

Analysis of the Healthcare Sector in Africa and Its Policy Implications for Korea

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I. Introduction

One of the main changes in Korea's foreign affairs in recent years is the expansion of official development assistance (ODA), among which Africa is showing particularly rapid growth. Korea's ODA to Africa accounted for 15% of its total ODA budget in 2010, and rose to 25% in 2019 as Korea emphasized its role in international development. Korea ranks 11th in terms of the cumulative size of ODA to the African healthcare sector between 2011–2019, totaling 674 million USD. As Korea's expansion of ODA and solidarity in international development aid to respond to COVID-19 are related, the expansion of ODA in the African healthcare sector is anticipated to continue. This study analyzes features of the healthcare sector in Africa in an effort to suggest various plans for development cooperation, based on an evaluation of Korea's ODA project design to enable the effective provision of ODA.

II. Features of the Healthcare Sector in Africa

1. Leading Causes of Death

The five main diseases in Africa that cause death or disease burden are neonatal diseases, HIV/AIDS, lower respiratory tract infections, diarrhea diseases, and malaria, and similar results were found in Korea's five priority partner countries: Ethiopia, Ghana, Senegal, Uganda, and Tanzania. In these five countries, heavy funding from the international community has caused rapid declines in infection rates of, for example, HIV/AIDS and malaria, whereas neonatal conditions and cardiovascular diseases, which have not received similar levels of funding, have exhibited either slow declines or increases. In the case of neonatal conditions, for which healthcare personnel who can manage births and newborns are essential, deaths and

disease remain high due to a lack of healthcare workers. In the case of cardiovascular diseases, deaths and the burden of disease have increased in Africa due to increased vascular diseases, such as high blood pressure and diabetes, as well as overweight and obesity rates. In Africa, most patients suffering from cardiovascular diseases go undiagnosed due to underdeveloped healthcare services, accessibility, and technology, and few diagnosed patients are treated and managed.

2. Governance

There is evidence that the administrative systems in Africa's healthcare sector in general, and particularly in Korea's five priority partner countries, are in a very poor situation. There are poor infection control practices, availability of medical equipment, communication with medical workers in the event of a public health crisis, and health capabilities in primary healthcare hospitals and communities. In addition, the five countries have either no quarantine system or a poor one. For example, they struggle to meet quarantine obligations, perform regular quarantining, or maintain a system related to quarantine detection and response.

Yet Africa's healthcare governance in terms of compliance with international healthcare norms is at a level similar to the world average. Many countries in Africa, including the five priority partner countries, have national healthcare plans, high compliance with the International Health Regulations (IHR), and

high financial support against health emergencies. In addition, laboratory diagnostic systems and governance related to the planning and implementation of public health preparedness have shown rapid growth.

The healthcare-related Sustainable Development Goals (SDGs) include comprehensive healthcare improvement measures to achieve reductions in infectious diseases, health improvement, and welfare promotion, such as a reduction in child and maternal mortality; eradication of infectious diseases, such as HIV/AIDS and malaria; reduction in early death due to non-infectious diseases; reduction in health-threatening external factors, such as drug abuse, traffic accidents, and pollution; and adherence to policies of the World Health Organization (WHO) regarding infectious diseases, such as HIV/AIDS, viral hepatitis, and sexually transmitted diseases. Similar to the SDGs, Africa's Agenda 2063 health strategy includes comprehensive healthcare improvement measures, such as reducing child and maternal mortality, reducing infectious and non-infectious diseases, and improving healthcare systems. The healthcare strategies of the five priority partner countries include specific plans to provide quality healthcare services and increase access to these services. While the health strategies of US and global funds, major donor countries, and donor organizations have centered on prevention, detection, and infectious disease response, the United Kingdom's health strategy has focused on improving public health and responding to global health threats.

III. Korea's Healthcare Sector ODA in Africa

1. ODA Strategies and Plans

Korea's national development cooperation plan is primarily built on the Strategic Plan for International Development Cooperation, initially published in 2011. The Strategic Plan details the size, destinations, modalities, and characteristics of Korea's development cooperation. The third Strategic Plan (2021–2025) adopted in 2021 stems from the rapid spread of COVID-19 and emphasizes action towards mitigating the effects of COVID-19 in partner countries. The emphasis is reflected in the budget, where allocation to the health sector increased by 21% in 2021 from 277 billion KRW in 2020, amounting to 458 billion KRW in 2022.

Korea's understanding of Africa and the importance of African countries in Korea's ODA partnership has evolved with the Strategic Plans. The third Strategic Plan outlines Africa not merely as an ODA destination but also as a strategic partner where innovative technologies and business models can be developed. Reflecting Africa's growing importance, Korea's ODA budget for Africa has increased from 18% of the total budget in 2011 to 26.4% in 2019, whereas that of Asia decreased from 63% in 2011 to 39.4% in 2020.

The significance of Africa and the healthcare sector is also mirrored in the programs of KOICA and the Exim Bank, agencies that represent Korea's development aid. Of the 413.9

million USD of healthcare ODA disbursement to Africa during 2011–2019, over 80% was facilitated by KOICA and the Exim Bank.

KOICA has established two strategies on co-operation with Africa, the first in 2012 and the second in 2020. The first strategy targets Africa as a continent while the second strategy is more advanced in identifying the various needs of African countries by region. Consequently, the second strategy highlights water, sanitation, and reproductive healthcare for Central and Western Africa; TVET and reproductive healthcare for Southeastern Africa; and TVET, public administration, climate and energy for Northern Africa. The second strategy also seeks cooperation in the areas of digital, business and climate change in addition to the established areas of agriculture, health, education and energy. Prior to the rise of COVID-19, KOICA's healthcare projects focused primarily on the sectors of water and sanitation, reproductive healthcare, and the prevention and treatment of diseases. Support was also provided for nutrition, vaccination, and development of healthcare insurance, among others. Since the outbreak of COVID-19, KOICA has developed the ABC Program, short for "Agenda for Building resilience against COVID-19 through development co-operation," which seeks to take action on improving the fragility of countries in regards to the effects of COVID-19, to build capacity, and to form a comprehensive network of co-operation in managing the social and economic impacts of COVID-19. KOICA supported 12 African countries in 2020 through

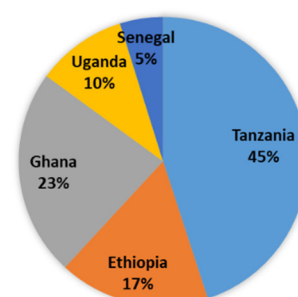
the ABC Program.

Exim Bank presented its Post-COVID-19 EDCF Operational Strategy in 2021 to assist countries to build a management and response system to COVID-19 and to provide medical equipment. The strategy has enabled partner countries to use emergency concessional loans of up to 100 million USD at a low interest rate of 0.05%. Ethiopia, Ghana, Tanzania, and the African Development Bank have already facilitated emergency loans in acquiring medical equipment.

2. Korea's Healthcare ODA Disbursement in Africa

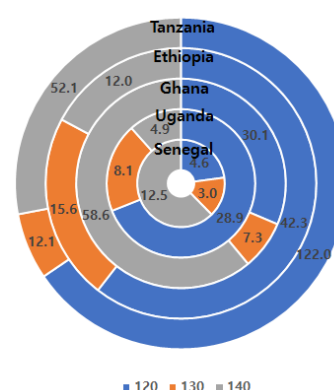
Of the seven countries listed as a priority partner in Africa within the third Strategic Plan, five (Ghana, Ethiopia, Uganda, Senegal, Tanzania) have healthcare included as one of their focus areas of cooperation. Of the five countries, Tanzania has received the largest amount of aid, followed by Ethiopia and Ghana (Figure 1). Countries located in East Africa received more aid for general health while the coastal states of west Africa received the most aid for water and sanitation, as identified in KOICA's second Africa strategy (Figure 2). The majority of Korea's ODA is used for projects. This is also reflected in the disbursement of ODA in Africa's healthcare sector, where 90% of the total ODA was spent on projects, followed by funds for World Friends Korea and consulting at 4%, basket funds at 3%, fellowship programs at 2% and other technical cooperation at 1%.

Figure 1. Healthcare ODA by Country (2011-2019)



Source: Author's calculations based on data from OECD Statistics, "Creditor Reporting System (CRS)," stats.oecd.org (accessed: 2021.5.28).

Figure 2. Healthcare ODA by Category (2011-2019, million USD)



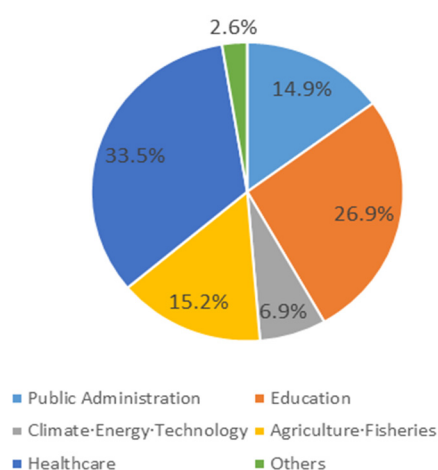
Source: Author's calculations based on data from OECD Statistics, "Creditor Reporting System (CRS)," stats.oecd.org (accessed: 2021.5.28).

Interestingly, in comparison to other regions and sectors, KOICA's use of multi-bi ODA in Africa's healthcare sector stands out. KOICA has spent more than 30% of its budget between 2016 and 2021 on healthcare, of which approximately 50% was distributed in Africa. The concentration of multi-bi aid in Africa's healthcare suggests the difficulties faced by Korean aid organizations in reaching remote rural areas in regards to both administrative and physical barriers. This is exemplified by Uganda, where KOICA's multi-bi aid was

concentrated in the remote area of Karamoja and managed by UNICEF and UNFPA. Located 12 hours from Kampala, Karamoja is one of the most underdeveloped areas of

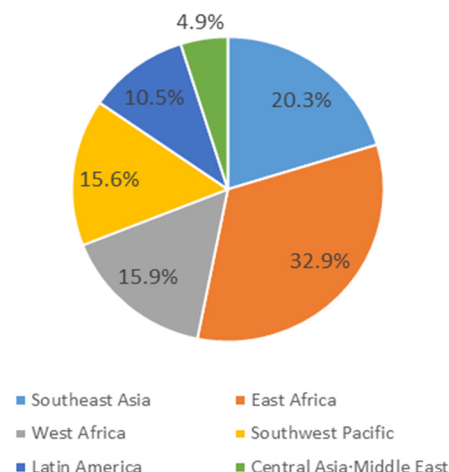
Uganda. UNICEF and UNFPA facilitated the Better Life for Girls project, which seeks to improve school sanitation facilities and reproductive healthcare.

Figure 3. KOICA's Multi-bi ODA by Sector



Source: Chungbook National University (2021), "Multi-bi Results Management in Africa," KOICA, p.23.

Figure 4. KOICA's Multi-bi ODA by Region



Source: Chungbook National University (2021), "Multi-bi Results Management in Africa," KOICA, p.24.

3. A Comparison of Healthcare ODA in Africa¹

Korea's distribution of healthcare ODA in Africa is relatively fairly distributed among sectors compared with other countries.² The US is heavily concentrated in the population policies and reproductive health cluster while Switzerland spends more than 60% of its budget on basic health.

When looking at the channels of distribution

per cluster, Korea delivers most of its aid to public institutions for the "general health" cluster, which includes health policies, administration, research, and health services. Switzerland is unique in delivering more than half of its ODA to research and educational institutions. Switzerland puts much emphasis on research and development for healthcare. It spends more than 50 million USD annually on research for development cooperation, and has

¹ "General healthcare" is defined as the sum of codes under the OECD DAC CRS code 12100, "basic healthcare" is defined as the sum of codes under 12200, "population policies and reproductive health" is defined as the sum of codes under 130. However, "water and sanitation" is defined as the sum of codes 14020, 14021, 14030, 14031,

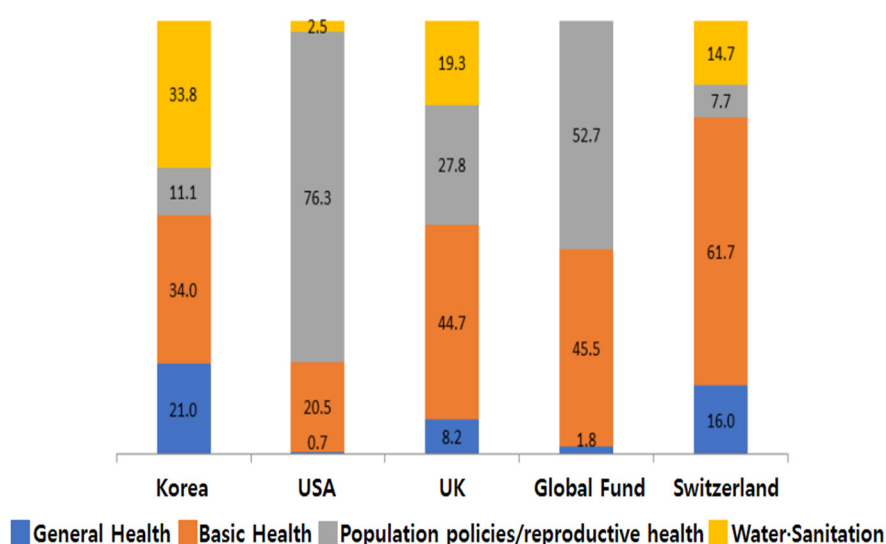
14081 to limit its relevance to health-related projects.

² Target comparison countries have been selected in terms of representation and similarity in terms of size relative to Korea's ODA.

played an important role in establishing the Council on Health Research for Development and the Global Forum for Health Research. As for the “basic health” cluster, which includes healthcare services and infrastructure at the local level as well as the treatment of diseases, aid delivered to multilateral agencies increases to 23%, signaling the importance of multi-bi aid in Korea’s healthcare support for local communities in Africa. The role of the civil society increases greatly in the “population policies and reproductive health” cluster for all countries. Korea also utilizes multilateral agencies in this cluster, as projects are commonly rolled out at local levels. Switzerland distributes 82% of its budget to NGOs and the civil society in this cluster. This is because

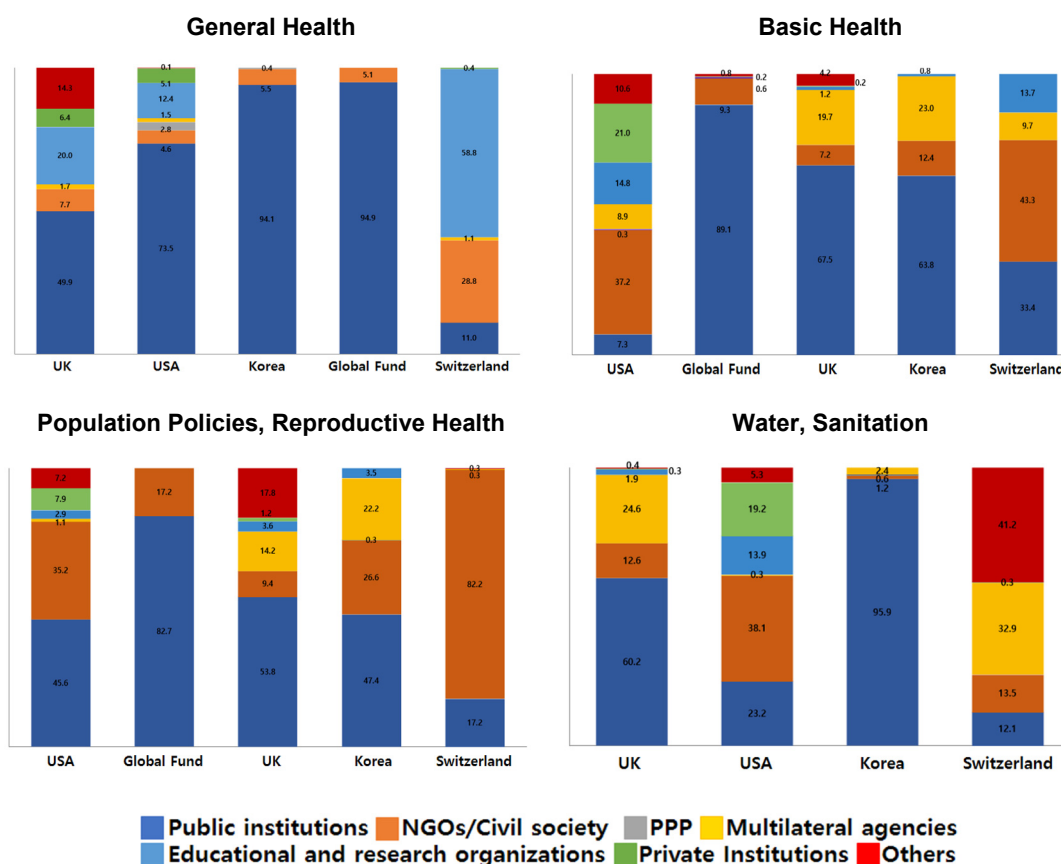
Switzerland prefers to provide budget support to international organizations such as Doctors Without Borders rather than operate projects of its own. As for the “water and sanitation” cluster, Korea’s spending is heavily skewed towards public institutions compared to other countries. This would be because most of Korea’s activities in this cluster consist of infrastructure development while other countries also support evaluation, monitoring and provide budget support as well. Korea only allocates 4–7% of its aid to the healthcare sector for budget support while the UK distributes more than 50% and 30% of its aid in the basic health cluster and water sanitation cluster, respectively, through budget support.

Figure 5. A Comparison of the Distribution of ODA by Cluster



Source: Author’s calculation based on data from OECD Statistics, “Creditor Reporting System (CRS),” stats.oecd.org (accessed: 2021.5.28).

Figure 6. ODA Distribution by Distribution Channel per Cluster (%)



Source: Author's calculations based on OECD Statistics, "Creditor Reporting System (CRS)," stats.oecd.org (accessed: 2021.5.28.).

IV. Healthcare Sector ODA Demand Outlook in Africa

Korea's ODA is limited in size compared with other countries. Under limited resources, Korea has strategically allocated its ODA budget to priority countries and sectors in order to maximize efficiency. With the emergence of COVID-19, the importance of building a systematic healthcare system has increased. In order to identify future demands for healthcare cooperation in Africa, two models have been used below. The decision

tree analysis identifies the effects of the various combinations created by the independent variables and thus provides a guideline on how the interactions between variables should be considered. The text-mining analysis extracts meaningful characteristics and relations from unstructured data in identifying useful patterns.

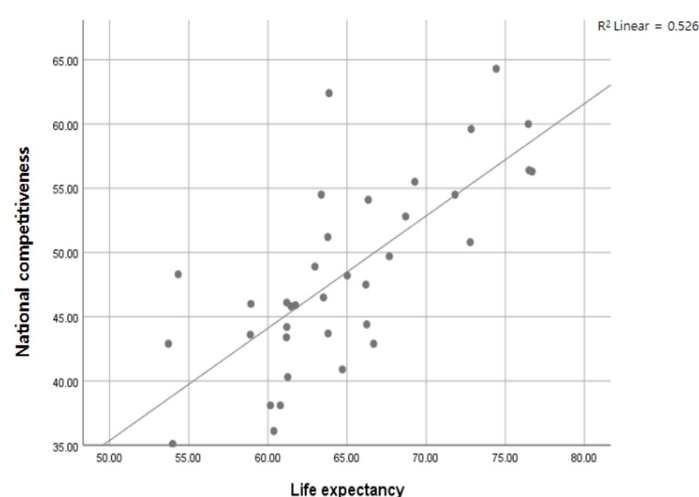
1. Decision tree analysis

For the decision tree analysis, 13 independent variables were selected based on a cross examination of the SDGs and the OECD

DAC CRS codes relevant to health.³ Life expectancy was selected as the dependent variable, as improved health conditions lead to increased life expectancy, which ultimately

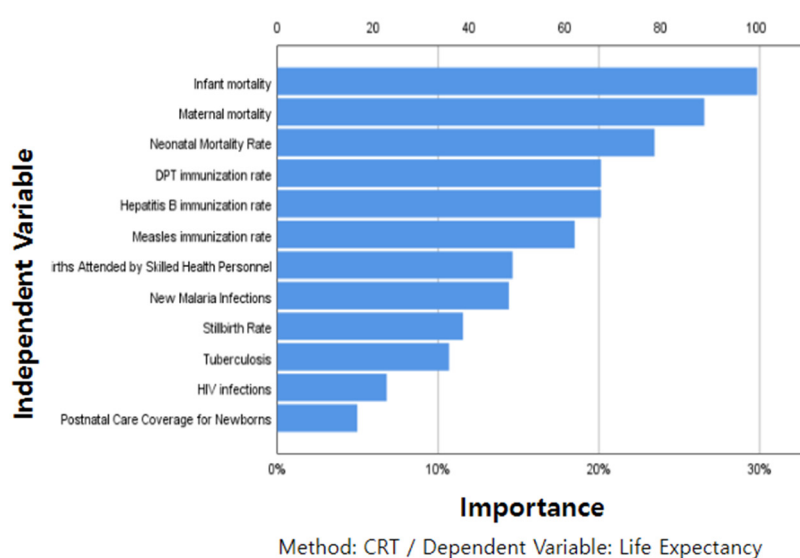
leads to increased national competitiveness. Data was collected and processed from 55 African countries.

Figure 7. Life Expectancy and National Competitiveness



Source: Author's calculations.

Figure 8. Importance of the Independent Variables



Source: Author's calculations.

³ The independent variables are 1) life expectancy, 2) HIV infection rate, 3) number of tuberculosis infections, 4) rate of DPT immunization, 5) hepatitis B immunization rate, 6) measles immunization rate, 7) maternal mortality, 8) infant mor-

tality, 9) number of malaria infections, 10) number of stillbirths, 11) neonatal mortality, 12) rate of newborns cared by trained health workers, and 13) rate of postnatal care for newborns.

As shown in Figure 8, infant mortality and maternal mortality are the most important variables that impact life expectancy. Figure 9 categorizes countries by life expectancy based on their infant mortality rate. The five priority countries reviewed in section 3 are all located in the third column while the two priority countries (Egypt, Rwanda) that do not include healthcare in their focus areas are located in the first column. Based on the author's calculations, countries in the third column are expected to be able to raise their life expectancy by nine years if infant mortality is reduced by 28%. Countries in the lower columns have high infant and maternal mortality rates.

2. Text-mining analysis

145 international journals from Springer were selected for review in the text-mining analysis. Journals were extracted based on the inclusion of the terms “Africa” and “health” in their titles. Springer was used not only because it is connected to NetMiner 4.4, the tool used to mine the texts in the study, but also because journals published in Springer are recognized to be of a certified status.

The results of the text-mining analysis show seven areas that should be considered to have meaning for future healthcare ODA cooperation in Africa. The seven areas are: 1) infant and maternal mortality, 2) HIV/AIDS, 3) water, 4) malaria and tuberculosis, 5) healthcare worker training, 6) infrastructure and capacity building at community levels, and 7)

healthcare governance. Of the seven areas, HIV/AIDS, malaria, tuberculosis, and water have witnessed large-scale investment by aid organizations. However, increased support for capacity building, governance and community development is called for as demand is expected to increase.

Table 1. Frequency of Words in the Text-mining Analysis

Word	Frequency	Word	Frequency
health	4,597	woman	539
Africa	1,192	community	472
care	1,177	disease	413
South Africa	1068	risk	397
service	980	factor	397
system	739	level	393
HIV	610	need	382
policy	604	patient	370
intervention	560	facility	370
child	546	worker	359

Source: Author's calculations.

3. Results

Overall, both models show that improving infant and maternal mortality rates will increase life expectancy and by extension a country's national economic competitiveness. The models also show that countries differ in their degree of improvement, and thus different healthcare sectors and methods should be prioritized and utilized to maximize aid efficiency. As for the five priority countries, increasing infant and maternal mortality rates have a considerable impact on improving life expectancy, and thus should be prioritized in future planning.

V. Policy Suggestions

African countries have consistently spoken out since the 1974 Bucharest Conference, and the African Union specified strategies for improving healthcare through partnerships with various stakeholders to combat three major diseases—namely, malaria, HIV/AIDS, and tuberculosis—in the 2006 Abuja Declaration. In addition, the importance of joint cooperation has recently been emphasized in areas such as eradication of infectious diseases and universal health coverage. Further, the African Union values linking the SDGs to healthcare goals and aims to achieve major goals, such as the Maputo Action Plan; the African AIDS, Tuberculosis and Malaria End Promotion Framework; and African Health Strategies by 2030.

The international community emphasizes access to universal healthcare services, strengthening efficiency in delivering healthcare services, and protecting Africans from public health crises, and goals such as the Triple Billion targets have been established accordingly. It also emphasizes targeting, life-cycle approaches, and approaches tailored to individual characteristics to prevent the segmentation of diseases. As a result, demand for cooperation in major healthcare areas by life cycle is increasing, without neglecting the importance of the three major diseases, and cooperation in other important areas, such as nutrition and health services, infectious and non-infectious diseases, and so-

cial services for the elderly, is expected to increase. In particular, Korea's healthcare ODA strategy centered on the three major infectious diseases and maternal reproductive health is also expected to require a slight shift, as the disease burden and deaths from adult diseases and traffic accidents are gradually increasing in some countries, including Ghana.

Through the 3rd Strategic Plan for International Development Cooperation, Korea has strengthened its strategies for expanding the size of ODA in the healthcare sector, expanding public-private cooperation, responding to infectious diseases, establishing healthcare systems, and establishing basic hygiene infrastructure, among others. However, to implement more integrated and unsegmented aid, the importance of presenting customized goals along with program access in the healthcare field is also emerging. For example, KOICA is planning a healthcare project focused on intervention in three major areas necessary to lower the maternal mortality rate, using Thaddeus and Maine's (1994) three delays model of maternal mortality. This approach is expected to be necessary not only for maternal deaths but also for areas such as basic health, general health, drinking water hygiene, infectious diseases, and infant deaths. In particular, efforts should be made for the international community and Korea to achieve common goals through healthcare projects. For example, USAID is carrying out aid projects by establishing programs focused

on activities that allow for meeting mid- to long-term goals in the healthcare sector that will facilitate meeting the core goals. To improve project effectiveness, Korea will also need to approach this on a program basis, but it will be necessary to establish a project design focused on activities aimed at achieving key goals in the healthcare sector.

Meanwhile, for Korea to improve the effectiveness of its aid projects in the healthcare sector, it must accumulate more information on the local area. In particular, to identify the beneficiaries of the project, on-site surveys should be conducted in more depth, but in situations where there are physical constraints, such as in terms of the survey period or budget, these pose clear limitations to grasping the demands of beneficiaries. Accordingly, alternative data, for instance from identifying local demand, can be collected through communication with officials of the partner countries. To overcome the aforementioned limitations, it is necessary to utilize not only field experts but also local experts in the pre- or project design surveys and grasp the healthcare status of the project target site through the results of the Demographic and Health Survey (DHS).

Korea will be able to cooperate with its priority partner countries to improve Africa's healthcare delivery system. For example, Korea has a comprehensive crisis management system for the outbreak of infectious diseases, and a well-established healthcare communication system using digital devices. However,

the partner countries have had communications difficulties in responding to COVID-19 despite the benefits of digitalization. Therefore, there will be a continuous demand for cooperation in establishing a healthcare delivery system in cooperation with Korea. In addition, it is necessary to strengthen the capabilities of public health centers to strengthen basic medical capabilities. Secondary and tertiary hospitals in the five priority partner countries are mainly concentrated in cities, and accordingly, local residents living in rural areas must seek healthcare services from local health centers. With this in mind, it will be necessary to expand cooperation to strengthen the capacity of community health workers in public health centers. Meanwhile, information and communications technology (ICT)-based pharmaceutical supply chain management will be a promising field for cooperation as ICT can enable real-time management of medical and pharmaceutical products, such as public health centers, and prevent delays in treatment due to lack of medicines.

With the COVID-19 pandemic, global demand for Korea's infectious disease diagnosis, tracking, and monitoring system has increased rapidly, and African countries are no exception. There is an increasing need for cooperation in the formation of infectious disease diagnosis and tracking systems in the five priority partner countries, for instance to strengthen the capabilities of infectious disease screening centers, build digital platforms, and enhance human resource capabilities. In

particular, Korea is developing or testing mobile diagnostic equipment for tropical diseases centered on startup companies, and the establishment of a mobile diagnostic system is expected to be of great help in improving the disease diagnosis rate, especially for African rural residents.

To expand cooperation in the healthcare sector, efforts to link the cooperation sector are also needed. Public health insurance systems have not been established in the five partner countries because they require considerable national funds. However, when there is no public health insurance system, healthcare service costs are high, and individuals bear a higher ratio of the cost, making it highly likely that residents will deplete their financial resources to receive healthcare services or have very low access to healthcare services. Therefore, it will be necessary to expand cooperation to support a health insurance system to which local residents can voluntarily subscribe, such as community-based health insurance. In addition, it is necessary to expand public–private cooperation projects in the construction of hospitals. For example, Lesotho’s project to build the Queen Elizabeth II Hospital raised project funds by attracting private capital and guaranteed private profits while allowing patients to receive treatment at reasonable costs. There are various methods for undertaking public–private cooperation projects, but it is necessary to respond to healthcare demands, such as hospital con-

struction, by attracting private capital according to the circumstances of each country. **KIEP**