Cost-Benefit and Cost-Effectiveness Analysis of the PLANE Education Programme in Nigeria

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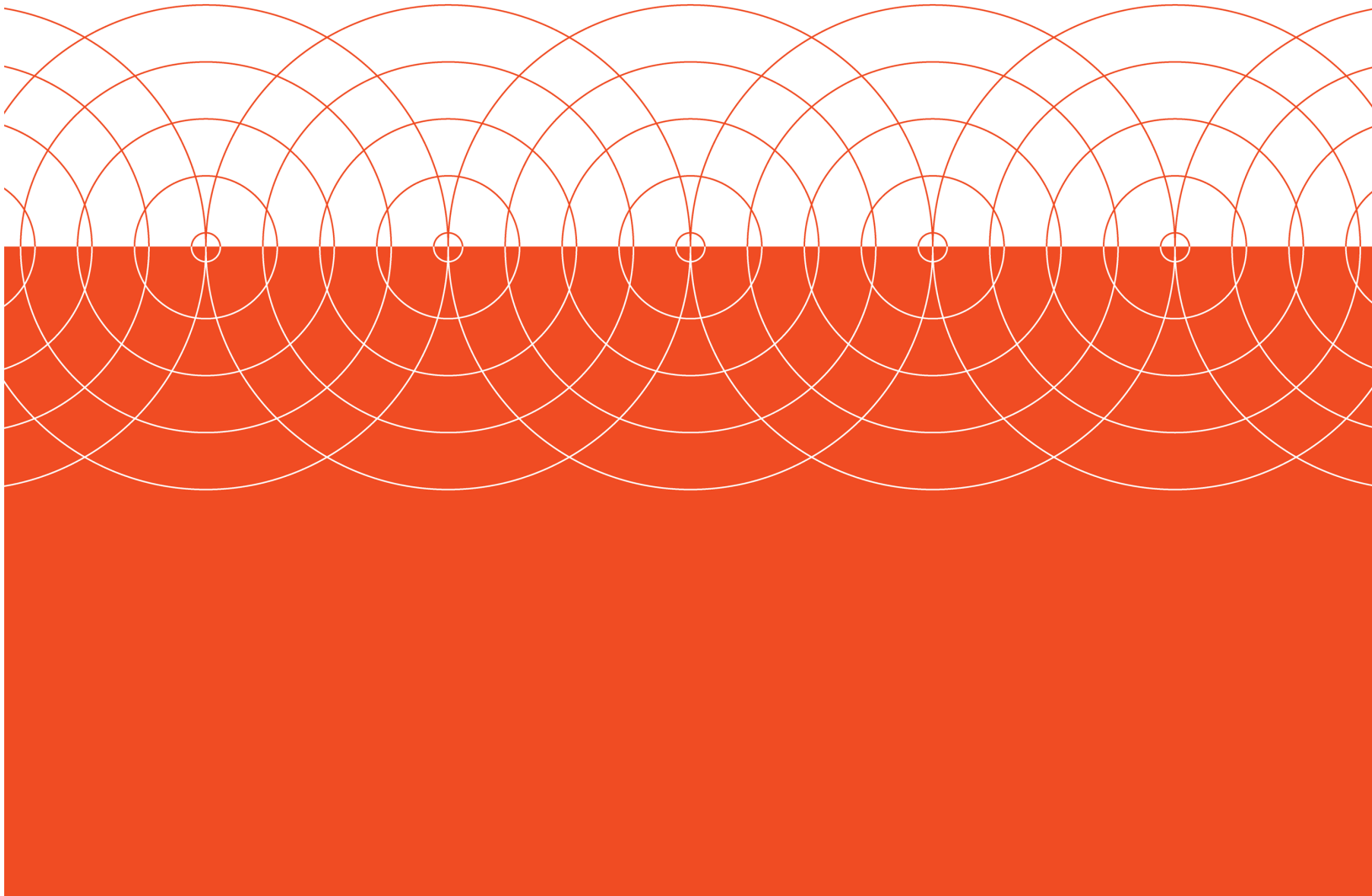

Executive Summary

The Partnership for Learning for All in Nigeria (PLANE) is the UK Foreign, Commonwealth and Development Office's flagship basic education programme in Nigeria. Window 1, implemented by FHI 360, focuses on improving foundational literacy and numeracy through the provision of Hausa-language teaching and learning materials (TLMs) and structured professional development for teachers and head teachers in Kano, Kaduna, and Jigawa States. The programme represents one of the largest investments in foundational learning in Sub-Saharan Africa, with a goal of addressing persistent deficits in reading and mathematics achievement.

This report presents a cost–benefit and cost–effectiveness analysis of PLANE's Window 1 activities using the Cohort-Based Cost–Benefit (CBCB) model. The framework links observed learning gains from the impact evaluation to lifetime earnings through the human capital channel, quantifying the long-term economic returns to improved learning. The analysis uses 10,000 Monte Carlo simulations to account for uncertainty in key parameters, discounts future values at three percent, and expresses all results in constant 2022 GBP. Data are drawn from programme records, budget and cost data, and national labour force statistics.

The evaluation finds that PLANE improved literacy and numeracy outcomes by 0.41 standard deviations across four cohorts of pupils, equivalent to roughly 1.8 additional years of effective schooling. These gains translate into substantial lifetime earnings benefits for participants, generating very high returns relative to programme costs. Teacher professional development constitutes the largest cost component, followed by management and materials, reflecting the programme's focus on instructional quality.

Key Findings

- Mean lifetime earnings benefit per participant: £3,301 (after adjustment for external validity).
- Aggregate discounted benefit across 607,701 students: £2.0 billion.
- Total programme cost (2022–2024): £13.7 million, or £22.5 per pupil.
- Benefit–cost ratio (BCR): 146.5, meaning each £1 invested yields about £146 in discounted lifetime benefits.
- Cost-effectiveness ratio (CER): £54 per standard deviation of learning gain, or £12 per additional year of schooling.
- In-school components (TLMs and teacher training) yield a BCR near 290, demonstrating high efficiency of direct instructional inputs.
- Monte Carlo simulations confirm robustness, with over 95 percent of draws producing positive net returns.
- Under a government-led sustainability scenario, the BCR remains very high at 230 (253 excluding social costs), even after adjusting for lower implementation quality.

PLANE is a highly cost-beneficial investment in human capital. Its combination of materials and teacher development matches the structured pedagogy interventions highlighted by Evans and Yuan (2017) as delivering large economic returns, with a benefit–cost ratio comparable to the Kenya Extra Teacher Program (ETP) performance pay arm evaluated by Duflo et al. (2011).

List of Acronyms

BCR	Benefit–Cost Ratio
CBCB	Cohort-Based Cost–Benefit model
CER	Cost-Effectiveness Ratio
DAI	DAI Global (implementer consortium for Window 1)
FCDO	Foreign, Commonwealth and Development Office
FHI 360	Family Health International 360
HT	Head Teacher
NEMIS	National Education Management Information System
NPV	Net Present Value
PD	Professional Development
PLANE	Partnership for Learning for All in Nigerian Education
SD	Standard Deviation
SSO	School Support Officer
TLM	Teaching and Learning Materials
UNICEF	United Nations Children's Fund

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Background

The PLANE programme (*Partnership for Learning for All in Nigerian Education*) was launched by the UK Foreign, Commonwealth and Development Office (FCDO) to address Nigeria's persistent foundational learning crisis. Millions of children remain unable to read or perform basic arithmetic despite being enrolled in school, with learning outcomes particularly low in the northern states where access, quality, and teacher capacity are weakest. PLANE represents the UK's largest basic education investment in Nigeria, with a commitment of up to £170 million over 2021–2028 to strengthen literacy and numeracy, teacher professional development, and education system performance (World Bank, 2015; HM Treasury, 2022).

The programme operates through three implementation windows: Window 1 (DAI consortium) focuses on foundational literacy and numeracy and teacher support; Window 2 (UNICEF) covers education in emergencies; and Window 3 (Save the Children) supports community learning and out-of-school children. The analysis presented here focuses on **Window 1**, which delivers the in-school teaching and learning package across Kano, Kaduna, and Jigawa states. This package combines the development, production, and distribution of Hausa-language teaching and learning materials (TLMs) with structured teacher and head-teacher professional development to improve classroom practice (Dhaliwal et al., 2013).

By the end of the 2024-2025 school year, PLANE Window 1 had reached approximately **2,000 schools** and **670,000 students** across Kano, Kaduna, and Jigawa states. The intervention combined structured teacher and head-teacher professional development with the design, production, and distribution of Hausa-language teaching and learning materials to improve classroom instruction and student outcomes. Impact-evaluation results using a spatial regression-discontinuity design show an aggregate improvement of **0.41 standard deviations** in literacy and numeracy—consistent with international benchmarks for structured-pedagogy programmes (Evans and Yuan, 2017).

The framework follows established approaches in the education economics literature (e.g., Boardman et al., 2018; Duflo et al., 2008; Evans and Yuan, 2017), linking learning gains to years of schooling and lifetime earnings. The model is implemented as a Monte Carlo simulation with 10,000 draws, varying key parameters for learning impact, learning-to-schooling translation, and fidelity of implementation. Benefits are projected over a 35-year working life (ages 20–54) and expressed in 2022 GBP using real effective exchange rates, consistent with standard development-economics practice (World Bank, 2015). The analysis focuses on the three northern states where the foundational learning package has been fully implemented. It applies specifically to the Foundational Learning and Systems Strengthening Window (Window 1) of the PLANE programme, delivered by FHI 360 over the 2022–2024 implementation period. The analysis will be updated annually as new cohorts and cost data become available through the remainder of the programme lifecycle.

The remainder of this report is organized as follows. Section 2 presents the cost–benefit model and simulation framework, outlining the parameters, functional form, and stochastic structure used to estimate lifetime returns. Section 3 describes the data sources and cost inputs drawn from programme records, budget data, and evaluation results. Section 4 reports the results of the Monte Carlo simulation, including estimated net present value (NPV), benefit–cost ratio (BCR), and cost-effectiveness (CER) with associated confidence intervals. Section 5 concludes with interpretation and implications for programmatic decision-making and scale-up.

Cost–Benefit and Cost–Effectiveness Analysis

We estimate the long-term economic return to the PLANE foundational learning programme using the Cohort-Based Cost–Benefit (CBCB) framework. The framework links improvements in foundational learning to lifetime earnings through a human capital channel and compares these discounted benefits to the full economic costs of implementation, expressed in constant 2022 GBP and discounted at three percent.

Benefits (B)

Model summary

The benefit component of the CBCB framework quantifies the long-term economic gains associated with PLANE's observed improvements in foundational learning. The underlying premise follows a standard human-capital logic: children who learn more in school accumulate greater cognitive skills, progress further in their education, and eventually earn higher wages as adults. These earnings gains represent the principal channel through which early learning investments translate into lifetime economic returns.

Formally, the discounted benefit for participant i is expressed as:

$$NPV_i^B = \sum_{a=20}^{54} \frac{b_i(a)}{(1+r)^{a-a_0}}$$

where a denotes age, a_0 is the average age at which the child completes the programme, and r is the social discount rate. The term $b_i(a)$ represents the expected annual earnings gain at age a attributable to the programme:

$$b_i(a) = \ell(a)e(a)\big(w_i^{(1)}(a) - w_i^{(0)}(a)\big)$$

where $\ell(a)$ is the labour-force participation rate, $e(a)$ is the probability of employment conditional on participation, and $w_i^{(1)}(a) - w_i^{(0)}(a)$ is the incremental wage difference between the treatment and counterfactual trajectories.

This formulation captures three essential elements of the benefit mechanism. First, it distinguishes between potential and realised earnings by weighting incremental wages by observed labour-market participation and employment probabilities at each age. Second, it accounts for the timing of benefits: gains only begin to accrue once participants reach working age, typically around 20, which means benefits are lagged relative to programme implementation. Third, it discounts future earnings to their present value at the time of programme completion, ensuring comparability with upfront programme costs.

Aggregating across all participants yields total discounted programme benefits:

$$NPV_B = \sum_{i=1}^{N} NPV_i^B$$

which can be expressed per pupil or at the aggregate level across cohorts.

Empirical application

Observed treatment effects from the PLANE impact evaluation yield an average learning gain of 0.414 standard deviations across four cohorts. Following standard CBCB assumptions, this corresponds to approximately 1.8 additional years of effective schooling. Applying age–earnings profiles from the 2024

Nigerian Labour Force Survey produces a mean discounted lifetime benefit of £4,126 per participant before adjustments and £3,301 after applying an external validity weight of 0.8. Aggregated across 607,701 participating students, total discounted benefits equal £2.006 billion.

Table 1: Cohort-Level Benefit Estimation

	Parameter	Cohort				Aggregate
		1	2	3	4	
N	Student population	153,354	139,252	157,615	157,480	607,701
ATE	Average treatment effect (SD)	0.439	0.350	0.526	0.334	0.414
ΔS	Additional years of schooling	1.93	1.54	2.31	1.47	1.82
NPV_B	Lifetime earnings benefits (£)	4,840	3,910	5,736	3,404	4,126
$\text{NPV}_{B,\text{adj}}$	Adjusted benefits (£)	3,872	3,128	4,589	2,723	3,301
NPV_{agg}	Aggregate benefits (£m)	593.8	435.6	723.2	428.8	2,006.0

Figure 1 illustrates the estimated age–earnings profile derived from the Nigerian Labour Force Survey. The dashed line represents expected lifetime earnings under the counterfactual while the solid line reflects expected earnings with PLANE. The shaded area between the two curves represents the incremental benefit stream $b_i(a)$, whose discounted sum yields the per-participant NPV_i^B.

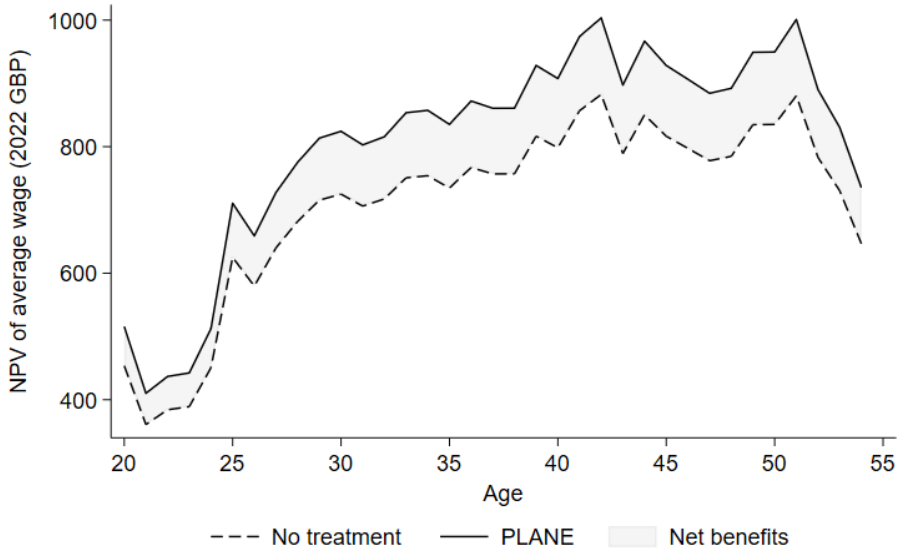

Figure 1: Age–earnings profile and incremental benefit area (net present value of lifetime earnings gains).

These results indicate that learning gains, averaging 0.41 standard deviations, translate into substantial cumulative earnings effects over the working life. At scale, these benefits amount to roughly £2.0 billion in total discounted gains across participating cohorts, forming the benefit component of the programme's value-for-money analysis.

Programme Costs (C)

Programme costs represent the full set of resources required to design, produce, and deliver the PLANE foundational learning package. Following the Cohort-Based Cost–Benefit (CBCB) framework, total costs are divided into two components: *fiscal* costs, which represent direct budgetary expenditures, and *social* costs, which capture the economic value of non-budgeted resources such as opportunity costs and environmental externalities. Accordingly, total programme cost in year t is defined as:

$$C_t = C_t^{\text{fiscal}} + C_t^{\text{soc}}$$

Fiscal costs

Fiscal costs include all financial expenditures incurred by the programme and its government partners:

$$C_t^{\text{fiscal}} = C_t^{\text{TLM}} + C_t^{\text{PD}} + C_t^{\text{Ops}} + C_t^{\text{Gov,fiscal}}$$

where C_t^{TLM} covers the design, production, and distribution of teaching and learning materials (textbooks, supplementary readers, and related inputs); C_t^{PD} covers professional development for teachers and school leaders, including training workshops and coaching support; C_t^{Ops} covers programme management, logistics, monitoring, and overheads; and $C_t^{\text{Gov,fiscal}}$ represents direct government contributions such as transport, fuel, and venue use.

Social costs

Social costs encompass non-budgetary resources and externalities borne by stakeholders outside the direct financial accounts of the programme:

$$C_t^{\text{soc}} = C_t^{\text{opp}} + C_t^{\text{env}}$$

where C_t^{opp} represents the opportunity cost of teacher, head teacher, and school support officer time devoted to PLANE activities, valued at their prevailing daily wages; and C_t^{env} represents environmental externalities associated with material production and distribution. These include deforestation, carbon emissions, and water use, each valued at estimated shadow prices in 2022 GBP.[1] All expenditures are converted into constant 2022 values to ensure comparability across years and consistency with the discounted benefit stream.

Aggregate estimates

Total programme expenditure over three years amounted to £13.7 million, equivalent to £4.56 million per year. This corresponds to £22.5 per pupil, or £7.5 annually. Fiscal costs accounted for approximately £13.1 million, while social costs—including the opportunity cost of labour and environmental externalities—added £0.64 million. Within the fiscal component, teacher professional development was the single largest cost category, representing about 34 percent of total expenditure, followed by programme management and administration (22 percent) and the production of teaching and learning materials (10 percent). Other activities, including data collection, coaching, and distribution, accounted for smaller shares. Per-teacher costs, based on the professional development component only, averaged £217 across the programme period.

[1] All shadow prices (p^k) and physical quantities (Q^k) for C_t^{env} are derived from the following sources: Przybysz et al. (2018), Busch et al. (2024), Matsuo et al. (2025), Tomberlin et al. (2020), Dmitry (2024), Hawkins et al. (2019), Kikstra et al. (2021), and Kyoi et al. (2024).

Table 2: Programme Costs by Category

Cost Category	Total (£)	Source
Programme Delivery (Implementer, Financial)		
C_t^{TLM}		
TLM content development (once per grade)	230,037	CWP
TLM production (recurring)	1,308,446	Calculated ($p_{books} \times q_{books}$)
TLM distribution & support (recurring)	110,484	CWP
C_t^{PD}		
Teacher and HT PD (recurring)	4,498,197	CWP
Coaching & school support (recurring)	145,640	CWP
C_t^{Ops}		
Monitoring, data collection, and data sharing (recurring)	823,637	CWP
Local management & admin	2,995,793	Calculated (Direct fees)
Total	**10,112,233**	
Government (Economic)		
C_t^{Gov}		
Teacher labour (opp. cost)	1,280,745	Calculated (# of teachers × training days × daily wage)
Principal labour (opp. cost)	563,850	Calculated (# of principals × training days × daily wage)
School support visits (opp. cost)	825,766	Calculated (# of SSO visits × daily wage)
Government operations (fiscal)	143,927	Calculated (fuel, transport, logistics)
Government resources used (fiscal)	129,067	Calculated (venue unit cost × training days × # LGAs)
Total	**2,943,354**	
Externalities (Non-Pecuniary)		
C_t^{env}		
Deforestation, CO_2, and water use	637,595	Calculated (shadow pricing of physical quantities)
Total	**637,595**	
Total Costs per Person		
Total costs per person	22.5	Calculated
Total costs per person, w/o social costs	21.5	Calculated
Total costs per person (in-school component)	11.4	Calculated
Total costs per person (in-school component), w/o social costs	10.4	Calculated
Grand Total (£)	**13,693,183**	

Programme delivery activities, encompassing training, materials, and management, constituted nearly three quarters of total programme expenditure. Government-incurred costs, reflecting teacher and principal time and the use of public facilities, contributed about £2.9 million or 21 percent of total costs. Environmental externalities associated with book production and distribution amounted to £0.64 million, approximately 5 percent of total expenditure. These figures suggest that PLANE's cost structure is heavily weighted toward human-capital development inputs, particularly teacher training, which aligns with the programme's emphasis on instructional quality improvement rather than infrastructure or capital investment. The resulting composition provides a transparent baseline for evaluating the efficiency and sustainability of PLANE's delivery model relative to comparable foundational learning programmes.

Benefit–Cost Indicators

Using the discounted benefit and cost streams, we calculate the principal indicators of value for money under varying assumptions: (i) including and excluding social costs, and (ii) isolating the in-school components (C_t^{TLM} and C_t^{PD}). These indicators provide complementary measures of programme efficiency and economic return.

The net present value (NPV) per participant is calculated as

$$\text{NPV}_i = \text{NPV}_i^B - \tilde{C}_i$$

and at the aggregate level as

$$\text{NPV}_{\text{agg}} = \sum_{i=1}^{N} \text{NPV}_i^B - \sum_{t=0}^{T} \tilde{C}_t$$

Two principal value-for-money ratios are then derived:

$$\text{BCR} = \frac{\text{NPV}^B}{\tilde{C}}, \qquad \text{CER} = \frac{\tilde{C}}{\text{ATE}}$$

The benefit–cost ratio (BCR) expresses the ratio of discounted benefits to total costs, while the cost-effectiveness ratio (CER) represents the cost per standard deviation of learning improvement. We also report cost per additional year of schooling (CER$/\theta$).

Point estimates

The overall BCR is estimated at 146.5, implying that each pound invested in PLANE yields approximately £146.50 in discounted lifetime benefits. The cost-effectiveness ratio is £54.45 per 1 SD of learning gain, or £12.38 per additional year of schooling when translating learning effects into schooling equivalents. When restricted to in-school components (materials and training), the BCR rises to nearly 290, reflecting the relatively low unit cost of these direct learning inputs.

These estimates are broadly consistent with the comparative literature. For example, Evans and Yuan (2017) report median benefit–cost ratios of roughly 156 for highly cost-effective teacher incentive programmes in Sub-Saharan Africa, with a range from 40 to over 400 across interventions. PLANE's estimated ratios fall within this upper range, underscoring its strong economic efficiency relative to similar foundational learning interventions.

Uncertainty and Sensitivity Analysis

To account for uncertainty in key parameters of the cost–benefit model, including the treatment effect (ATE) and the learning-to-schooling conversion factor (θ), we implement a Monte Carlo simulation with

Table 3: Benefit–Cost Indicators

Outcome	Unit	Value
Benefit-to-Cost Ratio (BCR)		
Outcome	Benefits/unit of cost	146.5
Outcome, w/o social costs	Benefits/unit of cost	153.7
Outcome, in-school	Benefits/unit of cost	289.5
Outcome, in-school w/o social costs	Benefits/unit of cost	318.8
Cost-Effectiveness Ratio (CER), per SD		
Outcome	GBP/SD	54.45
Outcome, w/o social costs	GBP/SD	51.91
Outcome, in-school	GBP/SD	27.56
Outcome, in-school w/o social costs	GBP/SD	25.02
Cost-Effectiveness Ratio (CER), per year of schooling		
Outcome	GBP/year of schooling	12.38
Outcome, w/o social costs	GBP/year of schooling	11.80
Outcome, in-school	GBP/year of schooling	6.26
Outcome, in-school w/o social costs	GBP/year of schooling	5.69

10,000 repetitions. Each iteration randomly samples parameter values from specified probability distributions and propagates these through the model to produce distributions of the main indicators: the net present value (NPV), benefit–cost ratio (BCR), and cost-effectiveness ratio (CER).

The stochastic parameters and their distributions are defined as follows. The treatment effect (ATE) is modeled as normally distributed with mean 0.42 SD and standard deviation 0.06, reflecting the uncertainty of the pooled impact estimates. The learning-to-schooling conversion factor (θ) follows a normal distribution with mean 4.4 and SD 0.26, consistent with meta-analytic evidence linking test-score gains to years of schooling. All parameters are assumed to be independent and identically distributed draws.

Table 4: Monte Carlo Simulation Summary Statistics (10,000 Repetitions)

	Mean	SD	p5	p25	Median	p75	p95
ATE (SD units)	0.42	0.06	0.29	0.37	0.42	0.46	0.54
Learning-to-schooling factor	4.37	0.26	3.13	4.20	4.38	4.55	5.30
Net present value (£)	3,301	524.10	1,945.68	2,904.65	3,291.26	3,685.67	5,033.73
Benefit–cost ratio							
With social costs	146.52	23.26	86.36	128.92	146.08	163.59	223.42
Without social costs	153.68	24.40	90.58	135.23	153.22	171.59	234.34
Cost–effectiveness (GBP/SD)							
With social costs	55.29	8.36	41.47	48.69	54.18	60.86	77.33
Without social costs	52.71	7.97	39.54	46.42	51.66	58.03	73.73

The results in Table 4 show that the mean net present value per participant is £3,301, with a 95 percent confidence interval ranging from approximately £1,946 to £5,034, as defined by the fifth and ninety-fifth percentiles of the simulated distribution. The expected BCR centers around 146.5 when including social costs and 153.7 when excluding them. The corresponding cost-effectiveness ratios are £55 and £53 per standard deviation gained. These distributions remain tightly bounded, suggesting limited sensitivity of results to parameter uncertainty.

Figure 2 illustrates the simulated distribution of net present values, which is unimodal and slightly right-skewed around the mean of £3,300. Fewer than 5 percent of draws fall below £2,000, indicating a high

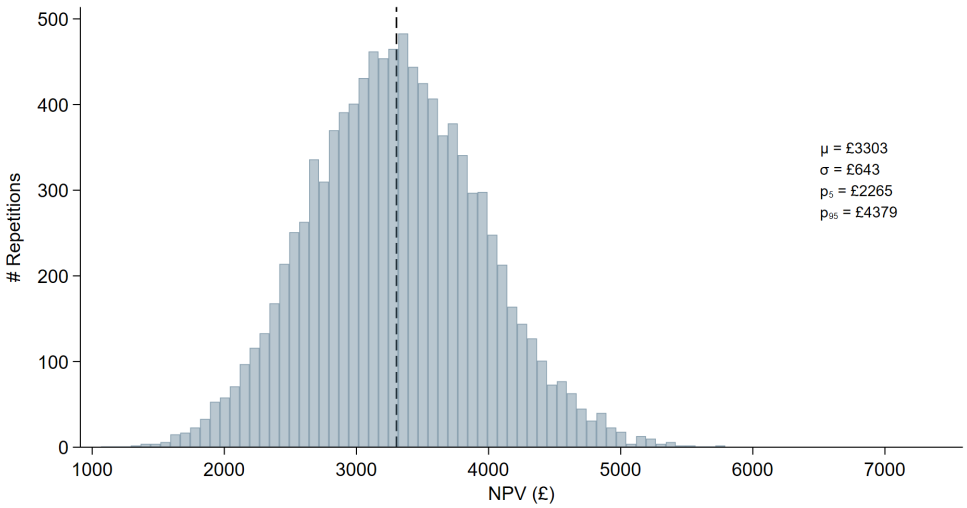

Figure 2: Distribution of simulated net present value (10,000 repetitions).

probability that the programme remains economically beneficial even under conservative assumptions about effectiveness and discounting. Overall, the simulation confirms the robustness of PLANE's value-for-money estimates, with the probability that BCR > 1 or NPV > 0 exceeding 0.95 across all specifications.

Sustainability Application

A key question for long-term policy planning is whether the PLANE model remains economically viable once external donor support ends and the government assumes full responsibility for implementation. This section simulates such a scenario, projecting the costs and benefits of government-led delivery at full scale across Jigawa, Kaduna, and Kano States.

Motivation

When external implementation concludes, the sustainability of PLANE depends on the government's ability to maintain essential programme functions within its own fiscal and administrative capacities. We model this transition by removing all donor specific and start up expenditures, such as TLM content development, monitoring and data collection, local management and administration, and the economic costs of teacher, principal, and school support officer time, and by retaining only the recurrent activities that the government would realistically continue to finance. These include TLM production and distribution and teacher professional development.

Assumptions

Because all values are expressed in constant 2022 GBP, no additional discounting of costs is required. The analysis assumes a total population of 4.06 million pupils in Primary 1–4 across the three states (NEMIS, 2022). We apply two multiplicative adjustment factors to the benefit stream: an *external validity weight* ($\omega = 0.8$), reflecting expected attenuation when scaling from evaluation to routine government delivery, and a *quality-of-implementation penalty* ($\pi = 0.8$), capturing potential efficiency losses in training

delivery and material distribution under government systems. The adjusted benefit term is therefore:

$$\text{NPV}^{B}_{\text{gov}} = \pi \cdot \omega \cdot \text{NPV}^{B} = 0.64 \cdot \text{NPV}^{B}$$

The cost side includes only those categories that the government will directly inherit:

$$C_t^{\text{gov, sustain}} = C_t^{\text{TLM, prod+dist}} + C_t^{\text{PD}}$$

These assumptions represent a conservative but realistic picture of post-project continuity.

Results

Under these parameters, the total cost of full government implementation is estimated at £11.50 per pupil over three years, or £10.43 when excluding social costs. Table 5 summarizes the resulting benefit cost and cost effectiveness indicators. The benefit to cost ratio (BCR) is 230.1, increasing to 253.3 when social costs are excluded. The corresponding cost effectiveness ratio (CER) equals £27.7 per standard deviation of learning gain, or £6.3 per additional year of schooling.

These findings indicate that, even after accounting for reduced implementation quality and external validity, the programme remains highly cost beneficial under government led delivery. The improvement in efficiency reflects the removal of fixed and start up expenditures while the benefit stream remains unchanged. This implies that sustainability depends less on maintaining large fiscal outlays and more on institutionalising the core instructional components, namely teacher training and TLM provision, within state education budgets.

Table 5: Benefit–Cost Indicators, Sustainability Application

Indicator	Unit	Value
Total costs		
Cost per person	GBP/person	11.5
Cost per person, w/o social costs	GBP/person	10.4
Benefit-to-Cost Ratio (BCR)		
Outcome	Benefits/unit of cost	230.12
Outcome, w/o social costs	Benefits/unit of cost	253.28
Cost-Effectiveness Ratio (CER), per SD		
Outcome	GBP/SD	27.73
Outcome, w/o social costs	GBP/SD	25.19
Cost-Effectiveness Ratio (CER), per year of schooling		
Outcome	GBP/year of schooling	6.30
Outcome, w/o social costs	GBP/year of schooling	5.73

Conclusion

The Cohort Based Cost Benefit (CBCB) analysis shows that PLANE is a high return investment in foundational learning. Learning gains of 0.41 standard deviations translate into about 1.8 additional years of effective schooling and average lifetime earnings benefits of £3,301 per pupil. Compared to full programme costs, the benefit cost ratio (BCR) of 146.5 implies that each pound invested yields about £146.50 in discounted lifetime benefits. Monte Carlo simulations show these results remain stable across a wide range of parameter values, with more than 95 percent of draws producing positive net returns.

PLANE's ratios align closely with the broader evidence base. Evans and Yuan (2017) report median benefit cost ratios of about 156 for teacher incentive programmes in Sub Saharan Africa, with a range from about 40 for additional contract teachers to more than 400 for textbook provision in Kenya. PLANE's BCR of 146.5 sits toward the upper end of this distribution and is consistent with structured pedagogy interventions that combine materials and teacher training. The cost structure supports this interpretation. About two thirds of total expenditure went to professional development, with the remainder mainly for teaching and learning materials and management. Training is costly, but the returns match these investments through improvements in teacher practice and student learning.

The sustainability analysis extends these results under a government led implementation scenario. When fixed and start up costs are removed and only recurring activities such as teacher training and TLM production and distribution remain, the BCR rises to 230, or 253 when social costs are excluded. Even after applying conservative external validity and implementation quality adjustments of 0.8, the programme remains highly cost beneficial at state level scale. Continued returns depend on institutionalising core instructional components within public systems rather than maintaining the same fiscal outlays.

These results show that foundational learning interventions that emphasise structured materials and sustained teacher support can generate large and durable economic returns in low resource settings. For policy, this implies that investments in instructional quality, not only school access, offer one of the highest yield strategies for improving human capital and long term economic growth.

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Appendix

Table A1. Breakdown of Cost Items by Category

Cost Categories and Budget Items	
TLM Development	**Teacher/HT Training**
Accommodations	Accommodations
Banner	Consultant Expenses
Consultant Expenses	DSA/Perdiem
Development, Testing and Validation Cost	Facilitation Fee
DSA/Perdiem	Food
Food	Hall Hire
Hall Hire	Lumpsum
Printing and Workshop Materials	Master Trainers/SSOs Daily Facilitation Fee
Projector Hire	National Master Trainers Facilitation Fee
Transportation	Printing and Photocopy
Writing Materials	Support NCCE Activities
TLM Distribution	Training Materials
Accommodations	Transportation
DSA/Perdiem	Workshop Materials
Transportation	Writing Materials
Coaching	**Monitoring, Data Collection, Data Sharing**
Accommodations	Accommodations
Banner	Data Subscription
DSA/Perdiem	DSA/Perdiem
Facilitation Fee	Enumerators Fees
Food	Flip Chart
Hall	Food
Lumpsum	Hall Hire
Printing and Photocopy	Photocopy & Printing
Projector Hire	Training Materials
Stipend for SSO Visits to Schools	Transportation
Training Materials	Writing Materials
Transportation	
Workshop Materials	