



Cost Effectiveness Study Report Ghana

Research Title:

“Increasing Access to Quality Education for Rural and Marginalised Children in West Africa— A Comparative Study of Accelerated Education and Girls Focussed Programmes in Ghana, Nigeria and Sierra Leone”

Research Report

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Executive Summary

Introduction and objectives

Over the last decade, Accelerated Education Programs (AEP) and Girls Focus Models (GFMs) programs has emerged as key innovations for providing foundational education to out-of-school children and addressing rural-urban disparities in education (AEWG, 2020, Associates for Change, 2022). The AE programming are flexible, age-appropriate programs, designed to provide accelerated education to school-going-age children who have dropped out of formal schooling or never attended school before. The AEPs aim to strategically provide learners with numeracy, literacy, and life skills equivalent to formal basic education using effective pedagogy that matches their level of cognitive maturity. These innovative models have the potential of addressing the out-of-school prevalence particularly in underserved communities and among marginalized groups (Effectiveness Study Report, 2023). However, knowledge about the cost-effectiveness of AEP programming is limited.

The need for understanding the cost-efficiency of education programming is particularly germane for resource-constraint developing countries since it is critical to ensuring resource optimization amid limited financial resources. In addition, giving the dwindling donor budgetary support for education in recent years, providing interventions for the OOSC, targeting vulnerable populations must do so within a constrained resource envelope. As part of efforts of effectively addressing the out-of-school challenge and advocate for government uptake of alternative education pathways, research on the cost-effectiveness of alternative education interventions cannot be overemphasized. Evidenced produced from such analysis will serve as critical consideration or catalyst for policymakers seeking to understand the alternative education models that will provide value for money in terms of reaching out to OOSC in rural deprived communities. The Accelerated Education Programmes (AEPs) and girls-focused models being implemented in the three Northern Regions of Ghana by both Non-Governmental Organizations (NGOs) and government agencies (CEA) provide the appropriate platform to do such value-for-money analysis with the cost of formal schooling in Ghana as a benchmark.

This study therefore aims to provide evidence on the cost-effectiveness of AEPs and Girls Focused Models (GFMs) programs implemented in 3 regions and over 8 districts in the Northern part of Ghana. In achieving the broad aim, the research was driven by three key objectives:

1. To determine the unit costs of AEP and Girls Focused Models (GFMs) programs in Ghana?
2. Undertake similar cost determination of public basic schools to provide a benchmark to the AEP programme.
3. Determine the effectiveness of AEP programme the program vis-à-vis the formal sector.

Methodology

A sample of three (3) IPs working within the Kumbungu, Gushegu, and Talensi Districts of the Northern and Upper East Regions of Ghana are drawn for the study, with a long history of implementation of AEP programmes and could provide significant information of AEP programme costing over a long period. In addition, three (3) district Ghana Education Service offices from the same sample district were selected for the formal sector costing data.

The study adopts a Cost-Effectiveness Instrument developed by UKaid for the study with inputs from the Brookings Childhood Cost Calculator (3) Tool. For the qualitative component the ROSIE instrument was used. The cost-effectiveness instrument comprised three sub-sections: the Implementing Partners (IP), the Management Units (MU), and the Formal Sector (FS) sections. The costing of the AEPs programme was done using an input cost approach, where costs were estimated by major cost categories and by cost per unit: (1) estimating the total cost of core project inputs such as operational costs, training cost, administrative costs, production and distribution of TLMs, capacity building cost, monitoring and evaluation cost, and office costs, (2) integrating academic data to determine cost per unit (i.e. per student) and (3) Cost projections based on secondary data were cost data was lacking.

The cost-effectiveness or Value for Money (VfM) analysis was done within the DFID (2011) 3Es framework, in terms of the Economy, Effectiveness and Efficiency of the program.

An in-depth interview were conducted with structured ROSIE questions. These interviews are intended to provide qualitative background to scaling up and unravel strategies put in place by state and non-state actors for long term financing of AEP programs. The data was transcribed and analyzed using thematic analysis.

Findings

- ❖ **CSOs implementation of CBE** programs cost an average operational cost of GHS1, 513.00 compared to the formal sector operational cost of GHS1, 852.00.
- ❖ **Cost** drivers are mainly delivery costs and exacerbated by the current exchange rate volatility and inflationary pressures.
- ❖ **AEPs** programs are observed to be cost-efficient, transitioning over 90% of AEP beneficiaries at an average cost of GHS816 (US\$71) compared to the formal sector cost of GHS 962(US\$83). The average entry point of AEPs graduates is P4, skipping about three years of formal schooling, has implication for cost savings.
- ❖ **Unit Cost of AEPs** programing at the national government through the Complementary Education Agency level is estimated at GHS599 (US\$50) in 2022/23.
- ❖ **Investment required** to eliminate the over 1.2 million children out of school, is estimated at an amount of GHS150 million (USD Equiv. 12.5 million) yearly for the next four years. Equivalent to 0.7% and 0.5% of the budget allocation to education sector in 2023 and 2024, respectively.
- ❖ **International Donors** remain the major source of funding for the implementation of accelerated education programing in Ghana. With major funding coming from DFID and the World Bank.
- ❖ **Institutionalization of** the Complementary Education Agency shows the foundation for full government uptake.
- ❖ **Government commitment** to allocating an equivalent of 1% of education budget allocation to the Complementary Education Agency has been missed for two (2) consecutive years.

Recommendations

- ❖ Measuring the cost-effectiveness of AEP programs requires IPs to document accurately and comprehensively costing and outcome data from the inception of the program, building this into the program monitoring and evaluation reports.
- ❖ For cost savings CSOs should consider community volunteers as facilitators.
- ❖ We recommend a budgetary allocation for 250,000 children amounting to GHS150 million (USD Equiv. 12.5 million) yearly. This proposed allocation is equivalent to

0.7% and 0.5% of the budget allocation to education sector in 2023 and 2024, respectively.

- ❖ To help in improve efficiency in public basic schools spending, there is the need for increase resource allocation to school management for continuous monitoring.
- ❖ The CEA should be clothed with the capacity to coordinate all CBE programs across the country. This will ensure proper coordination of effects by both state and non-state actors and provide a comprehensive database on all pockets of CBE programming across the country. This will enable the proper tracking of progress in addressing the OOSC challenge.
- ❖ Although all IPs generally operate the same approach to CBE, there are notable differences in implementation driven in part by IPs experiences and capacity for local contributions. This was not looked at in this study due to the challenges of data accessibility. Future research should look closely into this variation to unravel their relative effectiveness.

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The authors are solely responsible for the opinions and recommendations made in this report.

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1 Introduction

1.1 Background – CBE Implementation in Ghana

Over the last decade, Accelerated Education Programs (AEP) and girls focus models (GFM) programs have emerged as key innovations for providing education to out-of-school children and addressing rural-urban disparities in education (AEWG, 2020, Associates for Change, 2022). The AEPs programming are flexible, age-appropriate programs, designed to provide accelerated education to school-going-age children who have dropped out of formal schooling or never attended school before. The AEPs aim to strategically provide learners with numeracy, literacy, and life skills equivalent to formal basic education using effective pedagogy that matches their level of cognitive maturity. These innovative models have the potential of addressing the out-of-school prevalence particularly in underserved communities and among marginalized groups; however, knowledge about their cost-effectiveness for potential government uptake is limited. Complementary Basic Education has been proven to be more universal and allow equitable access for Out-of-school children to get a second chance of getting basic education, particularly in rural extreme poverty communities, than the traditional model of education (UNESCO, 2018). The Alternative education models, according to Abango and Casely-Hayford (2022), focus on community approaches, local language of instruction, use of local facilitators, and alternative educational schedules, proven to be effective at improving learning outcomes. The Complementary Basic Education program is currently fully managed by the GOG with funding from the Department for International Development (DFID) – United Kingdom. The program aims to provide over 200,000 out-of-school children between the ages of 8-14 years access to quality education (*Ministry of Education, 2018*).

1.2 Problem identification

Over 1.2 million children of school going age in Ghana, according to the Population and Housing Census (2021) are not in formal school system. This number includes children who have never been to school or attended in the past. The government of Ghana promised to half this numbers by 2025, speaking on international platform. To half this number there is the need to invest in more cost-effective and innovative models to promote accelerated impact and scalability. The quest for ensuring cost-efficiency in the execution of education programming is particularly germane for resource-constraint countries such as Ghana since it is critical to meeting the increasing demand for basic education services amid limited financial resources.

While addressing the out-of-school challenge remains a top priority area for the government of Ghana, interventions targeting vulnerable populations must work within a constrained resource envelope, giving the dwindling donor budgetary support for education. As part of efforts to promote scaling-up and ensure government uptake of alternative education pathways, research on the cost-effectiveness of education interventions cannot be overemphasized. Evidenced produced from such analysis will serve as critical consideration or input for policymakers seeking to understand the alternative education models that will provide value for money in terms of reaching out to OOSC in rural deprived communities. The Accelerated Education Programmes (AEPs) and girls-focused models being implemented in the three Northern Regions of Ghana by both Non-Governmental Organizations (NGOs) and government agencies (CEA) provide the appropriate platform to do such value-for-money analysis of the cost of formal schooling in Ghana as a benchmark.

1.3 Research objectives

This study aims to provide evidence on the cost-effectiveness of AEPs and Girls Focused Models (GFMs) programs implemented in 3 regions and over 8 districts in the Northern part of Ghana. In achieving the broad aim, the research was driven by two key objectives:

1. To determine the unit costs of AEP and Girls Focused Models (GFMs) programs in Ghana?
2. Undertake similar cost determination of public basic schools to provide a benchmark to the AEP programme.
3. Determine the effectiveness of AEP programme the program vis-à-vis the formal sector.

2 Methods

2.1 Instrumentations

We developed one instrument for the study with inputs from the ROSIE instrument. The cost-effectiveness instrument comprised three sub-sections: the Implementing Partners (IP), the Management Units (MU), and the Formal Sector (FS) sections.

CBE Costing Templates:

The IP template was used to collect data from CBE innovators in the selected districts of the Northern and Upper East regions. Primarily it was used to capture input cost expenditure data including training, project office administration cost, monitoring and evaluation, capacity building costs, local staff cost, and cost of production of TLM and primers. The same template was also deployed to collect data on two key IP cost components: the setup and delivery costs.

The Management Unit template was used to collect cost data from two management units: the Crown Agents for the period 2013-2017 and the Complementary Education Agency for the period 2018-present.

Formal Sector (FS) Costing Template

The FS template was used to collect expenditure data from the formal district education offices. Information that was captured with this template is delivery and management & agency costs and academic data at the basic school levels (i.e. primary and junior high schools). Other information that was generated with the help of the template is the unit costs (per primary pupil), unit cost (JHS learners), and the basic education per unit cost.

The ROSIE Instrument:

The instrument was developed to collect qualitative data on CBE innovators' perspectives on scalability and potential government uptake. It was also used to collect information about the availability, number, and types of funding alternatives for CBE continuation in the northern part of the country. It was also to take key perspectives from the innovators about the possible use of national service personnel as facilitators for CBE. Finally, the instrument was used to capture qualitative data on CBE cost-effectiveness in the era of donor fatigue to CBE programmes.

2.2 Study area inclusion criteria

The inclusion of the research study areas was based on the fact that the district and its respective regions should have benefited from CBE intervention activities in the last five years, and the beneficiary learners should have received CBE-provided training for 9 months. Thus three (3) IPs working within the Kumbungu, Gushegu and Talensi Districts of the Northern part of Ghana were targeted for the data collection and their respective formal district education offices.

2.3 Data collection process

A team of two data collectors with years of experience working in Complementary Basic Education programs were recruited and trained to collect data. Data collection took place in three phases namely: (i) the Formal Sector (ii) the Program and (iii) the Management Unit levels. Data collection at the Program and Formal Sector levels started on 31st July 2023 and ended on 11th August 2023. At the formal sector, the Gushegu, Talensi, and Kumbungu district directorates of education were sampled for data collection at different time intervals in the first week of data collection while at the program level, cost data from GILLBT and Afrikids representing the program Implementing Partners (IP) were collected in the second leg of data collection.

The fieldwork was directly supervised by the lead researcher for the cost analysis of the AEPs project.

An ingredients-based approach was used in the cost data collection, where costs were collected by intervention cycle by major cost centers; and by sub-categories.

2.4 Data sources and assumptions

The field data collection encountered several challenges leading to its unsuitability to be used for the current study. First, data from IPs was not representative enough of the larger IPs to carry out a meaningful and acceptable analysis. Second, MU data were completely not available at the time

of writing this report. Third, it was inappropriate to have targeted only three IPs for the data given that the MU activities cover far more IPs on the ground, thus it is not feasible to delineate MU costs out to represent only three IPs. Indeed the cost data obtained from the field suggest that total IP costs are far less than the MU costs (which should not be the case practically) (See Crown Agents, 2015 for example). These above-mentioned reasons among other things make the cost data collected on the CBE programme not reliable for analysis.

Therefore given the above-mentioned challenges we relied rather on secondary data sources to conduct the current analysis, which we adopted from CROWN AGENTS' report on the cost effectiveness of Ghana's CBE program in 2015. Thus the data on inputs (operational cost per student), output (cost per graduate and cost per transitioners), and outcome data (cost per proficient graduate) for the period 2013/14 to 2017/18 are previous estimates from CROWN AGENTS. Data for the recent 2018/19 to 2021/2022 cycles of AEP programs were had to come by. To fill this data gap the linear extrapolation method was used to estimate the cost data for the period 2018/19 to 2021/22. Such that current cost is a function of old cost data and inflation. An extrapolation method is one way used by many researchers to fill data generation gaps (see for example Agarwal, 2023). Appendix A provides a detailed explanation of the data extrapolation procedure.

On the other hand, the formal sector costs data were obtained from three selected district education offices from the northern and upper east regions for the period 2013/14 to 2022/23 academic years. The expenditure items recorded included delivery costs (at primary and junior high) and management & agency costs. The main cost items under management & agency costs were expenditure on goods and services and other government subventions. Delivery costs were mainly salary payments and other allowances to employees. This approach is different from that of CROWN AGENTS where national-level formal sector budgetary expenditures and country-level enrolment were used. This seems questionable since CBE programme implementation is largely in the northern regions and the fact that the region is geographically and economically different from the rest of the country. Taking comparable formal sector cost data from the district level where CBE programmes are being implemented, like in our case, may be appropriate.

Meanwhile, data for the period 2013/14 and 2017/18 experienced significant gaps due to missing financial data on teachers' salaries and other government subvention. Data analysis therefore for

this current study is based on the period 2018/19 to 2022/23, where significant financial budget lines were obtained in about 80-90% of the district's expenditure records¹.

2.5 Analysis strategy

<p>Costing analysis</p>	<p>Following UKaid (2019) and Brookings (2023) Childhood Cost Calculator (C3) tool, the cost analysis of the AEPs programme was done using an input cost approach, where costs were estimated by major cost categories and by child using the following steps: (1) estimating the total cost of core project inputs such as operational costs, training cost, administrative costs, production and distribution of TLMs, capacity building cost, monitoring and evaluation cost, and office costs, (2) integrating academic data to determine cost per unit (i.e. per student) and (3) integrating results from the cost evaluation report of CROWN AGENTS.</p> <p>Cost figures were also estimated from the reported lump sum expenditures from the formal sector for the period 2018/19 to 2021/22 academic cycles. Parameters for the cost estimation under the formal sector included delivery and management and agency costs. The delivery cost comprised of salaries of teachers, supplies, and learning materials. The management and agency component largely included management staff salaries and goods and services provided by management. The formal sector unit cost was determined based on the “expenditure line” per “year” per “districts” and later integrating academic data to estimate “cost per pupil” and “cost per transitioner”.</p>
<p>Qualitative analysis</p>	<p>With the help of ROSIE questions the research team conducted in-depth interviews with three education innovators, and one interview with the Complementary Education Agency, who understand the AEP programming and are therefore well positioned to provide accurate and authentic views about the scalability and sustainability of the AEP program. These interviews are intended to provide background to scaling and strategies put in place by state and non-state actors. The data was transcribed and analyzed using thematic analysis.</p>

¹ The reporting period for financial data is usually designated as either fiscal basis or calendar year basis.

3 Implementing Partners Cost

3.1 IP cost estimations

The accumulated CBE programme cost between 2018/19 and 2022/23 is estimated at a total of GHS 305 million (US\$ 27 million)², with 69% going to IPs and 31% spent by the MU.

I think that we could do more analysis here. For example, zooming in on the IP cost component shows that from 2013/14 to 2017/18, the IP expenditure increased significantly, going from GHS6,542,000 to GHS 14,113,000. This indicates a notable rise in funding allocated to IPs over this period. The data shows that the IP expenditure was the dominant cost component, comprising 75% of the total costs during these five years. Projections for IP expenditures from 2018/19 to 2022/23 show a continued increase, reaching GHS 41,744,000 in 2022/23. This suggests a sustained commitment to funding IP activities.

Analyze MU cost. Similar increasing trends can be observed in terms of Management Unit costs, reaching GHS 22,547,000 in 2022/23 from GHS5,108,000 in 2013/14.

The data suggests that Ips has been a major recipient of funding for the AEPs in Ghana, with their expenditures increasing significantly over time. This underscores the importance of these partners in the implementation of the AEPs. Additionally, while MU costs have also risen, they have consistently represented a smaller portion of the total costs compared to Ips. These trends indicate a sustained commitment to funding the AEPs, with a focus on strengthening the role of IPs in program delivery.

TABLE 1 TOTAL EXPENDITURE IN GHS 000S

Crown Agents Data							
GHS 000s	2013/14	2014/15	2015/16	2016/17	2017/18	2013/14 to 2017/18	Share
IP Expenditure	6,542	19,591	24,944	23,261	14,113	88,113	75%
MU Cost	5,108	5,045	5,245	6,245	7,623	29,267	25%
Total	11,650	24,636	30,189	29,506	21,736	117,717	100%
Projections to date*							
GHS 000s	2018/19	2019/20	2020/21	2021/22	2022/23	2018/19 to 2022/23	Share

² Note: There were no readily available uniform US\$ equivalence of all recorded expenditures in the three districts hence, the US\$ equivalence as quoted in this report are based on the current prevailing exchange rate of 1 US\$ = 4.45 GHC. US\$ 11.41 Source: www.oanda.com/currency/converter Accessed on 14/ 09/2023.

IP Expenditure	15,228	16,812	18,930	29,171	41,744	210,335	69%
MU Cost	8,225	9,081	10,225	15,756	22,547	95,101	31%
Total	23,453	25,892	29,155	44,927	64,291	305,436	100%

*Expenditure value = expenditure_1 + expenditure*inflation rate

3.2 Operational cost

The current delivery cost is estimated at more than half of the total spending. Set-up cost re estimated at 5% of total costs. Other costs n operational management, capacity, and evidence building, building up to 28% of total costs

Please follow the approach in section 3.1 for the remaining tables

Table 2 Operational expenditure by area in GHS 000s

	Crown Agents Data						
GHS 000s	2013/14	2014/15	2015/16	2016/17	2017/18	2013/14-2017/18	%
Set-up cost	2180	892	0	332	1,239	4,645	4%
Delivery costs	7177	20,158	25,707	23,964	14,535	91,541	78%
Operational management costs	1146	1793	2241	2605	2981	10,766	9%
Capacity building costs	916	1,434	1793	2084	2385	8,613	7%
Evidence building costs	229	359	448	521	596	2,153	2%
Total	11648	24636	30189	29506	21,736	117,717	100
Projections to date*							
GHS 000s	2018/19	2019/20	2020/21	2021/22	2022/23	2018/19-2022/23	%
Set-up cost	1,337	1,476	1,662	2,561	3,665	10,700	5%
Delivery costs	15,683	17,314	19,496	30,043	42,992	125,745	67%
Operational management costs	3,216	3,551	3,998	6,162	8,817	25,745	14%
Capacity building costs	2,573	2,841	3,199	4,930	7,054	20,598	11%
Evidence building costs	643	710	799	1,232	1,763	5,147	3%
Total	23,453	25,892	29,155	44,927	64,291	187,719	

Table 3: Operational cost per student in GHS

GHS [US\$]	Crown Agents estimates						
	2013/14	2014/15	2015/16	2016/17	2017/18	Average	Share
Delivery costs per student	292	366	494	599	727	477	89%
Management cost per student	47	33	43	65	149	56	11%
Total	339	398	537	664	876	534	100%

	Projections to date*						
	2018/19	2019/20	2020/21	2021/22	2022/23	Average	
Delivery costs per student	784 [68]	866 [75]	975 [85]	1,503 [131]	2,150 [187]	1,256 [109]	83%
Management cost per student	161 [14]	177 [15]	200 [17]	308 [27]	441 [38]	257 [22]	17%
Total	945 [82]	1,044 [91]	1,175 [102]	1,811 [157]	2,591 [225]	1,513 [131]	100%

We obtained the cost per student for the period 2018/19 to 2022/23 by interpolating the Crown Agents estimates by accounting for the year-on-year inflation (GSS, 2022) for each intervention year. The estimated average cost per student for the period of 2018/19 to 2022/23 is calculated at 1,513 GHS (US\$ 132.1). Crown Agents estimated an average cost per student at 534 GHS (US\$ 47) for the period 2013/14 to 2017/18. In GHS, costs have increased by an average of 26%. The current cost estimate is almost three times that of Crown Agents'. This is to be expected given the recent increases in the general prices of goods and services coupled with the depreciation of the Ghana cedi over the recent years of the programme.

4 Cost of formal sector education spending

4.1 Estimated Formal Basic Education Spending in selected districts of Northern Ghana.

The cumulative expenditure of basic education for the period between 2013 and 2023³ is estimated at 716 GHS million (US\$ 62.5 million). The total cost of basic education for the Talensi district is estimated at approximately 309 GHS million (US\$ 27 million) (accounting for approximately 43% of the cumulative cost), and that of Kumbungu and Gushegu districts is estimated at 124 GHS million (US\$ 11 million) (17%) and 283 GHS million (i.e. \$US 25 million) (40%), respectively. Total education expenditure (from all three districts) in nominal terms from 2013 to 2023 has recorded a progressive increase from GHS 866 thousand to GHS 140 million. The total education expenditure for 2023 was GHS 140 million from government allocations and other sources. This represents a decrease of 4% over the expenditure for 2022.

The formal basic education spending reveals significant variations between delivery and management expenses. From Table 4.1 below, between 2013 and 2023, an average of 6% of basic education expenditure was on education management, which includes interventions like the capitation grant, other government subventions, and monitoring activities. Whilst 94% went into financing compensations or salaries and other forms of employee remunerations. Nationally similar trend is observed. For instance, the Education Sector Performance Report by, the Ministry of Education, (2018); (2019) reported that in 2017 and 2018, 95.4% and 98.1% of total education expenditure from the Government's consolidated fund went into financing employee remunerations, respectively. According to a Unicef Report (2022), 8% of Ghana's education budget was spent on management and subventions between 2017 and 2020. This points to the reasons why the capitation grant is among subsidies that experience funding challenges and low monitoring activities within the formal basic school sub-sector. On average, 59% of the total expenditure on basic schools from the districts visited is on Junior High Schools (JHS), with 41% of total expenditure allocated to primary schools.

³ 2023 Expenditure as at June 2023. Mind you expenditure could go up by close of the academic year in September, 2023.

Table 4: Basic Education Spending, 000 GHS

Districts: Talensi, Gushegu and Kumbungu	2013/14*	2014/15*	2015/16*	2016/17*	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23**	Total	%
Basic Schools (Prim. & JHS)												
Delivery spending	236	1,430	1,200	39,294	46,316	70,577	111,065	136,706	137,801	131,289	675,914	94%
Management spending	630	319	290	1,835	2,355	4,059	7,274	7,287	7,657	8,390	40,097	6%
Total	866	1,749	1,490	41,130	48,672	74,636	118,338	143,993	145,458	139,679	716,010	
Primary												
Delivery	96	1,265	1,156	9,472	13,660	20,432	48,674	47,948	51,439	56,963	251,106	86%
Management & agency	630	319	290	1,835	2,355	4,059	7,274	7,287	7,657	8,390	40,097	14%
Subtotal	726	1584	1446	11307	16016	24491	55948	55235	59096	65354	291203	41%
JHS												
Delivery spending	141	165	44	29,823	32,656	50,145	62,391	88,758	86,362	74,326	424,808	100%
Management & agency	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal	141	165	44	29,823	32,656	50,145	62,391	88,758	86,362	74,326	424,808	59%
Total	866	1,749	1,490	41,130	48,672	74,636	118,338	143,993	145,458	139,679	716,010	

*Captures only expenditures on goods and services. **2023 Expenditure as of June 2023.

4.2 Estimated Basic education cost per unit

Dividing the total basic expenditure by the number of students, the estimated average cost of basic education per child is 1751 GHS (US\$ 162). The Delivery cost component of basic education per student accounted for 1751 GHS (US\$ 153) and 102 GHS (US\$ 9) on management and agency costs. This does not include the cost of training teachers in the basic schools, so is an underestimate of the actual cost across the three districts under consideration.

Furthermore, at the primary school level, we observed that the delivery cost (per primary pupil) is estimated at 962 GHS (US\$ 84) in only 2022/2023 academic year, from a primary delivery cost per student of 467 GHS (US\$ 41) in 2018/19 academic year. This implies that primary delivery costs increased on average by 32% annually. If this trend continues, we expect primary delivery cost (per primary student) to hit 1084 GHS (US\$ 94.7) in 2023/24 academic year.

On average, for the primary school level the delivery cost (per primary pupil), for the period between 2018/19 and 2022/23 is estimated at 821 GHS (US\$ 72) and 128 GHS (US\$ 11.2) on management and agency costs. Whereas for the same period, at the JHS level, the average cost estimated is 5386 GHS (US\$ 470). A study by CROWN AGENT (2015) estimated the cost per student year in primary schools at 547 GHS (US\$ 48) on delivery costs for the 2015/2016 academic year.

Table 5: Public basic schools spending per student, GHS

Unit cost (GHS)	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23**	Average*
Basic Schools (Prim. & JHS)											
Delivery	5	31	22	702	824	1263	1852	2376	2357	1833	1751
Management	15	7	5	33	42	73	121	127	131	117	102
Total	20	38	27	734	866	1335	1973	2502	2488	1950	1,852
Primary											
Delivery	3	34	26	214	310	467	1,025	1,057	1,106	962	821
Management & agency	18	9	7	42	54	93	153	161	165	142	128
Subtotal	20	43	33	256	364	559	1,179	1,218	1,271	1,103	949
JHS											
Delivery	18	17	4	2,524	2,682	4,144	4,984	7,288	7,216	6,002	5,386
Management & agency	0	0	0	0	0	0	0	0	0	0	0
Subtotal	18	17	4	2,524	2,682	4,144	4,984	7,288	7,216	6,002	5,386
Total	39	60	37	2,780	3,046	4,703	6,162	8,506	8,487	7,105	6,335

**As at June 31st, 2023. *Based on the 2017/18 to 2022/23 academic years, we had about 80% required data on both delivery and management expenses.

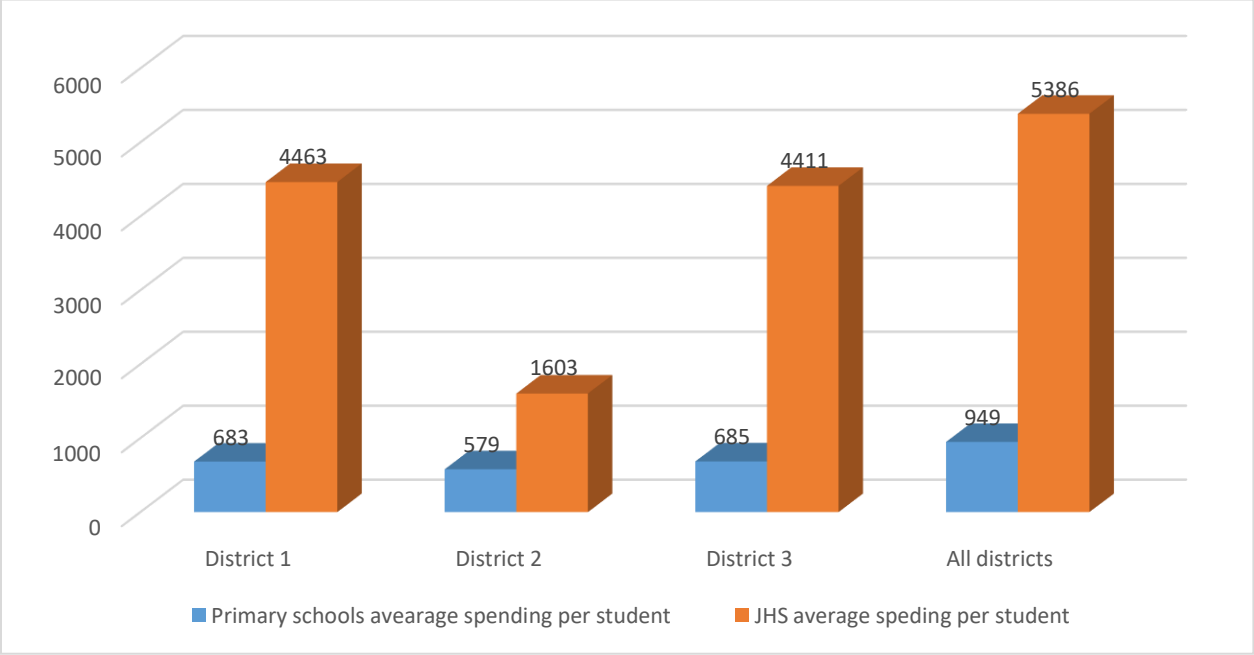


Figure 1: Trends in formal basic education expenditure per student in Northern Ghana

Fig. 1 The average cost of formal basic school by district category. Source: District Education directorates in northern and upper east regions (31st July-August, 2023). Note: Cost per-student estimations are based on consolidated direct delivery and indirect management cost components.

It is observed that the cost of formal basic education varies significantly between the primary and JHS levels. For instance, it was observed that the districts recorded an average cost per JHS student of 5386 GHS (about 6 times that of the primary level). The significant variations still hold when expenditure was further disaggregated into individual districts. Thus primary schools with a higher number of students recorded lower per capita costs, suggesting that the primary schools perhaps enjoy economies of scale and are more efficient in expenditure allocations (See Fig. 4.1).

4.3 Enrolment statistics for selected districts in northern Ghana.

4.3.1 Primary schools

Primary enrolment trends showed an impressive increase in the number of pupils by 27% from 46,504 in the 2021/22 academic year to 59,240 in 2022/23. In terms of annual percentage change, we observed that the average increase in enrolment between 2013/14 and 2022/23 is 6% per academic year (see Fig. 4.2 below). Given the population growth rate of the Northern region estimated at 3.7% annually by the Ghana Statistical Service, Population and Housing Census report (2021), one could coarsely conclude that the current enrolment rate should be able to equalize the increase in population growth in the northern regions.

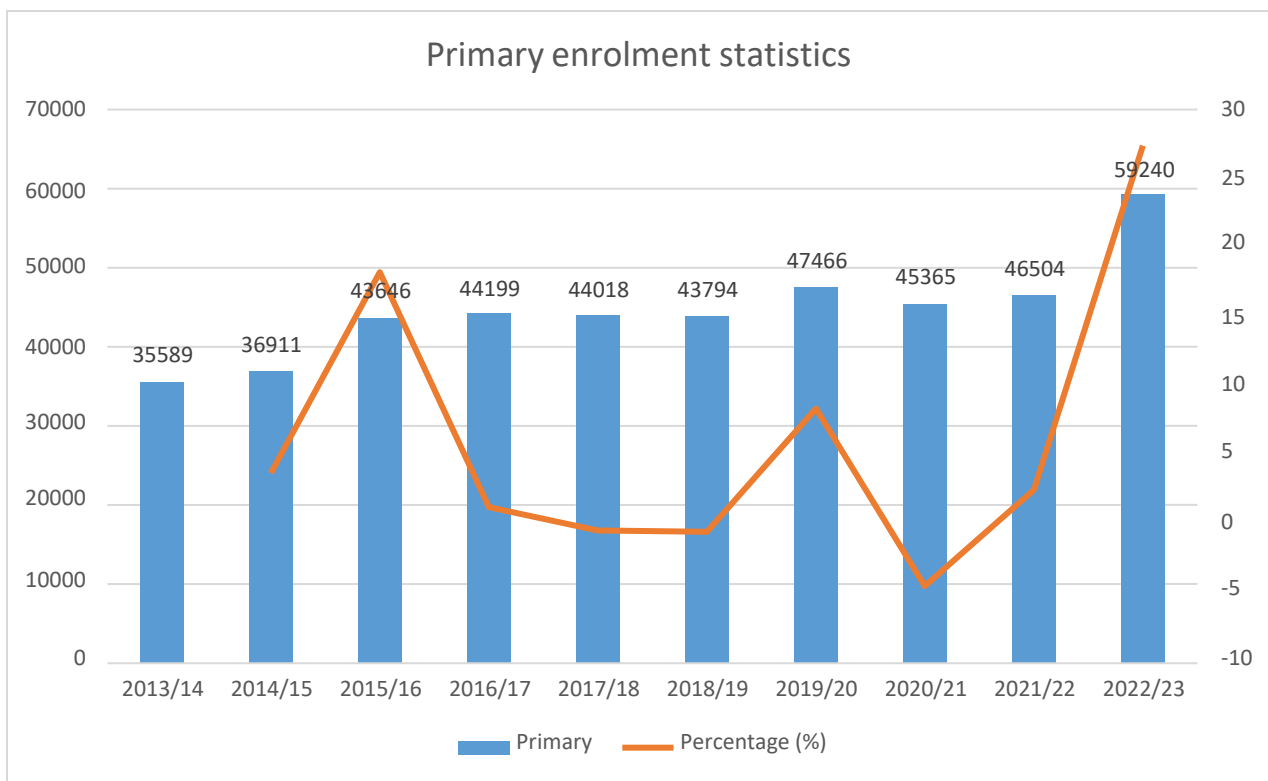


Figure 2: Primary enrolment statistics, by academic year

Source: Field Data (August, 2023)

4.3.2 Junior High Schools

The total number of students for 2022/23 was 12,383, an increase from 11,968 students in the 2021/22 academic year, representing an increment of 3.5%. In terms of annual enrolment, we observed that the JHS enrolment increased by 3.2% between 2014/15 to 2022/23 (See Fig. 4.3). At this level, with the current population growth rate in the northern regions, JHS enrolment may not be able to contain the rising demand for pre-secondary education.

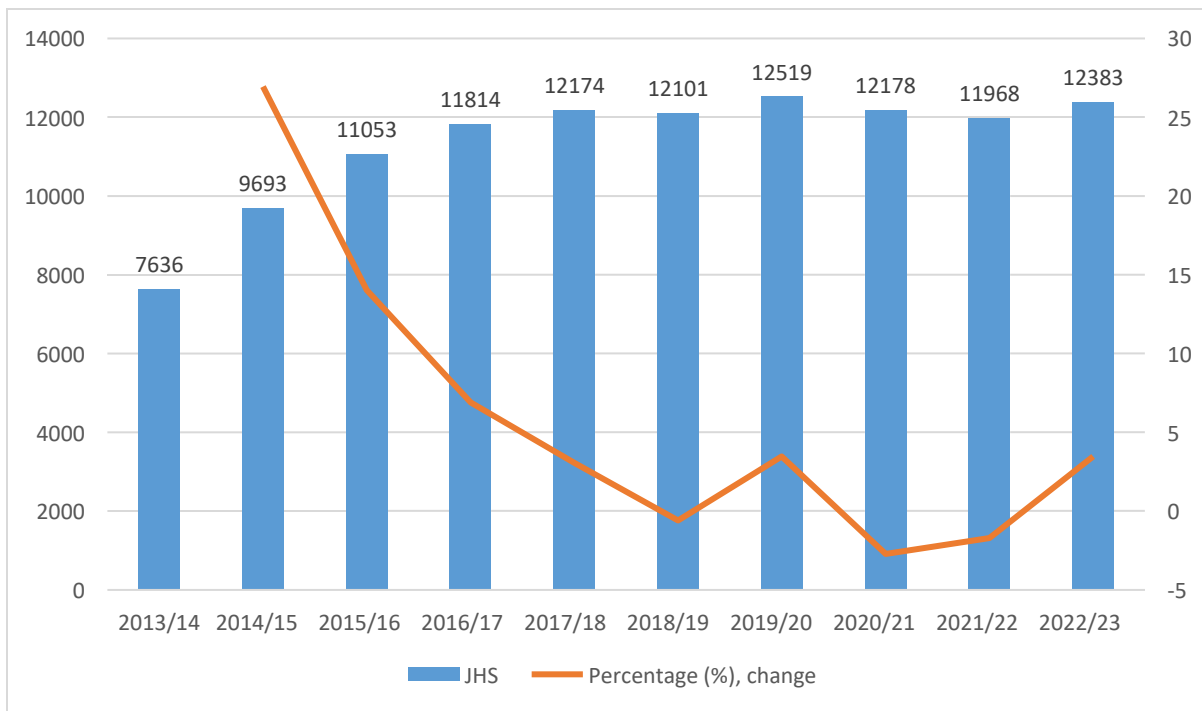


Figure 3: JHS enrolment statistics, by academic year

Source: Field Data (August, 2023)

5 Cost-effectiveness analysis

5.1 Approach

There are different methods or approaches for measuring and analyzing cost-effectiveness and determining the value for money of development projects. The DFID (2011) and UKaid Direct (n.d) offer a succinct definition of value for money as below:

Value for money refers to maximizing the impacts of each unit of currency spent to develop a better understanding of costs and results so that choices of programs can be informed by evidence. This requires an understanding of the expected costs of a program and its expected outcomes.

Therefore to get the full picture of the cost-effectiveness of the CBE programme, the VfM analysis which encapsulates cost-economy and cost-effectiveness dimensions is used. This approach is similar to that of the DFID approach to VfM analysis (Walls et al., 2020). This approach in turn uses the 3Es framework to look at the overall cost-effectiveness, namely:

- Economy – is the program using the appropriate quality of inputs at the right price?
- Efficiency – is the program using these inputs in an optimal way to produce outputs?
- Effectiveness – Are the program outputs achieving the desired outcomes in students' literacy and numeracy skills?

At the program level, these considerations roughly correspond to the cost of access, completion, and learning outcomes. The formal sector is also analyzed in the same way to provide a benchmark to which to compare CBE cost-effectiveness.

5.2 Economy

5.2.1 How much does it cost to access CBE vs. The Formal sector?

The evidence presented here is based on the latest Cycle (2021/22) costs are used as the main point of reference since these represent the latest available costs and capture considerable the increased inflation and exchange rate volatility experienced in recent times.

IP Cost per student is estimated at 1,811 GHS (or \$US157), composed of 1,503 GHS (US\$ 131) on delivery costs (IP cost as well as TLM procurement) and 308 GHS (US\$ 27) on operational management costs.

This is comparable to unit cost in the formal primary sub-sector. The cost per basic school pupil was estimated by dividing cost data from 2022 with academic data from 2021/22, giving an approximated cost per basic pupil as 1,950 GHS (US\$ 169). This is comprised of 1833 GHS (US\$ 159) delivery costs and 117 GHS (US\$ 10.2) management and agency costs. The current cost estimates put the cost of the CBE programme 18% lower than in the formal sector. Thus CBE programme has considerably lower costs of access than the formal sector.

5.3 Effectiveness

Cycle (2021/22) of one IP (GILLBT) costs are used as the main point of reference since there was no data available for the remaining targeted IPs. The analysis is done assuming one IP (GILLBT) represents the larger IPs since all IPs are operating the same approach to CBE with similar budget lines.

Table 6: Cost efficiency table

CBE programme, GHS	2018/2019	2019/20	2020/21	2021/22
Cost per AEP student	531	652	642	674
Cost per AEP graduates	545	659	655	771
Cost per AEP transitioner	551	678	675	816
Formal sector, GHS				
Cost per promoted student (formal sector)	381	908	894	960
Management cost per promoted student (formal sector)	76	136	136	143

The graduation rate for the 2021/2022 cycle was 95% of total learners. As stated earlier, we make a conservative assumption that this output remains averagely the same for the larger IPs. Thus with a graduation rate of 95%, this returns a cost per CBE graduate for 2021/22 of 771 GHS (US\$ 67).

The transition rate for the 2021/22 cycle was 90% of total students, assuming the same applies to the rest of the IPs. This returns a cost per CBE transitioner of 816 GHS (US\$ 71).

In the formal sector, the promotion rate is found to be higher than in CBE, averaging around 98% in all three districts. This gives us a cost per promoted student of 960 GHS (US\$ 83). Formal sector management cost per promoted student vary considerably over the last four years, largely depending on the number of students promoted. Management costs were at their lowest in the 2018/19 academic year at 76 GHS (US\$ 7) per promoted student, remaining at 136 GHS (US\$

11.81) per promoted student between 2019/20 and 2020/21 academic years, and rising thereafter to 143 GHS (US\$ 12.41) per promoted student in 2021/22 academic year.

In effect, we observed that the cost per AEP transitioner is about 18% less than the cost for the formal sector. Suggesting that CBE programmes are more cost-efficient in turning inputs (operational cost per student), into outputs (cost per graduate and cost per transitioner).

6 Government commitment towards CBE financing and long-term scalability in Ghana.

6.1 The Complementary Education Agency (CEA)

Currently, the complementary education programmes in Ghana are funded by the government with support from development partners. The Complementary Education Agency (CEA) is the body mandated by law to provide and promote quality complimentary education in Ghana. Provisional data obtained from the CEA office suggests that in 2022/23 the Agency has received an estimated amount of GHS2.1 million for 5,000 children out of a budgeted amount of GHS6 million to cover 20,000 children, representing only 25%.

Table 7 Status of CBE Implementation by Complementary Education Agency

	2023			2024		
Legislation	Act (1055) 2020 ¹					
	Target	Actual allocation	%	Target	Actual allocation	%
Investment	6 million	2.1 million	25%	6 million	-	
CBE Learners	20,000	5,000	25%	20,000	-	
CBE Learning centers	800	200	-	800	-	
Cost per CBE Learner		599			-	

¹DATE OF ASSENT: 29th December, 2020

The Ghana Education Outcome Program (GEOP) being implemented by the Ministry of Education with its development partners and service providers also implementing CBE seeks to bring back 70,000 out-of-school children to the primary education system. For the next three years, an average of 20,000 children are to be supported. If you are to add this figure to that of CEA, about 25,000 children nationwide are supported to transition back to the formal school system in 2023. The current investment commitment towards CBE scaling is hugely inadequate, and the country is unlikely to halve the over 1.2 million OOSC by 2025 as promised by the president.

Table 8 Proposed Budget Estimation for Complementary Basic Education in Ghana.

Year	No. of OOSC	Unit cost, GHS	CBE Proposed Budget to address the OOSC crisis -Presidential commitment (GHS)	Projected Education Allocation (GHS)	Share (% overall educ budgets Allocation)
2023*	250,000	599 (US\$50)	149,750,000	22,900,000,000	0.7%
2024	250,000	599 (US\$50)	149,750,000 (USD Equiv. 12.5 million)	27,938,000,000	0.5%
2025	250,000	599 (US\$50)	149,750,000	-	0.4%
2026	250,000	599 (US\$50)	149,750,000	-	0.4%
2027	200,000	599 (US\$50)	119,800,000	-	0.2%

Government budget allocation to education sector, 2023 and 2024.

The estimated unit cost based on the Complementary Education Agency is around GHS599.00 (US\$50) per student. This suggests that the government's full uptake of CBE programs will require an estimated amount of GHS150 million (USD Equiv. 12.5 million) yearly for the next four years. This projections is equivalent to 0.7% and 0.5% of the budget allocation to education sector in 2023 and 2024 respectively.

7 Main findings

The main objective of this study was to examine the cost-effectiveness of the CBE programme and determine cost inputs per learner and how this translates into output. This was done by taking previous cost estimates and extrapolating them into today's reality. Similar data was garnered for the formal sector in three districts of the northern region that benefited from CBE interventions to compare performance.

7.1 Cost

IP costs per student remain constantly increasing throughout the period, between 784 GHS in 2018/19 to 1,811 GHS in 2021/22. The average operational costs per student (including MU costs) of the CBE programme for the last five years (2018-2023) is about 3 times higher than that for the period for CROWN AGENT.

This level of rising CBE costs, raises concerns about CBE scalability and adaptability, considering the current Government of Ghana budgetary constraints. Meanwhile, access IP costs are much lower than in the formal sector. Thus the increments of CBE costs to 1,881 GHS in 2022 from 784 GHS in 2018 presents a huge challenge to the GoG budget.

This trend could be alleviated to some extent by maintaining macroeconomic stability, which is averaging about 26% for the same period.

7.2 Efficiency and effectiveness

The transition rate for the 2021/22 cycle was 90% of total students, this translated to a cost per CBE transitioner of 816 GHS (US\$ 71).

In the formal sector where transition rates are found to be higher, the cost per promoted student of 960 GHS (US\$ 83). The cost per AEP transitioner is about 18% less than the cost for the formal sector. Suggesting that a CBE programme is more cost-efficient in turning inputs (operational cost per student), into outputs (cost per graduate and cost per transitioner).

7.3 Government Uptake

The government implements Complementary Education in Ghana at an average unit cost of around GHS599.00 (US\$50). An estimated amount of GHS150 million (USD Equiv. 12.5 million) yearly for the next four years is required to eradicate the over 1.2 million OOSC in Ghana, all other things

being equal. This financial investment will involve leveraging on both internal resources like proceeds from minerals extraction and donor partners.

7.4 CSOs **financing** strategies for CBE scaling.

- **Donor driven:** Current funding of CBE programs are largely donor driven and as it stands now there is no concrete plan as in the next foreseeable future for financing of CBE beyond the donor-sponsored implementation of CBE. We gathered that the current GEOP program co-funded by the World Bank and the government of Ghana is a pilot project being implemented outcome will determine whether such programs should be replicated on a large scale across the country.
- **Crowdfunding:** Education innovators and the CEA reported emphasizing pulling funding from a multiplicity of sources. A situation where the donor community including domestic institutions implementing CBE could work together as a donor resource mobilization agenda. For instance, an officer from CEA has this to say:

“...if we have Aluminous, CEA could partner with them to build the staff capacity, at least that personal staff capacity would have been built, and it saves the cost for CBE. If it is NTC that is supposed to be helping, building the capacity of our facilitators, and they are doing teacher professional arrangement career for teachers and all that data is included in the CEA agenda, then our facilitators can have that built up. So capacity building is one of the areas that we can leverage on our strength”.

- **Collaboration:** Strong collaborations among the Ministry of Education and other agencies within and outside the ministry provide synergy for effective and efficient use of scarce resources. The CEA collaboration with NACCA, which is clothed with the responsibility for curriculum development, would facilitate CBE curriculum update. According to the CEA desk officer, the CEA curriculum has remained the same for the past 12 to 15 years and needs a review. And so collaborating with NACCA on that is one of the strategies seen as part of resource mobilization to support the program. Thus collaboration was reported as one of the working strategies to strengthen and function out various agencies' comparative advantages for the implementation of CBE. The collaboration will bring on board the Ghana Education Service and the CISOs even in terms of supervision of the CBE, with existing resources like motorbikes helpingsupervision. The CEA officer posits that

resource mobilization goes beyond financial but also human resources to facilitate community support. Such effort is needed to reduce costs and improve efficient mechanisms for ensuring that children remain in school. There is a need to have a strong networking strategy to rope in funding agencies like UNICEF, Kuwait Fund, GIZ, and the like.

- **Component funding approach:** the CEA reported that component financing is one useful way of ensuring continued support for the CBE program. The cost components can be roughly grouped into a) the printing of primers, b) logistics, c) training of facilitators, d) stipends for facilitators, etc. At the management level of CEA, the strategy was to propose different components to various funding opportunities that fit into their budgets to support. The CEA are financially constraints affecting the smooth implementation of the program. Currently, the CEA needs over 2.5 million GHS to complete a full cycle of the CBE program. This amount they say does not include procurement of logistics like motorbikes for district staff needed for monitoring visits. Monitoring visits has been identified as a major challenge.
- **Data:** the CISOs and the Education Innovators have highlighted the role of data generation for sustained resource mobilization strategy for CBE financing. It came out that development organizations including the Associates for Change, the Education Watch, and the Education Innovators have been at the forefront of this, producing enormous data and evidence that has been the driving force for advocacies and for seeking increased funding and investment for CBE. There is no standardized nationwide data on out-of-school children and seamlessly coordinated interventions that could be captured by EMIS and available to governments, NGOs, CISOs, and development partners to help solidify the progress of CBE planning and programming.
- **Ghana Education Outcome Program (GEOP):** The GEOP is a five (5) years program secured by the Government of Ghana with funding from the World Bank set to reintegrate 70,000 out-of-school children back to school. The Ministry of Education together with development partners and services providers is implementing this program in 27 selected districts nationwide.

- **The current government allocation is woefully inadequate:** Data available to us suggest that the government's full uptake of CBE programs will require an average of GHS101 million yearly for the next five years.

8 Recommendations

- I. Although all IPs generally operate the same approach to CBE, there are notable differences in implementation driven in part by IPs experiences and capacity for local contributions. This was not looked at in this study due to the challenges of data accessibility. Future research should look closely into this variation to unravel their relative effectiveness.
- II. Measuring the cost-effectiveness of AEP programs requires IPs to document accurately and comprehensively costing and outcome data from the inception of the program, building this into the program monitoring and evaluation reports.
- III. The evidence points to a rising cost of the CBE programme in Ghana; begging the question of the sustainability and scalability of the programme in reaching deprived and hard-to-reach communities. Closely contributing to this rising cost are infrastructure deficits and macroeconomic instabilities. The government has a role to play in this by providing infrastructure development including roads and ensuring a stable macro-economic environment for education innovations such as CBE to thrive.
- IV. Invest more in alternative education models, designed to target girls and boys equally, and with strong attention to children living in extreme poverty and physically disabled children.
- V. We recommend a budgetary allocation for 250,000 children amounting to GHS150 million (USD Equiv. 12.5 million) yearly. This proposed allocation is equivalent to 0.7% and 0.5% of the budget allocation to education sector in 2023 and 2024, respectively.
- VI. To help in improve efficiency in public basic schools spending, there is the need for increase resource allocation to school management for continuous monitoring.
- VII. The CEA should be clothed with the capacity to coordinate all CBE programs across the country. This will ensure proper coordination of effects by both state and non-state actors and provide a comprehensive database on all pockets of CBE

programming across the country. This will enable the proper tracking of progress in addressing the OOSC challenge.

References

Agrawal, R. Interpolation Techniques Guide & Benefits |Data Analysis (Updated 2023)—Published on June 1, 2021, and Last Modified on February 28th, 2023.

<https://www.analyticsvidhya.com/blog/2021/06/power-of-interpolation-in-python-to-fill>

Abango, M. A., & Casely-Hayford, L. (2022). *Cost-Effective Options for Enhancing Transition and Progression of Hard-to-Reach Populations in Basic School in Ghana : Complementary Basic Education (CBE) Model and Formal Education System*. February.
<https://doi.org/10.13140/RG.2.2.23307.16167>

Brookings, C. (2023). *Childhood Cost Calculator (C3): User Guide*.

Ghana Statistical Service. (2021). Ghana Statistical Service. *Syria Studies*, 3A(1), 37–72.
https://www.researchgate.net/publication/269107473_What_is_governance/link/548173090cf22525dcb61443/download%0Ahttp://www.econ.upf.edu/~reynal/Civilwars_12December2010.pdf%0Ahttps://think-asia.org/handle/11540/8282%0Ahttps://www.jstor.org/stable/41857625

Ghana Statistical Service. (2022). *Statistical Bulletin Consumer Price Index (CPI) for December 2022*. December 2022, 1–10.

Jones, A. (2015). Ghana Complementary Basic Education : Cost-effectiveness Analysis. *Report of the Technical Assignment*, 24 November 2015.

Ministry of Education, MTEF PBB. (2022).

Ministry of Education [MoE]. (2019). Education sector performance report. *Government of Ghana*, November, 1–77.

MINISTRY OF EDUCATION EDUCATION SECTOR PERFORMANCE. (2018).

Ministry of Education, G. (2018). *Ministry of Education Education Sector Performance*. 1–55.

UKaid. (2019). Meeting the Academic and Social-Emotional Needs of Nigeria’s Out-of-School Children What Works and what doesn’t for an Accelerated. *Research Brief*, July.

Unicef. (2022). *Education budget brief*. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/[https://www.unicef.org/ghana/media/4576/file/2022 Education Budget Brief .pdf](https://www.unicef.org/ghana/media/4576/file/2022%20Education%20Budget%20Brief.pdf)

Walls, E., Tulloch, C., & Holla, A. (2020). Cost Measurement Guidance Note for Donor-Funded Education Programming. In *Washington, DC: United States Agency for International Development, prepared for Building Evidence in Education (BE2)*.

Appendix

Appendix A: Extrapolation of older by CA to current costs.

Due to cost data constraints, actual cost data from IPs, are not available for recent years of CBE implementations. Instead, we relied on a data generation method of extrapolation. This procedure has been widely adopted in the literature to fill data gaps (Agarwal,2022).

The current cost data was constructed in two simple steps:

First, inflation rates were constructed on a year-to-year basis to capture the general prices of goods and services for the entire year. Thus, current costs are assumed to be mainly driven by changes in the general prices of goods and services. Exchange rate fluctuation is a significant driver of imported inflation which has been accounted for in the calculations of inflation rate (GSS, 2022).

The second was to use both the constructed inflation figures and cost data from Crown Agent. By specifying, the following equation:

$$Cost_t = Cost_{t-1} + Cost_{t-1} * In_t$$

Where t denotes the implementing cycle (i.e. $t = 2018/19 \dots 2021/22$), $cost$ denotes cost inputs and In represents the inflation rate.

While it may be relevant to delineate inflation rates for imported goods from that for locally produced goods and services in the data extrapolation procedure, secondary expenditure data obtained from Crown Agents reports does not provide information on cost items or expenditure lines that are imported or domestically expended. This constraint leaves us with little chance than to apply the averaged year-on-year inflation estimates of which calculations considered both the imported and local changes in prices of goods and services. In any case, the major cost categories on which projection was done constitute sub-expenditure lines which could be construed as either imported or domestically.

Table A1: Estimated Cost of Basic Education Spending in Talensi, 2013-2022.

GHS	2013/ 14	2014/ 15	2015/ 16	2016/1 7	2017/1 8	2018/1 9	2019/2 0	2020/2 1	2021/2 2	2022/2 3	Total
Primary delivery spending	82,83 7.16	72,80 4.84	72,80 4.84	9,458,1 85.28	9,407,6 01.09	10,452, 890.09	11,356, 416.10	11,763, 427.02	11,655, 873.58	12,110, 123.71	76,432, 963.71
Primary management & agency spending	52,64 1.70	131,3 05.28	131,3 05.28	1,360,1 29.94	1,434,4 27.45	1,849,7 84.61	1,657,7 35.25	1,747,8 79.78	1,634,8 22.30	1,842,5 67.32	11,842, 598.92
Subtotal	135,4 78.86	204,1 10.12	204,1 10.12	10,818, 315.22	10,842, 028.54	12,302, 674.70	13,014, 151.35	13,511, 306.80	13,290, 695.88	13,952, 691.03	88,275, 562.63
JHS delivery spending	133,8 83.91	29,97 0.33	29,97 0.33	29,812, 913.10	29,792, 040.00	33,213, 378.11	36,484, 269.99	38,029, 438.29	14,078, 936.74	39,200, 518.03	220,805 ,318.83
JHS management & agency spending	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subtotal	133,8 83.91	29,97 0.33	29,97 0.33	29,812, 913.10	29,792, 040.00	33,213, 378.11	36,484, 269.99	38,029, 438.29	14,078, 936.74	39,200, 518.03	220,805 ,318.83
Total	269,3 62.77	234,0 80.45	234,0 80.45	40,631, 228.32	40,634, 068.54	45,516, 052.81	49,498, 421.34	51,540, 745.09	27,369, 632.62	53,153, 209.06	309,080 ,881.46

Table A2: Estimated Cost of Basic Education Spending in Kumbungu, 2013-2022.

GHS	201 3/14	2014/ 15	201 5/16	201 6/17	2017/1 8	2018/1 9	2019/2 0	2020/2 1	2021/2 2	2022/2 3	Total
Primary delivery spending	0.00	207,3 08.00	0.00	0.00	4,230,2 57.93	2,499,4 97.02	17,683, 656.18	14,486, 923.80	16,863, 960.96	12,981, 532.37	68,953,1 36.26
Primary management & agency spending	0.00	50,05 9.42	0.00	0.00	764,18 2.36	620,17 2.08	2,539,0 81.53	2,046,9 21.63	2,385,5 14.53	1,909,3 04.58	10,315,2 36.14
Subtotal	0.00	257,3 67.42	0.00	0.00	4,994,4 40.29	3,119,6 69.10	20,222, 737.71	16,533, 845.43	19,249, 475.49	14,890, 836.95	79,268,3 72.40
JHS delivery spending	0.00	134,7 50.20	0.00	0.00	2,749,6 67.65	1,624,6 73.06	11,494, 376.52	9,416,5 00.47	10,961, 574.62	8,437,9 96.04	44,819,5 38.57
JHS management & agency spending	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subtotal	0.00	134,7 50.20	0.00	0.00	2,749,6 67.65	1,624,6 73.06	11,494, 376.52	9,416,5 00.47	10,961, 574.62	8,437,9 96.04	44,819,5 38.57

Total	0.00	392,1 17.62	0.00	0.00	7,744,1 07.94	4,744,3 42.17	31,717, 114.22	25,950, 345.90	30,211, 050.12	23,328, 832.99	124,087, 910.97
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Table A3: Cost of Basic Education Spending, 2013-2022, Gushegu

	2013/ 14	2014/ 15	2015/ 16	2016/ 17	2017/ 18	2018/1 9	2019/2 0	2020/2 1	2021/2 2	2022/2 3	Total
Primary delivery spending	12,93 0.00	984,95 9.90	1,083, 430.57	13,67 7.00	22,44 7.40	7,479,7 96.28	19,633, 816.34	21,697, 453.90	22,919, 361.06	31,871, 823.39	105,719 ,695.84
Primary management & agency spending	577,2 68.85	137,89 4.39	158,52 5.68	475,0 76.04	156,7 23.43	1,589,0 95.15	3,076,9 20.53	3,492,2 99.35	3,636,7 15.55	4,638,3 78.79	17,938, 897.75
Subtotal	590,1 98.85	1,122, 854.29	1,241, 956.25	488,7 53.04	179,1 70.83	9,068,8 91.43	22,710, 736.87	25,189, 753.25	26,556, 076.61	36,510, 202.18	123,658 ,593.59
JHS delivery spending	6,621 .00	0.00	13,609 .80	9,588 .00	114,1 83.00	15,307, 000.00	14,412, 000.00	41,312, 000.31	61,321, 000.00	26,687, 000.00	159,183 ,002.11
JHS management & agency spending	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Subtotal	6,621 .00	0.00	13,609 .80	9,588 .00	114,1 83.00	15,307, 000.00	14,412, 000.00	41,312, 000.31	61,321, 000.00	26,687, 000.00	159,183 ,002.11
Total	596,8 19.85	1,122, 854.29	1,255, 566.05	498,3 41.04	293,3 53.83	24,375, 891.43	37,122, 736.87	66,501, 753.56	87,877, 076.61	63,197, 202.18	282,841 ,595.70

Table A4: Primary School Enrolment by Districts, 2013/14-2022/23

Primary School Enrolment				
Period	Talensi	Kumbungu	Gusheigu	Total
2013/14	12,744	5,764	17,081	35,589
2014/15	12,898	6,381	17,632	36,911
2015/16	12,898	12,963	17,785	43,646
2016/17	12,980	13,614	17,605	44,199
2017/18	13,040	14,196	16,782	44,018
2018/19	12,517	14,221	17,056	43,794
2019/20	12,796	15,244	19,426	47,466

2020/21	13,349	15,244	16,772	45,365
2021/22	12,689	16,983	16,832	46,504
2022/23	13,397	22,275	23,568	59,240
Grand Total	129,308	136,885	180,539	446,732

Table A5: JHS Enrolment by Districts, 2013/14-2022/23

JHS Enrollment				
Period	Talensi	Kumbungu	Gusheigu	Total
2013/14	3,779	596	3,261	7,636
2014/15	5,166	633	3,894	9,693
2015/16	5,166	1,854	4,033	11,053
2016/17	5,356	2,716	3,742	11,814
2017/18	5,382	3,100	3,692	12,174
2018/19	4,861	3,710	3,530	12,101
2019/20	5,123	3,811	3,585	12,519
2020/21	4,969	3,811	3,398	12,178
2021/22	4,691	3,814	3,463	11,968
2022/23	4,982	3,910	3,491	12,383
Grand Total	49,475	27,955	36,089	113,519

Table A6: Cumulative Enrolment statistics, by year

Academic Year	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Average
	4	5	6	7	8	9	0	1	2	3	
Primary	35589	36911	43646	44199	44018	43794	47466	45365	46504	59240	
Percentage (%)		3.7%	18.2%	1.3%	-0.4%	-0.5%	8.4%	-4.4%	2.5	27.4	
JHS	7636	9693	11053	11814	12174	12101	12519	12178	11968	12383	
Percentage (%)		26.9	14.0	6.9	3.0	-0.6	3.5	-2.7	-1.7	3.5	
Total	43225	46604	54699	56013	56192	55895	59985	57543	58472	71623	
		7.8	17.4	2.4	0.3	-0.5	7.3	-4.1	1.6	22.5	

Table A7: Inflation rate

	Dec.-2018	Dec. 2019	Dec. 2020	Dec. 2021	Dec. 2022	2023*
Inflation rate (end of period)	9.40%	7.90%	10.40%	12.60%	54.10%	43.10%

*as at August, 2023

Instruments

A: Program Background Data

S/N	Particulars		
1.	Region		
2.	District		
3.	Name of innovator		
4.	Intervention Type	CBE <input type="checkbox"/>	Girls mode <input type="checkbox"/>
5.	Intervention location		
6.	Funding Source		
7.	Project Cycles under consideration		
8.	Intervention sector	Rural Deprived <input type="checkbox"/>	Extremely Deprived <input type="checkbox"/>
9.	Intervention duration: e.g. 3 months		
10.	Intervention contact; e.g. 3 hours		
11.	Name of respondent		
12.	Tel. No. of respondent		
13.	Gender of respondent (Circle one without asking)	Male <input type="checkbox"/>	Female <input type="checkbox"/>
		Prefer not to specify <input type="checkbox"/>	
14.	Age (in complete ears)		
15.	Highest level of Education	Diploma [] Degree [] Masters or higher [] Others Specify.....	
16.	Position of respondent		
17.	Name/s of Interviewer/s		
18.	Names of Notetakers		
19.	Tel. No. of Interviewer		
20.	Date of interview		
21.	Time of arrival:		Departure:

B: Costing Template: Brookings – Childhood Cost Calculator (C3) Tool

1. Overhead Cost	Sub-categories	Investment (one-time)/Recurrent cost	Unit	Unit Cost (local)	Unit Cost (USD)	# of Units	Total Cost (local)
	Program Design. E.g. Feasibility, proposals, negotiation, and contracting.						
	Indirect Program Management (Administration): e.g. cost of electricity, water, rental, etc., dedicated telephone lines, cell phones, direct postage cost, printing incurred in the program).						
	Program Evaluation: e.g. all costs associated with the evaluation of the program including training of enumerators, baseline and end-line evaluation or midline evaluation, cost incurred in preparing evaluation report, etc.)						
	other head costs						
sub-Total							
2. Direct Cost							
	Training: e.g. cost of providing training to service providers providing services directly to beneficiaries, e.g. facilitators, teachers, parents, etc.)						
	Direct Delivery: salaries for facilitators, center workers, or home visitors, cost of classrooms/centers, medication or nutrition to participants)						
	Direct Program Management: e.g. office rent, equipment maintenance, communication, stationery, vehicle maintenance, fuel, vehicle insurance, etc.						
	Transfers to Individuals/Families: e.g. cash transfers (if any)/scholarships/grants/food to beneficiaries						
	Other direct cost						
sub-total							

3. Imputed Cost/Donated Resources							
	Volunteer time						
	space for workshops, trainings, or events utilized cost-free						
	donated resources or supplies etc.						
Grant Total							

NB: Investment costs are all other costs that occur only once in the life of the program. Recurrent costs occur at the same frequency in every year of the program being costed.

C: Program output/education data (taken intervention cycle)

	Cycle 1			Cycle 2			Cycle 3		
Education data	Male	Female	Total	Male	Female	Total	Male	Female	Total
Total number of students	x0	x1	X						
Total number of graduates	y0	y1	Y						
Total number of transitioners	z0	z1	Z						
The average grade of transition	gz0	gz1							
Grade equivalent pre-test average score									
Grade equivalent post-test average score									

Year	No. of OOSC	Unit cost, GHS	Total Amount	Projected Allocation*	Share (% edu. Allocation)
2023	250,000	599	149,750,000	GH¢22,900,000,000	0.7%
2024	250,000	599	149,750,000	GH¢27,938,000,000	0.5%
2025	250,000	599	149,750,000	GH¢34,084,360,000	0.4%
2026	250,000	599	119,800,000	GH¢41,582,919,200	0.4%
2027	200,000	599	119,800,000	GH¢50,731,161,424	0.2%

*Projected based on 2022 and 2023 budget allocation increased by 22%