76
11	15190	Facilitation of orderly, safe, regular and responsible migration and mobili	86.57	4.52	**41**	15250	Removal of land mines and explosive remnants of war	69.80	1.74
12	16062	Statistical capacity building	73.25	3.88	**42**	15170	Women's rights organisations and movements, and government institutions	121.10	1.71
13	72050	Relief co-ordination and support services	1095.69	3.83	**43**	14030	Basic drinking water supply and basic sanitation	186.41	1.68
14	15113	Anti-corruption organisations and institutions	131.21	3.60	**44**	32130	Small and medium-sized enterprises (SME) development	308.23	1.64
15	11110	Education policy and administrative management	746.02	3.49	**45**	31282	Forestry research	0.71	1.63
16	15151	Elections	158.46	3.47	**46**	23182	Energy research	1.18	1.56
17	12261	Health education	59.36	3.45	**47**	25010	Business policy and administration	431.14	1.55
18	12281	Health personnel development	50.10	3.41	**48**	15153	Media and free flow of information	36.36	1.48
19	72040	Emergency food assistance	2042.96	2.91	**49**	15114	Domestic revenue mobilisation	151.12	1.48
20	11320	Secondary education	338.63	2.72	**50**	33120	Trade facilitation	127.29	1.48
21	15152	Legislatures and political parties	31.25	2.67	**51**	43082	Research/scientific institutions	83.85	1.45
22	11220	Primary education	1069.26	2.54	**52**	11230	Basic life skills for youth and adults	42.56	1.35
23	24081	Education/training in banking and financial services	10.15	2.44	**53**	43040	Rural development	303.25	1.26
24	16010	Social Protection	1387.83	2.37	**54**	52010	Food assistance	255.09	1.25
25	41010	Environmental policy and administrative management	569.10	2.36	**55**	32120	Industrial development	30.81	1.25
26	14031	Basic drinking water supply	283.18	2.30	**56**	15210	Security system management and reform	105.99	1.14
27	72010	Material relief assistance and services	4448.27	2.28	**57**	16020	Employment creation	134.61	1.13
28	14032	Basic sanitation	97.45	2.16	**58**	12262	Malaria control	289.09	1.11
29	31120	Agricultural development	600.70	2.13	**59**	31210	Forestry policy and administrative management	45.10	1.03
30	33181	Trade education/training	4.12	2.12	**60**	11430	Advanced technical and managerial training	18.04	1.00

APPENDIX B –1.1 "DONOR ACA INDEX BY SECTORS LIST: DFID"

Number of sector	Sector code	Purpose Name	Total amount DFID	DFID RCA	Number of sector	Sector code	Purpose Name	Total amount DFID	DFID RCA
61	99820	Promotion of development awareness (non-sector allocable)	1.99	0.97	**91**	32310	Construction policy and administrative management	4.39	0.23
62	24020	Monetary institutions	17.16	0.96	**92**	23260	Geothermal energy	10.23	0.23
63	11330	Vocational training	167.60	0.92	**93**	41082	Environmental research	3.65	0.23
64	15230	Participation in international peacekeeping operations	19.85	0.84	**94**	14021	Water supply - large systems	55.04	0.22
65	31163	Livestock	34.04	0.80	**95**	14050	Waste management/disposal	17.90	0.21
66	15160	Human rights	81.30	0.78	**96**	24030	Formal sector financial intermediaries	154.05	0.20
67	43030	Urban development and management	234.90	0.77	**97**	32182	Technological research and development	2.21	0.20
68	33110	Trade policy and administrative management	70.66	0.74	**98**	23110	Energy policy and administrative management	106.79	0.18
69	15112	Decentralisation and support to subnational government	192.90	0.74	**99**	23270	Biofuel-fired power plants	3.14	0.17
70	11120	Education facilities and training	102.40	0.72	**100**	43010	Multisector aid	54.06	0.15
71	15220	Civilian peace-building, conflict prevention and resolution	166.58	0.71	**101**	23630	Electric power transmission and distribution (centralised grids)	90.97	0.13
72	24040	Informal/semi-formal financial intermediaries	126.36	0.67	**102**	33210	Tourism policy and administrative management	5.27	0.13
73	31110	Agricultural policy and administrative management	118.79	0.63	**103**	22030	Radio/television/print media	2.46	0.13
74	12250	Infectious disease control	133.50	0.58	**104**	22010	Communications policy and administrative management	2.70	0.11
75	15111	Public finance management (PFM)	310.35	0.56	**105**	99810	Sectors not specified	81.30	0.10
76	14010	Water sector policy and administrative management	88.18	0.52	**106**	23230	Solar energy for centralised grids	11.07	0.07
77	32210	Mineral/mining policy and administrative management	30.93	0.51	**107**	23220	Hydro-electric power plants	9.28	0.07
78	31220	Forestry development	22.84	0.50	**108**	11420	Higher education	34.22	0.06
79	21010	Transport policy and administrative management	165.06	0.48	**109**	12263	Tuberculosis control	6.67	0.06
80	11240	Early childhood education	15.47	0.44	**110**	31320	Fishery development	1.50	0.05
81	13010	Population policy and administrative management	21.66	0.44	**111**	13040	STD control including HIV/AIDS	32.89	0.05
82	24010	Financial policy and administrative management	125.86	0.42	**112**	32110	Industrial policy and administrative management	4.30	0.04
83	15130	Legal and judicial development	119.41	0.42	**113**	22040	Information and communication technology (ICT)	2.50	0.04
84	23210	Energy generation, renewable sources - multiple technologies	126.95	0.41	**114**	31182	Agricultural research	1.37	0.03
85	16063	Narcotics control	2.26	0.40	**115**	41030	Biodiversity	1.71	0.02
86	21020	Road transport	489.20	0.35	**116**	31310	Fishing policy and administrative management	0.15	0.01
87	14020	Water supply and sanitation - large systems	91.77	0.28	**117**	91010	Administrative costs (non-sector allocable)	1.70	0.01
88	25020	Privatisation	8.43	0.27	**118**	22020	Telecommunications	0.26	0.01
89	43060	Disaster Risk Reduction	23.92	0.24	**119**	16030	Housing policy and administrative management	0.18	0.002
90	14015	Water resources conservation (including data collection)	11.39	0.23	**120**	16040	Low-cost housing	0.08	0.001

APPENDIX B –2 "DONOR ACA INDEX BY SECTORS LIST: KOICA"

# of sectors	Sector code	Purpose Name	KOICA ODA amount	KOICA ACA	# of sectors	Sector code	Purpose Name	KOICA ODA amount	KOICA ACA
1	32172	Transport equipment industry	3.97	133.22	36	14081	Education and training in water supply and sanitation	1.60	3.88
2	11430	Advanced technical and managerial training	51.42	31.12	37	43040	Rural development	83.36	3.77
3	31181	Agricultural education/training	31.21	24.96	38	31120	Agricultural development	95.67	3.70
4	12181	Medical education/training	19.38	17.35	39	33140	Multilateral trade negotiations	0.11	3.34
5	11182	Educational research	11.24	15.23	40	11120	Education facilities and training	43.13	3.29
6	32140	Cottage industries and handicraft	1.86	14.74	41	32310	Construction policy and administrative management	5.80	3.26
7	16061	Culture and recreation	52.89	13.41	42	11220	Primary education	120.92	3.13
8	31281	Forestry education/training	0.64	12.46	43	14030	Basic drinking water supply and basic sanitation	31.63	3.11
9	12281	Health personnel development	16.05	11.90	44	15210	Security system management and reform	25.36	2.98
10	22040	Information and communication technology (ICT)	60.33	9.51	45	15110	Public sector policy and administrative management	169.07	2.86
11	31320	Fishery development	23.68	9.07	46	43060	Disaster Risk Reduction	20.62	2.29
12	12230	Basic health infrastructure	65.81	9.02	47	12220	Basic health care	90.36	2.27
13	23182	Energy research	0.62	8.93	48	11420	Higher education	109.35	2.25
14	33181	Trade education/training	1.56	8.75	49	21050	Air transport	18.25	2.17
15	12191	Medical services	80.33	8.74	50	13081	Personnel development for population and reproductive health	3.17	2.11
16	16063	Narcotics control	4.45	8.67	51	41082	Environmental research	3.03	2.04
17	32163	Textiles, leather and substitutes	4.48	8.57	52	21081	Education and training in transport and storage	0.75	1.96
18	12261	Health education	13.25	8.39	53	31162	Industrial crops/export crops	6.88	1.96
19	11230	Basic life skills for youth and adults	23.51	8.13	54	13020	Reproductive health care	34.96	1.92
20	31310	Fishing policy and administrative management	10.30	7.65	55	31140	Agricultural water resources	32.89	1.82
21	32182	Technological research and development	7.75	7.63	56	15151	Elections	7.54	1.80
22	11330	Vocational training	124.57	7.42	57	15170	Women's rights organisations and movements, and government institutions	11.30	1.74
23	11240	Early childhood education	23.42	7.35	58	12110	Health policy and administrative management	44.07	1.73
24	41081	Environmental education/training	2.40	6.68	59	14010	Water sector policy and administrative management	26.82	1.72
25	31166	Agricultural extension	10.73	6.36	60	33210	Tourism policy and administrative management	6.34	1.71
26	32171	Engineering	12.88	5.80	61	32161	Agro-industries	9.78	1.62
27	11130	Teacher training	26.04	5.65	62	31130	Agricultural land resources	7.88	1.60
28	15250	Removal of land mines and explosive remnants of war	20.01	5.45	63	43082	Research/scientific institutions	8.42	1.58
29	41040	Site preservation	5.32	5.05	64	31161	Food crop production	9.44	1.54
30	16062	Statistical capacity building	8.33	4.81	65	12240	Basic nutrition	17.35	1.50
31	11320	Secondary education	54.12	4.73	66	31182	Agricultural research	5.88	1.35
32	31381	Fishery education/training	0.50	4.42	67	43030	Urban development and management	37.42	1.34
33	24020	Monetary institutions	7.13	4.34	68	22030	Radio/television/print media	2.28	1.27
34	31194	Agricultural co-operatives	8.04	4.13	69	12250	Infectious disease control	26.68	1.26
35	22010	Communications policy and administrative management	8.81	3.94	70	32168	Pharmaceutical production	0.63	1.23

APPENDIX B –2.1 "DONOR ACA INDEX BY SECTORS LIST: KOICA"

# of sectors	Sector code	Purpose Name	KOICA ODA amount	KOICA ACA	# of sectors	Sector code	Purpose Name	KOICA ODA amount	KOICA ACA
71	15114	Domestic revenue mobilisation	11.54	1.23	111	25010	Business policy and administration	10.25	0.40
72	14015	Water resources conservation (including data collection)	5.56	1.22	112	14031	Basic drinking water supply	3.90	0.34
73	32220	Mineral prospection and exploration	0.66	1.22	113	21040	Water transport	4.03	0.30
74	15113	Anti-corruption organisations and institutions	3.97	1.19	114	14020	Water supply and sanitation - large systems	8.34	0.28
75	15130	Legal and judicial development	30.61	1.17	115	15112	Decentralisation and support to subnational government	6.55	0.27
76	52010	Food assistance	21.77	1.16	116	15150	Democratic participation and civil society	4.06	0.26
77	11110	Education policy and administrative management	22.47	1.15	117	99810	Sectors not specified	19.48	0.26
78	31191	Agricultural services	5.72	1.14	118	23210	Energy generation, renewable sources - multiple technologies	6.72	0.24
79	41010	Environmental policy and administrative management	25.11	1.13	119	15220	Civilian peace-building, conflict prevention and resolution	5.12	0.24
80	23183	Energy conservation and demand-side efficiency	4.05	1.11	120	14021	Water supply - large systems	4.76	0.21
81	14050	Waste management/disposal	7.96	1.02	121	15111	Public finance management (PFM)	9.94	0.20
82	15153	Media and free flow of information	2.12	0.94	122	24010	Financial policy and administrative management	5.29	0.19
83	16010	Social Protection	49.71	0.93	123	15160	Human rights	1.68	0.17
84	33110	Trade policy and administrative management	7.86	0.90	124	16020	Employment creation	1.85	0.17
85	23181	Energy education/training	0.33	0.90	125	15142	Macroeconomic policy	0.19	0.17
86	22020	Telecommunications	2.38	0.86	126	43010	Multisector aid	5.50	0.16
87	32110	Industrial policy and administrative management	8.53	0.85	127	12262	Malaria control	3.59	0.15
88	23230	Solar energy for centralised grids	11.73	0.83	128	23270	Biofuel-fired power plants	0.24	0.15
89	31193	Agricultural financial services	4.13	0.81	129	23110	Energy policy and administrative management	7.89	0.14
90	32210	Mineral/mining policy and administrative management	4.23	0.76	130	14040	River basins development	0.53	0.13
91	31220	Forestry development	3.16	0.76	131	73010	Immediate post-emergency reconstruction and rehabilitation	2.12	0.13
92	31110	Agricultural policy and administrative management	12.98	0.75	132	32262	Oil and gas (upstream)	1.01	0.12
93	31150	Agricultural inputs	0.98	0.65	133	72010	Material relief assistance and services	18.95	0.11
94	21010	Transport policy and administrative management	20.48	0.65	134	21020	Road transport	12.94	0.10
95	16050	Multisector aid for basic social services	5.56	0.64	135	23630	Electric power transmission and distribution (centralised grids)	5.99	0.10
96	32130	Small and medium-sized enterprises (SME) development	11.05	0.64	136	14022	Sanitation - large systems	1.54	0.08
97	31195	Livestock/veterinary services	0.63	0.64	137	21030	Rail transport	4.95	0.07
98	31210	Forestry policy and administrative management	2.56	0.64	138	15152	Legislatures and political parties	0.07	0.06
99	15180	Ending violence against women and girls	1.32	0.59	139	24040	Informal/semi-formal financial intermediaries	1.09	0.06
100	31163	Livestock	2.28	0.58	140	41020	Biosphere protection	0.28	0.05
101	31192	Plant and post-harvest protection and pest control	0.27	0.56	141	16040	Low-cost housing	0.31	0.05
102	33120	Trade facilitation	4.42	0.56	142	72040	Emergency food assistance	2.54	0.04
103	12263	Tuberculosis control	5.39	0.52	143	24030	Formal sector financial intermediaries	2.19	0.03
104	74020	Multi-hazard response preparedness	9.97	0.52	144	25020	Privatisation	0.08	0.03
105	16030	Housing policy and administrative management	4.47	0.51	145	13040	STD control including HIV/AIDS	1.62	0.03
106	23510	Nuclear energy electric power plants and nuclear safety	0.40	0.49	146	23640	Retail gas distribution	0.28	0.02
107	31391	Fishery services	0.28	0.48	147	16064	Social mitigation of HIV/AIDS	0.00	0.02
108	13030	Family planning	4.12	0.45	148	72050	Relief co-ordination and support services	0.36	0.01
109	12182	Medical research	0.67	0.45	149	23310	Energy generation, non-renewable sources, unspecified	0.07	0.005
110	43081	Multisector education/training	2.32	0.43	150	23220	Hydro-electric power plants	0.04	0.003

국문 초록

공여국 비교우위 대 수원국 필요성 및 우선순위: KOICA 와 DFID 사례를 중심으로

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본 논문은 공적개발원조 (ODA) 부문 할당 및 원조 일치에 유용한 프레임워크를 제공하는데 목적이 있다. 수원국의 부문별 필요성과 우선순위에 의한 선진국 개발원조 할당 일치성을 검토하여 공여국의 부문별 비교 우위와 경쟁력이 원조 할당 의사결정에 영향을 미치는 것을 연구했다. ODA 부문배분에 영향을 미치는 요인 중 하나는 경제협력개발기구(OECD)의 타 공여국에 비해 비교 우위와 국별 산업경쟁력이다. 비교우위(Revealed Comparative Advantage, RCA)를 적용하여 ODA 에 관한 공여국의 비교우위 및 수원국의 비교 순위 부문을 계산한 결과를 이용하여 양국 상호 유리한 우수순위인 선행 부문을 추출했으며, 공여국들이 개발도상국의 필요성과 우선 순위보다 본 국가가 비교우위를 가진 전문 부문의 중요성을 고려하는지를 한국과 연국의 사례를 통해 살펴보았다.

본 논문 결과에서 한국과 영국은 DAC 타 기증국가들에 비해 상대적으로 유리한 비교우위를 가진 부문에 ODA 원조의 큰 규모를 할당하는 것을 보여준다. 따라서 타 공여국의 원조 배분 패턴 및 산업별 경쟁력이 부문별 원조 배분 결정에 있어 중요한 요소 중 하나임으로 나타났다. 또한, 영국과 한국은 양자원조 부문별 배분에서 공여국의 자기이익을 중시하는 것을 볼 수 있으나 DFID 의 경우 KOICA 와 비해 수원국의 필요 충족도가 높았다. 특히, 사례연구에서 양국은 양자 원조의 우선순위인 수원국에 대해 높은 필요

충족도와 일치성을 형성했다. 이 논문을 통해 ODA 총 예산 금액, 원조 부문별 분절화, 공여국의 부문 정책뿐만 아니라 선진 공여국과 신흥 공여국의 특성도 모두 공여국 비교우위 부문에 따른 배분에 영향을 미치는 중요한 요소임이 밝혀졌다.

주요어: 공적개발원조 (ODA), 부문별 원조 할당, 원조 효과성, 양자원조, 원조 비교 우위, 원조 비교 순위, 원조 일치성, 필요 충족

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