

# The Cost of Universalizing Basic Education in Nigeria

## Key Messages

- Nigeria continues to face serious challenges in basic education enrollment rates.
- Nigeria's public spending on education today is low.
- Continuing with current trends means that Nigeria will not achieve universal basic education by 2030.
- Improvements in system efficiency in terms of student intake, promotion, and transition rates are necessary to achieve universal basic education by 2030.
- Cost implications of universalizing basic education are substantial (an increase of 1-3 percent of GDP over 2020-2030) but not prohibitive given the low level of spending that Nigeria is starting from.
- Significant (20 percent) cost savings are possible through better management of teachers and construction of school infrastructure that provides the best value in terms of learning.
- *All of the above is modelled using an Excel-based simulation tool with assumptions and parameters that can be altered to simulate the cost implications of different policies the Government may be interested in.*

## 1. Basic Education in Nigeria Today

1. **Nigeria has a long-standing commitment to universal basic education, and yet its number of out-of-school children remains amongst the highest in the world.** The Universal Basic Education (UBE) Act of 2004 stipulates free, compulsory, and universal basic education, i.e. grades 1-9, or 6 years of primary school followed by 3 years of junior secondary school (JSS). According to administrative data, enrollment in basic education grew between 2014 and 2018 by 18 percent -- from 29.8 to 35.1 million -- faster than the growth rate of the 6-14-year-old age group of 14 percent (see Table 1). A simple comparison of the enrollment and population figures in Table 1 would indicate that the number of out-of-school children in basic education is on the order of 18 million today. This figure is, however, larger than estimates based on household survey data. According to analysis of the 2013 Demographic and Health Survey (DHS), roughly 13 million 6-14-year-olds were out-of-school in Nigeria, and the 2016-17 Multiple Indicator Cluster Survey (MICS) provides an even lower estimate at roughly 11 million. The discrepancy between the administrative and household data findings can be the result of several factors, including: (i) incomplete administrative collection of enrollment numbers in private and other non-public formal basic education schools; and (ii) in household surveys, parental confirmation of enrollment when in fact the child is not enrolled in formal basic education but other types of education. For purposes of the present report, population estimates and projections are from the United Nations (UN) Population Division; the breakdown of the population by age group is derived from the 2016-17 MICS; and education system data rely on a combination of administrative and household survey data.

Table 1: Population and enrollment in basic education, 2014-2018

	2014	2015	2016	2017	2018
Primary enrollment	24,188,647	23,315,791	24,810,491	<i>n.a.</i>	28,630,375
JSS enrollment	5,570,226	4,973,900	5,802,991	<i>n.a.</i>	6,467,116
<b>Total, basic education</b>	<b>29,758,873</b>	<b>28,289,691</b>	<b>30,613,482</b>	<i>n.a.</i>	<b>35,097,491</b>
6-11-year-olds	32,881,683	33,950,914	35,054,913	36,194,811	37,371,776
12-14-year-olds	14,230,714	14,693,461	15,171,256	15,664,588	16,173,961
<b>Total, 6-14-year-olds</b>	<b>47,112,397</b>	<b>48,644,375</b>	<b>50,226,169</b>	<b>51,859,399</b>	<b>53,545,737</b>
<b>Total population</b>	<b>181,403,148</b>	<b>187,301,926</b>	<b>193,392,517</b>	<b>199,681,159</b>	<b>206,174,292</b>

Sources: Federal Ministry of Education (FME) Education Management Information System (EMIS) for 2014-2016 enrollment; UBEC Personnel Audit for 2018 enrollment; high fertility scenario from the UN Population Division, Department of Economic and Social Affairs, *World Population Prospects: The 2017 Revision*, for population estimates.

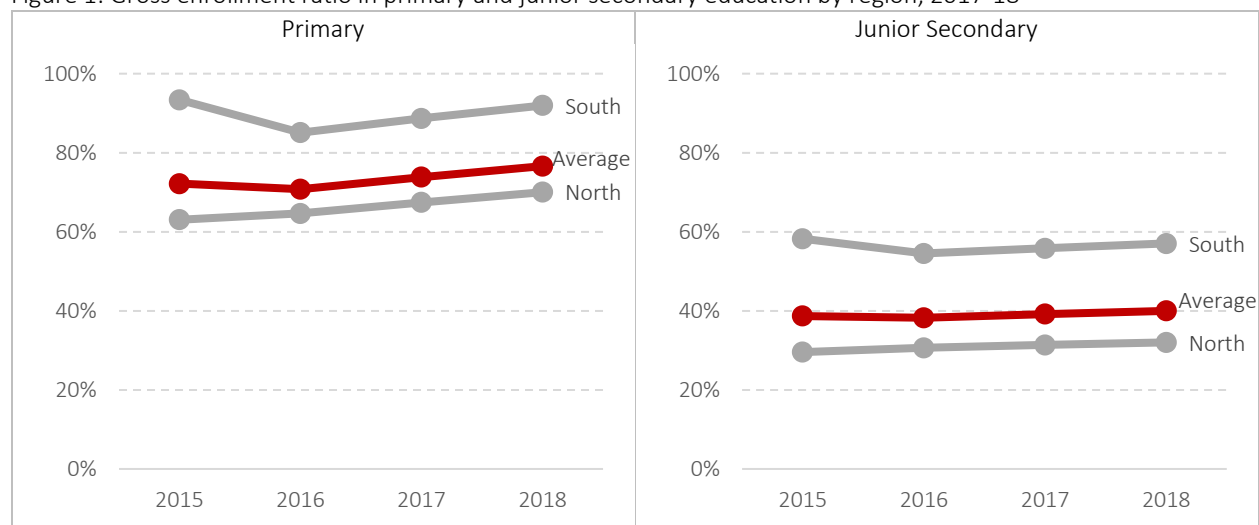
Note: *n.a.* signifies "not available"

2. **Enrolment rates in basic education have only increased slightly in recent years and demonstrate wide geographic variation.** The gross enrolment ratio (GER) in primary school increased by three percentage points from 73.6 percent in 2013-14 to 76.6 percent in 2017-18, and only marginally in JSS over the same period from 39.1 to 40.0 percent (Figure 1). Regional variation in primary GER is stark with the ratio being at 92 percent on average in the southern states (South East, South South, and South West zones<sup>1</sup>), and at 70 percent in the northern states (2017-18). In junior secondary education the pattern of differentiation in the GER is similar: 57 percent in the South, and 32 percent in the North. The 2016-17

<sup>1</sup> See administrative division of Nigeria by zones and states in Annex 1.

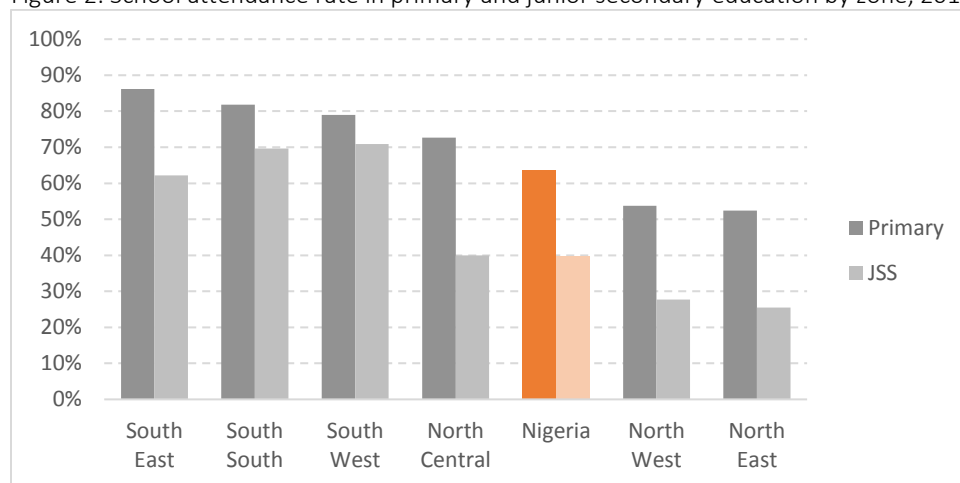
MICS findings reveal stark geographic variation in the school attendance rates<sup>2</sup>, which average nationally at 64 and 40 percent for primary and junior secondary education, respectively (see Figure 2).

Figure 1: Gross enrollment ratio in primary and junior secondary education by region, 2017-18



Source: FME EMIS and UBEC

Figure 2: School attendance rate in primary and junior secondary education by zone, 2016-17



Source: MICS 2016-17

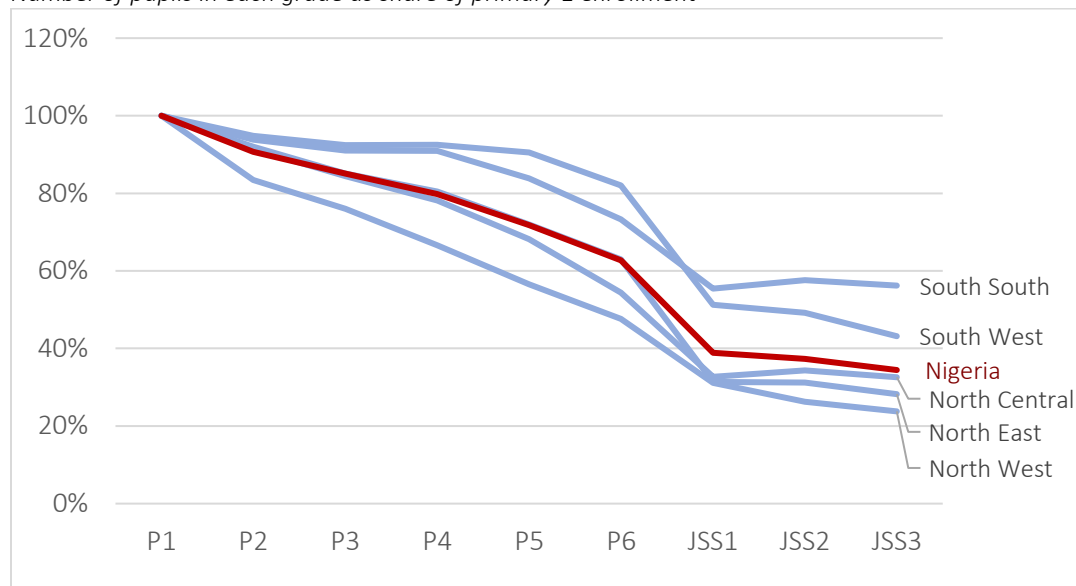
### 3. Unpacking basic education into individual grades and observing pupil survival and completion rates reveals high dropout, particularly at the transition from primary to junior secondary education.

Of those pupils enrolled in primary 1, only two out of three reach the last grade of primary, and only one out of three reach the last grade of junior secondary (see Figure 3). On average, 9 percent of pupils drop out at each grade before completing the primary education cycle, and the average dropout rate in junior secondary is six percent. Moreover, more than one third of pupils (38 percent) in the last grade of primary education do not proceed to secondary education. The gap in primary school completion rates between the North and the South is wide at 32.6 percentage points (90.1 percent in the South versus 57.6 percent

<sup>2</sup> School attendance is a higher threshold than simple enrollment, as a student can be enrolled at the beginning of the year, for example, but then fail to actually attend school on a regular basis.

in the North). However, the difference in transition rates is less, with 58.9 percent of primary school graduates continuing studying in junior secondary school in the North and 63.5 percent in the South.

Figure 3: Pupil survival rate in basic education by zone  
Number of pupils in each grade as share of primary 1 enrollment



Source: EMIS and UBEC data

4. **In terms of trends, while primary completion rates have improved, the transition to secondary has not.** Table 2 provides the completion rate in primary education<sup>3</sup> over the period 2007 to 2017, showing that it has almost doubled over the period. Yet, while the percentage of children completing primary school increased, the share continuing on to secondary school decreased by a third over the same period. This would indicate a supply bottleneck at secondary education that hampers the absorption of ever larger numbers of primary graduates. Finally, though officially reported repetition rates in Nigeria are low -- the average across all six primary grades is 1.4 percent and 2.2 in junior secondary education -- available data from various sources (see Annex 2) suggest that repetition is greatly underreported.

Table 2: Primary school completion and transition to secondary school rates

	2007	2011	2016	2017
Primary school completion rate	36.0%	73.4%	63.7%	67.9%
Transition rate to secondary school <sup>4</sup>	92.8%	70.0%	64.0%	60.8%

Sources: MICS (2007-08 & 2016-17) and EMIS (2011-12 & 2017-18).

5. **The combination of low survival, completion, and transition rates and high repetition rates implies inefficient use of public resources.** In particular, the high repetition and dropout rates in the primary cycle represent inefficiencies in the system, and the above-described combination of access factors is equivalent to a loss of 14 percent of public spending on basic education in 2018. These estimates

<sup>3</sup> The primary school completion rate is the number of children of primary completion age (11 years) who have attended the final grade of primary education.

<sup>4</sup> The transition rate to secondary school is the proportion of pupils in the final grade of primary school who enroll in the first grade of secondary school the following school year.

are conservative as they do not consider the cost of students who do reach the upper grades of primary education but do not achieve basic literacy and numeracy skills.

6. **The 2013 Service Delivery Indicator (SDI) survey in four states in Nigeria found that only 55 percent of schools were equipped with the minimum stock of teaching and learning materials and equipment** (pens, pencils, notebooks, textbooks, black boards, chalk, and so forth) and met the minimum standards for infrastructure. Only 33.6 percent of pupils have the mathematics textbook and 38.1 percent, the English one. Only 27 percent of school toilets were clean; 44 percent of toilets provided privacy; and only 38 percent were accessible. A 2017 study comparing SDI findings across several countries found that, in Nigeria, only 24 percent of teachers had the minimum knowledge in language and 31 percent had the minimum knowledge in mathematics (Table 3).

**Table 3: Teacher Knowledge**

*Percent of teachers who score at least 80 percent on a test of grade 4 material*

	Average	Kenya 2012	Mozambique 2014	Nigeria 2013*	Tanzania 2014	Togo 2013	Uganda 2013
Equivalent to student <i>language curriculum</i>	61	66	77	24	41	54	90
Equivalent to student <i>mathematics curriculum</i>	56	82	26	31	62	24	55

Source: Bold and others 2017. \*Data based on 4 states in Nigeria.

7. **The SDI survey also found that only one third of grade 4 pupils acquire the minimum level of numeracy and literacy skills.** Only 12 percent of pupils can read a paragraph, and less than half of pupils recognize a simple word. On the mathematics side, scores are on average low and vary significantly by state. Half of the pupils did not feel comfortable with single digit number operations and struggled when it came to double- and triple-digit operations. Only 4.4 percent could multiply double digits and only 12.0 percent could divide double digits. Thus, though students may be in school, public spending on their education is not translating to desirable levels of student learning.

8. **Low levels of learning contribute to Nigeria’s low Human Capital Index (HCI), which is 0.34, placing the country at rank 152 out of 157.** Consequently, a child born in Nigeria today will be 34 percent as productive when she grows up as she could be if she enjoyed complete education and full health. Nigeria’s HCI places the country lower than the average for its region -- Sub-Saharan Africa (SSA) -- and income group -- lower middle income countries. Looking more closely into the education indicators, the expected years of schooling in Nigeria indicate that a child who starts school at age 4 can expect to complete 8.2 years of school by her 18<sup>th</sup> birthday. In addition, the harmonized test scores show students in Nigeria scoring 325 on a scale where 625 represents advanced attainment and 300 minimum attainment. Consequently, though expected years of schooling are 8.2, factoring in what children actually learn, this is only equivalent to 4.2 learning-adjusted years of school – a learning gap of fully 4 years.

## 2. Basic Education Financing

9. **The system of public education financing in Nigeria is complex.** It involves, at least in principle, all three tiers of government: federal, state, and local. There is no simple division of responsibilities among tiers: both the federal government and the states finance secondary and tertiary schools; local governments, in theory, finance the bulk of primary education but in practice have ceded all management responsibilities to the states. In addition, specific arrangements vary from state to state, and there is no

requirement for states to report their education spending to the federal level. It is therefore very difficult to obtain a complete picture of public education spending that includes all tiers of government.

10. **The last comprehensive analysis available<sup>5</sup> indicates that total public spending on education (all levels) was 1.7 percent of Gross Domestic Product (GDP) in 2013 and increased marginally from 10.2 to 12.5 percent of total public spending over the 2009-2013 period.** As such, Nigeria’s education spending is lower than the averages for Sub-Saharan Africa (4.6 percent of GDP and 16 percent of total public expenditure). Nigeria’s shares are also lower than the agreed benchmarks stipulated in the Incheon Declaration of the 2015 World Education Forum, which expresses countries’ determination to “increase public spending on education to the international and regional benchmarks of allocating efficiently at least 4 – 6 percent of GDP or/and at least 15 – 20 percent of total public expenditure to education<sup>6</sup>.” Overall, basic education in Nigeria receives about 48 percent of public education spending from all three tiers of government and 44 percent of total education spending when taking all financing sources into account – public, households, and donors.

11. **The federal government finances about 30 percent of public sector spending on education, the states finance about 22 percent, and local governments about 42 percent.** Under the UBE Act, the federal government transfers annually to the states 2 percent of its budget in the form of the UBE Intervention Fund, which is managed by the Universal Basic Education Commission (UBEC), for purposes of ensuring universal basic education. The UBE Intervention Fund accounts for about five percent of public spending (Table 4). This breakdown is arguably somewhat misleading, however. As local governments have virtually no control over their education spending, their share is more accurately attributed to the states. And since the federal government effectively controls the allocation of the UBE Intervention Fund, its share is more accurately attributed to the federal government. Thus, de facto, the federal government accounts for about one-third of public financing and the states, the remaining two-thirds.

Table 4: Public sector spending on education, 2013

	De jure		De facto
	Naira (billions)	%	%
Federal	419	30%	35%
State	303	22%	64%
Local	582	42%	
UBEC	70	5%	
Donors	9	1%	1%
TOTAL	1,384	100%	

Source: World Bank. 2015. *Governance and Finance Analysis of the Basic Education Sector in Nigeria*.

12. **The bulk of the federal budget is devoted to tertiary institutions.** The federal budget finances 43 universities, 25 polytechnic schools, and 21 colleges of education.<sup>7</sup> In 2017, federal spending on these institutions totaled NGN 315 billion or about 75 percent of federal budgetary funding for education.<sup>8</sup> The federal government also finances 103 secondary schools, many of them boarding schools. These include federal government colleges, federal government girls’ colleges, federal technical colleges and the Kings and Queens Colleges in Lagos. Spending on these secondary schools totaled about N 24 million in 2017 or

<sup>5</sup> World Bank. 2015. *Governance and Finance Analysis of the Basic Education Sector in Nigeria*.

<sup>6</sup> See full Incheon Declaration at <http://en.unesco.org/world-education-forum-2015/incheon-declaration>

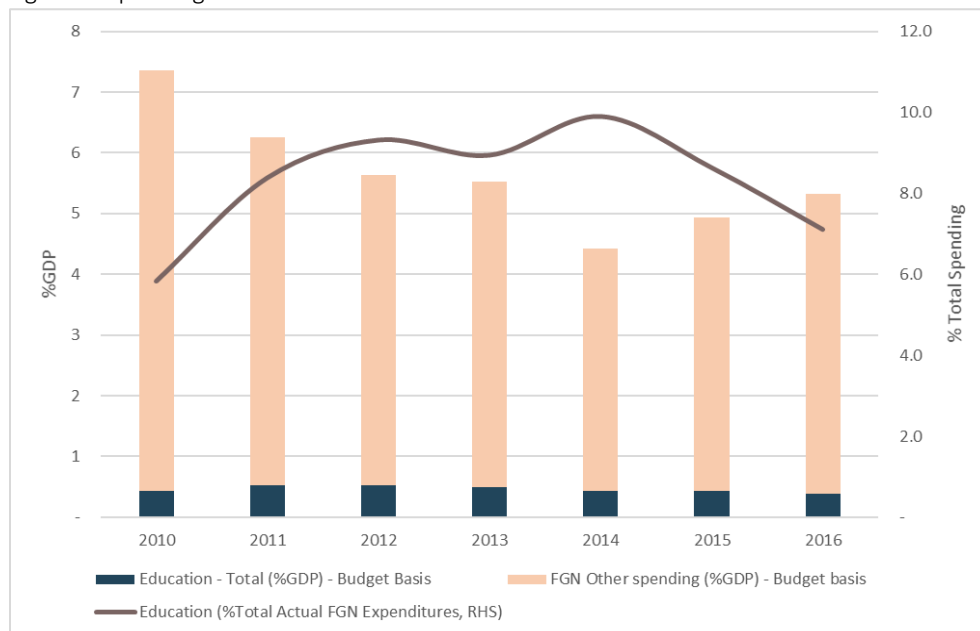
<sup>7</sup> Based on list of institutions as reported in Accountant General final accounts for 2017.

<sup>8</sup> Office of the Accountant General. Funds Department. Final Accounts for 2017.

about six percent of federal budgetary spending on education. As Figure 4 below shows, there have been recent declines in the federal spending on education as a share of GDP and total federal spending.

13. **State and local government authorities (LGAs) are the primary financiers of primary, lower secondary, and upper secondary public education in Nigeria.** State government financing appears to be confined to secondary and tertiary institutions.<sup>9</sup> In theory, local governments are responsible for financing primary education. In practice, this is not exactly the case: local governments are entitled shares of centrally collected revenues, but state governments are permitted to intercept these revenues to pay for services they provide on behalf of the LGAs. This includes education. In some states, the salaries of staff at all grades of basic education are deducted by the state governments from the statutory allocations of the local governments. Each month, the statutory allocations of all LGAs in the state are transferred to a joint state/local account. From this account, the amount required to pay the wage bill of all basic school teachers is deducted. This is considered a first line item and thus has first claim on resources. This amount is then transferred to the State Universal Basic Education Board (SUBEB, the state-level arm of UBEC) which pays salaries to individual staff. Any funds left over are distributed among the LGAs to be used at their own discretion.

Figure 4: Spending on education



Source: World Bank macroeconomic team, 2017.

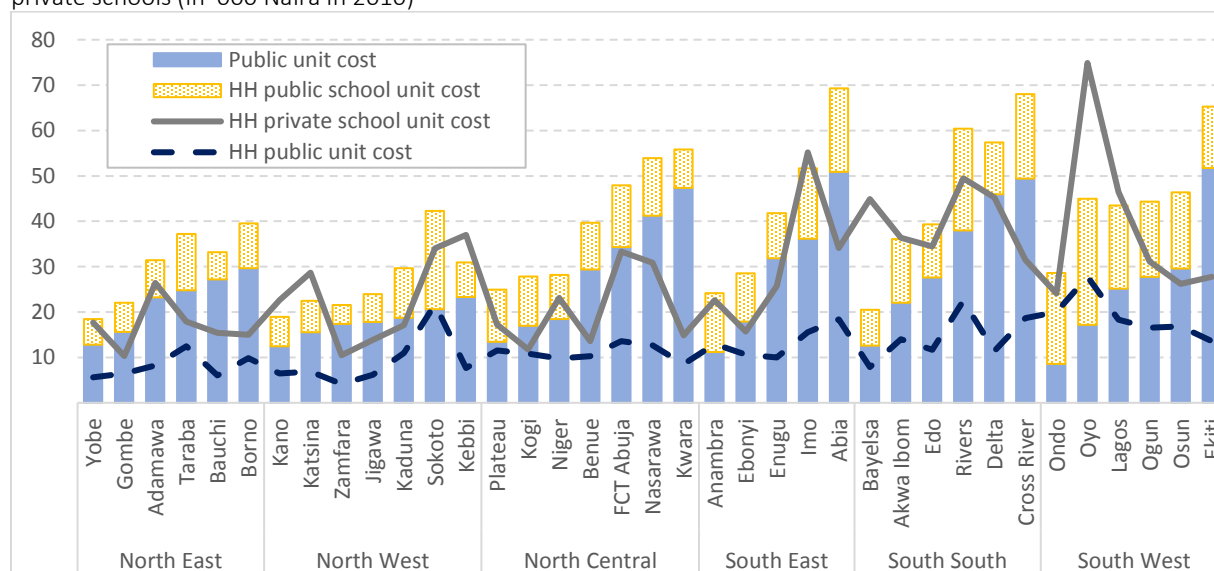
14. **Public basic education finance depends to a large extent on federal revenues: salaries account for more than 80 percent of total spending in the sub-sector, and those are sourced directly through statutory transfers from the federal government to the local government authority (LGA) accounts.** Fully 95.3 percent of LGA's total revenues come from statutory allocations, and only 1.6 percent from internally generated revenues. At the state level, internally generated revenue represents 19 percent of total revenues, indicating some potential fiscal space for capital and non-salary spending on education. However, the share of internally generated revenue varies greatly by state: in 2013, from a low of 1

<sup>9</sup> This section is based on a detailed examination of the final accounts of only two states--Kaduna and Ebonyi.

percent in Benue state (2 percent in Borno) to a high of 41 percent in Lagos. Overall, only 4 states (including Lagos) have a share higher than 15 percent.

15. **Per student basic education spending shows large variation across states, with southern states spending more public as well as household resources per student.** As Figure 5 shows, the public per student allocation is generally higher in southern states. In addition, household spending in public education is generally higher in southern states. The fact that there is household spending in public basic schools attests to the lack of enforcement of free basic education, so that fees and other costs are incurred by households. Figure 5 further shows that per student household spending is higher in private than public schools, as would be expected. Unexpectedly, however, the figure also shows that total per student spending is generally higher in public than private schools (taking both public and private spending into account) – indicating room for efficiency improvements in public spending.

Figure 5: Public and household spending per student in public schools, and household spending per student in private schools (in '000 Naira in 2010)



Source: Central Bank of Nigeria; Nigeria state and federal government budgets; and General Household Survey Panel 2010/11 – as presented in World Bank. 2015. *Governance and Finance Analysis of the Basic Education Sector in Nigeria*.

### 3. Universalizing Basic Education

#### Simulation Model

16. **This note presents the findings of a simulation model in terms of enrollment projections and associated costs for universalizing basic education in Nigeria.** The note presents a specific set of estimates derived from the simulation model, but key input parameters can be adjusted in the underlying Excel-based tool in order to estimate enrollment and cost projections under different assumptions and scenarios. The tool estimates the cost of universalizing basic education, which comprises the primary and junior secondary levels, up to 2030, based on enrollment estimates employing UN population projections and recent trends in promotion and retention. Unit costs for school construction were collected from UBEC, and teacher salaries for several states were obtained from the Teacher Registration Council of



Nigeria (TRCN) and Nigeria Union of Teachers (NUT). The simulation model utilizes schooling input provision in line with recent average trends, utilizing data from the FME EMIS and UBEC as well as other sources to develop a picture of the current model of inputs in Nigeria’s primary and junior secondary schools, including the numbers of available teachers, classrooms, libraries, laboratories, latrines, etc. (see Table 5). In addition, the tool has adjustable parameters reflecting shares of public intake into primary school and public shares of primary and junior secondary school enrollment. The tool allows the user to easily adjust a range of policy and service parameters in order to estimate the impact on public costs (see Table 6).

Table 5: Current model of inputs in Nigeria’s public primary and junior secondary schools, 2018

	Primary	Junior Secondary
Pupil-teacher ratio	40.2	21.9
Classrooms per school	6.5	4.8
Pupil-classroom ratio	56	60
Pupil-latrine ratio	112	66
% of schools with libraries	18%	29%
% of schools with labs	2%	45%
Share of public enrollment	80%	75%

Source: FME EMIS and UBEC

Table 6: Model adjustable parameters

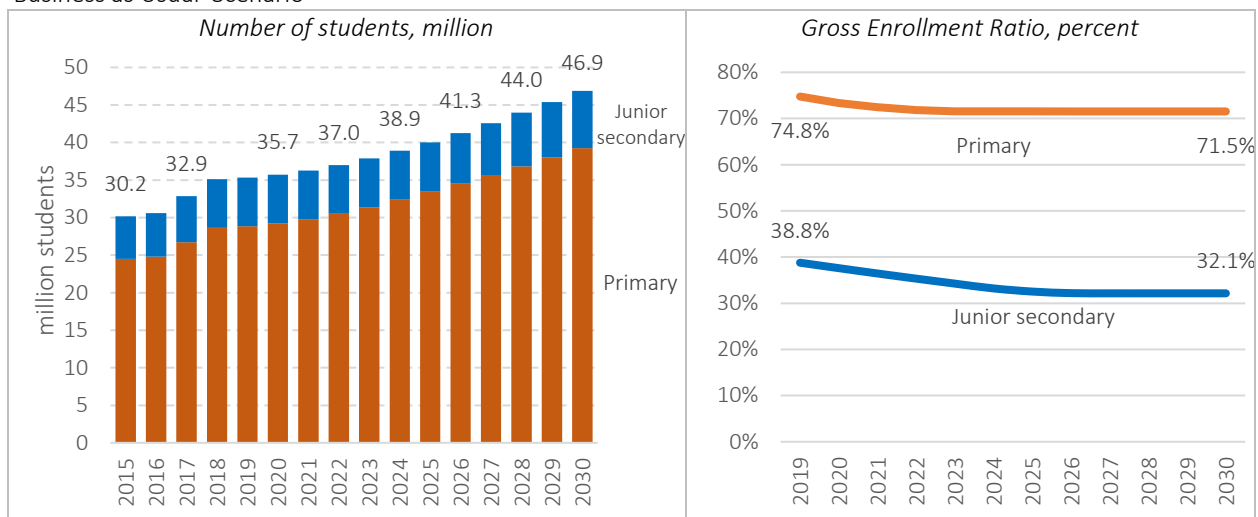
<ul style="list-style-type: none"> <li>• Pupil-teacher ratio</li> <li>• Number of classrooms per school</li> <li>• Pupil-classroom ratio</li> <li>• Number of classrooms per school</li> </ul>	<ul style="list-style-type: none"> <li>• Pupils per toilet</li> <li>• Share of schools with laboratories</li> <li>• Share of schools with libraries</li> <li>• Share of public enrollment in primary and junior secondary enrollment</li> </ul>
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17. **The projections employ a reconstructive cohort method to calculate the enrollment flow, using several key assumptions on the inputs.** The assumptions are: (i) the growth in the appropriate age for the particular level of education – ages 6-11 for primary, ages 12-14 for junior secondary education -- follows the UN projections; (ii) the current pattern of student flow (intake, promotion, repetition, and transition rate) is extrapolated based on the trend based on the 2014-2018 data; (iii) the share of students directly enrolled in private schools remains unchanged in all levels of education; (iv) construction costs are inflation-adjusted using the same construction unit costs as UBEC; (v) universal basic education is assumed to be achieved by 2030, in line with the fourth Sustainable Development Goal (SDG).

## Enrollment Projections

18. **Based on current development trends in the education system – a “business as usual” scenario -- basic education enrollment numbers will increase but GERs will fall.** The increase in enrollment figures between 2018 and 2030 is equivalent to 11.8 million more children studying, or an increase of 34 percent. At the same time, it is expected that the GER will fall to 71.5 percent in primary and 32.1 in junior secondary education by 2030 (see Figure 6) due to high birthrates exceeding the growth rates in enrollments. In other words, the education system would be even further away from universal basic education than it is today.

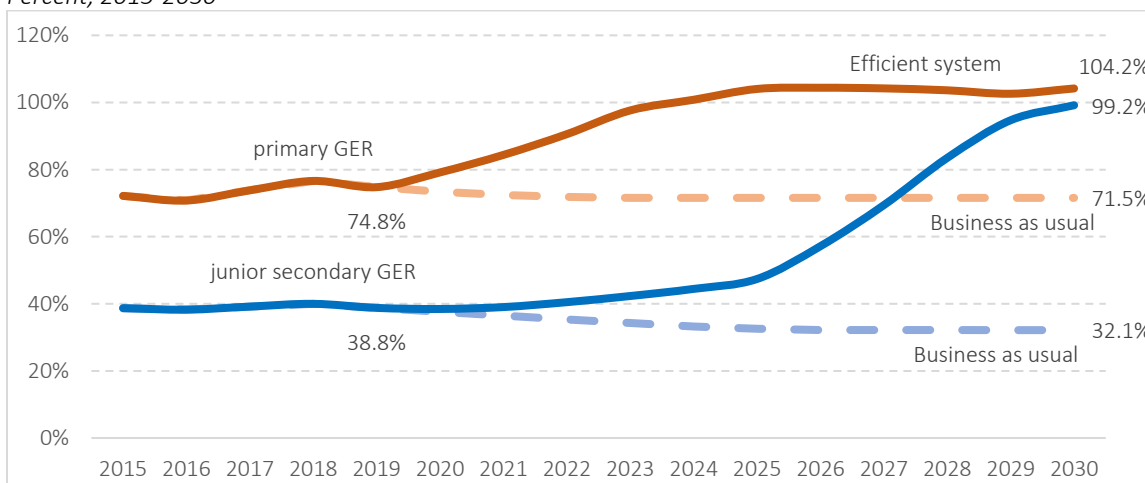
Figure 6: Enrollment projections and Gross Enrollment Ratio in primary and junior secondary education under 'Business as Usual' Scenario



Source: Authors' estimates

19. **Fulfilling the Government of Nigeria's commitment to UBE and SDG#4 by 2030 implies improvement in system efficiency leading to more children completing the primary cycle and transitioning on to junior secondary school.** A scenario with a gradually improving system efficiency in 2020-2030 includes increases in intake, promotion, and transition rates and declines in repetition rates (see details on model assumptions in Annex 4), as well as absorption of out-of-school children. This more efficient education system would allow achievement of GERs in primary and junior secondary education that are close to 100 percent (see Figure 7). Under this scenario, junior secondary school enrollment would increase by 50 percent in six years from 6.5 million in 2018 to 9.6 million in 2025, and triple by 2030 to 19.6 million. Achieving such a rapid expansion entails the retention of more children in schools, improving the acquisition of skills in primary education and allowing the majority of students who reach the end of primary to make the transition to secondary.

Figure 7: Projected gross enrollment ratio in primary and secondary education Percent, 2015-2030

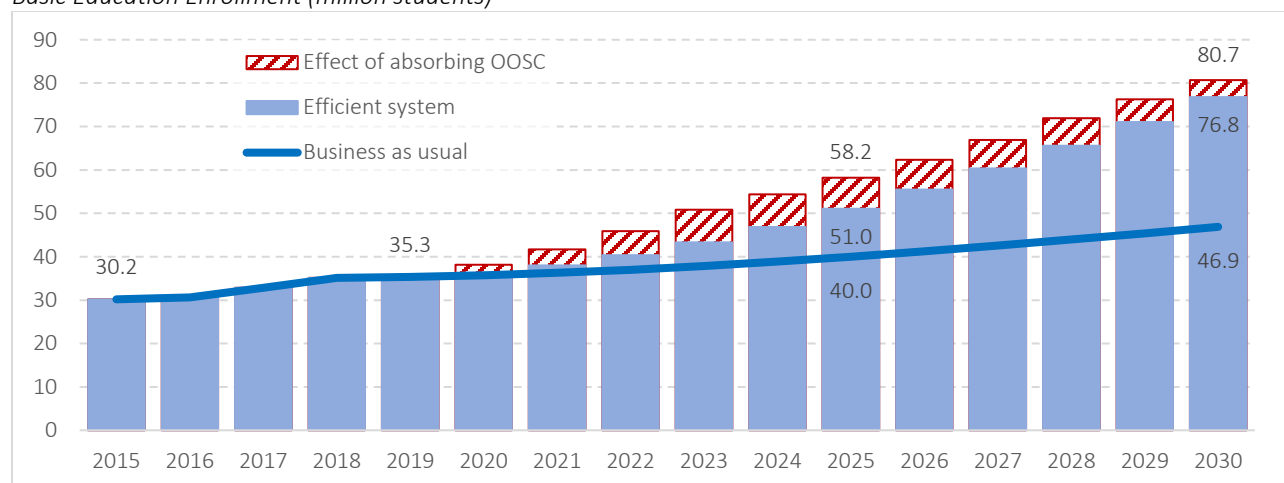


Source: Authors' estimates

20. **Absorption of out-of-school-children of primary school age (6-to11-year-olds) by the education system would further increase enrollments.** As a result, the number of students in basic education would increase on average by 11 percent per year in 2020-2030. Figure 8 below shows enrollment projections until 2030 under the expansion scenario with gradually improving system policies and efficiency and including absorption of out-of-school children.

Figure 8: Basic education enrollment under various scenarios, 2015-2030

*Basic Education Enrollment (million students)*

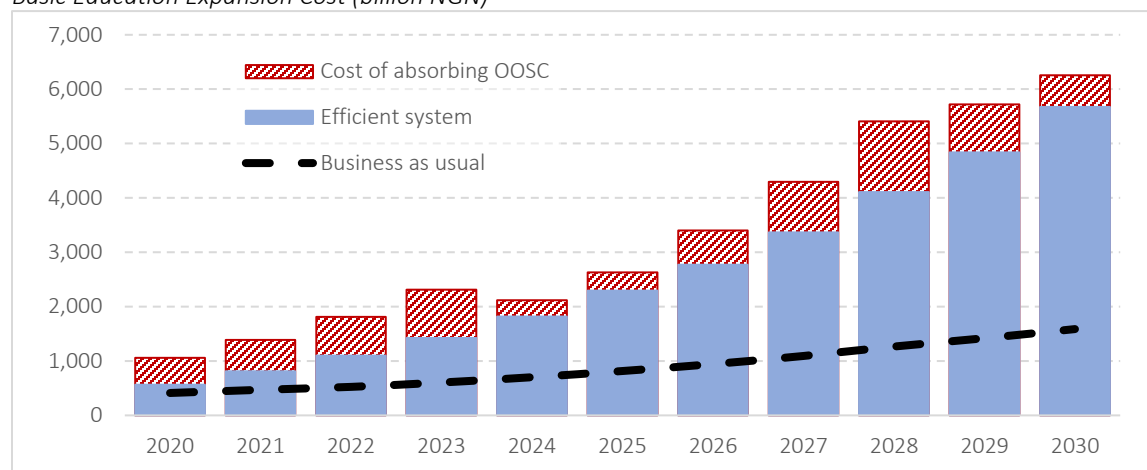


Source: Authors' estimates

### Cost of Universal Basic Education

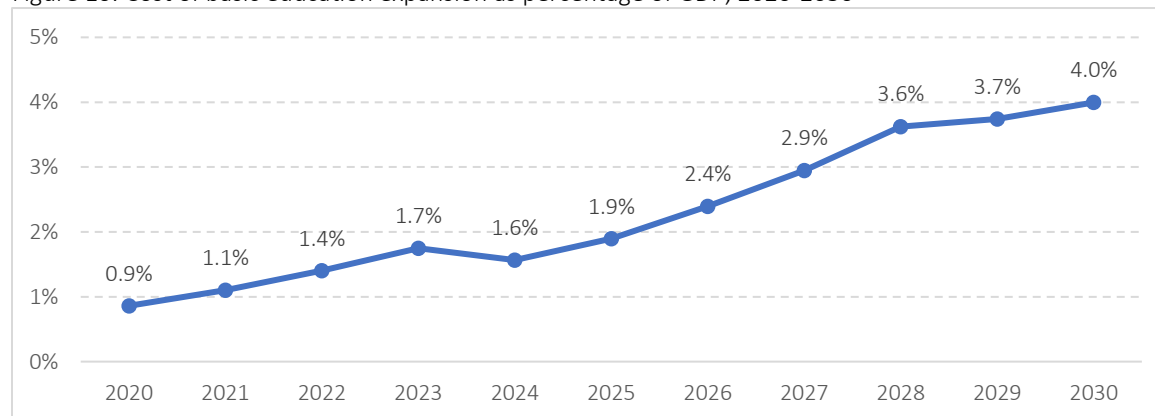
21. **Absorbing the enrollment increases driven by improved quality and student flow in primary and secondary education will likely cost an additional US\$ 6.7 billion (NGN 1,720 billion) on average per year in 2020-2030 (Figure 9).** By comparison, Nigeria's entire education budget for 2013, including pre-primary, primary, lower and upper secondary, vocational, and tertiary education, was approximately US\$ 14.6 billion (NGN 2,329 billion). In terms of percent of GDP, the enrollment expansion translates to an increase in public education spending of roughly 1 to 4 percent of GDP (Figure 10). Though this is a substantial increase, it must be kept in mind that Nigeria's current public education spending as a share of GDP is very low at roughly 2 percent, where basic education is below 1 percent of GDP. In addition, if the percent of national budget allocated to education would remain unchanged, the basic education share in the education budget would increase from 48 to 510 percent, i.e., six times higher than the entire education budget (see Table 7). Here again, the roughly 12 percent of the education budget in the total budget in Nigeria is on the low side: over the past decade, African countries have increased the share of government budgets for education from 14.8 percent in 1998-2001 to 16.1 percent in 2014-17. In other words, there is certainly room in Nigeria to increase public spending on education.

Figure 9: Basic education cost, 2020-2030  
*Basic Education Expansion Cost (billion NGN)*



Source: Authors' estimations.

Figure 10: Cost of basic education expansion as percentage of GDP, 2020-2030



Source: Authors' estimations.

Table 7: Public spending projections, 2020-30

Total fiscal implications:	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Primary, billion Naira	867	1,115	1,446	1,852	1,544	1,897	1,603	1,747	1,931	2,104	3,494
Junior secondary, billion Naira	190	275	365	458	575	732	1,796	2,546	3,475	3,613	2,762
Basic education, billion Naira	1,057	1,390	1,810	2,310	2,119	2,628	3,400	4,293	5,407	5,717	6,256
- as % of education spending	53.4%	68.5%	87.1%	108.5%	97.1%	117.6%	148.5%	183.0%	225.0%	232.2%	248.0%
- as % of basic education budget	110%	141%	179%	223%	200%	242%	306%	377%	463%	478%	510%
- as % government spending	7.1%	9.2%	11.7%	14.5%	13.0%	15.7%	19.9%	24.5%	30.1%	31.1%	33.2%
- as % of GDP	0.9%	1.1%	1.4%	1.7%	1.6%	1.9%	2.4%	2.9%	3.6%	3.7%	4.0%

Source: Authors' estimations.

22. **In addition to increasing public education spending, the role of the private sector in providing education can be expanded.** Households and the private sector have already been financing a significant part of the total expenditures on education in Nigeria. More than two thirds of junior secondary schools in Nigeria are privately owned. Private schools have played an important role in reducing the capital expenditures needed for the expansion of the system, and their share in the investment should be maintained. This may require adopting public-private partnership (PPP) policies such as provision of subsidies to private providers. In Uganda, under the Universal Secondary Education Policy, the Government provides subsidies to private lower secondary schools to enrol new students. The amount of the subsidy is equivalent to 1/3 of per pupil spending in the public sector.<sup>10</sup> In the case of Nigeria, provision of such subsidies for every ten percent of pupils enrolled in public schools would contribute to US\$ 42.1 million (NGN 15.2 billion) per year in savings.

23. **The public cost of universalizing basic education can also be reduced through savings in both capital and recurrent expenditure.** On the recurrent side, improvements in teacher allocation and deployment are crucial. And on the capital expenditure side, savings in the cost of new classroom and specialized facilities construction can be very important. Focusing on junior secondary schools is particularly important as they are by nature more expensive, requiring additional school infrastructure such as laboratories and workshops. A recent World Bank study simulated the cost implications of a number of potential reforms and alterations to the input model for lower secondary level, noting that expanding lower secondary education sustainably at the required pace would require governments to revise their 'standard package' of facilities to be included with each new school. The package should be focused on facilities that offer the best value in terms of learning. Several examples we modelled including: (i) more effective use of teachers with respect to their workload, effort, and efficiency; (ii) provision of teacher housing only when most needed; (iii) employing classroom libraries and multifunctional laboratories; (iv) better utilization of existing infrastructure; and (v) reduced use of boarding schools. According to the results of the simulations conducted in SSA countries, combining all these policy levers could reduce the annual cost of lower secondary education significantly, namely, by 54 percent for Tanzania, and 51 percent for Uganda.

24. **In Nigeria, UBEC provides support to the states in education infrastructural development and defines the 'standard package' of facilities expected to be included with each new school.** Therefore, expanding basic education at the required pace in a sustainable manner in Nigeria warrants a closer look at this standard package in order to ensure that facilities offer the best value in terms of learning. The simulation tool is used to model the cost implications of four specific examples:

- a. *Employ classroom libraries, rather than dedicated library buildings, in new schools and convert existing libraries into additional classrooms.* Equipping a school with a dedicated library building carries a similar cost to the addition of five (!) classrooms. An alternative model employs 'classroom libraries' to place books within easy access of readers within classrooms. The cost impact of expanding this approach to all new schools in place of constructing new dedicated library buildings is modelled, including converting existing libraries into classrooms.
- b. *Use teachers more effectively.* Evidence from the SDI survey indicates that teacher absenteeism in Nigeria is an issue: one third of teachers are either absent from school or at school but not in class teaching, and those teachers who come to school spend less than two thirds of the scheduled

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<sup>10</sup> World Bank. 2019 (forthcoming). Economic Development & Human Capital in Uganda: A Case for Investing More in Education. Uganda Economic Update, 13th Edition. World Bank. Washington DC.

time actually teaching.<sup>11</sup> Model projections suggest that to maintain the current pupil-teacher ratio to 2030, Nigeria would have to hire an additional 541 thousand primary teachers (two times more) and 387 thousand secondary teachers (three times more). This would entail significant expense, accounting for more than one half of the projected costs in 2030. Furthermore, evidence from Uganda suggests that to rapidly expand the teaching workforce may mean hiring more teachers who lack the requisite knowledge, skills, and motivation.<sup>12</sup> Improving the distribution of teachers between schools, and improving utilization of teachers, is a more cost-effective way to support additional enrollment than to hire enough additional teachers to maintain the current staffing level. A scenario is modelled where the number of hours a teacher is teaching increases from 17<sup>13</sup> to 20. Employing these assumptions would reduce the hiring of new teachers by 15 percent.

- c. *Make better use of existing infrastructure.* Nigeria faces the daunting prospect of building 35 thousand new classrooms in primary education each year by 2030 (and 20 thousand new classrooms each year in junior secondary education). According to construction standards in other SSA countries including Kenya, Tanzania, Uganda, the optimal pupil-classroom ratio in primary education is 60:1. However, the current stock of classrooms appears to be under-utilized: the ratio of pupils per classroom is 56:1<sup>14</sup>, meaning that the equivalent of 30 thousand classrooms is not in full use. The number of new classrooms required can be reduced, without negative impacts on learning, through better utilization of infrastructure. In the current analysis, the impact of the increased utilization of unused classrooms in primary schools (higher PCR) is modelled.
- d. *Multiple shifts* are another tool employed by countries that have undergone a rapid expansion of basic education, particularly in Latin America. Evidence from countries including Brazil, Chile, and Guinea suggests that multiple shifts can provide significant cost reductions and, if carefully implemented, need not pose a threat to the quality of teaching.<sup>15</sup> In Tanzania, for example, double shifts are in use in some of the largest urban schools with high population density. In the current analysis, the impact of constructing multiple stream schools is modelled.

**25. The financial impact of these policy levers on the total annual cost of junior secondary education is modelled, starting from the scenario of implementation of current policies.** The finding is that each of these policy levers reduces the overall annual cost by between US\$ 292 million (NGN 105 billion) and US\$ 1.7 billion (NGN 628 billion) in 2030 (see Table 8). The largest impact is from constructing larger (two stream) schools where applicable (e.g., in dense urban areas). Combining all these policy levers could reduce the annual cost of basic education by US\$ 2.8 billion (NGN 1,033 billion) by 2030, a 20 percent reduction (see Figure 11).

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<sup>11</sup> Remainder of time spent in school, but not in class; or in class but not teaching (e.g., doing paperwork). While the SDI is focused on primary schools, findings from a Mobile Phone Public Services Monitoring Survey, among others, suggest similar issues at secondary level (see Twaweza, 2012).

<sup>12</sup> World Bank, 2016. Project Information Document, Concept Stage: Uganda Secondary Education Improvement Project. Washington, D.C.: World Bank Group.

<sup>13</sup> According to SDI, teachers in grade 4 spend 3h 26min teaching per day, which is equivalent to 17 hours teaching per five-day working week.

<sup>14</sup> Pupil-classroom ratio in junior secondary is 60:1 (2018).

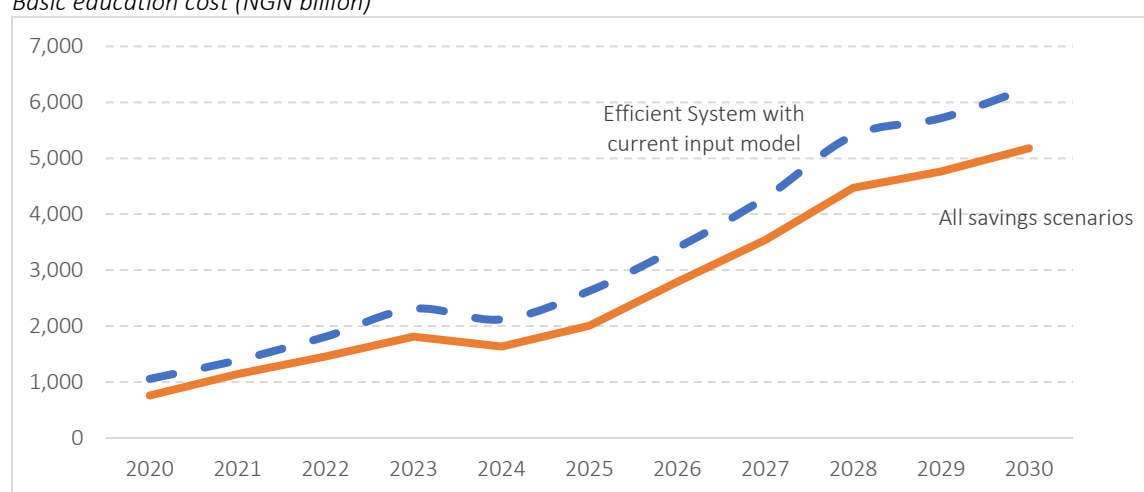
<sup>15</sup> Bray, M. (2008). Double-shift schooling: design and operation for cost-effectiveness (third edition). Paris: UNESCO International Institute for Education Planning. Mimeo.

Table 8: Annual cost of basic education under different cost scenarios (NGN billion)

	2020	2021	2022	2023	2025	2028	2030	Annual saving, 2030
<i>Efficient System with current input model</i>	1,057	1,390	1,810	2,310	2,628	5,407	6,256	-
More effective use of teachers	1,017	1,343	1,755	2,244	2,531	5,239	6,021	235
More effective use of infrastructure	982	1,293	1,683	2,141	2,397	5,362	6,151	105
New schools have classroom libraries	1,053	1,382	1,797	2,291	2,598	5,215	6,138	118
Two streams schools	1,023	1,307	1,656	2,063	2,319	4,840	5,628	628
<i>All savings scenarios</i>	911	1,169	1,483	1,847	2,027	4,488	5,222	1,033

Source: Authors' estimations.

Figure 11: Potential reductions in the fiscal implications of the basic education expansion  
Basic education cost (NGN billion)



Source: Authors' estimations.

## 4. Conclusion

26. **Achievement of the SDG#4 likely requires most developing countries to adopt free primary and secondary education over the coming decade, as free education offers significant benefits for access to education.** However, careful calibration of input models is required for such an expansion to be fiscally sustainable. In the case of Nigeria, full implementation of the UBE policy, with the government simultaneously expanding the junior secondary school system to accommodate increased enrollment and raising per-student finance to accommodate current planned policies, is likely to cost US\$ 17.4 billion (NGN 6,256 billion) by 2030 for basic education alone and require the hiring of almost 928 thousand extra teachers and construction of 606 thousand additional classrooms in primary and secondary schools.

27. **Nigeria will require a substantial increase in public spending, in part because it is starting from a low base.** At the same time, careful choices at this stage, particularly with regard to construction, can significantly shift the cost curve. This note reports the fiscal impact of adopting common-sense reforms to the input model of primary and junior secondary schooling, including improved utilization of classrooms and teachers, and classroom libraries; model projections suggest that these measures could reduce the annual cost of basic education by 2030 by at least 20 percent.

28. **The simulation tool created as part of this analysis will enable government officials to evaluate the impact of these and other potential parameters and devise a package of policies which puts the expansion of basic education in Nigeria on a sustainable footing.** One of the key challenges is to improve student retention in primary and junior secondary schools. To achieve the goal, Nigeria needs a three-pronged strategy that aims at (i) improving the quality and the completion rate of primary education, (ii) expanding access to junior secondary education, while improving its quality, equity and efficiency, and (iii) devising ways to finance such an effort in a sustainable manner.

29. **The present note abstracts from the myriad of governance and managerial reforms that would be required to implement the required input changes in order to make the education system more efficient and ensure achievement of universal basic education.** These governance and management challenges include regulation of private sector providers given the importance of the private sector in delivery education services today and its potential growing share of enrollment. In addition, important reforms are needed in terms of teacher management and revision of school construction standards and requirements.



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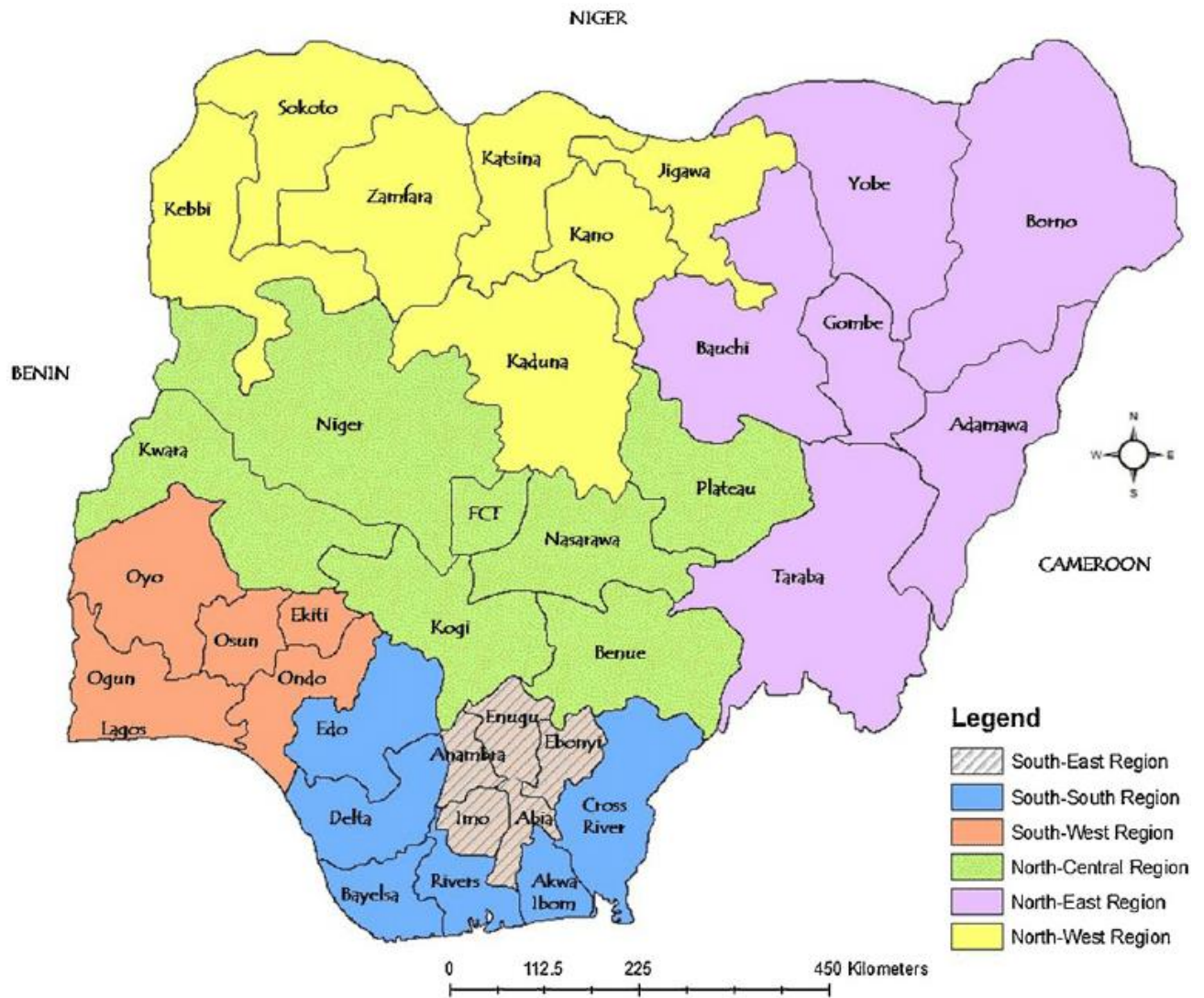
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Annex 1

Map of Nigeria showing the six geopolitical zones



## Annex 2

Table A2.1: Enrollment figures

	2014	2015	2016	2017	2018
Data source:	EMIS	EMIS	EMIS		UBEC
P1	4,466,311	4,406,334	5,001,122	n/a	5,842,657
P2	4,265,294	4,222,032	4,491,872	n/a	5,300,517
P3	4,674,368	4,111,547	4,339,371	n/a	4,969,136
P4	3,860,609	3,883,864	4,044,102	n/a	4,661,563
P5	3,533,365	3,528,846	3,710,263	n/a	4,193,557
P6	3,388,700	3,163,168	3,223,761	n/a	3,662,945
JSS1	1,917,955	1,754,604	2,085,315	n/a	2,274,251
JSS2	1,880,544	1,674,229	1,942,850	n/a	2,180,421
JSS3	1,771,727	1,545,067	1,774,826	n/a	2,012,444
<b>Total, primary</b>	<b>24,188,647</b>	<b>23,315,791</b>	<b>24,810,491</b>	<i>n/a</i>	<b>28,630,375</b>
<b>Total, JSS</b>	<b>5,570,226</b>	<b>4,973,900</b>	<b>5,802,991</b>	<i>n/a</i>	<b>6,467,116</b>
<b>Total, basic</b>	<b>29,758,873</b>	<b>28,289,691</b>	<b>30,613,482</b>	<i>n/a</i>	<b>35,097,491</b>

Table A2.2: System Efficiency Indicators

<b>Nigeria</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
<b>Gross Enrollment rate</b>	GHS		GHS	MICS	UBEC
Primary	83%	n/a	80%	82%	87%
Junior secondary	45%	n/a	44%	45%	45%
<b>Gross Intake Rate</b>	GHS		GHS	MICS	UBEC
Primary	52.2%	n/a	58.6%	62.8%	98.3%
<b>Promotion/Survival rates</b>	EMIS	EMIS	EMIS	MICS	UBEC
P1	95.5%	95.8%	89.8%	74.9%	90.7%
P2	109.6%	97.4%	96.6%	83.7%	93.7%
P3	82.6%	94.5%	93.2%	85.9%	93.8%
P4	91.5%	90.9%	91.7%	85.5%	90.0%
P5	95.9%	89.6%	86.9%	84.7%	87.3%
Transition primary -> secondary	56.6%	55.5%	64.7%	49.0%	62.1%
JSS1	98.0%	95.4%	93.2%	79.1%	95.9%
JSS2	94.2%	92.3%	91.4%	84.7%	92.3%
JSS3	...	...	...	76.9%	...
<b>Repetition rates</b>	GHS	<i>Estimates</i>	GHS	MICS	UBEC
P1	1.7%	1.8%	1.9%	24.0%	1.2%
P2	0.9%	0.7%	0.5%	15.4%	1.6%
P3	0.7%	0.8%	0.9%	13.0%	1.6%
P4	0.7%	0.9%	1.1%	13.4%	1.5%
P5	1.0%	0.6%	0.3%	14.0%	1.5%
P6	0.0%	0.3%	0.7%	26.8%	1.3%
JSS1	0.1%	0.2%	0.4%	19.7%	2.0%

<b>Nigeria</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
JSS2	0.0%	0.4%	0.8%	13.6%	2.8%
JSS3	0.6%	0.6%	0.6%	14.8%	2.0%
<b>Dropout rates</b>	<b>GHS/EMIS</b>	<b>EMIS</b>	<b>GHS/EMIS</b>	<b>MICS</b>	<b>UBEC</b>
P1	4.5%	4.2%	10.2%	9.7%	9.3%
P2	0.0%	2.6%	3.4%	4.9%	6.3%
P3	17.4%	5.5%	6.8%	6.5%	6.2%
P4	8.5%	9.1%	8.3%	9.2%	10.0%
P5	4.1%	10.4%	13.1%	12.9%	12.7%
P6	43.4%	44.5%	35.3%	36.7%	37.9%
JSS1	2.0%	4.6%	6.8%	5.4%	4.1%
JSS2	5.8%	7.7%	8.6%	8.1%	7.7%
JSS3	...	...	...	...	...

### Annex 3: Unreported repetition in Nigeria

Available data from various Household Surveys suggests that official repetition in Nigeria is underreported. In 2018, UBEC conducted an audit to collect school-level data including on repetition. Using UBEC data for enrollments and repeaters and UN population estimates Gross Intake Rate jumps from around 60 percent in 2016-2017 to 98 percent in 2018. Using National Population Census (NPopC) GIR is even higher – 105 percent, which signals that population is underestimated.

Table A3.1: Gross Intake Rate to Grade 1

	2014	2015	2016	2017	2018
<b>Source</b>	GHS		GHS	MICS	UBEC
Primary education	52.2%	n/a	58.6%	62.8%	98.3%

MICS reveals high repetition and lower promotion rates in all grades across the basic education cycle, while UBEC reports about very small number of repeaters and few respondents in the General Household Survey reported about repeating a grade in 2014 and 2016. MICS findings are more consistent with the results of the 2015 Nigeria Education Data Survey (NEDS), which revealed 12 percent repetition in grade 1, and 5-6 percent in grades 2-4.

Figures for dropout rates are consistent across different sources of data for 2016-2018 (GHS, MICS, and UBEC): around 10 percent for grade 1, 5-6 percent for grades 2-3, and so on. Thus, the inconsistency issue is caused by the reported low number of pupils repeating grades.

Table A3.2: Repetition and Dropout Rates in Primary and Junior Secondary

	2014	2015	2016	2017	2018
<b>Repetition rates</b>	GHS	<i>Estimates</i>	GHS	MICS	UBEC
P1	1.7%	1.8%	1.9%	24.0%	1.2%
P2	0.9%	0.7%	0.5%	15.4%	1.6%
P3	0.7%	0.8%	0.9%	13.0%	1.6%
P4	0.7%	0.9%	1.1%	13.4%	1.5%
P5	1.0%	0.6%	0.3%	14.0%	1.5%
P6	0.0%	0.3%	0.7%	26.8%	1.3%
JSS1	0.1%	0.2%	0.4%	19.7%	2.0%
JSS2	0.0%	0.4%	0.8%	13.6%	2.8%
JSS3	0.6%	0.6%	0.6%	14.8%	2.0%
<b>Dropout rates</b>	GHS/EMIS	EMIS	GHS/EMIS	MICS	UBEC
P1	4.5%	4.2%	10.2%	9.7%	9.3%
P2	0.0%	2.6%	3.4%	4.9%	6.3%
P3	17.4%	5.5%	6.8%	6.5%	6.2%
P4	8.5%	9.1%	8.3%	9.2%	10.0%
P5	4.1%	10.4%	13.1%	12.9%	12.7%
P6	43.4%	44.5%	35.3%	36.7%	37.9%
JSS1	2.0%	4.6%	6.8%	5.4%	4.1%
JSS2	5.8%	7.7%	8.6%	8.1%	7.7%
JSS3	...	...	...	...	...

## Annex 4: Model assumptions and unit costs

### Model assumptions

	Baseline, 2018	Target value	Target year
Gross Intake Rate, primary (primary)	81%	100%	2025
Share of public intake, primary	78%	78%	2020
Share of public enrollment, primary	80%	80%	2025
Share of public enrollment, JSS	75%	75%	2025
Promotion rates			
P1 -> P2	89%	99%	2030
P2 -> P3	92%	98%	2030
P3 -> P4	92%	98%	2030
P4 -> P5	89%	98%	2030
P5 -> P6	86%	98%	2030
Transition rate: primary -> secondary	61%	99%	2030
JSS1 -> JSS2	93%	98%	2030
JSS2 -> JSS3	90%	97%	2030
JSS3 -> JSS4	88%	98%	2030
Repetition rates			
P1	1.3%	1.3%	2030
P2	1.7%	1.7%	2030
P3	1.7%	1.7%	2030
P4	1.6%	1.6%	2030
P5	1.6%	1.6%	2030
P6	1.4%	1.4%	2030
JSS1	2.1%	2.1%	2030
JSS2	2.9%	2.9%	2030
JSS3	2.1%	2.1%	2030

### Construction costs

	North East	North West	North Central	South West	South East	FCT	South South	Lagos
A block of 2 classrooms, office and store	8.0	8.0	8.0	8.0	10.0	10.0	12.0	12.0
A block of 3 classrooms, office and store	12.0	12.0	12.0	12.0	15.0	15.0	18.0	18.0
A block of 6 classrooms, office and store	24.0	24.0	24.0	30.0	30.0	30.0	36.0	36.0
<b>Av. Cost of 1 classroom</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>	<b>4.3</b>	<b>5.0</b>	<b>5.0</b>	<b>6.0</b>	<b>6.0</b>
Library	19.4	19.4	19.4	19.4	24.3	24.3	32.4	32.4
Laboratory	17.0	17.0	17.0	17.0	21.3	21.3	28.4	27.4
Workshop	17.0	17.0	17.0	17.0	21.3	21.3	28.4	28.4
A block of 2 Units VIP Toilet	1.2	1.2	1.2	1.2	1.5	1.5	1.8	1.8
Borehole with Overhead Tank	3.0	3.0	3.0	3.0	3.5	3.5	3.5	3.5
Perimeter fence (RPBA, 2016)	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
Office block (RPBA, 2016)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7

Note: million Naira, 2018/19; Source: UBEC