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Analysis of donor investment in Ethiopian Agricultural Research

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ABSTRACT

The study examines the impact of foreign aid on agricultural research in Ethiopia over the period 2011-2020. According to the study, donor allocations averaged 23% of the total amount of funds received by the institution in the form of loans and grants in 2020. Donors' investment in Ethiopian agricultural research is decreasing and negative growth has been recorded, from 33% in 2016 to 23% in 2020. Donor aid funding decreased by 51.3% in 2019 and 84.6% in 2020 compared to 2018. In addition to joint research and financial investment, 65% of improved germplasm comes from donors directly through adaptation research or parent material. Furthermore, for which information is collected and available, 7.3% of trained scientists and 57% of fixed assets were financed by donors. The majority of the donor-funded projects focused on short-term goals that did not align with national priorities or focused on commodities of relatively low economic value to the country. Therefore, a new financial framework is needed for the government to set strategic priorities for donors to contribute to the country.

Key words: Donors, Projects, Agricultural Research, Public Research, Investments, Impacts.

1. INTRODUCTION

In developing countries, agriculture is widely accepted as an engine of growth as it reduces poverty according to their level of development [3, 5, 13].

Agricultural research for development is especially important in Sub-Saharan Africa (SSA), where climate risks are immediate and food insecurity is high. In low-income countries, agricultural research is the most effective investment to support the agricultural sector, leading to education, infrastructure and input credits [4].

National agricultural research systems in SSA face a number of challenges, including low public investment, dependence on foreign donors, and volatility in financial flows. The public sector is still the main actor in public agricultural research and development (R&D), both in implementation and funding.

However, the agricultural research and supply system in these regions has performed below expectations. Consequently, agricultural research in SSA is more dependent on non-governmental funding sources, particularly donor and development bank funding, compared to other developing regions of the world [14]. Currently, Africa Rice, International Institute of Tropical Agriculture (IITA), International Animal Research Institute (ILRI) and World Agroforestry Center are headquartered in SSA, and most of the remaining CGIAR (Consultative Group on International Agricultural Research) centers have offices. In SSA, they often have many research facilities and human resources.

CGIAR centers have been a key source of agricultural innovation in SSA since the 1970s. Activities include conducting joint research with National Agricultural Research Secretariats (NARSs), training scientists and access to improved germplasm; either for direct release or as parent material. A large proportion of crop species currently grown in SSA can be traced from CGIAR-derived germplasm [11].

African research institutions are the main recipients of funding with 9% of Bill & Melinda Gates Foundation (BMGF) projects and 10% of Swiss funded projects [1]. In 2014, CGIAR centers spent a total of $1.06 billion on agricultural research worldwide; $550 million was spent on SSA alone. SSA was the recipient of 40% of CGIAR investments for most of the 1990s, rising to 47% in 2008, and 52% in 2014. Total CGIAR spending on agricultural research in SSA tripled

between 1992 and 2014, while national spending only increased by a third over the same period [8].

According to [10], 9% of agricultural aid in SSA was allocated to research. This is an upward trend compared to the global average of 7%. However, this is lower than the estimated 7% allocation for SSA in 2005-2008.

Due to inflation and many other economic factors, the real value of foreign aid is also gradually decreasing. For instance, in 2007 the aid of developed countries reduced by 8.4% in terms of real value and inflation [9, 12]. The world's largest humanitarian aid donor, the United States, cut its spending by 6%, or $423 million, in 2018, while Germany and Britain both spent 11 percent less than in 2017, according to the annual International Humanitarian Aid Report.

Foreign aid has been found to be significantly and negatively associated with development for several major factors such as aid dependency, economic treatment of recipient countries, corruption and poor coordination and cooperation of aid agencies, etc. [16].

Findings of [7] pointed out that the volatile nature of aid and the delay in aid disbursement hampers the government's spending capacity. As a result, the government of the recipient country was unable to collect the maximum amount of aid in time and could not convince the donors that the remaining funds would be spent efficiently.

There is a long history of donor relations with Ethiopia dating back at least to the early 1940s [2]. Since then, the number of bilateral and multilateral donors supporting the country has grown significantly.

In addition to joint research, donors have provided support for salary and non-salary-related expenditures (such as, operating costs, capital investments), and also provided access to improved germplasm, either for direct release or as a parent material to Ethiopia. Donor grants had also covered the expense for study tours, higher-education scholarships, participation in international conferences, and short term training. Beyond their pledges donors subsidize the country as a means to acquire foreign currency.

This study examined the existing levels of donor investment, and provided details on the composition of funding sources, including, notably, what comes from the donors and private sector.

2. OBJECTIVES

The purpose of this study is to synthesize knowledge on the impact of donor investments in Ethiopia to help policy makers determine future research directions.

Specifically,

- To examine the composition of funding sources for the period 2011-2020.
- Identifying the priority funding agenda for agricultural research from the donor.
- To analyze trends in donor investment in agricultural research between 2011-2020.
- To evaluate donor support other than financial investment for agricultural research.

3. MATERIALS AND METHODS

3.1. Data

Both primary and secondary data were used as a source of data in this research. Purposive sampling was used to collect primary data and in-depth informant interviews were conducted at sampled agricultural research centers. Through questionnaire administration, 961 sampled scientists from 18 research centers were interviewed to examine the level of donor investment in scientists training. Similarly, data was collected from 12 sampled agricultural research centers of Ethiopian Institute of Agricultural Research (EIAR) to assess the level of capital investment in building, research infrastructure and other resources. Data on capacity building of agricultural researchers, financial resources and expenditures, research infrastructure and resources and sources of germplasm for released crop varieties was collected and this was supplemented by data obtained from the Ministry of Agricultures' annual crop variety registry bulletin [6].

3.2. Method of data analysis

The data was analyzed using descriptive statistics. Agricultural research intensity ratio (ARI) which is a measure of total agricultural research spending as a percentage of agriculture output (AgGDP), volatility coefficient which is a measure of inflow of funding over the period to support agricultural research activities, frequencies, mean, and graphs were used to assess the general assessment of the variables.

4. RESULTS AND DISCUSSION

4.1. Composition of funding sources

Grants are received through direct government or private funding or through a competitive grant application process. In 2020, international and regional organizations such as Bill & Melinda Gates Foundation (BMGF), ICIPE, World Vision, Korea (RDA), Food and Agriculture Organization (FAO), ASARECA, SNV, Boku University, Cornell University, ACDI/VOCA, AGRA, the World Bank are the key sources of research funding, accounting for 53.1% of the fund. In the study, the research institute found that private agricultural companies and government agencies are important funds accounting for 21.9% (Figure 1).

Donors still prefer international intermediaries to manage funds and administer programs rather than giving directly to the institution. The channels of CGIAR centers (CIMMYT, ILRI, ICARDA, AfricaRice, CIAT, IITA, CIP, IFPRI, ICRISAT, IRRI and Bioversity International) together accounted 25% of the total donor investment grant in EIAR.

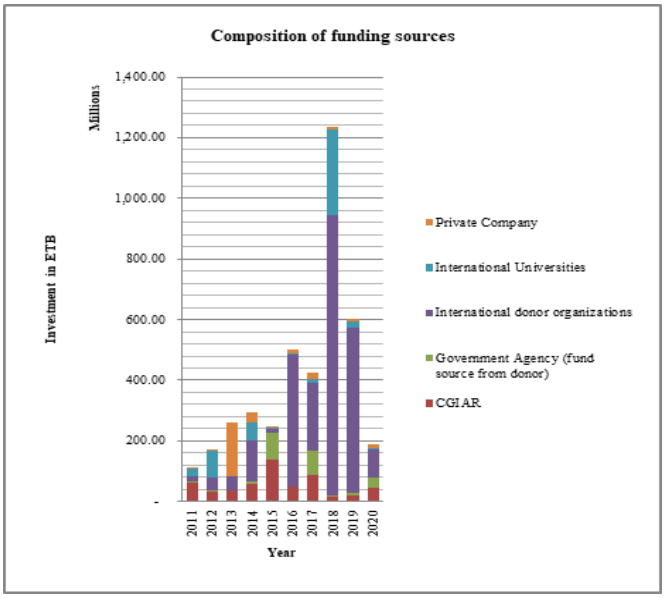

Figure 1. Composition of funding sources

4.2. Priority agenda of donor funding to agricultural research

The study found that, on average, 89% of the total funding received from donors was allocated to research or experimental activities (Figure 2). This is a downward trend compared to 91% in 2020 and 99% in the 2011 base year. The remaining 11% were used for early generation technology multiplication, demonstration of agricultural technology and other agricultural activities with 5%, 4% and 2% respectively.

Figure 2. Priority agenda of donor funding

Over 59% of the grants received were dedicated to crop research, while 14% focused on natural resource research in terms of budget and number of projects (Table 1). The remaining one-quarter of funding is focused on plant protection research (3.3%), livestock research (12.1%), and on other agricultural disciplines (11.2%) which are usually a lesser priority for donors.

Table 1. Share of granted budget based on research disciplines

Focus area	Based on granted budget	Based on number of project
Crop research	59.4	63.7
Natural resource management research	14.1	9.5
Plant protection research	3.3	6.3
Livestock research	12.1	4.4
Others	11.2	16.1
Total	100	100

Based on number of projects granted, the fund from donors invested relatively more on crop research (64%) compared to the other research disciplines.

4.3. Trends in donor investment in agricultural research between 2011-2020

According to the results of the study, the government budget will account for 77 percent of the institute's total funding in 2020. Only 273.4 million ETB (23%) came from donor contributions in the form of grants or loans during the same year (Figure 3).

Donor contributions to agricultural research investments have been declining and recorded negative growth, from 33 percent in 2016 to 23 percent in 2020. Study on Bangladesh also shown that rich countries have cut aid funds by 8.4%, inconsideration of real value and inflation [7].

Since 2018, the nominal value of foreign aid has gradually decreased due to various reasons. According to [15] since the new biodiversity law related to genetically modified organisms, or GMOs went into effect foreign donors cut off funding to Ethiopian scientific research institutions. For instance, donor funding decreased by 51.3 percent in 2019, and 84.6 percent in 2020 as compared to base year 2018.

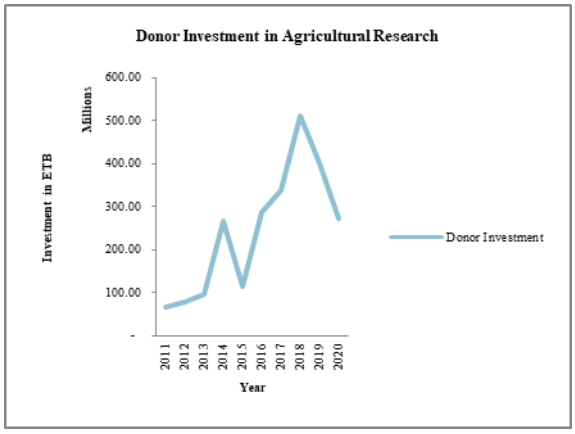

Figure 3. Donor financial investment in agricultural research

The agricultural research intensity ratio measure for donor investment averaged 0.03 in 2019. This shows that donor funding contributes less than one percent of agricultural GDP, indicating the importance the government attaches to agricultural and investment in agriculture research in Ethiopia.

4.4. Contributions of donors other than financial investment in agricultural research

4.4.1. Providing access to improved germplasm

Besides financial investment, a large share of varieties grown in Ethiopia today can be traced their ancestry to international donor organizations mainly CGIAR-delivered germplasm. As shown in figure 4 below for the major crop varieties released by the institute since 2011, for which data were available, 65% of the improved germplasm came from donor organization either for direct release through adaptation research or as a parent material. The introduction of germplasm was high for those crops the country didn't have gene variability.

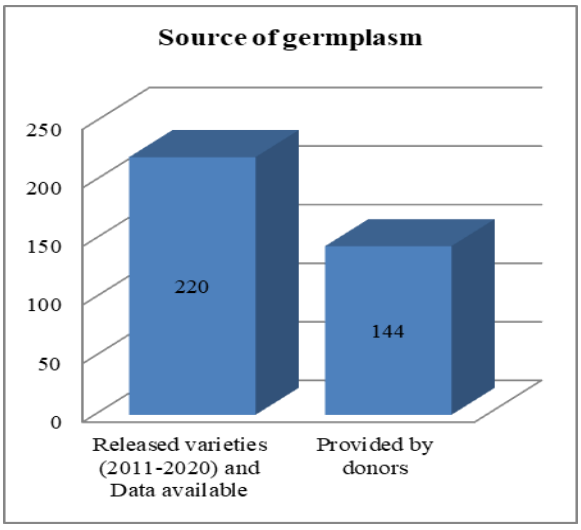

Figure 4. Donor contribution in delivery of germplasm (EIAR)

4.4.2. Impact of donor investment in scientists training

In addition to their role in conducting collaborative research, obtaining improved germplasm and institutional capacity, donors play an important role in empowering scientists. The results of the study, which covers 19 out of 21 research centers, show that EIAR has increased the number of trained scientists engaged in agricultural research by 72.6 percent in the period 2011-2020.

The results of the survey indicated that, only 7.4% of trained scientists were trained with donor funding (Table 2). Crop research program alone trained a total of 36 (43.4%) scientists out of 83 during the last decade. This shows that the research program has developed a close relationship with donors. The remaining trained scientists are from agricultural biotechnology (14.5%), natural resources (10.8%) and other agricultural sectors (31.3%).

Table 2. Donor investment in scientists training

Source of finance	Completed			On study		
	M.Sc.	Ph.D.	Total	M.Sc.	Ph.D.	Total
Before joining EIAR	22	4	26			
Government sponsored	594	41	635	119	97	216
Project sponsored	43	23	66	3	14	17
Scholarship	55	36	91	4	17	21
Self-sponsored	53		53			
Total	767	104	871	126	128	254

4.4.3. Capital investment

Fixed assets are the institute's tangible long-term assets, plants and equipment that have a useful life of more than one year. As part of the investment, EIAR acquired fixed assets purchased with grant funds or from a donor or government and joint investment. In the year 2020, Using data collected from 12 research centers in 2020, 57% of the annual physical inventory of fixed assets was purchased by donors with a value greater than 144 million ETB (Figure 5). As the pattern and trend of spending on donors and domestic financing shows, an increase (decrease) in donor spending has led to a decrease (increase) in government spending.

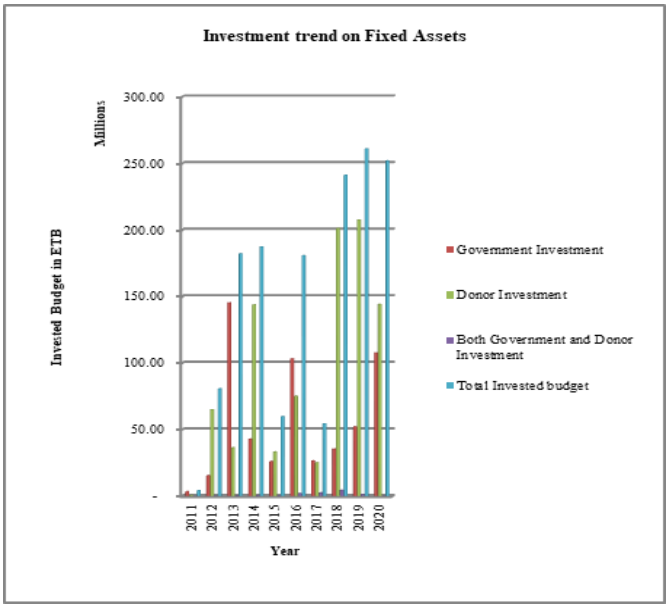

Figure 5. Investment trend on fixed assets

The expenditure trend shows that on average 79.6% of vehicles were purchased with donor assistance (Table 4). The main reason for the high average is that procurement of vehicles was done by the Ministry of Finance and the procurement procedure is lengthy and time-consuming.

Table 4. Donor assistance in purchase of fixed assets category

Fixed items category	Government investment (%)	Donor investment (%)	Both government and donor investment (%)	Total
Building	42.1	57.9	0	100
Equipment and Stationary	44.8	54.0	1.2	100
Infrastructure	27.2	72.8	0	100
Vehicles	18.6	79.6	1.8	100
Other	28.6	70.3	1.1	100

5. CONCLUSION

The government is the largest contributor to public agricultural research in Ethiopia and also the funding is more stable than funds received from donor. The majority of donor-funded projects focused on short-term goals that were not necessarily aligned with national priorities or on commodities of comparatively limited economic importance. A new funding guidance framework is therefore needed by the government to set strategic priorities for donors to contribute and cooperate.

CONFLICT OF INTEREST

The author declares no competing interests.

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