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I . Introduction

Tanzania government has made remarkable progress in access to education through the introduction and implementation of various education policies based on cooperation with Tanzania development partners over the past 20 years. Nevertheless, the net enrollment rate for pre-school education is 38.9% (2016), the elementary school net enrollment rate is 87.5% (2012), and the middle school net enrollment rate is 28.9% (2019), so continuous improvement efforts are required.

KOICA has fulfilled its role as a development cooperation organization in Tanzania. In particular, to order to improve the quality of education, KOICA has jointed the Education Program for Education (EPforR) since 2020, along with the other development partners: SIDA (Swedish International Development Cooperation Agency), DFID (Department for International Development), World Bank, and GPE (Global Partnership for Education)

Unlike traditional international development programs, EPforR is an innovative programs such that its financial support is determined according to the recipient country's program performance on the program. While participating in EPforR, KOICA focuses the student retention and female middle school transition rate. In addition, KOICA plans to launch Challenge with the fund of \$500,000, which aims to help improve student retention and transition rates in local governments lagged behind.

Meanwhile, KOICA Tanzania office planned this research project to analyze the operational features of EPforR and its performance and to identify proper statistical methods to estimate treatment effects of the Challenge Fund's

activities in the future. Accordingly, based on the research requirements of the KOICA office, the research team focused on 1) identifying operational characteristics of EPforR and analyzing its performance, 2) examining factors affecting the survival and transition rates in Tanzania, and lastly 3) presenting a statistical method for measuring the effectiveness of the Challenge Fund.

II . Tanzania Education Outline (Primary and Secondary)

The Tanzania education system is operated as a dual system between mainland Tanzania and Zanzibar in accordance with the federal government system.

Since 2011, the gross enrollment rate for elementary education has gradually decreased, but has risen sharply after reaching the lowest level in 2015. This trend change has considered to have something to do with the introduction of the free basic education policy in 2016. On the other hand, in the case of the net enrollment rate, it has gradually decreased since 2012, bottomed out at the lowest level in 2018, and then increased sharply again in 2019. In terms of the gross enrollments, the introduction of the free basic education policy has increased the total number of enrolled primary school students by more than 2 million over the past five years, raising concerns about a deterioration in the quality of the education system due to overload. In particular, the number of students per teacher is almost doubled (51) the average of sub-Saharan countries (38) and low-middle-income countries (29), and the overall grade retention rate and dropout rate remain high.

Secondary education is divided into four years of lower secondary education and two years of upper secondary education, and like elementary education, the number of enrolled students steadily increased from 1.8 million in 2015 to 2.2 million in 2018. Nevertheless, secondary school enrollment rates are significantly lower than in neighboring African regions. Nevertheless, it is optimistic that the primary to lower secondary transition rate has increased continuously over the past five years, rising to 75% as of 2020, and the gender

difference in transition rates is also gradually narrowing down. However, the dropout rate in secondary school is still high (17% dropout rate in the second year of secondary education), and the transition rate to upper secondary school remains at 20%. Therefore, continuous support is needed for improving the education system both in qualitative and quantitative manners.

In order to solve these problems in Tanzania's education system, development partners have continued supporting the education sector. For example, USAID focuses on improving elementary education's learning ability and secondary school girls' education, and the World Bank is implementing projects for the purpose of qualitative improvement in overall primary and secondary education through EPforR, SEQUIP, and Zanzibar Improving Student Prospects Project. In the case of DFID (currently renamed as FCDO), carried out the EQUIP-T project with an emphasis on improving the access and quality of primary education.

III. Review on Education Program for Education (EPforR) in Tanzania

In 2013, Tanzania government established Big Results Now (BRN) as part of a comprehensive national development strategy. In order to implement the BRN in Education (primary and lower secondary education), a joint support project was developed and began to improve the quality of education. As a result of the 2017 Min-Term Review, it was decided to extend the project. After that, the project was renamed as the Education Program for Results (EPforR) and has been actively implemented so far. There were three participating international development partners in the beginning, and now, five agencies are participating in, as GPE and KOICA have joined.

The main purpose of EPforR is to improve the quality of primary and secondary education. Initially, it was a system of six disbursement-linked results (DLR) and 17 disbursement-linked indicators (DLI). Now it is managed with nine disbursement-linked results and 19 disbursement-linked indicators. Overall, the program fund totals around \$515 million (610 billion Korean won), and

since it is a joint project, the total project fund might also change if there are changes such as additional agreements (or commitment) for each development cooperation partner, extension of the project period, and expansion of participating agencies. Currently, KOICA's contribution to EPforR is around 7 million dollars.

Unlike existing budget support projects, EPforR follows the World Bank's PforR (Program for Results) approach in which the development cooperation agency provides Tanzania government with the project fund predetermined according to the agreed EPforR budget framework. The actual project execution is carried out by Tanzania government (Ministry of Education, etc.). The EPforR coordination unit (located in the Ministry of Education) is responsible for the overall project management and communication, and the Strategic Management Team carries out practical project management and monitoring activities. In addition, A Technical Assistance Team is established to support the internal staff's capacity building of Tanzania government.

The project fund is paid after completion of the annual or semi-annual performance verification process. To verify whether the program performance has been achieved, EPforR selects a separate independent verification agency. The verification agency reviews EPforR various performance result under the EPforR budget framework using the data submitted by Tanzania government and conducts cross-validation procedures by visiting sample schools and reviewing educational statistics. The submitted verification report by the verification agency is officially finalized through the EPforR annual (technical) meeting.

As it is a joint program involving various international development partners, performance management is also an important issue. The development partners jointly manage the DLR and DLI. Through the verification report submitted by the independent verification agency, the performance on DLR and DLI is identified and major implementation-related issues are examined. The

development partners developed their own program performance management platform (e.g., logic model) and use it for an internal purpose. Most of the contents are derived from the EPforR DLR and DLI results and modified in line with each partner organizations' own strategic needs.

So far, EPforR's development partners have evaluated and their findings are quite positive. The World Bank consider the program successful as many of the program's indicators have been achieved. In fact, as of 2020, five out of eight World Bank's project development objectives (PDOs) have been achieved. Among the major achievements, significant progress was made in primary education learning outcomes, student survival, and transition rates. Through the evaluation report on EPforR, SIDA concluded that it had brought positive changes in 1) relevance, 2) effectiveness, and 3) sustainability. Lastly, GPE reviewed the project prior to participating in EPforR, and found that the EPforR will make a positive contribution to 1) equity, 2) efficiency, and 3) improvement of learning outcomes.

Regarding the improvement of student survival rate and secondary school transition rate, which are the KOICA's target DLIs, it is considered that the EPforR have contributed to the improvement of the student survival rate and the secondary school transition rate significantly. The survival rate of primary school students has increased significantly, and the transition rate to secondary school has been continuously improving since 2016. However, as there has been significant improvement in the survival rate and transition rate, the degree of achievement of the DLIs, which are expressed as a percentage increase by year is gradually decreasing.

Lastly, EPforR has clear strengths and weaknesses as it is a type of result-based budget support, unlike the existing KOICA's typical project-based assistance. First, it is inherently helpful for the recipient country to achieve performance goals by establishing and strengthening the recipient country own system. Also, it contributes to enhancing sustainability by focusing on

institutional strengthening of Tanzania government. As the program results framework is managed by the existing Tanzania government process, it also contributes to strengthening governance. In addition, EPforR is a program that encompasses the entire sector rather than an individual topic or theme, and the project is founded on cooperation/support between various government ministries. As a joint project with various bilateral institutions, it is highly expected that the participation in the EPforR will bring valuable experience and internal learning outcomes to KOICA.

Despite these strengths, EPforR must outsource the verification tasks to an external entity. Thus, the quality and efficiency of verification process hinges on the professional and technical capacity (competence) of the external entity. And this is an absolute risk factor in overall project management/performance management. Also, considering that it is a extensive program, there is a disadvantage that it takes a lot of time and effort to verify the performance. On average, more than half year is required to end the verification process. For KOICA, a small scale funding contributor, it is difficult to actively participate in the performance verification process, and there are also practical limitations in that it is difficult to speak out KOICA's own strategic priorities in the process of agenda setting (e.g., new indicator discussion). In addition, since the scope of the project is large, it is difficult to grasp the detailed information of the program and it is difficult to make a clear causal inference due to the limitation of conducting an impact evaluation. For example, it is difficult to argue that improvement of the student survival rate is the effect of EPforR due to EPforR's national coverage and not being able to conduct an experimental research.

IV. Analysis on the student retention and transition in Tanzania

Various factors affecting the survival and transition rate of Tanzania students were analyzed in terms of a preliminary literature review for the upcoming research on the effectiveness of Challenge Fund activities. As the student retention and transition appear to be a subsequent consequence of student

dropout for a certain period of time, the analysis on the retention and transition is conducted as looking for factors causing dropouts. Accordingly, the research team conducted by narrowing down the scope of the topic from a general theories on the factors affecting dropout to Africa and Tanzania cases.

In general, factors that cause dropout from school are divided into push-out factors (school characteristics) and pull-out factors (factors surrounding students). In an ecological perspective, there are four categories about dropout factors: student factors, family factors, school factors, community factors. As the factors causing dropout are complex and diverse, it is impossible to argue only some factors as determinants of dropout but overall factors interact in causing students dropouts. Nevertheless, it can be seen that the student or family factor is relatively more important since student and family are in fact the decision makers for their dropout decision. On the other hand, from a policy point of view, school factors seems relatively important because most of policy interventions are available in a school level.

According to the research conducted in sub-Saharan Africa (Ghana, Malawi, Kenya), the characteristics of the African educational environment (student-teacher relationship, child labor, unexcused absence from school, punishment in school) are the significant factors in influencing students dropouts. For the policy intervention, in Kenya and Uganda, it was found that the introduction of the free education policy decrease the educational quality in public schools and increased dropouts.

The analysis of dropout factors in Tanzania was conducted based on the educational statistics in Tanzania and various research findings related to school dropout. As a result, the official educational statistics showed that factors affecting dropout from school are 1) poverty (economic conditions), 2) peer pressure, 3) divorce/separation of parents, 4) participation in external economic activities (housework, peddling, farms, mines, etc.). Considering the fact that the data are collected at the school level, the findings from the educational

statistics is somewhat limited in representing the real reasons for student dropouts. For example, reasons related to the school/teachers are less likely to be reported. These limitations were supplemented through examining the research papers. As a result of analyzing the research literature on dropout in Tanzania, it was confirmed that not only poverty (economic strains) and family factors, but also school-related factors (corporal punishment, student-teacher relationship, long distance commute, home-school relationship, etc.) affect students dropouts

Lastly, the research team additionally analyzed the recent declining trend in the student retention (survival rate) in Tanzania. In sum, the recent drop in the student survival rate is a result of the deteriorated education system caused by a large surge of enrollments since free basic education policy introduction in 2015 and statistical aspects in the process of calculating the survival rate. Despite the recent downward trend, student survival rates is still higher than the pre-2015 levels. Thus, the EPforR and other efforts of Tanzania government and development agencies were effective keeping the survival rates from dropping further.

V. Ways to improve students retention and transition rate in Tanzania

The high dropout rate (= low retention) is not a problem unique to Tanzania, but a common phenomenon in sub-Saharan Africa. Accordingly, the research team looked for and presented the best practices related to the reduction of student dropouts, which will be helpful for the implementation of Challenge Fund (or similar projects), and provided suggestions for improving student retention. In South Africa, a number of NGOs have been jointly implementing the “Zero Dropout Campaign”, in which they promoted several activities to reduce student dropouts: 1) student attendance management system, and 2) placement of early warning system student using student enrollment statistics 3) provision of emotional/social support system, and 4) improved engagement of related stakeholders and establishment of partnership. Some of the best practices include 1) the use of community volunteers for monitoring dropout students, 3)

using peer (model) students to help dropout students. In Malawi, students' dropouts were reduced by providing a flexible learning materials (self-learning materials and mentoring activities) and out-of school club activities. In addition, the effects on dropout of projects by type/region were summarized.

For the Challenge Fund activities, it is necessary to select locally proper activities to maximize the effect on dropout reduction. First, in order to increase the effectiveness of the Challenge Fund, identification of causes of dropout should be a priority prior to implementing the Challenge Fund. For example, considering that poverty is reported as one of the most common reasons of dropouts, the financial support such as conditional cash support may be more effective than other type of interventions. In addition, training to improve teacher responsiveness for students' needs, and emotional counseling support, and club activities might can resolve factors inside and outside the school, such as peer pressure, negative relationships with teachers, and corporal punishment. For long-term strategy for drop-out reduction, it is highly required to place a basic attendance management system within schools.

VI. Methodological review for Challenge Fund impact evaluation

Finally, the research team reviewed methods to measure the causal effect of the Challenge Fund activities and presented applicable statistical method. Statistical research designs for estimating causal effects can be broadly divided into experimental designs (eg, random controlled trials) and quasi-experimental designs. In the case of the Challenge Fund, the experimental model cannot be applied because the project participants (e.g., beneficiary schools) have been selected in a non-random process. As for quasi-experimental designs, there are double difference (difference-in-differences), regression discontinuity, instrumental variable, and matching are available. In detail examination, instrumental variable and regression discontinuous method are not suitable as a method of measuring the effectiveness of the Challenge Fund activities considering the contents of the Challenge Fund activities. In addition, double difference has unduly assumptions and requires multiple time series data collection to secure the

credible estimation. Therefore, the research team concluded that matching is suitable method in terms of cost and practical applicability.

As for matching, there are various estimation techniques. In actual research, the reliability of the causal effect can be increased by applying multiple estimation approaches. Furthermore, the matching method is to be applied in the future research, it is recommended to collect the list of schools (the sampling framework) and the characteristic variables for each school in advance.

VII. Conclusion and Discussion

Tanzania government and development partners have made joint efforts for quality education in Tanzania, and as a result, the education system in Tanzania has improved over the past five years, and the EPforR is one of the exemplary projects of this effort. EPforR is featured with a result-based budget support (PforR) approach. Thus, both Tanzania government and development partners can hold accountability, efficiency and sustainability strengthening the existing government system. Since its introduction in 2016, we have seen the positive results of EPforR.

As an analysis of factors causing dropouts in Tanzania, not only general factors but also factors reflecting the unique characteristics of African (eg, poverty, corporal punishment, peer pressure, teacher-student relationship, labor activity) were identified. In addition, the recent decrease in the survival rate is due to the rapid increase in student inflow following the introduction of the free basic education policy in 2015 and the statistical calculation issues. Accordingly, if the current influx of students continues and the education system continues to be overloaded, it will not be easy to shift back the trend of the decreasing retention.

As for the statistical method for estimating the effect of the Challenge Fund, the research team presented a matching technique as a scientific causal effect estimation method. The matching technique can create a control group after

project implementation, and can secure a higher similarity between the treatment group and the control group than the double difference method. It is necessary to collect sample framework (a list of schools in each LGA) and school's characteristics in advance.

In sum, based on the current study's findings, the research team would like to propose the followings in relation to KOICA's participation in EPforR and the Challenge Fund's activities.

First, when participating in a new type of program like EPforR, sufficient investigation and analysis must be preceded. In particular, it is desirable that the investigations are carried out in the form of participation of both external experts and KOICA internal staff. Compared to the total fund size of EPforR, KOICA's contribution is very small, so it is not easy to actively express opinions on the course of operation of the program. Therefore, when participating in a large-scale (budget support) program like EPforR, it is necessary to approach with the detailed development goals and a strategic stance.

Second, Performance-based budget support program such as EPforR are not suitable for input/output-oriented project performance management, which KOICA are deeply inclined. Thus, flexible monitoring and evaluation approaches should be granted to the KOICA's country level management.

Third, the effect estimation of development projects is becoming increasingly important as the demand for evidence for the effectiveness of development projects gradually increases. In addition, scientific evidence to support the planning and promotion of a new project is required. Of course, it is well noted that there is a practical limitation that there are few experts with relevant expertise in the field of development cooperation. Even so, considering KOICA's mandate to present the results of their development programs, it is suggested to establish a strong practice of incorporating of how to measure the effect when a project is planned.