Government of Sierra Leone

Ministry of Education Science and Technology

SIERRA LEONE

Education Country Status Report

An analysis for further improving the quality, equity and efficiency of the education system in Sierra Leone

UNESCO Dakar Office
United Nations Educational, Scientific and Cultural Organization
Pôle de Dakar
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UNESCO INSTITUTE for STATISTICS

SIERRA LEONE

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September 2013

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CURRENCY EQUIVALENTS

(Exchange Rate Effective October 1, 2012)
Currency Unit = Leone (Le)
US$ 1 = Le 4,300

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August – June

Foreword

The consultation on education during the Post-2015 Development Agenda, held in Dakar in March 2013, reaffirmed the value of education as a human right and its positive role in sustaining socioeconomic development. It also allowed a review of progresses made since 2000 and remaining challenges: while school access and gender parity have shown the greatest improvements, many hurdles still prevent equitable access and the delivery of quality education for all. The consultation proposed three major priorities that could guide the post-2015 development agenda: inclusion and equity, quality and learning outcomes and the expansion of access beyond primary school. In this context, detailed analytical work to inform education policies remains as important as ever to adequately guide policy formulation and monitoring.

This country status report (CSR) is part of an ongoing series of country-specific reports on education conducted by government teams, technically supported by the Pôle de Dakar/UNESCO, the World Bank and other development partners. It is a detailed analytical document that offers an evidence-based diagnosis of the education sector that enables decision-makers to orient national policies. It also provides relevant analytical information to nourish the dialogue on education, promoting a vision for the future of the sector that is shared by government and education sector stakeholders, including development partners.

This is the second CSR conducted in Sierra Leone, the first having been carried out in 2006. Although its main objective is to provide a comprehensive picture of the education system in 2010/11 (the last year for which statistics were available), it provides some analysis of the evolution of the system over the time, when feasible and relevant. This CSR offers not only traditional and basic indicators, but also analyzes the performance of the education system in terms of access, learning outcomes, internal efficiency, external efficiency, equity, teacher management and the allocation and utilization of financial resources.

More specifically, the Sierra Leone CSR contributes to the 2014-18 Education Sector Plan (ESP) by allowing a better understanding of the issues and challenges faced by the sector, as well as strengths and weaknesses. It also helps identify priority strategies and inform the White Paper recommendations and their application in the short and medium term. In this, the CSR is a major instrument that helps move the education agenda in Sierra Leone forward.

This CSR was carried out between March 2011 and October 2012 by a multi-ministerial national team with technical support from the Pôle de Dakar (UNESCO/BREDA), the UNESCO Institute of Statistics, UNICEF and the World Bank. The analyses presented use data and information from multiple sources, in particular: school administration data collected by MEST, household surveys (CWIQ, DHS, MICS) conducted by Statistics Sierra Leone, specific surveys on leaning achievements and national examination data from WAEC. Macroeconomic and financial data were made available by MoFED. Obtaining timely and reliable data (the SLIHS 2011, some WAEC data, learning outcomes survey) was a major constraint that has heavily impacted the scope of some analyses. Nevertheless, some important conclusions have been reached, both on the achievements' front and on major challenges faced by the education system.

The 2013 CSR has highlighted some interesting achievements.

- Despite challenges faced by the government in resource mobilization, education expenditure has slightly increased over 2004-11, to reach 3.5 percent of GDP in 2011, and 29 percent of public recurrent expenditure, indicating the high priority placed on education. In addition, prospects for higher investments in education are expected over years to come, as new investments in mining are expected to result in higher projected GDP growth rates, providing opportunities for greater revenue generation.

- Enrollment has increased in all education subsectors over the 2000-10 period, particularly at the secondary level. Demand for junior secondary has grown as a result of the higher primary completion rate and the education system has responded favorably by increasing capacity at this level.

- The net impact of education on human development is noteworthy. Many fertility and maternal and child health indicators change/improve with education: the average age at first childbirth rises, women have fewer children and the probability of at least one child dying drops. The probability of poverty also drops considerably. Individuals with higher levels of education are also the least exposed to unemployment.

However, many challenges still prevail:

- *Increasing capacity:* Demographic pressure on the education system is set to increase in the near future. In this context, achieving universal primary education by 2020 will require increasing the system's capacity by 56 percent.

- *Improving primary access and retention:* Although the access rate to the first grade of primary was estimated at 120.5 percent in 2010/11, it is estimated that 14 percent of a generation of children did not have access to primary school in 2010 (against 20 percent in 2003/04). In the same vein, the primary completion rate, while having steadily increased over the period, stood at just 76 percent in 2010.

- *Ensuring children enter primary school at the right age:* 24 percent of the 6-11 years age group were out of school in 2010, most of which never attended school. Late entry is a pervasive phenomenon in Sierra Leone, as 40 percent of Grade 1 new entrants are aged seven years and above. This is cause for all the more concern given its detrimental effect on schooling careers.

- *Improving internal efficiency:* Repetition is particularly high for primary at 16 percent, well above the SSA average of 12 percent.

- *Improving pedagogical management to raise pupils' learning outcomes:* Pupils' outcomes are generally very poor at all levels. Deficiencies are apparent from the early grades of primary and learning outcomes are modest by regional standards.

- *Supporting pro-poor schooling:* Household wealth remains a major factor of disparities in children's enrollment, for all age groups, and the distribution is worsening, both over time and with each successive level. The increase in school coverage has benefitted the wealthy more than the poor. Whereas an estimated 35 percent of children from the poorest households never access Grade 1, against just 4 percent from the wealthiest ones, 99 percent never access the last grade of secondary, against 54 percent of the wealthiest. Transition and intra-cycle retention rates are also particularly unfavorable to the poorest children.

- *Further supporting girls' schooling:* Gender disparities in access to education are slight, but tend to deepen gradually as children progress through their school careers. The systematic underperformance of girls in almost every examination is a particular issue.

- *Improving teacher management:* There is clearly scope to rationalize the use of existing staff rather than recruit more teachers, which would involve improving the allocation of teachers to primary and secondary schools to ensure more consistent and equitable deployment. Providing untrained or unqualified teachers with the necessary training and skills and assessing the opportunity of formalizing the status of non-PIN teachers would also contribute to improving the situation.

- *Reducing disparities among regions, districts and schools that persist despite decentralization*: Improving supervision and accountability mechanisms at the local level may be effective interventions to ensure more efficient use of education inputs and resources at the school level. To move this forward, the need for an adequate and effective decentralized information and monitoring system is urgent. Decentralized financial and human resource management systems would also improve fiscal management and accountability systems.

This CSR offers valuable and comprehensive resources to anyone interested in understanding the state of the education sector in Sierra leone. It should be noted that it is a snapshot of a system that is continuously evolving. As the sector makes progress in implementing its sector plan, this report's findings are likely to become outdated, but many features will remain valid. It is the hope of both the Ministry of Education and development partners that this document will be of use to all stakeholders in the education sector.

Dr. Minkailu Bah
Minister of Education, Science and Technology

Ann Therese Ndong-Jatta
Director, UNESCO/BREDA

Acknowledgments

This country status report (CSR) on education was prepared collaboratively by the Government of Sierra Leone, the Pôle de Dakar (UNESCO/BREDA), the UNESCO Institute of Statistics (UIS), UNICEF and the World Bank.

The activity was led by the Sierra Leonean Ministry of Education, Science and Technology (MEST). The government team consisted of staff from the MEST, as well as the Ministry of Finance and Economic Development (MOFED) and Statistics Sierra Leone (SSL).

Under the leadership of Dr. Minkailu Bah, Minister of Education, Science and Technology, the government team was coordinated by Horatio Nelson-Williams, Secretary of the National Commission for Basic Education and National EFA Coordinator. The team consisted of Lansana Fofanah (Senior Economist, MOFED), Ibrahim Gibril Kargbo (Director, SSL), Kawusu Kebbay (Director, Development Assistance Coordinating Office - DACO/MOFED), Harold Barber (Budget Officer, MOFED), Adama Momoh (Director, Policy and Planning - MEST), Musu Govie (Deputy Director, HEST - MEST), Mohamed Sesay (Director, Inspectorate - MEST) and Nabie Kamara (Director, HEST - MEST). Albert Dupigny provided general chapter inputs.

The Pôle de Dakar (UNESCO/BREDA) team consisted of Diane Coury (Team Leader, Education Policy Analyst), Jean Luc Yameogo and Olivier Pieume (Education Policy Analysts). The UIS and World Bank members were Mélanie Smuga (Statistic Advisor, UIS), and Mamy Rakotomalala (Senior Education Specialist, World Bank).

Special thanks are due to Albert Dupigny who has provided strong support and facilitated the policy dialogue throughout the entire process. The team would also particularly like to thank UNICEF, particularly Linda Jones (Chief of Education) and Miriam Mareso (Education Specialist), for their constant guidance and support throughout the process. Major administrative support was also provided by UNICEF in Sierra Leone. The team is also grateful to Bidemi Carrol (Human Development Specialist, World Bank) who helped to complete the process and provided a valuable peer review of the document, Serge Peano (Principal Programme Specialist, IIPE/UNESCO) who also reviewed the report and Barnaby Rooke (Economist, Consultant) for the translation and editing work.

The preparation of this report was financially supported by multiple donors, including the Pôle de Dakar (UNESCO/BREDA), the Education Programme Development Fund (EPDF) of the Global Partnership for Education (GPE), UNICEF Sierra Leone and WCARO and the World Bank.

Acronyms and Abbreviations

AFDB	African Development Bank
AGD	Accountant-General's Department
BECE	Basic Education Certificate Examination
CSR	Country Status Report
CWIQ	Core Welfare Indicator Questionnaire
DACO	Development Aid Coordination Office
ECOWAS	Economic Community of West African States
EFA	Education for All
EMIS	Education Management Information System
FTI	Fast Track Initiative – now the Global Partnership for Education
ESR	Education Sector Review
GDP	Gross Domestic Product
GER	Gross Enrollment Ratio
GIR	Gross Intake Rate
GPI	Gender Parity Index
GoSL	Government of Sierra Leone
HTC	Higher Teachers Certificate
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
HLI	Higher Learning Institution
IEC	Internal Efficiency Coefficient
INPSS	Integrated National Public Services Survey
IRCBP	Institutional Reform and Capacity Building Project
JSS	Junior Secondary School
LICs	Low Income Countries
MDGs	Millennium Development Goals
MEST	Ministry of Education, Science and Technology
MICS	Multiple Indicator Cluster Survey
MoFED	Ministry of Finance and Economic Development
MRY	Most Recent Year
NFE	Nonformal Education
NPSE	National Primary School Examination
OECD	Organisation for Economic Cooperation and Development
PASEC	Program on the Analysis of Education Systems (Programme d'analyse des systèmes éducatifs de la CONFEMEN – Conférence des ministres de l'Éducation des États et gouvernement de la Francophonie
PCR	Primary Completion Rate
PIN	Personal Identification Number
PRSP	Poverty Reduction Strategy Paper
PTA	Parent-Teacher Association
PTR	Pupil-Teacher Ratio
SACMEQ	Southern African Consortium for the Monitoring of Educational Quality
SLIHS	Sierra Leone Integrated Household Survey
SMC	School Management Committee
SSS	Senior Secondery School

SSA	Sub-Saharan Africa
SFS	Scholl Fee Subsidy
STR	Student Teacher Ratio
TC	Teachers Certificate
TVC/TVI	Technical and Vocational Center/Institute
TVET	Technical and Vocational Education and Training
UIS	UNESCO Institute of Statistics
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
UPE	Universal Primary Education
WAEC	West African Examination Council
WASSCE	West Africa Senior School Certificate Examination
WFP	World Food Programme
WHO	World Health Organisation

Executive Summary

As the number of school-aged children increases, the education system will need to significantly increase its capacity.

Demographic pressure on the education system is set to increase in the near future. The number of school–aged children is expected to increase over 2010-20: (i) for primary (6 to 11 years old), from about 0.98 million to 1.32 million; and (ii) for lower secondary (12 to 14 years), from 395,000 to 506,000.Given the high level of repetition, achieving universal primary education by 2020 will require increasing the system's capacity by 56 percent.

School-Aged Population, 2010 and Projection to 2020

	2010		2020	
	Number	%	Number	%
Total Population	5,746,799	100	7,487,754	100
3-5 years	575,027	10	656,345	9
6-11 years	979,009	17	1,316,008	18
12-14 years	394,691	7	664,529	9
15-17 years	339,688	6	505,752	7
Subtotal	2,288,415	40	3,142,634	42

Source: Based on weighted average projection rates from the PHC, 2004 and latest available SSL estimates on population growth for 2004-14.

Although the government already devotes a considerable share of recurrent expenditure to education, the national revenue base is still weak, slowing progress.

Sierra Leone has enjoyed relatively strong economic growth in recent years, despite the challenging external economic environment. Since 2004, real GDP has grown at 5.2 percent on average per year, from Le 7,475 billion in 2004 to Le 10,687 billion in 2011 (constant 2010 prices). GDP per capita has witnessed slower growth however, at an average real rate of 2.7 percent per year, reaching Le 1.8 million in 2011 (constant 2010 prices);

Although the general macroeconomic outlook has improved, the government still faces challenges in terms of revenue generation. Domestic revenues are low by regional standards (11.3 percent of GDP in 2011 compared to 16.0 percent for other LICs). Public recurrent expenditure represents 12.4 percent of GDP, and capital expenditure represents 7.9 percent. Capital expenditure is mostly supported by donors' grants and loans, equivalent to 76 percent of the total over 2004-11, but was projected to drop to 68 percent in 2012. Sierra Leone carries a moderate risk of debt distress and the government has adopted a policy of only accepting highly concessional loans.

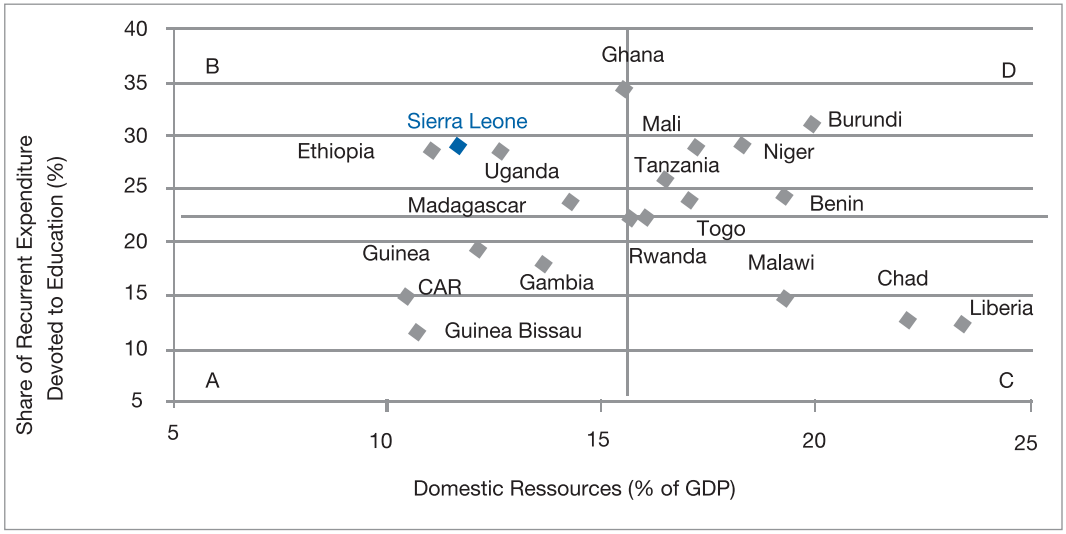
Government Revenue, Expenditure and Deficit in Real Terms, 2007-11

(Share of GDP)	2004	2007	2010	2011*
Total Government Revenues	16.0	12.2	15.4	17.3
Domestic Revenues	9.3	8.5	10.0	11.3
Grants	6.7	3.8	5.4	6.0
Total Government Expenditure	17.8	13.2	20.6	20.3
Recurrent Expenditure	14.4	10.4	12.8	12.4
Development Expenditures (Including net lending)	3.5	2,7	7,8	7,9
External	2.8	2.1	4.3	6.0
Domestic	0.7	0.7	3.5	1.9
Deficit including Grants	-1.9	-0.9	-5.2	-3.0
Deficit excluding Grants	-8.6	-4.7	-10.6	-9.0

Source: : MoFED and authors' computations. See Annex Table A1.2 for further detail.
Note: * Estimation.

Education expenditure has slightly increased over 2004-11, from 3.3 percent of GDP in 2004 to 3.5 percent in 2011. However, Sierra Leone's effort still remains below that of other LICs that devote 3.9 percent of GDP to education, on average. The share of total public recurrent expenditure devoted to education has been relatively high, with an average of 25.8 percent over the period, reaching 29 percent in 2011, indicating that the government places a high priority on education. Such levels of education financing are above both the average for LICs (22 percent) and the FTI benchmark (20 percent).

Public Expenditure Efforts for Education, SSA Countries, 2011



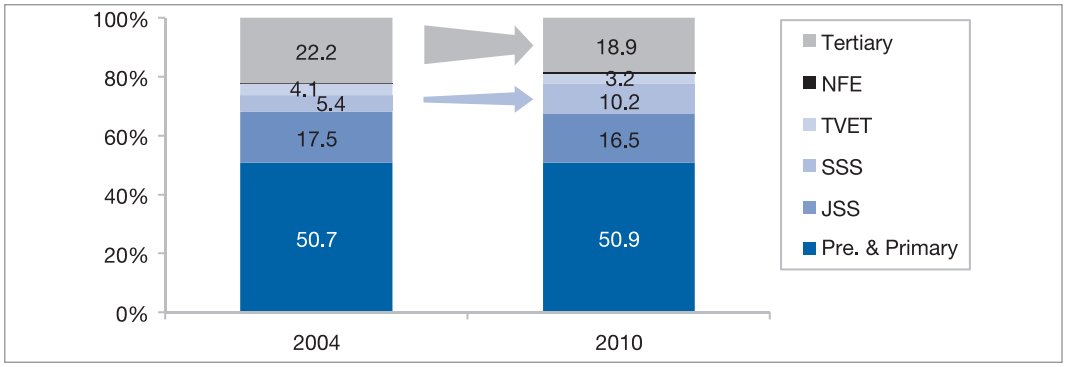
Source: Tables 1.5 and 1.6 for Sierra Leone; Pôle de Dakar, UNESCO/BREDA for other countries.
Note: Domestic resources do not include grants.

There are prospects for higher investments in education over the years to come as new investments in mining are likely to boost GDP growth, providing opportunities for greater revenue generation.

A considerable share of education resources are devoted to the primary level, possibly at the expense of secondary and technical education.

Primary education absorbs the highest share (49.3 percent) of recurrent education spending, highlighting the sustained priority given to this subsector by MEST. The share allocated to SSS has almost doubled (to 10.2 percent), at the expense of JSS and higher education whose respective shares have dropped from 17.5 percent to 16.5 percent and from 22.2 percent to 18.9 percent. Whereas the evolution in the tertiary allocation could be associated with more balanced public-private cost-sharing, the drop observed in the JSS allocation is cause for concern as the sector expands.

Distribution of Public Recurrent Education Expenditure, 2004 and 2010



Source: World Bank, 2007 and authors' computations based on MoFED data.

Sierra Leone places relatively more emphasis on primary than other LICs, as well as on JSS (that receives 16.5 percent of the recurrent education budget, against 13.4 percent on average) and higher education (18.9 percent in Sierra Leone, against 16.1 percent on average). On the other hand, the investment in TVET is below average and has witnessed a relative drop in its share, from 4.1 percent to 3.2 percent. This raises issues with respect to the subsector's adequate development and suggests that further resources could be channeled away from higher education towards TVET.

Teacher salary levels in Sierra Leone are low, and other types of expenditure represent a very small share of the education budget.

Although salaries are low, as a share of total recurrent education expenditure, salary expenditures are high, leaving Sierra Leone with little leeway for potential wage expansion under current conditions, although the government did recently increase the education budget to improve teacher pay. School-level salaries represent over 80 percent of the primary education budget and about 72 percent of the budget for secondary. A more efficient use of existing human resources could help relieve pressure in this area, particularly as there has been evidence of under-utilization of teachers' time at the secondary level.

Distribution of Recurrent Education Expenditure by Level and Type, 2010

(%)	Payroll		Non-Teacher Salary Items						(Non-Teacher Salary)
	School Level	Central Level	Admin.	Pedagogical (1)	School Fee Subsidy	Exams	Social (2)	Special Needs Schools (3)	
Primary	80.6	0.9	3.7	2.7	9.6	2.0	0.0	0.5	(19.4)
JSS	73.0	1.2	4.2	1.7	0.0	10.2	9.7	0.0	(27.0)
SSS	69.9	1.3	2.0	0.4	0.0	17.1	9.3	0.0	(30.1)
Total	77.9	1.0	3.5	2.1	6.1	5.7	3.3	0.3	(22.1)

Source: Annex Tables A3.1 and A3.2.
Note: (1) Pedagogical items include textbooks, teaching and learning materials, science equipment and reagents. (2) Social spending includes JSS girls' fee subsidy and food inputs for public secondary boarding schools. (3) Special needs schools refer to primary schools hosting handicapped children that receive government grants.

Non-teacher salary expenditure is low compared to regional norms. The share ranges from 19 percent for primary to 27 percent for JSS and 30 percent for SSS (but is almost nil at the preprimary level). The share for primary is much lower than in other LICs (28 percent on average) and well below the FTI benchmark of 33 percent. These low numbers emphasize the scarcity of resources left for education inputs that support student learning conditions.

There are opportunities for cost-savings through greater efficiency and effectiveness, particularly in postprimary social programmes and exam fees. Given that postsecondary students tend to come from wealthier households, the relevance of subsidizing JSS girls' fees, secondary school feeding and BECE and WASSCE exam fees should be evaluated. Providing such support on a needs-tested basis would allow the MEST to make considerable savings without jeopardizing the impact of such programmes, just as the promotion of public-private partnerships at the tertiary level could significantly reduce its financial burden.

Delays in the transfer of much devolved spending impact negatively on the daily running of basic schools. In the current devolution context, making sure that central and local council staff and school management committees are able to plan, budget and monitor funds and activities is crucial to ensure that services are timely, adequately delivered and their quality enhanced. In this regard, EMIS systems that provide accurate and reliable education sector data to the relevant decision-making levels are fundamental.

Unit costs are among the lowest in the region leaving households to contribute significantly to the financing of education.

Unit costs in Sierra Leone are among the lowest in the region, especially at postprimary levels. At junior and senior secondary levels, public recurrent unit costs are respectively 2.1 and 2.6 times lower in Sierra Leone than for the average LIC. This is likely a driving force behind the lower quality of education at those levels.

Low secondary unit costs are the result of relatively low teacher wages and higher STRs, as well as the low education budget relative to GDP. Sierra Leone salaries are systematically lower than those in other countries in the region. Primary teacher salaries for example, are equivalent to 2.4 units of GDP per capita in Sierra Leone, compared to 5.3 units on average in the region, and below the FTI benchmark of 3.5 units. The level of postprimary salaries is also of concern, as weak pay could encourage the emigration of teachers to neighboring countries offering better pay, potentially depleting Sierra Leone of its best human resources.

Public Recurrent Unit Costs, by Education Level, 2004 and 2010

	Preprimary & Primary			Secondary			Tertiary **
	Prep.	Primary *	Total	JSS	SSS	Total	
2010							
Unit Costs (Le)	179,655	111,530	112,807	186,849	316,061	221,313	2,118,011
Multiple of Primary	1.6	1.0	1.0	1.7	2.8	2.0	18.8
% of GDP p.c.	10,2%	6,4%	6,4%	10.6%	18.0%	12.6%	120.7%
2004							
Unit Costs (Le, Constant 2010)			103,103	302,361	327,591	307,992	3,135,768
Multiple of Primary			1.0	2.9	3.2	3.0	30.4
% of GDP p.c.			6.9%	20.1%	21.8%	20.5%	208.8%
2004-10 Variation			+ 9%	-38%	-4%	-28%	-32%

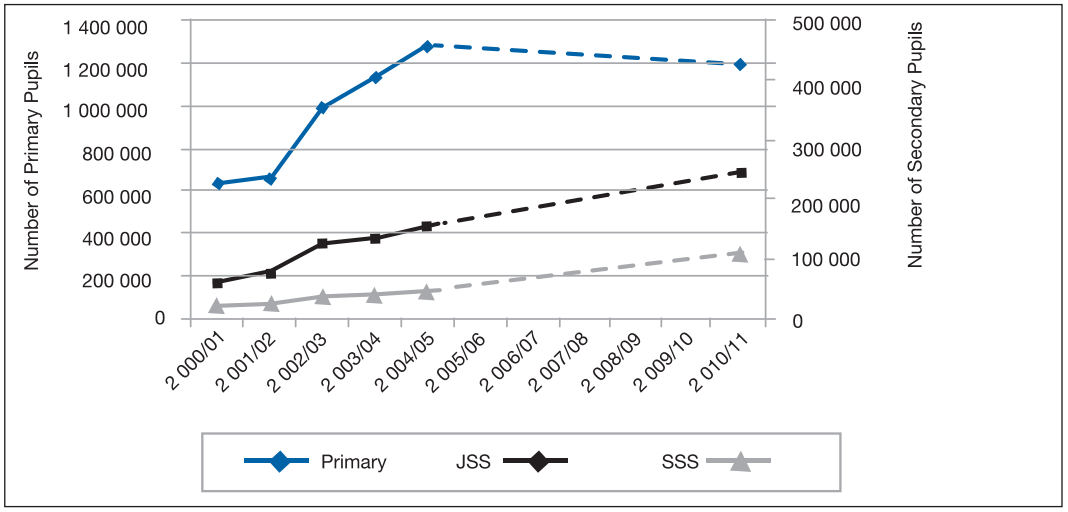
Source: Table A3.1 and A3.2 for recurrent costs for 2010; World Bank, 2007 for 2004 data.
Note: * Excludes transfers to private schools. ** Excludes bursaries for students abroad. *** Authors' estimate.

Household contributions to primary education were estimated at 18 percent of total primary recurrent education expenditures in 2010. It is disconcerting that despite the official abolition of school fees in 2002/03, many households enrolling their children in public schools still pay fees. Families also contribute highly to other costs, the most expensive being uniforms. The government may consider targeted financial support programmes for the neediest students, relieving the financial burden on households for non-fee expenses, to ensure that such students are given the opportunity to complete their basic education.

Enrollment has nevertheless grown at all levels, especially at secondary.

Enrollment has increased in all education subsectors over the 2000-10 period, particularly for secondary. Demand for JSS is strong as a result of the higher primary completion rate, to which the education system has responded favorably by increasing capacity at this level.

Primary and Secondary Enrollment Trends, 2000/01-2010/11



Source: World Bank, 2007 for 2000/01-2004/05; EMIS database for 2010/11.

The GER for primary was 122 percent in 2010/11, indicating that Sierra Leone is, in principle, able to accommodate all of its primary school-aged population. The preprimary GER is particularly low (6.5 percent) in comparison to other African countries with similar GDP per capita. For JSS (62 percent), SSS (32 percent) and tertiary education (388 students per 100,000 inhabitants) on the other hand, enrollment rates are all above the average of comparable SSA countries. NFE programme coverage remains low, with literacy programmes benefiting only 7.4 percent of the target population.

Schooling Coverage by Education Level, 2004/05-2010/11

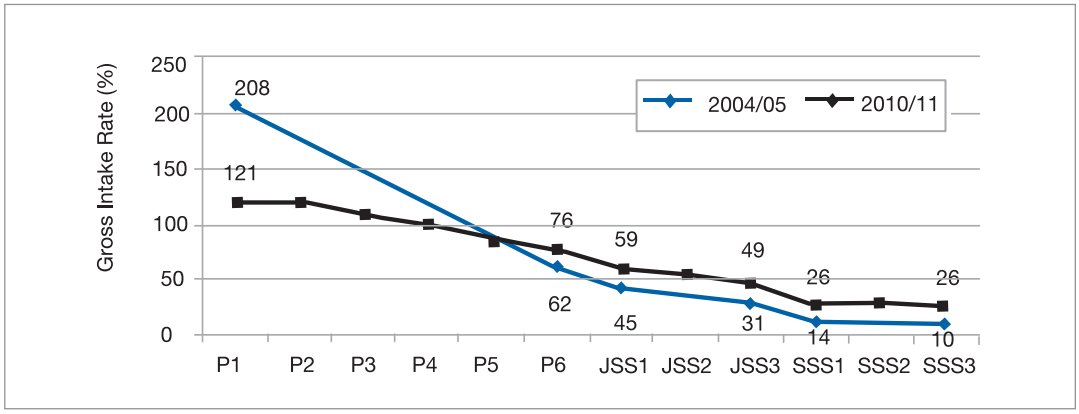
	2004/05	2010/11
Preprimary (GER - %)	—	6.5%
Primary (GER - %)	156%	122%
JSS (GER - %)	43%	62%
SSS (GER - %)	14%	32%
TVET (Share of Secondary - %)	16%	8%
Tertiary (Individuals per 100,000 Inhabitants)	330	451 *

Source: World Bank, 2007 for 2004/05; EMIS database for 2010/11, Lamin et al., 2012 and ESR, 2012 for 2010/11.
Note: * Includes teacher education.

The number of out-of-school children remains high however, and the primary completion rate is low, meaning that universal primary education has not yet been achieved.

Universal primary education is yet to be reached. Although the access rate to the first grade of primary was estimated at 120.5 percent in 2010/11, it is nevertheless estimated that 14 percent of a generation of children did not have access to primary school in 2010 (against 20 percent in 2003/04). In the same vein, the primary completion rate, while having steadily increased over the period, stood at just 76 percent in 2010.

Cross-Sectional Schooling Profile, 2004/05 and 2010/11

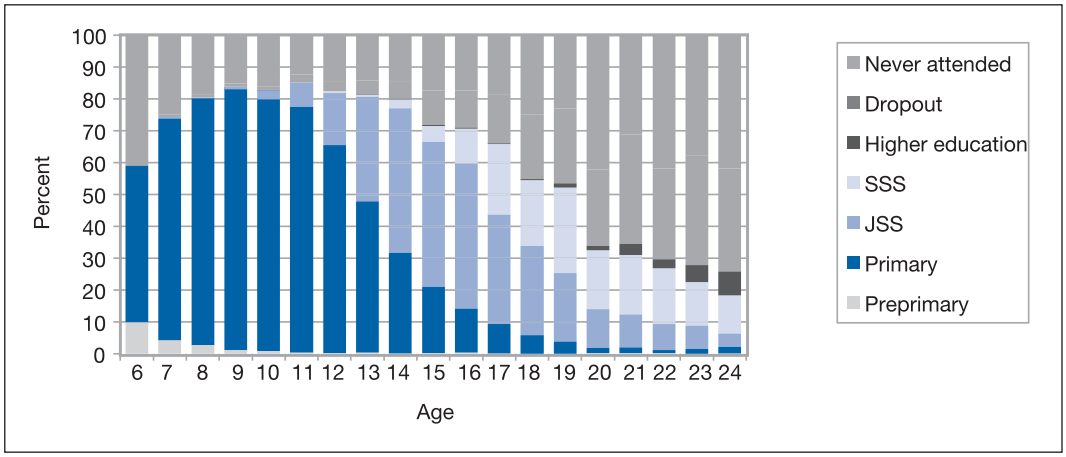


Source: World Bank, 2007 for 2004/05; EMIS database for 2010/11.

Gross intake rates to the first and last grades of secondary have improved since 2004/05. For lower secondary the access rate increased from 44.7 percent to 58.7 percent and the completion rate from 30.7 percent to 48.6 percent. For upper secondary, the access rate increased from 14.2 percent to 26.4 percent, whereas the completion rate increased from 10.1 percent to 25.9 percent. Overall, Sierra Leone is well positioned in relation to other SSA countries with low GDP per capita, for all these indicators.

In 2010, the number of out-of-school children was estimated at 233,000 approximately for primary and a further 74,000 for JSS, representing 22 percent and 19 percent of the respective official school-aged groups. Access remains an issue facing out-of-school children, although some eventually do enter: in 2010, 40 percent of Grade 1 new entrants were aged seven years and above. Nevertheless, the share of children having never attended school is lower among more recent cohorts of pupils, suggesting an improvement towards achieving universal access.

Distribution of Children According to their Education Status, 2010



Source: Authors' calculations based on MICS IV, 2010 data.

Although supply-side factors may explain part of the enrollment gap, poverty and the cost of education are also significant.

Supply and demand-side factors both influence schooling decisions. On the supply-side, the further the distance to the nearest primary school, the higher the out-of-school rate. In addition, grade discontinuity (or incomplete schools) put 28 percent of primary students at risk of dropping out before they complete the cycle. Demand-side factors also account for nonattendance. Poverty limits households' capacities to send their children to school and keep them there. Age also appears to be a major reason behind families' decisions to not enroll their children. It was also observed that, whereas there were no gender disparities in access to primary and JSS, boys were more likely to complete the cycle once enrolled.

Supply-Side Issues Faced by Enrolled Primary Pupils, 2007

Percentage of pupils facing a given issue	School Ownership				Total
	Government	Mission	Private	Community	
Distance to school *	—	—	—	—	46.0
Grade continuity **	28.1	26.4	15.9	43.7	27.8
Household head's perception					
Lack of books	32.9	45.6	20.1	55.4	40.6
High fees	20.4	23.3	58.0	25.3	23.8
Facility Issues	18.9	27.7	7.0	44.3	25.0
Teacher Issues	14.7	17.1	4.6	49.7	18.5

Source: CWIQ, 2007, ** EMIS, 2010/11.
Note: * Refers to children aged 6-11 years living more than 15 minutes away from the nearest primary school. ** Share of students attending an incomplete primary school (under 6 grades offered). All other issues as per frequency of household responses to a questionnaire.

Demand-Side Issues Explaining Out-of-School, 2007

Percentage of out-of-school citing a given reason	Age Groups			
	6-8 Years	9-11 Years	12-14 Years	Total
Child too young	40.3	10	2.3	25
School too far	17.9	11.5	10.2	14.8
School too expensive	33.2	43.7	39.5	37.1
Child is working	4.8	19.4	22	11.9
Education is pointless	4.2	9.3	12.6	7.2
Child is ill	2.1	3	3.8	2.7
Other	18.6	24.6	27.7	21.9

Source: CWIQ, 2007.

Given both the resource constraint and the pressure to expand capacity, how the budget is spent becomes paramount; yet the management and deployment of teachers is far from optimal, as is the size of schools.

The teaching profession is male dominated, women still only accounting for barely 25 percent of primary, 14 percent of JSS and 8 percent of SSS teachers in 2010/11. Of major concern is that their participation in the profession has dwindled since 2004/05. Barely half of teachers are qualified for their level and position, the problem being most acute at primary and preprimary levels (52 percent of primary, 41 percent of JSS and 31 percent of SSS teachers are not qualified). Public and government-aided school teachers account for 91 percent of the teaching force, about 52,300 in total in 2010-11, the broad majority in primary schools, but only about 60 percent have a PIN (are on the payroll).

The proportion of unqualified teachers has in fact witnessed an upward trend since 2004/05, when 40 percent and 10 percent of primary and secondary teachers were not qualified, suggesting that despite its broad scope, the teacher training system is facing difficulties to adequately respond to the growing demand for teachers following the surge in primary and secondary enrollment, boosted by the implementation of the fee-free primary education policy.

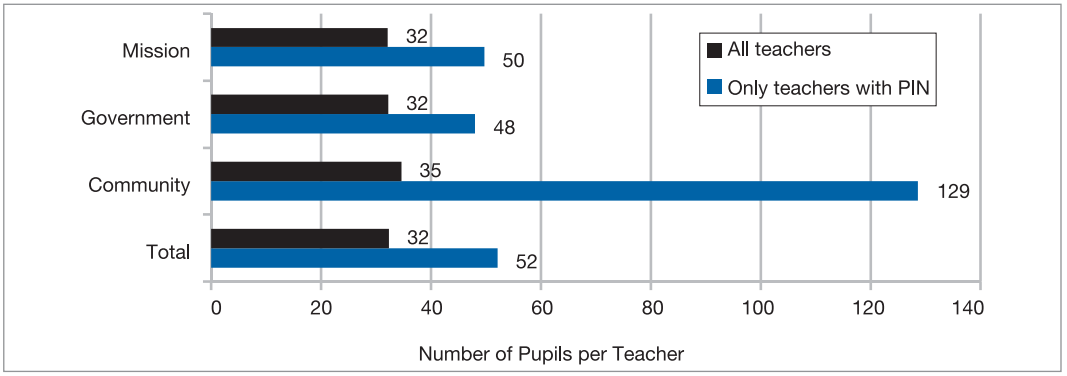
Share of Female, Qualified and Public and Government-Aided Teachers, 2010/11

	Preprimary	Primary	Secondary			Total
			JSS	SSS	Total	
2010/11 (Total)	2,167	38,125	12,794	4,400	17,194	57,486
% Female	82%	25%	14%	8%	12%	23%
% Qualified	42%	48%	59%	68%	61%	52%
% Public + GA Teachers	56%	94%	89%	86%	88%	91%
(% with PIN)	38%	62%	58%	72%	61%	61%

Source: World Bank, 2007 and EMIS, 2010/11.

Note: The share of qualified teachers refers to those qualified for their level and position. GA: Government-aided schools.

Primary Pupil-Teacher Ratio and Pupil-PIN Teacher Ratio, 2010/11

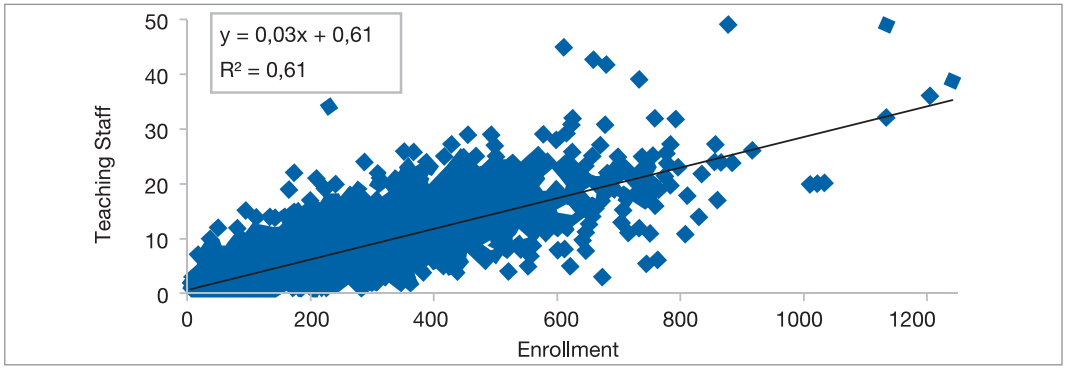


Source: Authors' calculations based on EMIS, 2010/11 data.

District-level disparities in the PTR are high, and suggest that class sizes are generally larger in rural schools. At the primary level, the average district ratio varies from 27:1 in Western Area Urban to 46:1 in Pujehun, and at JSS, from 16:1 in Bo to 27:1 in Kono. At SSS the disparities between districts are starker still, with PTRs varying between 12:1 and 31:1. At the school level, PTRs range from 2:1 to 284:1.

Analyses show poor consistency in teacher allocation across schools, both at the primary and secondary levels. The degree of randomness in teacher allocations in public and government-aided schools in 2010/11 was 39 percent for primary schools, 31 percent for JSS and 33 percent for SSS, indicating that a high share of postings are determined by factors other than school size. Indeed, these coefficients are much higher for Sierra Leone than for many Sub-Saharan African countries. Important variations are again observed across districts.

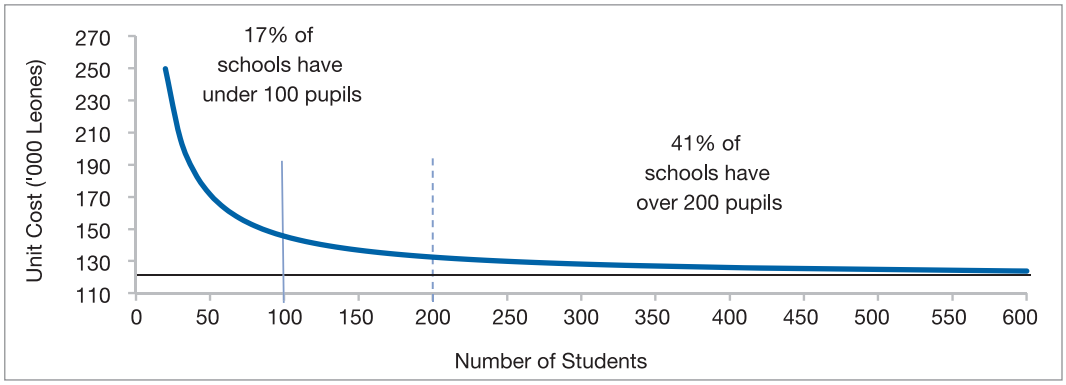
Primary School-Level Consistency in Teacher Allocation, 2010/11



Source: Source: EMIS 2010/11 data.
Note: The unit of observation is the public or government-aided primary school.

The ranges of school size that appear to be optimal from an economic perspective are of 100 to 200 pupils for primary and 200 to 450 pupils for secondary. Schools with sizes below these ranges could achieve significant economies of scale by increasing their enrollment (17 percent of primary, 47 percent of JSS and 28 percent of SSS schools), whereas schools with sizes beyond these ranges face comparatively insignificant and decreasing savings by expanding. Nevertheless, distance to school is one of a number of supply-side factors to take into consideration when addressing optimal school size and Sierra Leone's current school network focuses on proximity over size.

Economies of Scale in Public and Government-Aided Primary Schools, 2010/11



Source: Authors' simulation based on the equation of Figure 7.3 and average teacher salaries, Chapter 3.
Note: Unit costs consist only of staff wages.

Considering the above constraints, levels of internal efficiency are low, especially at the primary level, where repetition is particularly high.

Internal efficiency is poor at the primary level, but improves significantly thereafter. At primary, 37 percent of resources are wasted on repetition and dropout, and 9.5 student-years is the average investment in a completer of the six year cycle. JSS and SSS are more efficient, wasting 21 percent and 14 percent of resources respectively, and better than the SSA averages. Whereas for primary the inefficiency is mainly dropout-related, repetition is the main source of inefficiency at JSS and SSS levels. Given the low level of learning outcomes, this appears to indicate that the education system should prioritize the quality of learning over and above the duration of individual schooling in tackling internal efficiency issues.

Internal Efficiency Coefficients, by Education Level, 2010/11

	Primary	JSS	SSS
Internal Efficiency Coefficient	63%	79%	86%
Dropout-Related IEC (no Repetition)	75%	90%	99%
Repetition-Related IEC (no Dropout)	84%	88%	87%
Effective Student-Years Required for Completion	9.5	3.8	3.5

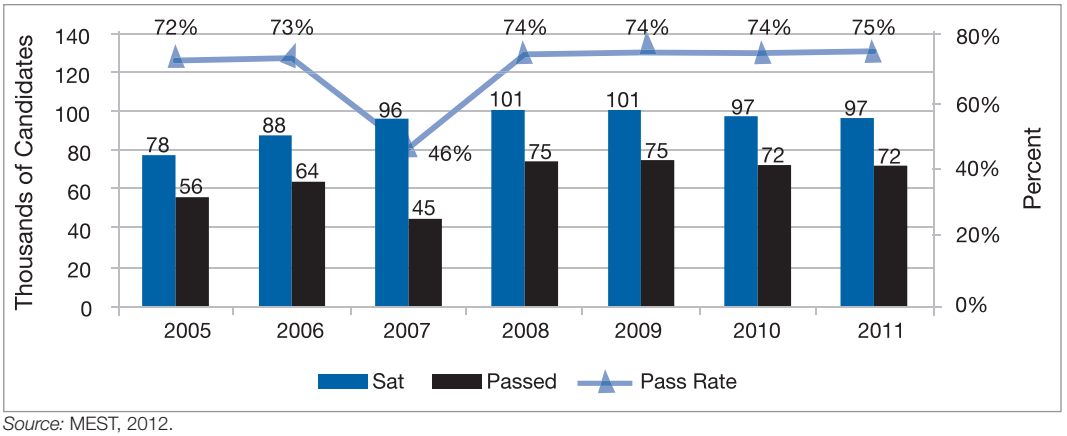
Source: World Bank, 2007 and EMIS, 2010/11

Repetition is particularly high for primary at 16 percent, well above the SSA average of 12 percent. It is also very high at JSS and SSS, at 13 percent, although almost in line with the SSA average. Repetition follows a bell shape by grade in primary (from 4 percent in Grade 1 to 18 percent in Grade 5 and 8 percent in Grade 6) as well as in JSS, but decreases with each grade in SSS (from 15 percent in SSS 1 to 12 percent in SSS 3).

Furthermore, learning outcomes are generally weak, at every education level, and bear little relation at the school level to the amount of resources allocated.

Pupils' learning outcomes are generally very poor at all levels; deficiencies are apparent from the first grades of primary. The Early Grade Reading Assessment results show that by the end of Grade 3, many children are not able to read to learn but are still learning to read, lacking the most basic reading, writing and comprehension skills (over 50 percent could not write their own name) to properly pursue their schooling.

NPSE Candidates, Graduates and Pass Rates, 2005-11

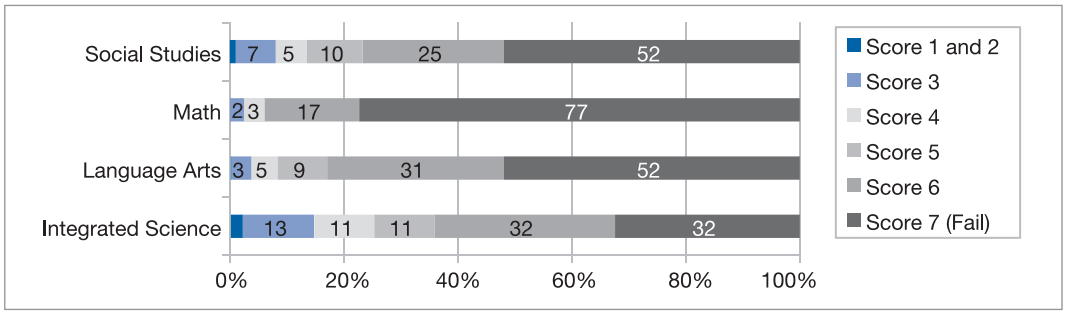


Source: MEST, 2012.

Overall, the NPSE (end of primary exam) pass rate has improved marginally, from 72 percent in 2005 to 75 percent in 2011, although this may reflect the expansion in the number of seats in JSS, for which the NPSE is effectively the admissions exam.

Junior secondary results are scarcely better, and have barely improved since 2005. The overall BECE (end of JSS exam) pass rate (the share of students passing at least four subjects) was barely 47 percent in 2011. The results by subject are equally low, with a failure rate of over 50 percent in all core subjects but integrated science. Math performance is particularly poor, with a 77 percent failure rate and just 3 percent of candidates obtaining a credit.

Distribution of Student Scores in the Four BECE Core Subjects, 2011



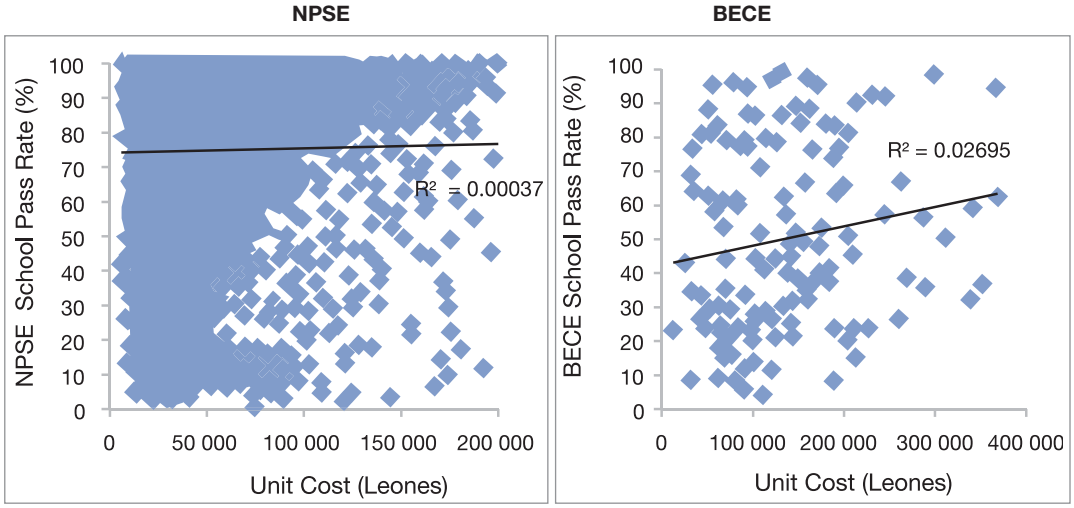
Source: BECE results, WAEC and authors' computations.

Senior secondary results are improving, but are still far behind other WAEC countries. Almost 40 percent of students failed to obtain a single WASSCE (end of SSS exam) credit and only 10 percent achieved credits in four or more subjects. The English success rate is low, having dropped from 17 percent to 14 percent over 2007-10. Performance in math is worse, with a success rate of just 5.2 percent in 2010 and only 3.2 percent of candidates achieving a credit (compared with 47 percent for Nigeria) in 2009.

The main factors negatively impacting on primary results are repetition, absenteeism, and class size. The lack of adequate coverage of the syllabus associated with various practices that reduce instructional time are also believed to play a major negative role. Poor results in BECE and WASSCE on the other hand are clearly affected by the inadequate preparation of students during their early education, resulting in poor mastery of basic literacy and numeracy, and the inability of the system to compensate for these initial shortcomings.

The school-level relationship between resources and results is particularly weak, at both primary and secondary levels. For the two levels considered here (NPSE and BECE pass rates), there is no tangible relationship between the resources mobilized and the results obtained. Indeed, at the primary level, some best NPSE pass rates are achieved by schools with lower unit costs.

Relationship between Pass Rates and Unit Costs in Public and Government-Aided Schools, 2009/10



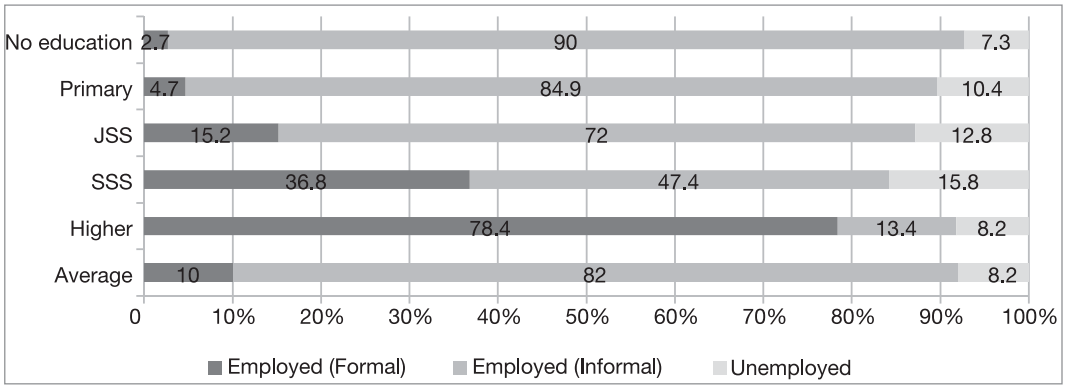
Source: EMIS 2010/11, WAEC data and Chapter 3.
Note: The unit of observation is public or government-aided school.

Employment outcomes are also poor, as reflected by the length of the school-to-work transition as well as under and unemployment rates.

The average duration of the school-to-work transition is estimated at three and a half years and job insecurity is common. Indeed, the average age of individuals leaving school for work in Sierra Leone is 20 years, whereas the average age of individuals starting work is 23.5 years. Generally speaking, 55 percent of the workforce having left school between 2002 and 2006 had an insecure job in 2007. Higher education graduates achieve the greatest level of job security, at over 90 percent. Crop farming, wholesale, retail and tourism and community services are the sectors that recruited most students between 2002 and 2006.

Individuals with higher levels of education are the least exposed to unemployment (only 8 percent are affected) and they work mainly in formal jobs (78 percent). Unemployment is below the national average for the uneducated however, probably due to their increased willingness to accept low paid informal jobs. In 2007, 37 percent of the workforce having ended their initial training between 2002 and 2006 was unemployed, against 9 percent of the workforce with over ten years of experience. The risk of being unemployed is the highest for senior secondary school leavers. They face the highest probability of unemployment of all, at 16 percent. This is most likely explained by the increase in the reservation wage with each level of education.

Employment Status of the Workforce, by Education Level Attained, 2007



Source: CWIQ, 2007 data.

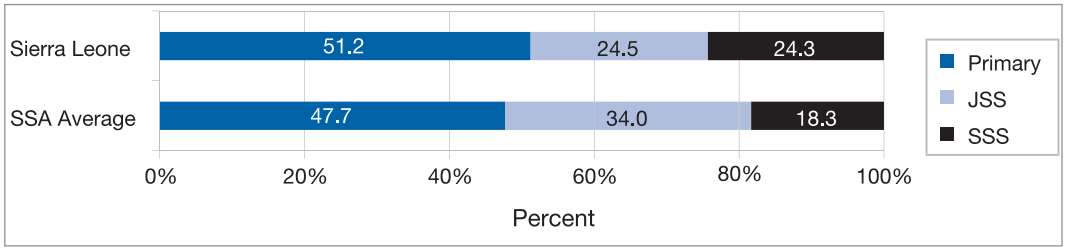
Note: The figures cover the workforce of individuals aged 15 years and above.

The impact of education on human development and social behaviors is however noteworthy, especially in terms of health and poverty, the primary cycle accounting for about half the net effect.

The net impact of education on human development is noteworthy. Many fertility and maternal and child health indicators improve with education: the average age at first childbirth rises, women have fewer children and the probability of at least one child dying drops. Gains are greater in urban areas, regardless of the availability of local health services. The probability of poverty also drops considerably.

On average, the primary cycle represents almost half (44 percent) of the total social impact of education on the behaviors considered. Secondary (combining junior and senior secondary) and higher education respectively account for 42 percent and 15 percent of the impact.

Distribution of the Social Impact of Education, by Level, 2010



Source: Table 5.2 for Sierra Leone; World Bank, 2010 for the Sub-Saharan African Average.
Note: Figures have been recalibrated to take into account primary, JSS and SSS levels only. Due to data comparability issues, higher education is not included, and the total social impact has been redistributed over the primary and secondary levels

Finally, disparities in terms of access are high and worsen with successive education levels, particularly in terms of household wealth and area of residence.

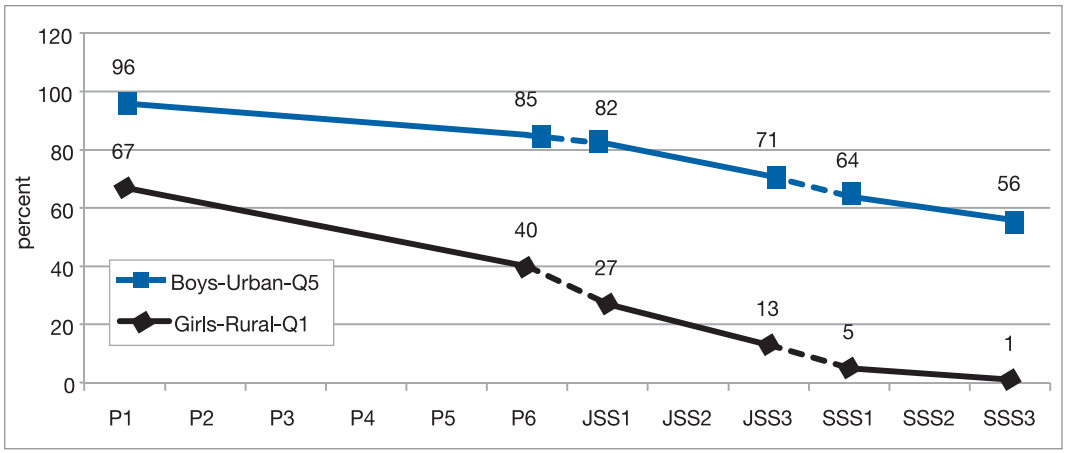
Household wealth explains the greatest disparities in children's enrollment, for all age groups, and the distribution is worsening, both over time and with each successive level. Whereas an estimated 35 percent of children from the poorest quintile never access Grade 1, against just 4 percent from the wealthiest quintile, 99 percent never access SSS 3, against 54 percent for Q5 children. Transition and intra-cycle retention rates are also particularly unfavorable to the poorest children.

Disparities by area of residence are apparent for all age groups, fuelled especially by weak retention in rural areas, although they are gradually subsiding. Disparities across regions are considerable on the other hand, showing a systematic and clear divide between the Western Area and other regions (90 percent of children aged 6 to 14 years were enrolled in the Western Area, against about 70 percent in the Southern Province in 2010). The Southern and Northern Provinces lag behind in terms of access to primary, whereas the Eastern and Northern Provinces display the lowest primary retention rate and the Northern Province has the lowest secondary retention.

Gender disparities in access to education are slight, but tend to deepen gradually as children progress through school. Marginally more boys aged 6 to 11 years were out-of-school in 2010 (25 percent, against 22 percent for girls), whereas the gap is inverted for older age groups. Indeed, girls' retention rates are lower than boys' at every level and although the primary to JSS transition rate is the same for boys and girls, the transition from JSS to SSS is more favorable to boys. Thus, although 86 percent of children access Grade 1 (boys and girls alike), just 14 percent of school-aged girls access SSS 3, against 32 percent of boys.

Although gender disparities are slighter than those related to area of residence or income, disparities tend to be cumulative: In 2010, whereas over 90 percent of rich urban boys were enrolled, 40 percent of poor rural girls aged 6 to 14 years and 65 percent of those aged 15 to 17 years were out-of-school. Only 1 percent of poor rural girls complete secondary, against 56 percent of rich urban boys.

Cohort Access Rates for the Extreme Groups, 2010



Source: Authors' calculations based on MICS IV, 2010 data (See also Annex Table A6.1).

Although gender parity in terms of access has been achieved, disparities in terms of learning outcomes are significant.

Although gender parity in the number of candidates sitting national examinations has been steadily improving, boys outperform girls in almost every other respect. Whereas the gender gap in NPSE pass rates has been closing tentatively since 2006, the gap in BECE pass rates has tended to increase. In 2011, only 30 percent of female BECE candidates obtained the results required to enter SSS, against 40 percent for boys. At the WASSCE girls also register more fails and fewer credits in at least four subjects than boys. Girls' underperformance throughout their schooling is possibly related to their weaker foundation skills, not least in English, as shown by their worsening performance in early reading over Grades 1 to 3.

NPSE and BECE Pass Rates by Gender and Gender Parity Index, 2005-11

	NPSE			BECE		
	Pass Rate (%)		GPI	Pass Rate (%)		GPI
	Male	Female		Male	Female	
2005	74.2	68.8	92.71	51.1%	41.1%	0.80
2006	75.2	69.2	91.97	—	—	—
2007	74.7	69.4	93.02	63.3%	53.3%	0.84
2008	76.4	70.8	92.63	50.6%	44.5%	0.88
2009	76.0	72.6	95.61	54.0%	43.2%	0.80
2010	75.9	72.5	95.54	54.9%	43.2%	0.79
2011	76.7	72.7	94.81	54.9%	43.2%	0.79

Source: MEST, 2012 for NPSE, WAEC/BECE results and authors' computations.

In terms of regional disparities, the most striking feature in learning outcomes is the East-West divide. On almost all counts, Western Area is the best performing region, and the Eastern Province is the worst: NPSE results, the BECE pass rates and subject scores and the WASSCE pass rate and results all follow this pattern. The NPSE pass rate is the exception, as it is highest in the Southern Province and lowest in the Eastern Province and Western Area, although the difference is very slight. Regional figures also hide significant district-level disparities.

Thus, despite improvements, the distribution of education resources continues to favor the wealthy and children living in urban areas.

The distribution of public education resources has improved significantly since 2004, but is still inequitable. In 2011 the share of resources absorbed by the 10 percent most educated was 47 percent, in line with the SSA average, down from 54 percent in 2004. Nevertheless, children from the wealthiest quintile still consume 10 times more public education resources than those from the poorest quintile, and those from urban areas 3.5 times more than their rural counterparts. The financing of the education system therefore tends to strengthen inequities between groups. More action is needed to ensure that the poor gain access to and remain in schools.

Social Disparities in the Consumption of Public Education Resources, 2010

	All Education Levels Combined			
	% of Education Spending Consumed (a)	Demographic Representativity of Each Group (b)	Ratio R = (a) / (b)	Appropriation Index I
Income Group				
Q1 (The Poorest)	5	18	0.253	1.0
Q5 (The Wealthiest)	**58**	**22**	**2.634**	**10.4**
Gender				
Girls	43	49	0.877	1.0
Boys	**57**	**51**	**1.118**	**1.3**
Area of Residence				
Rural	37	67	0.547	1.0
Urban	**63**	**33**	**1.919**	**3.5**

Source: Authors' calculations based on Table 6.4 and Annex Note A6.1.

School Data Limitations (General Note No. 1)

The 2007 Country Status Report for Sierra Leone (World Bank, 2007) was based primarily on administrative enrollment data and the demographic and health survey of 2004, and covered the period up to the academic year 2004/05. This report harnesses the new data produced primarily by three additional surveys on the one hand (the Core Welfare Indicator Questionnaire Survey of 2007, the Sierra Leone Demographic and Health Survey of 2008, and the Multi-Cluster Indicator Survey of 2010) and the education management information system (EMIS) recently resumed by the government on the other, with first data available for academic year 2010/11. Nevertheless, the inability to access the 2011 Sierra Leone Integrated Household Survey (SLIHS) has seriously limited the scope of analysis of labor market issues.

The cited sources have provided a valuable opportunity to take a fresh look at the status of the Sierra Leonean education system. The lack of reliable enrollment data for 2005/06-2009/10 means that any analysis of trends over the period is tentative however. On the other hand, the summary EMIS data collection exercise in academic year 2010/11 has pinpointed some weaknesses and inconsistencies, detailed below with other relevant limitations and considerations.

Enrollment Data

2005/06-09/10: As mentioned, recent trends' analysis are not possible due to the lack of reliable data.

2010/11: The EMIS enrollment data were found to be overestimated by a post-census survey carried out on a sample of schools, by 22 percent for preprimary, 18 percent for primary, 12 percent for JSS and 15 percent for SSS. The enrollment numbers for each cycle used in this report have been adjusted accordingly, to the district level.

No systematic data collection for TVET, higher education, teacher education or nonformal education has been carried out, making the coverage of data uncertain and/or incomplete. Data collection is ad hoc and generally partial.

Examination Data

National examination data have several shortcomings for this type of analysis: (i) pass rates are an imprecise measure of learning achievements, as they do not capture what students have really learned and can be used to regulate student flows between cycles; (ii) the pass rate being a school-level indicator, no analysis of success according to student characteristics or monitoring of student performance over time is possible; (iii) given that students are not tested at the beginning of the school year, it is difficult to capture the dynamic dimension of the learning process; and (iv) the data not being available at the student level also leads to less precision and variability, causing the aggregation level to be higher, as analyses are carried out at the school level.

For the analysis of the determinants of NPSE and BECE results, it was necessary to reconcile the WAEC examination results data with the EMIS data providing information on school and student characteristics. This was particularly unsatisfactory in the case of the JSS sample, reduced to 158 schools out of 740 offering JSS 3 (the sample for primary was 2,003 schools out of 3,937).

Staff Numbers

It is difficult to produce sound estimations of the number of teaching and non-teaching staff at the school level, as: (i) Neither payroll unit nor EMIS data distinguish between teaching and administrative school staff. It is assumed here that only teachers are recorded, administrative staff being paid directly by schools on their resources; (ii) The payroll unit only compiles information on staff with a personal identification number (PIN), whereas the last EMIS dataset does not adequately capture the PIN status of staff, making it difficult to reconcile the two data sets; (iii) Teachers teaching in more than one school or teaching more than one level (JSS and SSS) might be recorded twice, artificially inflating the numbers in the EMIS database; and (iv) It was not possible to compute the full-time equivalent number of teachers, as their work-load is not specified in the data. All teachers are therefore considered as working full-time.

Civil servant teacher numbers were estimated on the basis of those with a registered personal identification number (PIN). This assumption is limited by the fact that: (i) some teachers do not have or have not yet received a PIN even though they are recruited and paid by the Ministry; (ii) some teachers' PINs may not have been declared by omission in the EMIS database, leading to an underestimation of PIN staff in the EMIS of 8.6 percent for primary and 4.2 percent for secondary teachers, compared to the payroll.

Pupil-Teacher Ratios

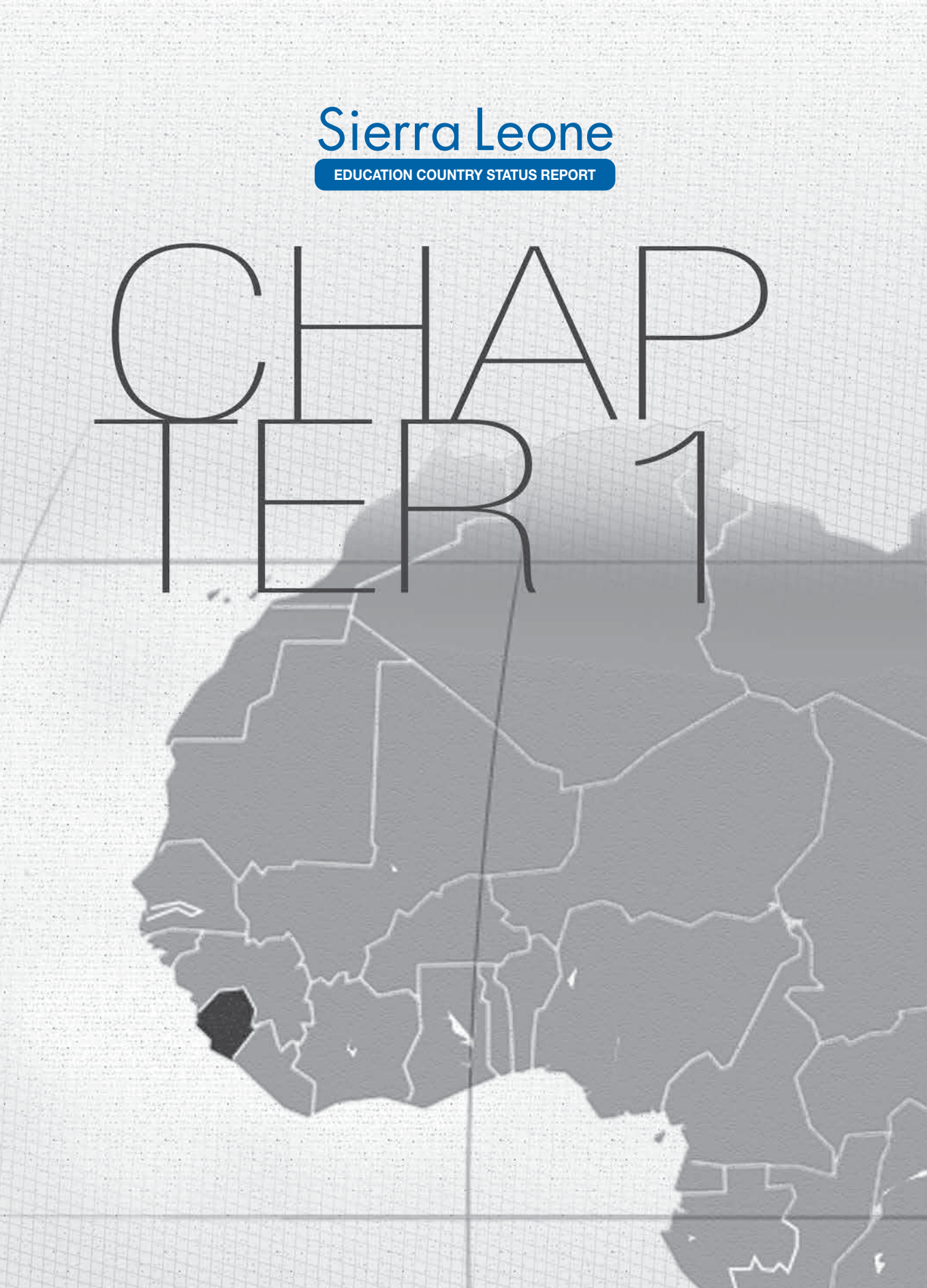
The different data constraints faced in terms of enrollment and staff numbers have a direct impact on the estimation of pupil-teacher ratios (PTR). Note that the PTRs estimated in Chapter 3 in the context of the analysis of education costs are based on payroll data, whereas those of Chapter 7, estimated in an education coverage perspective, are based on EMIS data, explaining some divergence.

PTRs in this report should be considered to be indicative as a result, as the overestimation of students or the underestimation of teachers would tend to artificially inflate the ratios. This could further introduce a bias into the analyses of teacher allocation consistency. However, the variation in the estimated PTRs is likely to reasonably reflect district-level disparities.

Sierra Leone

EDUCATION COUNTRY STATUS REPORT

CHAPTER 1



CHAPTER 1: Demographic, social and macroeconomic contexts

This chapter offers a discussion of the demographic, social and macroeconomic contexts affecting the education sector in Sierra Lone. It is divided into two parts: (i) demographic trends, with a particular focus on the school-aged population, and the social development context; and (ii) the macroeconomic environment.

Demography and Social Development Indicators

Sierra Leone is a small country located on the west coast of Africa, bounded on the west and southwest by the Atlantic Ocean, on the north and east by Guinea, and on the south by Liberia. Its territory covers an area of approximately 28,000 square miles (72,000 square kilometers), with maximum distances of 315 miles from north to south and 228 miles from east to west. The country has important mineral resources, including diamonds, titanium ore, bauxite, iron ore, gold, and chromite. Three quarters of the land is arable; of this, 10 percent is cultivated, mainly for food crops such as rice, cassava, yams, and other root crops.

Administratively, Sierra Leone is divided into four provinces: Northern Province, Southern Province, Eastern Province and Western Area. Each province is divided into districts, and each district into chiefdoms. Overall, there are 14 districts and 149 chiefdoms. The country is mainly dominated by two ethnic groups, the Temne (35 percent) and the Mende (32 percent) while the other main ethnic groups account for the remaining third of the population (SLDHS, 2008).

Sierra Leone's Human Development Index ranks 180th out of 187 countries (UNDP, 2011). Other composite measures and dimensions of human development such as the gender inequality index, the multidimensional poverty index and environmental sustainability all reaffirm and reflect the country's low human development. Sierra Leone still bears the stigma of a 10-year civil war, from 1991 to 2002. However, while many challenges remain, the country has made considerable progress since, in all areas: from the restoration of security to the delivery of basic services.

Demographic Trends

Population

All nine censuses conducted in Sierra Leone since 1901 show that the population is growing rapidly (See Table 1.1 below). Total population was estimated at 5.75 million in 2010, up from 2.18 million in 1963, implying that the demographic growth rate averaged two percent over the period[1]. Population growth has recently accelerated however, with an estimated average annual rate of 2.4 percent over 2004-10, expected to reach 2.6 percent over 2004-14, a figure that remains slightly above the 2.3 percent average for Sub-Saharan African low income countries (LICs).

1 The population data primarily used for this report are the Statistics Sierra Leone (SSL) projections for 2010, smoothed according to the methodology described in Annex Note A1.1.

Table 1.1: Census Population Trends, 1963-2004 and Projections for 2010-14

Number and Percent

	1963	1974	1985	2004	2010*	2014**
Population (Thousands)	2,180	2,735	3,516	4,977	5,750	6,416
Average Intercensal Annual Growth Rate	n.a.	2.1%	2.3%	1.8%	2.4%	2.6%

Source: National Population Census, Statistics Sierra Leone.

Note: * Authors' projection using the medium variant approach. ** SSL projection.

The projected 5.75 million population in 2010 has the following characteristics: (i) 49 percent are male; (ii) there is a high concentration in the Northern Province, with 2 million people (34 percent of the total population); the three remaining provinces having equal shares of 1.2 million to 1.3 million people (21 to 23 percent); and (iii) 62 percent live in rural areas.

School-Aged Population

To assess the potential demand for education, it is important to review population trends and projections by school age groups. Table 1.2 presents population projections for children aged 3 to 5 years, 6 to 11 years, 12 to 14 years and 15 to 17 years, for 2010, 2014 and 2020. These age groups reflect the official ages for attending preprimary, primary and lower and upper secondary education levels, respectively.

Table 1.2: School-Aged Population Projections, 2010-20

Number and Percent

	2010		2014		2020	
	Total	%	Total	%	Total	%
Total Population	5,746,799	100	6,416,480	100	7,487,754	100
3-5 years	575,027	10	606,270	9	656,345	9
6-11 years	979,009	17	1,101,985	17	1,316,008	18
12-14 years	394,691	7	486,138	8	664,529	9
15-17 years	339,688	6	398,312	6	505,752	7
Subtotal	2,288,415	40	2,592,705	40	3,142,634	42

Source: Based on weighted average projection rates from the PHC, 2004 and latest available SSL estimates on population growth for 2004-14.

The population will increase substantially for every school age group (See Table 1.2), although most drastically for lower secondary-aged children. Indeed, on the assumption that the growth trends implied by the latest available estimates (2010-14) will prevail over the coming decade, the expected average annual growth of the population is 1.3 percent for preprimary, 3.0 percent for primary, 5.3 percent for lower secondary and 4.1 percent for senior secondary.[2] The preprimary-aged population will be 14 percent larger in 2020 than in 2010, whereas the respective primary, lower and upper secondary-aged groups will be 34 percent, 68 percent and 49 percent greater.

2 This procedure, applying a flat growth rate over a long period of time, tends to overestimate population numbers. Indeed, the decrease in the growth rate observed in the younger population (3-5 years age group) is not taken into account over the period. Although the figures presented here may be slightly inflated, they do not fundamentally change the analysis or its conclusions.

The total school-aged population (3 to 17 years) is expected to grow from 40 percent to 42 percent of the total over the 2010-20 period. Much of the growth will occur within the basic education school-aged population (6 to 14 years), which is projected to increase from 24 percent of the total population in 2010 to 27 percent in 2020. These increases will put further demographic pressure on the education system over years to come, inevitably having to enroll more pupils, build new infrastructure, recruit new teachers, buy more textbooks and teaching and learning materials, and so on.

Given the expected demand for education, and considering the current percentage of repeaters (16 percent at the primary level in 2010/11 – See Chapter 4), the achievement of universal primary education will require the enrollment of 1.53 million pupils in 2020, against 0.98 million in 2010, a 56 percent increase in the system's capacity over the period.

Socioeconomic Factors

There are several socioeconomic factors which may affect this foreseen demographic scenario or otherwise impact on the service delivery of education, supply and demand-side factors, as well as, more broadly speaking, on national human and economic development.

Poverty and Inequality

Poverty remains a considerable issue in Sierra Leone, with 70 percent of the population living under the national poverty line in 2004 (SLIHS, 2004). While the situation has certainly improved since, spurred by economic growth, its exact extent is unknown. More accurate information will be available once the results of the 2011 Sierra Leone Integrated Household Survey (SLIHS) are released.

Urbanization

Urbanization is progressing slowly, and the pace has in fact dropped since the beginning of the decade. According to UNDP, the proportion of the population living in urban areas was 32.9 percent in 1990, 36.6 percent in 2000 and 38.8 percent in 2011, equivalent to annual growth rates of 1.1 percent over 1990-2000 and 0.5 percent over 2000-11. The urban population share is slightly below both the Sub-Saharan African (SSA) and Economic Community of West African States (ECOWAS) averages, of 40 percent and 42 percent respectively.

Considering the existing constraint on building schools in urban areas (due mainly to the lack of available land), the increase in the urban population in coming years, as little as it is, will pose a particular challenge to education system planners.

Adult Literacy

Adult literacy has increased from 34 percent in 2004 to 42 percent in 2010, nevertheless remaining extremely low compared to the ECOWAS and SSA averages, of 49 percent and 66 percent respectively (UNESCO Institute of Statistics - UIS).

Fertility

Sierra Leone's fertility rate is still high, at an estimated 5.1 live births per woman in 2008 (SLDHS, 2008), although lower than the average for other LICs (5.6 births per woman). The fertility age pattern indicates that childbearing starts early. By the age of 15 years, 11 percent of girls had begun childrearing; by the age of 19 years, this proportion had reached 52 percent. On average, 34 percent of the 15 to 19 years age group had already given birth or were pregnant at the time of the survey. Early pregnancies potentially weaken the demand for schooling, as pregnant girls often tend to drop out of school permanently.

The differences between urban and rural settings are fairly stark, women in rural areas having two more children on average (5.8 births per woman) than women in urban areas (3.8 births per woman). According to the 2008 SLDHS, teenage childrearing is also about twice as high in rural areas (44 percent) as in urban ones (23 percent).

Malnutrition

Anthropometric data on height and weight collected in the course of the 2010 Multiple Indicator Cluster Survey (MICS) allows for the measurement and evaluation of the nutritional status of young children and the identification of sub population groups that are at an increased risk of faltered growth, disease, impaired mental development and death.

Table 1.3 below presents the share of children under five years classified as malnourished according to weight-for-age, a composite index taking into account both acute (wasting) and chronic (stunting) malnutrition. Children whose weight-for-age is two or more standard deviations below the average are classified as underweight whereas those whose weight-for-age is three or more standard deviations below the average are considered to be severely underweight.

Overall, 21.7 percent of Sierra Leonean children were underweight in 2010 and 8.3 percent were classified as severely underweight. The situation has somewhat improved since 2000, when 27 percent and 9.8 percent of children were underweight and severely underweight respectively (MICS, 2000). The prevalence of underweight for 2008 is also slightly lower than in comparable LICs (19.3 percent).[3]

Table 1.3: Underweight Children (Under 5 Years), by Gender and Area of Residence, 2010

Percent

	Gender		Area of Residence		Total
	Male	Female	Urban	Rural	
Underweight	23.6	19.8	20.1	22.3	21.7
Severely Underweight	9.3	7.3	8.7	8.2	8.3

Source: MICS, 2010.
Note: Underweight is measured according to the Weight-for-Age (WAZ) index.

Finally, boys are more likely to be underweight (23.6 percent) than girls (19.8 percent) and children living in rural areas are also more at risk (22.3 percent) than those living in urban areas (20.1 percent).

Infant and Under-Five Mortality Rates

In 2008, infant mortality was estimated at 89 deaths per 1,000 live births, and under-five mortality was 140 deaths per 1,000 live births (SLDHS, 2008). In other words, about one in eleven children born in Sierra Leone die before their first birthday, and one in sevendie before their fifth birthday. The under-five mortality rate is higher in Sierra Leone than in comparable LICs (119 deaths per 1,000 live births).[4]

Although both infant and under-five mortality rates decreased between 1995 and 2008 by 26 percentage points, the decline was not regular. The highest levels occurred in 2000 (132 and 195 deaths per 1,000 live births, respectively), at the peak of the Sierra Leonean civil war. The country is therefore far from reaching the Millennium Development Goals' (MDGs) Target 4A, to "reduce by two thirds, between 1990 and 2015, the under-five mortality rate."

3 www.childinfo.org.
4 www.measuredhs.com.

Child mortality varies little by area of residence, but differences by province are significant. Children born in the Southern or Northern regions are at greater risk of dying than those born in the Eastern or Western regions, be it before their first or fifth birthdays.

Malaria

Malaria still poses a major public health issue in Sierra Leone and is the first cause of death (WHO, 2009). In 2003 the number of cases surpassed 500 per 1,000 individuals and although it has since improved, in 2008 the prevalence (about 361 cases per 1,000 inhabitants) was still significantly higher than for comparable LICs (275 cases per 1,000 inhabitants on average). The disease accounted for 48 percent of all outpatient consultations in 2008 and remains a major threat to socioeconomic development. The health issue posed by the disease is expected to have a considerable impact on children and teachers' absenteeism from school, although no measures are available at present.

HIV Prevalence

Results from the SLDHS indicate that 1.5 percent of Sierra Leonean adults aged 15 to 49 years were infected with HIV in 2008 on average, considerably lower than the ECOWAS average of 2.8 percent. The prevalence rate is slightly higher (1.7 percent) for women than for men (1.2 percent), which is common in most population-based estimates. There was no clear pattern by age groups, although prevalence peaked among individuals aged between 30 and 34 years (reaching 2.4 percent for women and 1.8 percent for men).

HIV can have multiple and negative impacts on education, affecting demand, supply and the quality and management of teaching. In Sierra Leone the impact of the disease on education is likely slight however, given the low prevalence. Assuming that teachers are affected by the disease in the same proportion as adults in general, just 830 primary and secondary teachers out of more than 55,000 would be affected.

The number of children orphaned by AIDS (aged up to 17 years) was estimated at 18,000 in 2011 (UNAIDS, 2012). Although this remains a relatively minor issue, the high prevalence of children living in fragile family settings is of particular concern. In 2010, 22.4 percent of children (under 18 years) were not living with a biological parent and in 12.8 percent of cases one or both of the parents was deceased (MICS, 2010). Although the practice of fostering can be associated with some schooling strategies (children move in with close relatives where no school is available in the vicinity of the family home), it is nevertheless usually associated with more fragile demand for schooling.

Macroeconomic Performance and Outlook

Economic Growth and Policy

Sierra Leone has witnessed steady growth since 2004, following the implementation of sound policies and structural reforms.[5] Growth has been broad-based and underpinned by increased activities in agriculture, mining, services (telecommunications and banking) and construction. Thus, over the 2004-11 period GDP has increased by a factor of 3.3 in current prices, from Le 3,859 billion to Le 12,602 billion, equivalent to an annual average nominal growth rate of 18 percent (See Table 1.4 below).[6]

However, following relatively high levels of inflation (of two digits most of the time), reflecting mainly exogenous influences, real annual GDP growth averaged 5.2 percent over the period. This real growth rate is almost on par with what was witnessed in the poorest African countries, of 6.5 percent. Despite being on good track, the Sierra Leonean economy remains fragile, as shown by the declining trend in real growth rates during the postwar period, from 6.5 percent in 2004 to 3.2 percent in 2009, followed by a recovery in 2010 and 2011 (with respective growth rates of 5.5 percent and 6.0 percent).

5 Governance has improved recently, with the implementation of the National Anti-Corruption Strategy (NACS), and reforms in public financial management and the public sector have been launched.

6 GDP data were revised in 2012. The revision consisted in a 30 percent upward adjustment in nominal GDP and a rebasing of 2001-06 data (IMF/GoSL, 2012).

Table 1.4: **Key Macroeconomic Indicators, 2004-11 and 2012-13 Projections**

	2004	2010	2011*	2012**	2013**	2004-11 Growth	
						Total	Annual
GDP (Billion Le, Current) (1)	3,859	10,084	12,602	18,611	21,182	226.6%	18.4%
GDP (Billion Le, Const 2010) (1)	7,475	10,084	10,687	14,160	16,182	43.0%	5.2%
Inflation (%)	14.2	17.8	18.5	11.5	9.1	30.3%	3.9%
GDP Deflator (2010 basis) (2)	51.6	100.0	117.9	131.4	130.9	128.4%	12.5%
Real GDP Growth (%)	6.5	5.5	6.0	32.5	14.3	-7.6%	-1.1%
GDP Structure ***							
Primary Sector (%)	49.0	53.5	52.8	42.0	n.a.	7.8%	1.1%
Secondary Sector (%)	10.9	8.5	8.8	27.3	n.a.	-19.3%	-3.0%
Tertiary Sector (%)	36.5	34.3	34.6	27.7	n.a.	-5.2%	-0.8%
GDP per Capita							
Primary Sector (%)	775	1,755	2,140	3,081	3,422	176.0%	15.6%
Secondary Sector (%)	1,502	1,755	1,814	2,344	2,614	20.8%	2.7%
Tertiary Sector (%)	557	441	417	526	566	-24.7%	-4.0%

Source: (1) MoFED. (2) SSL. See Annex Table A1.1 for further detail.
Note: * Provisional data; ** Estimations. *** The sum of the respective contributions of the sectors does not include taxes or subsidies; the totals hence fall short of 100%.

Although the international economic and financial crises may account for this situation in part, despite the progress achieved, the Sierra Leonean economy remains fragile and persistent and strong domestic structural weaknesses (in governance, service delivery and physical and economic infrastructure) are major impediments to growth. Economic growth forecasts for the coming years are nevertheless promising. The onset of iron ore production is expected to boost total GDP growth to 33 percent in 2012 and 14 percent in 2013.

Sierra Leone's economy is furthermore relatively undiversified and limited by a small market:

(i) It is dominated by agriculture, which accounts for 53 percent of GDP on average since 2004 and employs 61 percent of the active population (CWIQ, 2007). The sector relies mainly on little productive activities and is largely of a subsistence nature. The government's key objective is to achieve self-sufficiency in rice and other basic foodstuffs' production. Commercial agriculture (cocoa, coffee and palm oil) is gradually expanding however and a major bio-ethanol programme expected to cultivate thousands of hectares of sugar-cane in the north is attracting significant investment. In collaboration with international development partners, the government thus supports several projects under the National Sustainable Agriculture Development Plan, including the Small-Holder Commercialization Programme and the Rural Private Sector Development Project.

(ii) Industry accounts for nine percent of GDP, being mainly driven by mining. The share of the manufacturing sector within GDP has declined marginally since 2004 (from 11 percent), beset by supply-side constraints and competition from low-cost imports. The imminent onset of iron ore production and the increased availability of electricity are however expected to fuel the expansion of the sector in the near future, and boost growth.

(iii) Services on the other hand account for 35 percent of GDP on average, being dominated by wholesale, retail trades, public services and transport, whereas tourism, financial services and telecommunications continue to expand. Despite this, the Sierra Leonean formal sector remains contracted, employing barely 11 percent of the active population (CWIQ, 2007).

Further fostering growth and development will require gradually shifting the economy from low-productivity agricultural activities to value-added industry and service activities, progressively reducing the size of the informal sector and massive investments in economic and physical infrastructure, among others.

Sustained and positive real economic growth rates, well above population growth rates (estimated at 2.4 percent on average) explain the improvement of GDP per capita in real terms, from Le 1.5 million in 2004 to Le 1.8 million in 2011, equivalent to 2.7 percent annual growth. With GDP per capita of USD 417 in 2011, Sierra Leone nevertheless remains among the world poorest countries.[7] However, with the improving economic situation, GDP per capita is expected to rise rapidly to reach USD 566 in 2013.

Government Revenue and Expenditure

The general macroeconomic outlook has improved, but the government is still confronted with challenges in terms of income generation. The state's ability to absorb part of national wealth has improved gradually over the years, following the introduction of reforms.[8] However, the ratio of domesticrevenue to GDP (11.3 percent in 2011, up from 9.3 percent in 2004) remains low compared to countries with similar levels of development (18.0 percent on average for LICs in 2011, up from 16.0 percent in 2004).[9]

At the same time, the share of external support within total revenue has been quite erratic, with a huge drop in 2008 (to 3.6 percent of GDP, down from 6.7 percent in 2004) linked to the global financial crisis. The recovery observed in 2009 (back up to 6.0 percent of GDP) was mainly due to the release of backlogged donor funds.

Overall therefore, total revenue deteriorated slightly as a share of GDP over the 2004-10 period, from 16.0 percent to 15.4 percent, having hit a low of 12.2 percent in 2007 (See Table 1.5 below). Although national income apparently improved in 2011 (to 17.3 percent of GDP), it is expected to deteriorate anew in 2012 to an estimated 12.4 percent of GDP following the significant expected increase in national production.

7 Expressed in American dollars, GDP per capita has decreased over the 2004-11 period (from USD 557 to USD 416) following the depreciation of the Leone against the American dollar.

8 These include the introduction of the goods and services tax, the automation of the Customs and Excise Department, improved tax collection efforts and other reforms carried out by the National Revenue Authority.

9 Note that Sierra Leone's ratios have declined as a result of the upward revision and rebasing of GDP by SSL, with the technical assistance of the IMF.

Table 1.5: Government Revenue, Expenditure and Deficit in Real Terms, 2004-11 and 2012 Projections

Share of GDP and Percent

	2004	2007	2010	2011*	2012**
Total Government Revenues	16.0	12.2	15.4	17.3	12.4
DomesticRevenues	9.3	8.5	10.0	11.3	8.6
Grants	6.7	3.8	5.4	6.0	3.7
(% of Total Revenues)	42.1	30.8	35.1	34.7	30.3
Total Government Expenditure	17.8	13.2	20.6	20.3	15.1
Recurrent Expenditure	14.4	10.4	12.8	12.4	9.7
(Including Interest)	3.4	1.8	1.6	1.9	1.4
Development Expenditures (Including net lending)	3.5	2.7	7.8	7.9	5.4
External	2.8	2.1	4.3	6.0	3.7
Domestic	0.7	0.7	3.5	1.9	1.7
Deficit including Grants	-1.9	-0.9	-5.2	-3.0	-2.7
Deficit excluding Grants	-8.6	-4.7	-10.6	-9.0	-6.5

Source: MoFED and authors' computations. See Annex Table A1.2 for further detail.
Note: * Provisional data; ** estimation.

Over the 2004-11 period, government expenditure increased from 17.8 percent of GDP to 20.3 percent of GDP. This has mainly benefited development spending which has more than doubled to reach 7.9 percent of GDP, in line with the current policy of improving the country's economic and physical infrastructure. Despite a drop in external contributions (from 81 percent in 2004 to 76 percent in 2011, expected to reach 68 percent in 2012), the development budget remains strongly supported by foreign contributions in the form of grants and loans.

The public deficit does not follow a regular trend. While the highest level of public deficit since 2004 was recorded in 2010 (5.2 percent of GDP), this was due to the huge increase in development spending, mainly to support infrastructure development, and the deficit is expected to decrease to 2.7 percent of GDP in 2012.

On the debt front, Sierra Leone is today considered to present a moderate risk of debt distress (AEO, 2011), with a gross debt to GDP ratio of 60 percent in 2011 (IMF database).[10] This was achieved through the Highly Indebted Poor Countries (HIPC) initiative, which the country entered and completed in 2002 and 2006. Sierra Leone thus benefitted from extensive debt relief, including under the Multilateral Debt Relief Initiative (MDRI) whereby stock from its three major multilateral creditors (World Bank, AfDB and the IMF) was cancelled. Since then, the government has enacted the Public Debt Management Act, in February 2011. The act defines the legal framework for managing public debt, with the aim of improving the legal, policy and institutional framework for sustainable debt-management operations.

Sierra Leone's challenge is improving its fiscal situation to finance infrastructure and social services outlays, particularly given the current economic crisis faced by many OECD countries that could limit external resources in the near future. Although current measures such as the strengthening of tax collection, the improvement of the medium-term expenditure framework and the development of the financial sector should help to improve the domestic fiscal base, more efforts need be deployed to improve general revenue levels (AEO, 2011).

10 Down from 225 percent in 2003 (IMF database).

Recent Trends in Education Expenditure

Education spending has generally remained stable over the 2004-11 period, although slight improvements are noted for some indicators (See Table 1.6). In real terms, the spending devoted to education has increased from Le 247 billion to Le 374 billion, equivalent to a small increase as a share of GDP, from 3.3 percent to 3.5 percent. Despite this improvement, Sierra Leone's efforts still remain below those of other LICs in this respect, which invest 3.9 percent of their GDP on education on average (See Annex Figure A1.1).

Table 1.6: Government Education Expenditure, 2004-11

	2004	2008	2010	2011	2004-11 Growth	
					Total	Annual
Total Education Expenditure						
(Million Le, Constant 2010)	247,059	311,944	337,038	374,339	52%	6.1%
Recurrent	219,111	234,621	260,668	327,550	49%	5.9%
Development	27,947	77,323	76,371	46,789	67%	7.6%
Domestic	1,414	5,400	4,274	1,800	27%	3.5%
Foreign	26,533	71,923	72,097	44,989	70%	7.8%
(% of GDP)	3.3%	3.4%	3.3%	3.5%	6%	0.8%
(% of Total Public Expenditure)*	22.8%	22.3%	17.6%	19.0%	-17%	-2.6%
Recurrent Education Expenditure						
(% of GDP)	2.9%	2.5%	2.6%	3.1%	5%	0.6%
(% of Recurrent Public Expenditure)*	26.6%	24.9%	23.1%	29.1%	10%	1.3%
(% of Domestic Resources)	31.7%	27.9%	25.9%	27.1%	-15%	-2.2%
(Per School-Aged Child -Le, Constant)**	149,613	—	152,136	184,257	23%	3.0%

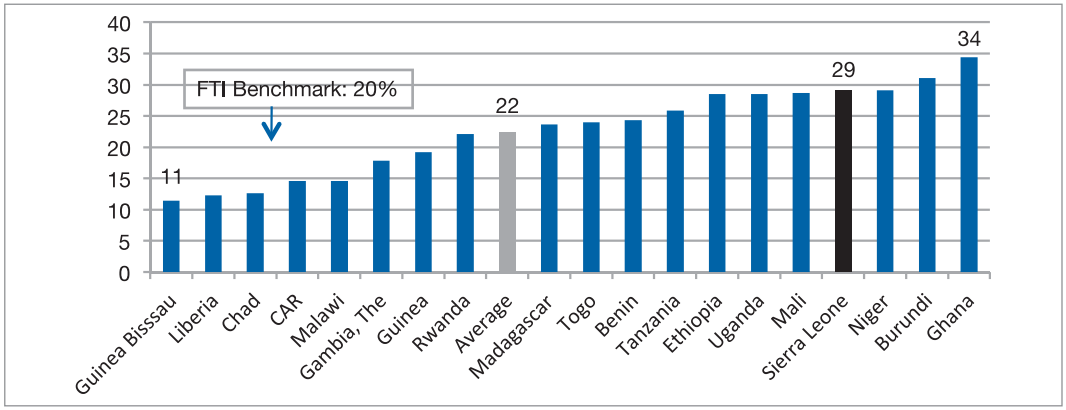
Source: MoFED and authors' computations. See Annex Table A1.3 for further detail.
Note: * Excluding debt service. ** Includes the population aged 6 to 17 years.

The level of recurrent education expenditure is comparatively favorable. In proportion to total public recurrent expenditure (excluding debt service), the share of recurrent education expenditure currently stands at a high 29 percent (See Figure 1.1 below). Even when at its trough of 23 percent in 2010, it was above other LICs in the region (that devote 22 percent of their recurrent expenditure to education, on average) and above the FTI benchmark of 20 percent.[11] Such spending levels are a positive signal of the government's commitment to education.

11 Benchmark set by the Education for All Fast Track Initiative (EFA-FTI), now the Global Partnership for Education.

Figure 1.1: Share of Public Recurrent Expenditure Devoted to Education, Various African LICs, 2011 or MRY

Percent

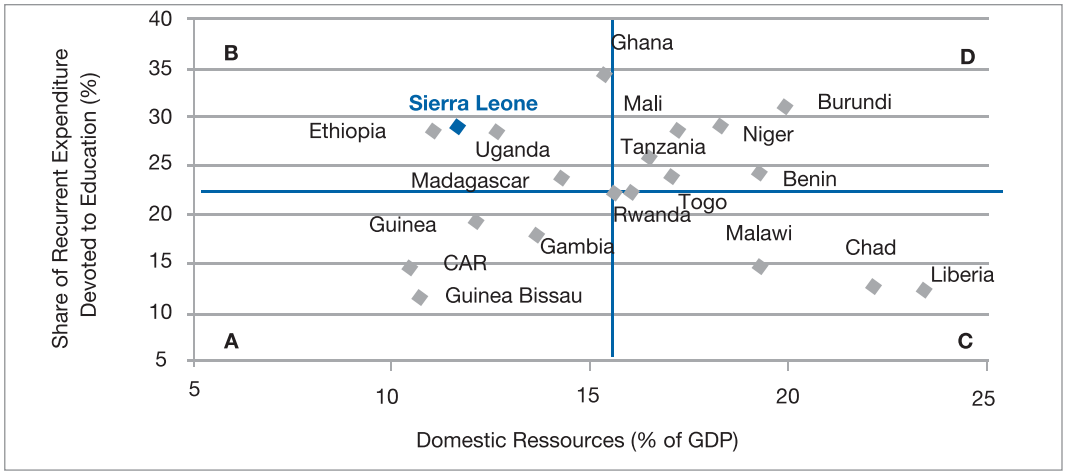


Source: Table 1.6 for Sierra Leone; Pôle de Dakar, UNESCO/BREDA for other countries.
Note: Excludes debt service.

An alternative approach to the analysis of the relative national effort for education is to combine data on domestic resources (as a percentage of GDP) and the share of recurrent expenditure devoted to education. This is shown in Figure 1.2, based on a subsample of African LICs.

Figure 1.2: Level of Domestic Resources and Share of Public Recurrent Expenditure Devoted to Education, Various African LICs, 2011 or MRY

Percent



Source: Tables 1.5 and 1.6 for Sierra Leone; Pôle de Dakar, UNESCO/BREDA for other countries.
Note: Domestic resources do not include grants.

Countries in the top-right quadrant (D) have relatively good macroeconomic contexts and allocate a high share of their national budget towards education. Arguably, it is comparatively easy for them to be generous to the sector. Countries in the bottom-right quadrant (C) allocate a lower share of their budget to education than average, despite their relatively good macroeconomic contexts. In this case, it could be argued that they apparently consider education to be a low priority. Countries in the bottom-left quadrant of the figure (A) face serious fiscal constraints and spend a lower share of their budget on education, which may be understandable.

Sierra Leone is among the countries in the top-left quadrant (B), whose macroeconomic context is below average, but who nevertheless devote a comparatively high share of their total recurrent budget to the education sector. Arguably, such countries demonstrate a high commitment towards education.

In the case of Sierra Leone, this hypothesis appears to find further confirmation with the evolution of the amount of recurrent education expenditure allocated per school-aged child.[12] Accounting for demographic pressure, the amount of recurrent spending per child aged 6 to 17 years has slightly improved in real terms, from Le 149,600 in 2004 to Le 184,250 in 2011, equivalent to a three percent annual gain over the period, on average.

Donor support

The data available on donor support, compiled by the Development Aid Coordination Office of the Ministry of Finance and Economic Development (DACO/MoFED), show that donor contributions play a critical role in the national development budget. On average, their contributions amounted to 96 percent of the total development budget over the 2008-11 period (See Table 1.7).

Table 1.7: Donor Disbursements for Education in Sierra Leone, 2005-11

Million USD and Million Le (Current)

	2004	2010	2011*	2012**	2013**	2004-11	Growth
Total (Million USD)	13,223	16,170	32,511	19,016	34,372	18,124	12,197
Bilateral	3,041	2,760	4,944	4,035	7,503	3,557	3,882
Multilateral	10,182	13,410	27,568	14,981	26,869	14,567	8,315
(% Multilateral)	77%	83%	85%	79%	78%	80%	68%
Total (Million Le)	38,096	47,894	97,046	56,681	116,371	72,097	53,051
Total (Share of Devt. Budget)	n.a.	n.a.	n.a.	93%	100%	94%	96%

Source: DACO/MoFED and authors' computations.
Note: No data on NGO financing was available; it is not included in the figures.

Multilateral support represents the biggest share of donor disbursements, accounting for 77 percent of total financial support over 2008-11. The donor community remains small, with seven major players: the African Development Bank (AfDB), UNICEF, the Global Partnership for Education (GPE), the World Food Programme (WFP), and the cooperation agencies of Germany (GIE), the UK (DfID) and Sweden (SIDA)(See Annex Table A1.4 for details).

The set up of an education sector support fund in 2008 has been instrumental in attracting further bilateral and multilateral funding, in a harmonized way.[13] The Education Sector Support Fund (ESSF) was set up to pool resources for basic education, to: (i) expand access; (ii) improve the quality of teaching and learning; and (iii) enhance sector coordination and management. A special pooled account is managed by the Ministry of Education, Science and Technology (MEST) with Ministry of Finance (MoFED) oversight.

Sierra Leone received an FTI endorsement of USD 13.9 million in 2007 (for 2007-09). Due to various difficulties in launching the process, with delays in the signing of the agreement and in the disbursement of funds, implementation has been far behind schedule. An extension of the EFA-FTI project was approved until September 2012 to allow MEST to complete outstanding activities.

12 Note that the amount of recurrent expenditure per school-aged child (6-17 years) is not per student spending (unit costs), presented in Chapter 3.
13 UNICEF, SIDA, DfID and the World Bank participate in the fund; the Bank is the supervising entity.

Key Findings

Demographic and Social Context

Demographic pressure on the education system is set to increase in the near future. The number of school–aged children is expected to increase over 2010-20: (i) for primary (6 to 11 years old), from about 0.98 million to 1.32 million; and (ii) for lower secondary (12 to 14 years), from 395,000 to 506,000. Thus, given the high level of repetition, achieving universal primary education by 2020 will require increasing the system's capacity by 56 percent.

Social development indicators are still low, but have been improving: (i) Under-five mortality has dropped over 2000-10 from 195 to 140 deaths per 1,000 live births; (ii) the incidence of malaria has dropped from 500 cases per 1,000 inhabitants in 2003 to 361 cases per 1,000 inhabitants in 2008; and (iii) child malnutrition was less frequent in 2010 at 22 percent, down from 27 percent in 2000.

Adult literacy, while having improved, still remains low at an estimated 42 percent in 2010, below the ECOWAS and SSA averages, of 49 percent and 66 percent respectively.

HIV/AIDS has a low impact on the education system. The adult HIV prevalence rate is low, at 1.5 percent in 2008, and the number of primary and secondary teachers affected by the virus is estimated at 830. The high prevalence of orphans (13 percent) and fostered children (22 percent) is likely to be more disrupting for children's schooling.

Macroeconomic context

Sierra Leone has enjoyed relatively strong economic growth in recent years, despite the challenging external economic environment. Since 2004, real GDP has grown at 5.2 percent on average per year, from Le 7,475 billion in 2004 to Le 10,687 billion in 2011 (constant 2010 prices). GDP per capita has witnessed slower growth however, at an average real rate of 2.7 percent per year, reaching Le 1.8 million in 2011 (constant 2010 prices);

Agriculture, mainly the subsistence variety, is the principal economic activity, accounting for 53 percent of GDP on average since 2004 and employing 61 percent of the active population. Industry accounts for almost 10 percent of GDP, mainly driven by mining, whereas services account for 35 percent of GDP.

The country has experienced double-digit inflationary pressure in recent years, mainly due to fluctuations in external commodity prices, although the most recent data show inflation is taking a downward trend.

Although the general macroeconomic outlook has improved, the government still faces challenges in terms of revenue generation. Domestic revenues have been low by regional standards (11.3 percent of GDP in 2011 compared to 16.0 percent for other LICs). Public recurrent expenditure represents 12.4 percent of GDP, and capital expenditure represents 7.9 percent. Capital expenditure is mostly supported by donors' grants and loans, equivalent to an average of 76 percent of the total over 2004-11, but projected to drop to 68 percent in 2012. Sierra Leone carries a moderate risk of debt distress and the government has adopted a policy of only accepting highly concessional loans.

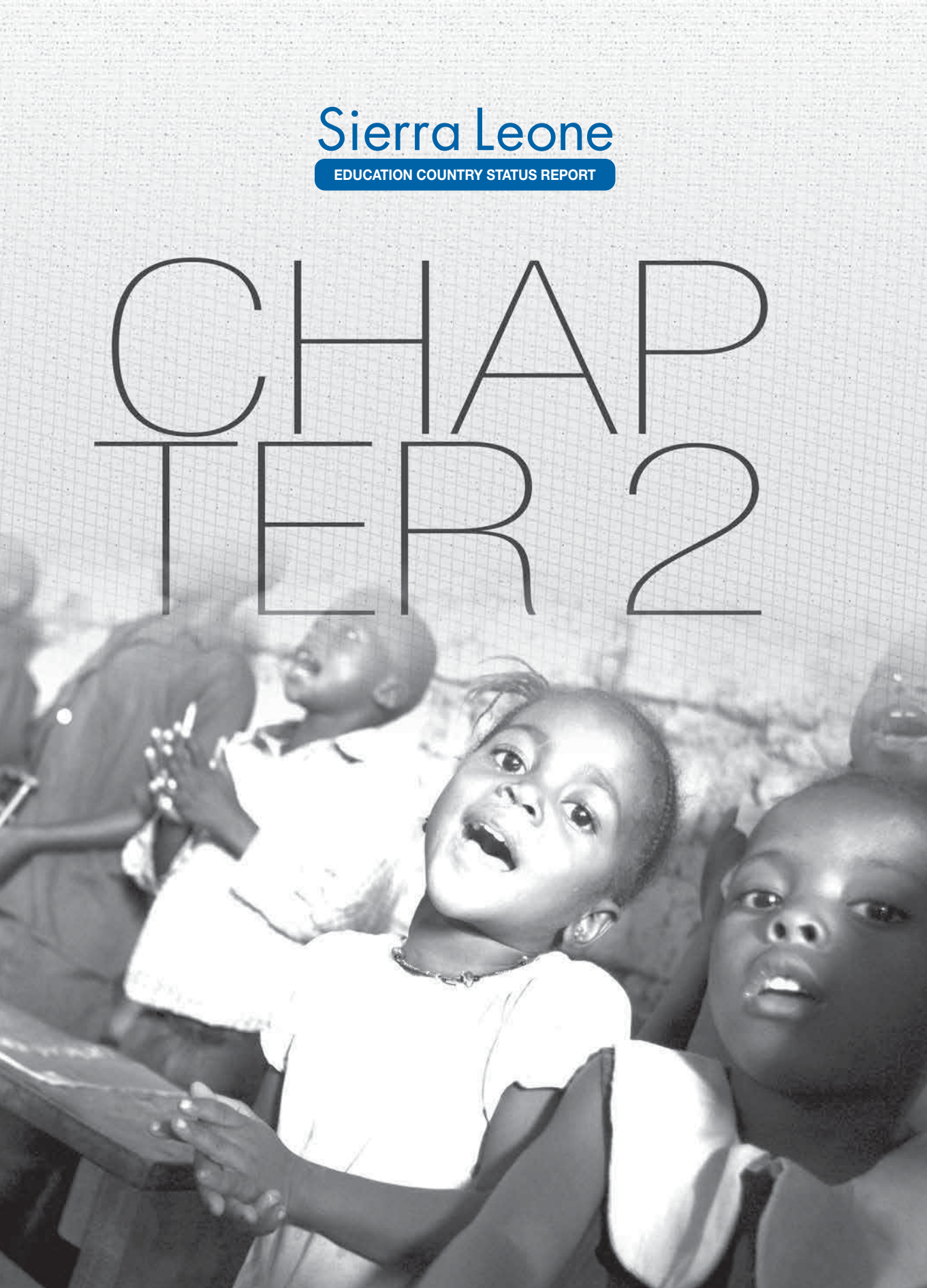
Education expenditure has slightly increased over 2004-11, from 3.3 percent of GDP in 2004 to 3.5 percent in 2011. However, Sierra Leone's effort still remains below that of other LICs that devote 3.9 percent of GDP to education, on average. The share of total public recurrent expenditure devoted to education has been relatively high, with an average of 25.8 percent over the period, reaching 29 percent in 2011, indicating that the government places a high priority on education. Such levels of education financing are above both the average for LICs (22 percent) and the FTI benchmark (20 percent).

There are greater prospects for higher investments in education over years to come, as new investments in mining drive higher projected GDP growth, providing opportunities for greater revenue generation.

Sierra Leone

EDUCATION COUNTRY STATUS REPORT

CHAPTER 2



CHAPTER 2: Enrollment patterns

Education policies in Africa generally focus on achieving universal primary education, and to a lesser degree, on enabling the quantitative and qualitative development of other education sub-sectors in response to countries' needs and financial capacity. This chapter analyses the expansion of schooling and the structure of student flows in detail, to assess what Sierra Leone has achieved so far. It also attempts to identify the main issues in dealing with students' access to and progression through the education system and presents an analysis of supply and demand, examining the causes of dropout and nonattendance. The analysis relies on quantitative indicators, mainly at the national level. Equity issues (disparities by gender, area of residence and socioeconomic characteristics) are later addressed in Chapter 6.

Overview of the Structure of the Education System

The education system is organized into various sub-sectors (See Figure 2.1 below):

- Basic education, that comprises preprimary, primary, and junior secondary;
- Senior secondary;
- Technical and vocational education and training (TVET);
- Tertiary education (universities, polytechnics and teacher education); and
- Nonformal education, that includes literacy programmes.

In the formal education sector, the provision of preprimary to tertiary education (including TVET, dealt with below) is provided by government and nongovernmental providers and is under the control of the Ministry of Education, Science and Technology (MEST) and, as far as basic education is concerned, the Ministry of Local Government as well. Progression from primary onwards is subject to passing each end of cycle exam. The different levels are:

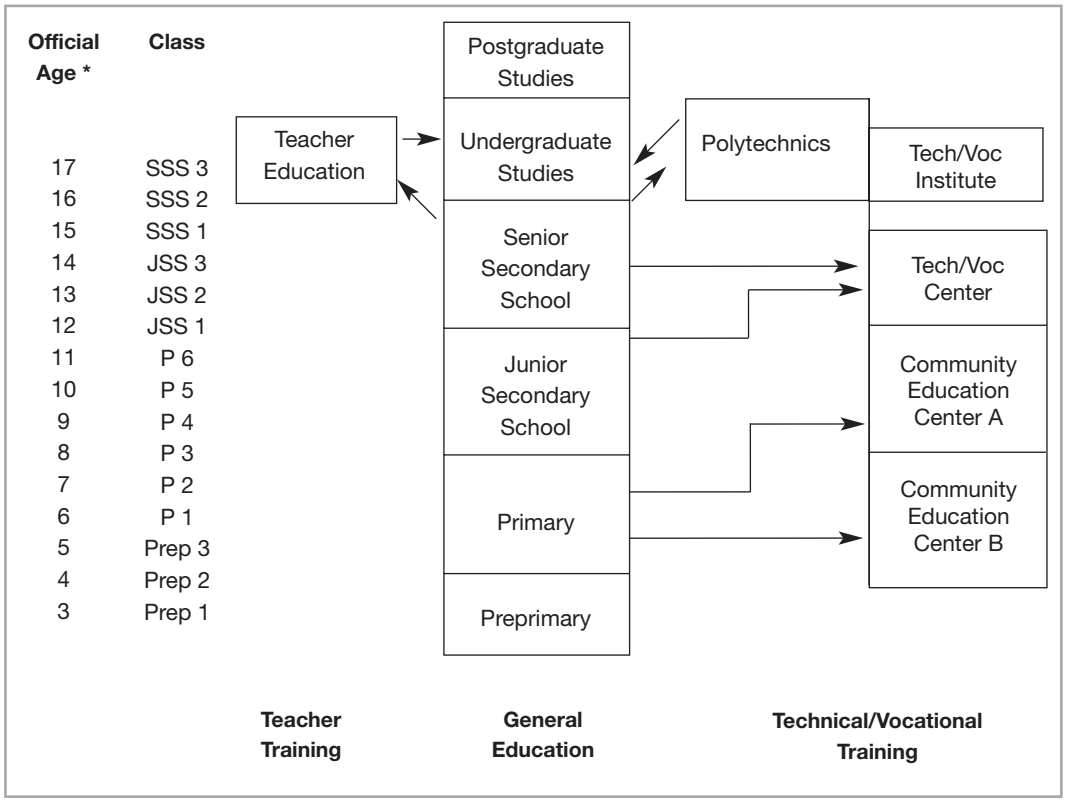
(i) *Preprimary education,* with a theoretical entrance age of three years and a duration of three years. The objective of this programme is to contribute to children's physical, cognitive, emotional and social development and to prepare them for primary school.

(ii) *Primary education,* that generally starts at age six and lasts for six years. At the end of the last grade all pupils are required to pass the National Primary School Examination (NPSE) designed by the West African Examinations Council (WAEC) to proceed to secondary education.

(iii) *Secondary education,* which is divided into: (i) Junior secondary school (JSS), the final cycle of basic education, validated by the Basic Education Certificate Examination (BECE); and (ii) Senior secondary school (SSS), validated by the West Africa Senior School Certificate Examination (WASSCE). Both examinations are administered by the WAEC.

(iv) *Tertiary education,* that includes: (i) University, leading to bachelor's (four years), master's and doctorate degrees; (ii) Teacher training, leading to the Higher Teacher Certificate (HTC - three years); Polytechnics, leading to the Higher National Diploma (HND – two years), and other vocational courses.

Figure 2.1: **Structure of the Sierra Leonean Education System, 2012**



Source: Authors' elaboration, based on MEST.
Note: * Official school ages apply to general education only.

Nonformal education (NFE) includes all organized educational and training activities and processes outside the formal education system, that are designed to meet the learning needs of out-of-school children, youths and adults. These include adult and continuing education, NFE for children, skills training and apprenticeships for youth, community education and adult literacy programmes.

NFE still has no institutional framework as such and implementation strategies are fragmented and weak. Among the numerous challenges faced by the sector, it is worth mentioning the clarification with respect to the use of the national language, the set-up of certification and accreditation frameworks and the building of bridges with the formal education sector (MEST and UNESCO, 2011).

The technical and vocational stream offers a variety of programmes and certificates, available at all stages of education, either as an alternative to completers of a given cycle, or independently from the general stream. Technical/Vocational Centers and Institutes are alternatives to further general education for BECE and WASSCE holders, respectively.The full range of TVET options includes those of Table 2.1 below.

Table 2.1: Sierra Leonean TVET Programmes, 2008

Programmes	Level	Entry Requirements	Course Duration	Certificate Gained
Community Education Centre (CEC) "B"	Nonformal	Age of Labor	6-18 Months	Certificate
Community Education Centre (CEC) "A"	Formal	Completion of Primary/NPSE	6-18 Months	Trade Test "B"
Junior Secondary Technical (JSTV)	Junior Secondary	NPSE	3 Years	
Technical Vocational Centre (TVC)	Secondary	Completion of JSS/BECE/Trade Cert. "B"	1-2 Years	Diploma/OND
Senior Secondary Technical (SSTV)	Senior Secondary	BECE	3 Years	
Technical-Vocational Institutes (TVI)	Postsecondary	Completion of SSS/WASSCE/OND	2-3 Years	Diploma/OND/HND
Professional Institutes	Postsecondary	WASSCE/OND/HND	3-4 Years	Diploma/OND/HND
Polytechnics	Tertiary	WASSCE/OND/HND	3-4 Years	Diploma/OND/HND/Degree

Source: MEST, 2008.

Enrollment Trends

This section provides an overview of the number of students enrolled in each level of education, from preprimary to tertiary, including recent trends (See Table 2.2). The next section provides further context by examining student enrollments in relation to the target population.

Table 2.2: Enrollment Trends by Education Level, 2000/01-2010/11

Number and percent

	Pre-primary	Primary	JSS	SSS	TVET	NFE	Tertiary	
							All	TE
2000/01	n/a	634,120	60,245	22,929	—	—	8,995	—
2001/02	n/a	659,503	76,861	22,257	—	—	12,895	—
2002/03	n/a	989,337	125,956	36,185	—	—	13,850	—
2003/04	19,068	1,134,815	133,401	38,324	—	—	15,497	—
2004/05	20,632	1,280,853	155,052	44,924	—	—	16,625	—
2005/06	18,147	—	—	—	—	—	—	—
2006/07	—	—	—	—	—	—	—	1,889
2007/08	—	—	—	—	—	—	—	2,378
2008/09	—	—	—	—	27,055*	—	—	2,901
2009/10	—	—	—	—	—	—	25,633**	2,355
2010/11	37,351	1,194,502	244,490	108,243	29,106 *	126,842	—	3,890
Growth 2000/01-2010/11	95.9%#	88.4%	305.8%	372.1%	—	—	185.5%##	—
Annual	10.1%#	6.5%	15.0%	16.8%	—	—	12.3%##	—

Source: World Bank, 2007 for 2000/01-2005/06; EMIS database for 2010/11; Allak, 2012 and Lamin et al., 2012 for tertiary; ESR, 2012; MEST, 2008; MEST and UNESCO, 2011 for NFE.

Notes: Not available. * Partial data. ** Includes teacher education (TE). # Computed over 2003/04-2010/11. ## Computed over 2000/01-2009/10. 2010/11 EMIS data found to be overestimated have been corrected (See General Note No.1).

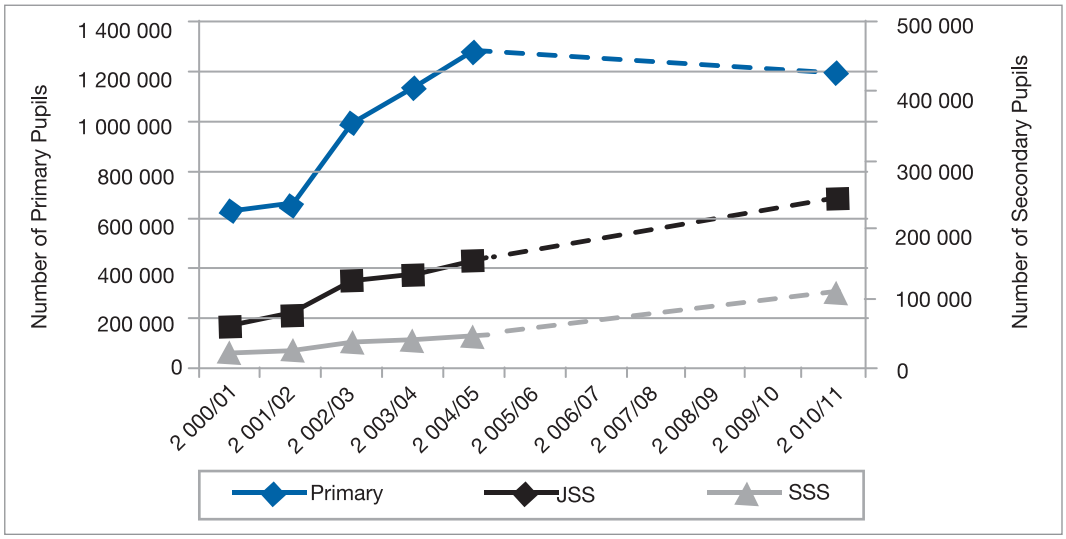
Basic and Senior Secondary Education

Over the decade, Sierra Leone has witnessed different patterns in terms of enrollment, at all education levels.

Preprimary enrollment has doubled since 2005/06, to over 37,000 children in 2010/11, having been stable for three consecutive years at the beginning of the observed period, at 19,000 per year on average.

Primary level enrollment has almost doubled over the decade, from 634,000 to 1.2 million pupils (See Figure 2.2). However, the current numbers are slightly below those of 2004/05, most of the growth having been achieved over the 2002-04 period, then fuelled by the introduction of the fee-free primary education policy in 2002/03. Lack of data limits the interpretation of the more recent stagnation/decline in numbers.

Figure 2.2: Primary and Secondary Enrollment Trends, 2000/01-2010/11



Source: World Bank, 2007 for 2000/01-2004/05; EMIS database for 2010/11.

Secondary level enrollment has witnessed the most growth. Over 2000/01-2010/11, JSS numbers have risen by a factor of four (from 60,000 to 244,000) and SSS numbers by a factor of five (from 23,000 to 108,000). Thus junior and senior secondary have grown at average annual rates of 15.0 and 16.8 percent respectively, compared to 10.1 percent for preprimary, 6.5 percent for primary and 12.3 percent for tertiary.

TVET

The absence of TVET sector-wide data is a major constraint in appraising the subsector in Sierra Leone. In August 2008, there were about 500 technical and vocational institutions, of which 370 were registered with the Ministry of Education (MEST, 2008). The available enrollment figures cover only institutions registered with the MEST and receiving government financial support, or 154 institutions. Thus approximately 30 percent of all TVET institutions accounted for about 27,000 students in 2008 (See General Note No.1). EMIS data for 2010/11 provides a total figure of 29,000 students registered in TVET programmes. Both should be treated as partial data.

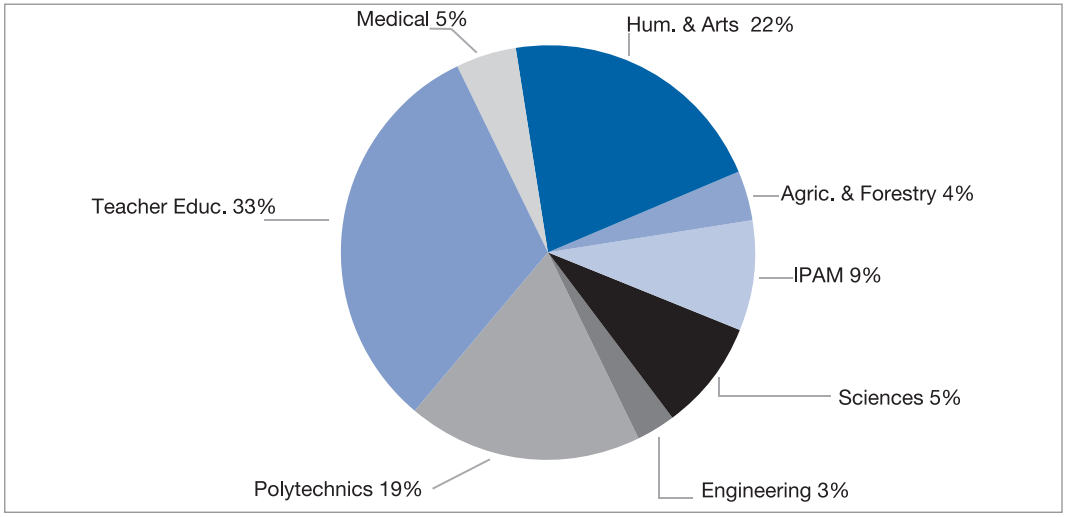
Higher Education

Higher education enrollment has almost tripled over the decade, from 9,000 to 26,000 students, increasing at an average annual rate of 12.3 percent over the period.[14]

As per Figure 2.3, in 2010, enrollment in engineering, agriculture, sciences and medical studies accounted for small shares of total enrollment (between 3 and 5 percent), whereas the bulk of students were registered in teacher education, humanities and polytechnics (33 percent, 22 percent and 19 percent respectively).

Figure 2.3: Breakdown of Higher Education Enrollment, by Subject, 2009/10

Percent



Source: Allak, 2012.
Note: IPAM is the Institute of Public Administration and Management.

Enrollment in sciences and engineering grew significantly at the end of the period, following a surge in the number of female students, favored by targeted government incentive programmes offering grants. Still, female participation in tertiary education remains lower than that of boys, representing just a third of total enrollment in 2010 and ranging from 30 percent in humanities and arts to 53 percent in medical studies (Allak, 2012).

Teacher Education

Table 2.3 provides the data available on teacher education. These are partial statistics (See General Note No.1). Since 2006/07 there has been an upward trend in the number of teacher trainees, for each programme. Overall, the average annual growth rate for the five-year period is 19.7 percent, the rate itself slowly declining over time.

14 See Allak, 2012 and Lamin et al., 2012 for deeper analyses of the higher education sector.

Table 2.3: Teacher Trainees, by Programme, 2006/07-2010/11

Number

	2006/07	2007/08	2008/09	2009/10	2010/11	Total
TC (1 year DE)		276	660	1,075	1,550	3,561
TC (3 years DE)	662	660	780	798	816	3,716
TC (3 years R)	526	701	690	714	728	3,359
HTC Primary (3 years R)	246	257	265	270	284	1,322
HTC Secondary (3 years R)	465	484	506	498	512	2,465
Total	**1,899**	**2,378**	**2,901**	**3,355**	**3,890**	**14,423**

Source: ESR, 2012. DE: Distance Education; R: Residential.

The Teacher's Certificate (TC) qualifies to teach at both preprimary and primary levels, whereas the two Higher Teacher's Certificates (HTC) qualify to teach primary and lower secondary, respectively.

Nonformal Education

In 2011, nonformal education was offered through 116 organizations across the country, providing courses to a total of 126,842 beneficiaries, 99,129 of which were following adult literacy courses and the remaining 27,713 vocational skills training courses (MEST and UNESCO, 2011). This coverage suggests low levels of adult education service provision. Indeed, literacy courses barely cover the needs of 7.4 percent of the illiterate adult population (aged 15 years and above), estimated at 1.34 million.[15]

The Role of the Private Sector

In 2010, the role of the private sector in the provision of schooling at primary and junior secondary levels was minor, representing just three and six percent respectively. Private senior secondary schools are more common (22 percent) and the sector plays an important role at the preprimary level (41 percent).

School Coverage

Gross Enrollment Ratios

Analyzing enrollment trends in the light of population data enables the measure of the potential demand for education and the share of it that is met. Table 2.4 shows the evolution of school coverage indicators for all education levels. From preprimary to secondary, levels for which school-aged populations are well defined, the gross enrollment ratio (GER) is computed. Given that there is no official age or standard curriculum length for TVET and higher education, the former is measured as a percentage of secondary and the latter as the number of students per 100,000 inhabitants.

15 Based on the share of the illiterate adult population, estimated at 42 percent for 2010.

Table 2.4: Schooling Coverage by Education Level, 2004/05-2010/11

Percent and Individuals per 100,000 Inhabitants

	2004/05	2010/11
Preprimary (GER - %)		6.5%
Primary (GER - %)	156%	122%
JSS (GER - %)	43%	62%
SSS (GER - %)	14%	32%
TVET (Share of Secondary - %)	16%	8%
Tertiary (Individuals per 100,000 Inhabitants)	330	451 *

Source: World Bank, 2007 for 2004/05; EMIS database for 2010/11, Lamin et al., 2012 and ESR, 2012 for 2010/11.
Note: * Includes teacher education.

A high GER generally indicates a high degree of participation, whether the pupils belong to the official age group or not. A GER value approaching or exceeding 100 percent indicates that a country is, in principle, able to accommodate all of its school-aged population. This is the case for primary education in Sierra Leone where the GER for 2010/11 is 122 percent, a result confirmed by that obtained by the MICS survey of 2010 (121 percent). Secondary education offers another picture however: the GER is just 62 percent for JSS and 32 percent for SSS, suggesting weak capacity relative to the respective school-aged group. Finally, the preprimary GER is particularly low (6.5 percent).

International comparisons offer a useful perspective on where Sierra Leone stands in relation to educational coverage. Table 2.5 below provides the range of gross enrollment ratios found in Sub-Saharan African countries with low GDP per capita (below US$ 800 per month). It shows that: (i) Sierra Leone's preprimary school coverage is very low compared to other countries (6.5 percent, against a subsample average of 20.3 percent); (ii) primary coverage is above average (1.2 times higher than the subsample); (iii) secondary level GERs are much higher than for other SSA countries, both for JSS and SSS (1.5 times and 1.9 times higher, respectively); and (iv) tertiary level coverage in Sierra Leone is on par with the subsample average.

Table 2.5: GERs in Sub-Saharan African Context, by Level, 2011 or MRY

Percent

	Preprimary	Primary	JSS	SSS	Tertiary
SSA Subsample Minimum	1	49	16	4	61
SSA Subsample Maximum	141	156	80	35	956
SSA Subsample Average	20	104	42	17	429
Sierra Leone	7	122	62	32	451
Ratio of Sierra Leone to SSA Subsample	0.3	1.2	1.5	1.9	1.1

Source: Table 2.4 for Sierra Leone; Pôle de Dakar, UNESCO/BREDA for other countries. See Annex Table A2.1 for further detail.
Note: SSA minimum and maximum refer to the lowest and highest subsample country GERs for each cycle. Tertiary enrollment is measured as the number of students per 100,000 inhabitants.

Schooling Profiles

Although the GER gives an indication of school participation, it is distorted by repetition, which makes it an imperfect measure of schooling coverage. It is more an average measure of schooling coverage than a true reflection of the pattern of a cohort of children through their schooling careers. Schooling and survival profiles allow for a more refined analysis of schooling patterns, to better address access and retention issues. They are presented below.

Cross-Sectional Schooling Profile

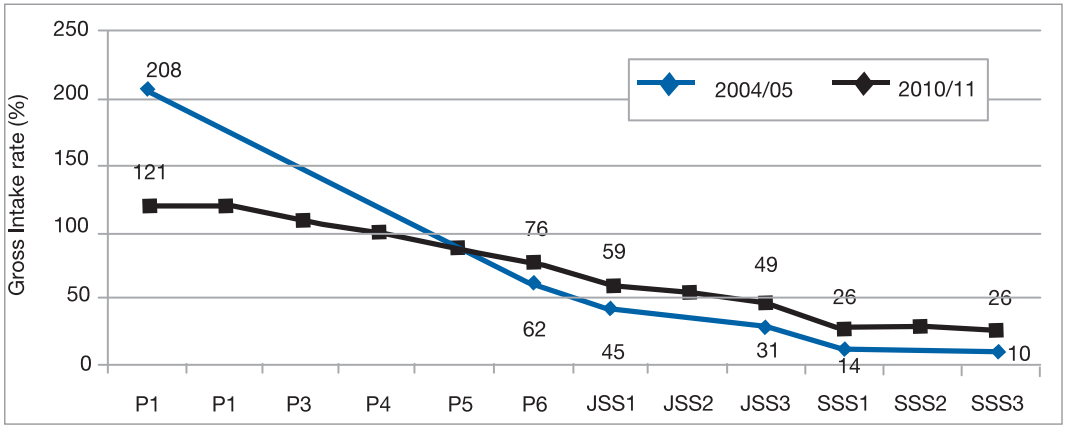
A thorough analysis of schooling coverage requires the examination of the access rates for each grade (the number of new entrants to a specific grade, divided by the school-aged population for that grade). The juxtaposition of the access rates for each grade in a given school year (2010/11 in this analysis) provides the cross-sectional schooling profile, also referred to as the transversal schooling profile. The access rate to the last year of a level is used as a proxy for the completion rate of that level[16].

Figure 2.4 below displays the cross-sectional schooling profile for 2010/11 and a simplified version for 2004/05. The first point (Grade 1) provides the primary access rate for a given generation of children, whereas the last point (SSS 3) is the senior secondary completion rate. The Grade 6 point provides the primary completion rate (PCR), an indicator used in the FTI framework and Education for All (EFA) goals.

The gross intake rate (GIR) in primary Grade 1 (the access rate for the first grade of primary) was estimated at 120.5 percent in 2010/11, a sharp decrease compared to 2004/05 when it stood at 208 percent. As indicated earlier, one needs to be cautious when interpreting this drop, as it is highly affected by the various hypotheses formulated with respect to enrollment and population (See the probabilistic schooling profile section below).[17]

Figure 2.4: Cross-Sectional Schooling Profile, 2004/05 and 2010/11

Percent



Source: World Bank, 2007 for 2004/05; EMIS database for 2010/11.

16 The completion rate measures the proportion of children who reach the last grade of a given school cycle. The use of a proxy is necessary because enrollment data are collected at the beginning of each school year and not at the end. This may slightly overestimate the completion rate, as it does not consider last grade dropouts.

17 The drop could be imputed to the decrease in the backlog of over-aged children entering the system immediately after the introduction of the fee-free primary education policy. School entry at the official age remains an issue however. It is estimated that almost 40 percent of students entering primary in 2010 were aged seven years and above, excluding the respective percentage of repeaters (See Annex Figure A2.1).

On the basis of the transversal schooling profile, primary retention has improved significantly: the share of pupils enrolled in Grade 1 who complete the cycle increased from 29.7 percent in 2004/05 to 63.1 percent in 2010/11. This in turn has had a positive impact on the PCR, which reached 76.1 percent in 2010/11, up from 61.8 percent in 2004/05. Sierra Leone is still far from achieving universal primary education (UPE) however: despite these improvements, a quarter of school-aged children do still not reach the end of primary.

The JSS access rate was 58.7 percent in 2010/11, favored by the improved PCR and higher transition rates from primary that rose from 72.4 percent in 2004/05 to 77.1 percent in 2010/11. Completion has also increased significantly over the period, to reach 48.6 percent, favored by better retention which has grown from 68.6 percent in 2004/05 to 82.9 percent in 2010/11.[18] Although the situation has improved since 2004/05, when only 44.7 percent of children could hope to enter secondary and just 30.7 percent completed the cycle, over 40 percent of children do still not access JSS and fewer than 50 percent complete the cycle.

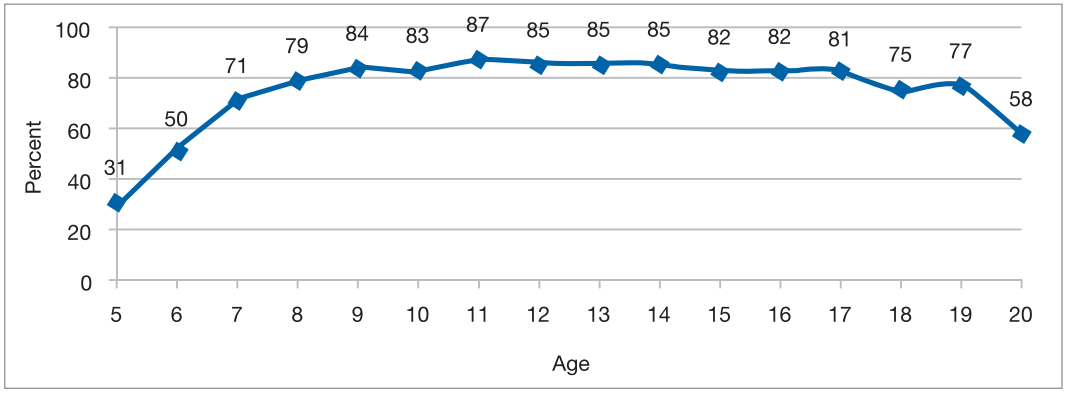
Access to upper secondary education stood at 26.4 percent in 2010/11, against 14.2 percent in 2004/05. This increase may have been fuelled by the growing number of students completing JSS and the improved transition rate between the two cycles, which rose from 46.4 percent to 54.4 percent over the period. The SSS completion rate was 25.9 percent in 2010/11, which is both a significant improvement over 2004/05 (10.1 percent) and implies that dropout has been virtually eliminated for the cycle. The retention rate is therefore estimated at 97.8 percent (up from 70.8 percent in 2004/05).

Probabilistic Schooling Profile

Despite the high primary GIR, access is still not universal, as shown by the access rate computed according to the probabilistic method, which tends to provide results less affected by age issues. Figure 2.5 illustrates the probability of a given generation of children having accessed primary school at a set point in time.[19]

Figure 2.5: Share of Individuals Having Attended Primary School, by Age, 2010

Percent



Source: Authors' calculations based on MICS IV, 2010 data.

18 The retention rate is computed as the JSS completion rate divided by the access rate. As such, it is an approximation. Using MICS data provides somewhat different figures for retention, of 77 percent for primary, 75 percent for JSS and 81 percent for SSS in 2010.

19 The major drawback of transversal schooling profiles is that they mix cohorts of children of different ages. The greater the multicohort phenomenon, the greater the overestimation of access and completion rates. Indeed, while the numerator considers new entrants attending a given grade regardless of their age, the denominator encompasses the school-aged population for the given grade.

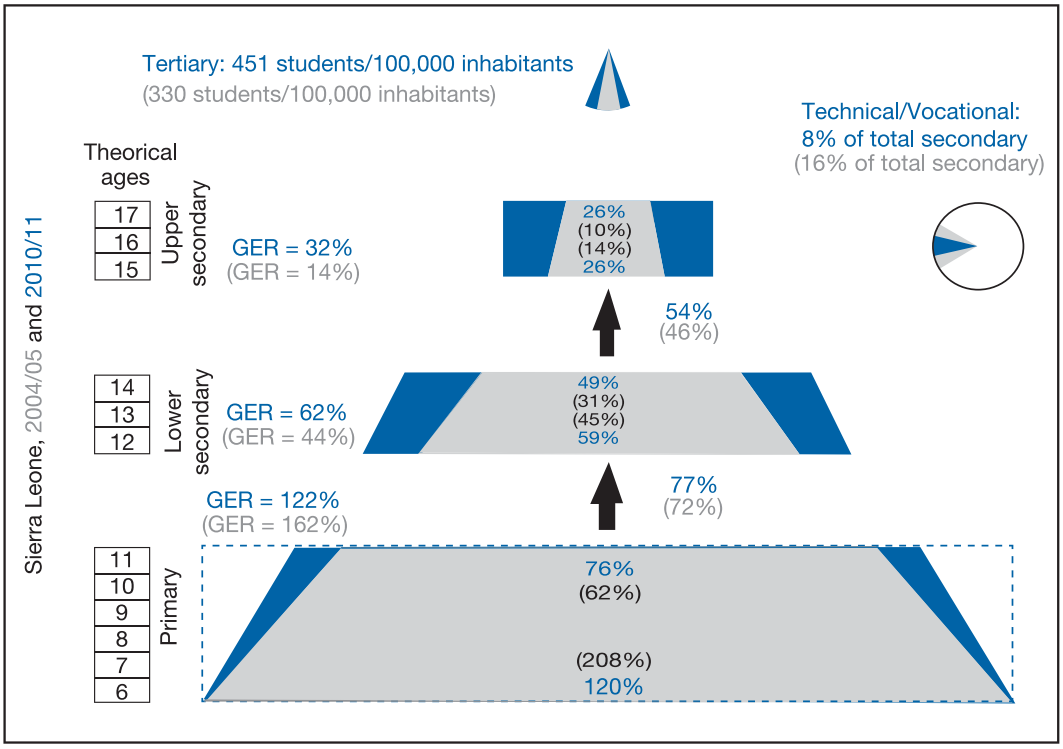
The proportion of individuals having accessed Grade 1 was highest for children aged 11 years (87 percent) and 12 years (85 percent), whereas only 50 percent of children aged 6 years had ever attended school, implying considerable late entry (almost 40 percent of new pupils entering primary in 2010 were seven years or above - see Annex Figure A2.1). The probability of accessing primary education is therefore estimated at 86 percent for 2010, meaning that 14 percent of children never access primary in Sierra Leone. Progress has been slow since 2003/04, when about 20 percent of a generation of children never went to school (World Bank, 2007). At this pace (one percentage point improvement in the GIR each year) universal access would only be reached in 2024.

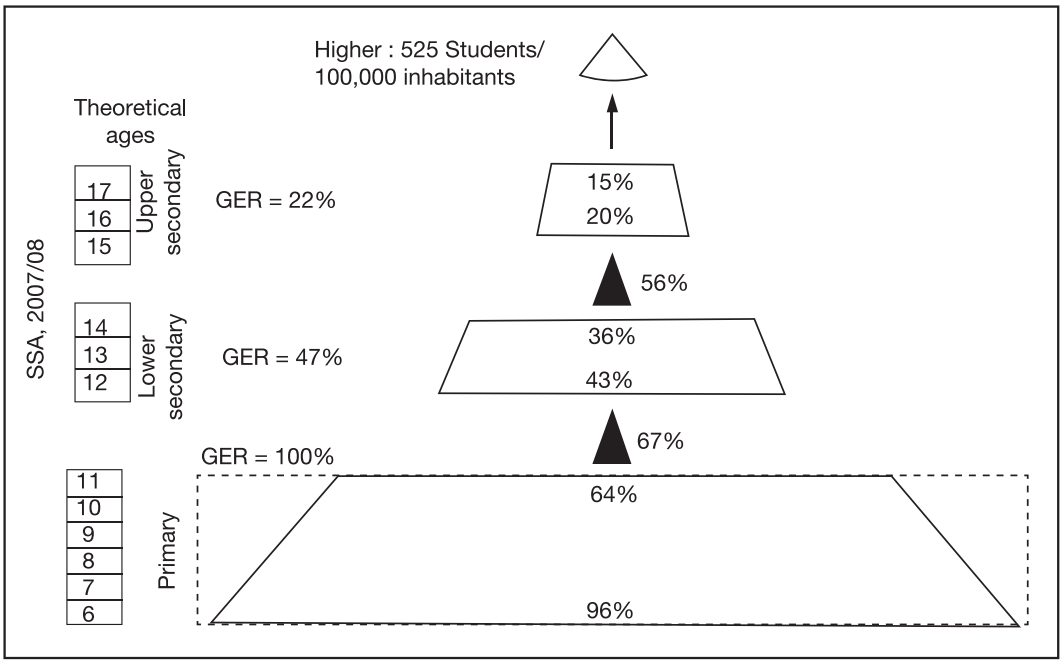
The Educational Pyramid

Educational pyramids provide a visual representation of student flows (see Figure 2.6 below). They are formed by four trapezes that represent the different levels of education (primary, JSS, SSS and tertiary). The width of the bottom of each trapeze reflects the access rate for that level whereas the top of each represents the completion rate for that level, its width similarly being proportional to the value of the rate. Thus the trapezoidal shapes indicate how well pupils survive from the first grade of a given level to the last. The arrows represent the transitions between levels; again their size is proportional to the level of the transition rate.

The educational pyramid for Sierra Leone thus provides a summary of the different coverage indicators presented in this chapter. The results can also be compared to that of SSA.

Figure 2.6: **Educational Pyramids for Sierra Leone, 2004/05 and 2010/11, and SSA, 2007/08**





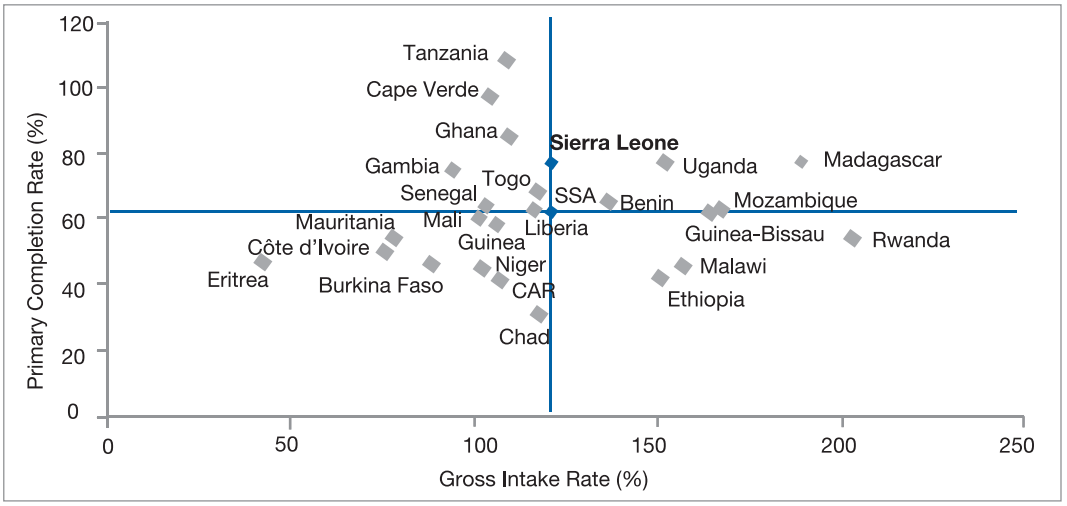
Source: Pôle de Dakar UNESCO/BREDA.

Cross-Country Comparisons

In comparison to other African countries with low GDP per capita, the primary access rate for Sierra Leone is in line with the average for the subsample of countries (120 percent) but the PCR is higher than average, indicating that Sierra Leone's education system is performing slightly better than others in this respect (See Figure 2.7).

Figure 2.7 Comparison of Various African LICs According to their Primary Access and Completion Rates, 2011 or MRY

Percent



Source: Pôle de Dakar UNESCO/BREDA.

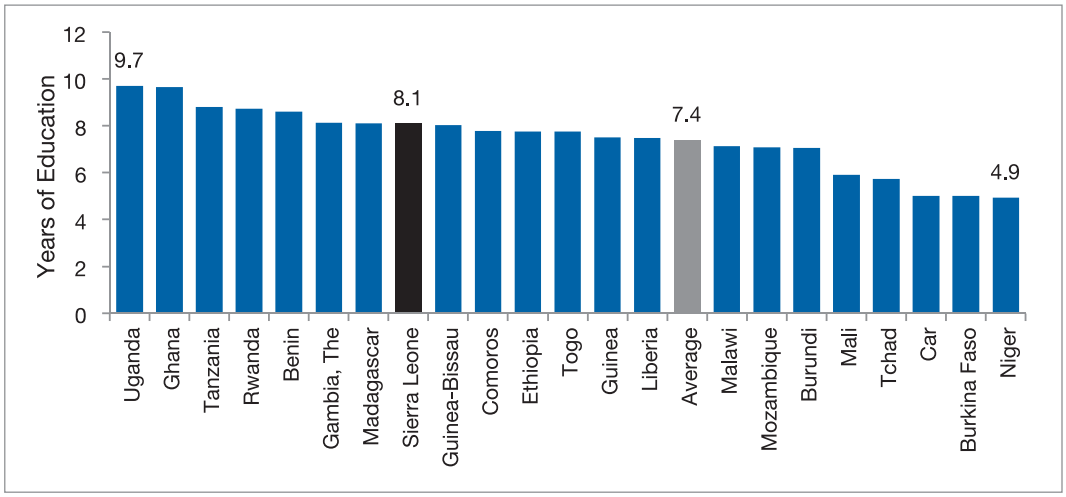
At the JSS level, Sierra Leone is well positioned in relation to other African countries with comparable GDP per capita. The access rate is 15 percentage points higher than the average and the completion rate is 18 percentage points higher. The country's GIRs in the first and last grades of JSS are among the highest of 23 countries (see Annex Figures A2.2 and A2.3).

School Life Expectancy

School life expectancy measures the total number of years of schooling that a child can expect to receive given current schooling patterns. For 2011, school life expectancy is estimated at 8.1 years in Sierra Leone, longer than the average 7.4 years for African countries with comparable GDP per capita (See Figure 2.8 below).

Figure 2.8: Cross-Country Comparison of School Life Expectancy, 2011 or MRY

Percent



Source: Pôle de Dakar UNESCO/BREDA.

Out-of-School Children

Information on out-of-school children (often referred to simply as out-of-school) is derived from the MICS IV, 2010 survey, helping to provide a picture of the magnitude of the phenomenon in 2010.

In that year, 22 percent of children of primary school age (232,645 children) and 19 percent of children of lower secondary school age (a further 73,641) were estimated to be out of school. The proportion reaches 30 percent for senior secondary school-aged children and increases continuously thereafter, driven by higher dropout as well as greater numbers of young people who never attended school (See Table 2.6).

Table 2.6: Incidence of Out-of-School (Children Aged 6-17 Years), 2003/04 and 2010

Percent and Number

	Age Groups			
	6-11	12-14	6-14	15-17
2003/04 (%)	25	24	25	38
2010 (%)	*24*	*19*	*22*	*30*
Dropouts (%)	1	4	2	11
Never attended (%)	23	15	20	19
2010 (Number)	232,645	73,641	306,286	101,918

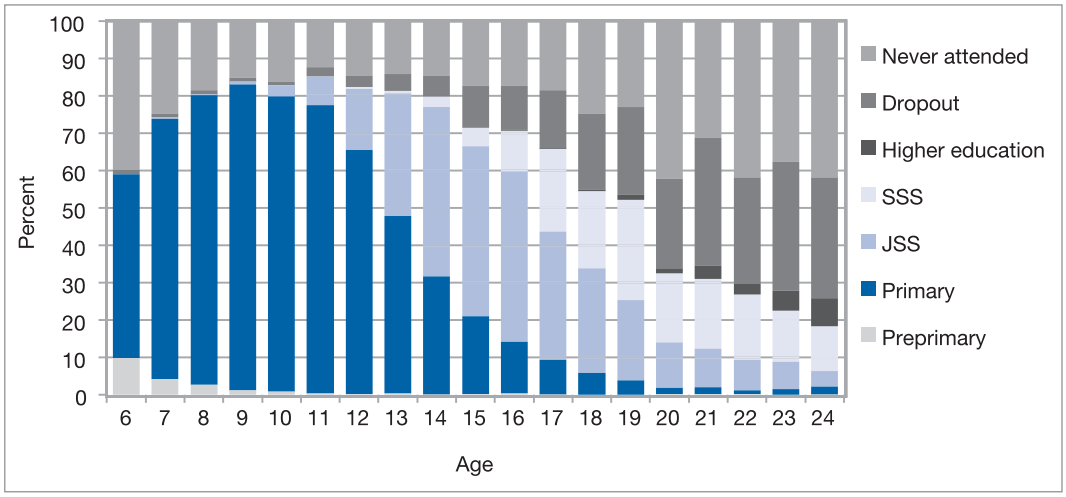
Source: World Bank, 2007 and authors' calculations based on MICS IV, 2010 data.

The prevalence of out-of-school has remained grossly stable among primary school-aged children since 2003/04 (at around 24 percent), but has witnessed drops as far as JSS and SSS school-aged children are concerned. This situation could be associated with improved access and retention at those levels.

It is worthy of note that out-of-school is composed mainly of children who have never attended school (91 percent of the total group and 96 percent of children of primary school age – See Figure 2.9). This observation highlights two important findings, that: (i) on the one hand, the major issue faced by children is to gain access to school; and (ii) on the other, that once in school, children tend to remain there.[20] It is also interesting to note that the proportion of children that never attended school decreases for the most recent cohorts of pupils, suggesting gradual progress towards universal access.

Figure 2.9: Distribution of Children According to their Education Status, by Age, 2010

Percent



Source: Authors' calculations based on MICS IV, 2010 data.

Furthermore, given the fact that many children enter school late, one can also assume that many of the current primary out-of-school children who have not yet entered school will eventually do so in the near future. Under this hypothesis, the number of primary out-of-school children could drop to 40,907. [21]

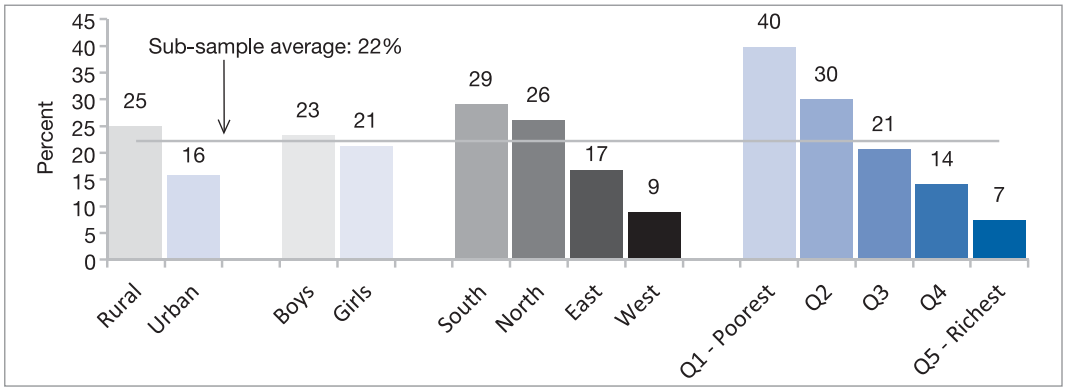
The incidence of out-of-school by different socioeconomic characteristics is depicted in Figure 2.10 below. The incidence of out-of-school is particularly strong among children belonging to the poorest quintile (40 percent) and among those living in the South region (30.5 percent). Children living is rural areas are also much more prone to nonattendance than their urban peers (25 percent and 16 percent respectively). Gender on the other hand does not seem to play a significant role: indeed, the incidence of out-of-school is similar for girls and boys.

20 Although dropout does exist, retention is fairly good.

21 The underlying hypothesis is that 14 percent of primary school-aged children will never enter school (See the probabilistic schooling profile section above). Of all primary out-of-school, 222,951 had never attended school and 9,694 were dropouts in 2010. If 86 percent of those having never attended enter school in the future, the number of them who will never attend school is estimated at 31,213. When added to the 9,694 who have dropped out, the estimated number of out-of-school is 40,907.

Figure 2.10: Incidence of Out-of-School (Children Aged 6-14 Years) by Area of Residence, Gender, Region and Wealth Quintile, 2010

Percent



Source: Authors' calculations based on MICS IV, 2010 data.

Looking more closely at the determinants of access, dropout and retention will be necessary to adequately tackle out-of-school issues. Specific policies might indeed be needed, tackling both supply and demand-side factors. These are dealt with in the following section.

Supply and Demand-Side Factors Affecting School Attendance

Both supply side and demand-side factors help to explain why children do not attend school or drop out once enrolled. Are children not enrolled because there is no school nearby, or because of cultural, social or economic constraints? In the same vein, do children drop out of school because of the financial burden, because their school does not offer the next grade, or because the quality of teaching offered is too poor? The policies to be implemented will vary depending upon the diagnosis. This section aims to disentangle the main factors at stake in school access and retention, mainly at the primary level.

Supply-Side Factors Affecting School Attendance

On the supply-side of education, many variables can be taken into consideration to analyze the different causes that act as deterrents to enrollment. The distance to school and grade continuity (that a school offers all grades) are the two variables used here as proxies for the supply of primary education. While the former can have an important impact on access, the latter is expected to impact more on retention.

Distance to School

As seen earlier, most out-of-school children have never had access to school. Understanding how supply issues affect access is a first step in helping to design appropriate policies.

The distance from home to the nearest primary school may act as a major deterrent to school access and, to a lesser extent, attendance. As Table 2.7 shows, in 2007 only just over half (54.0 percent) of children aged 6 to 11 years lived within 15 minutes of a primary school, whereas a quarter (25.2 percent) lived more than half an hour away. The situation is particularly difficult for children living in rural areas; 20 percent have to spend 45 minutes or more to reach the nearest primary school, against barely 3 percent of their peers living in urban areas. [22]

22. Data from the INPSS show that geographical access to school has tended to stall since 2008. Indeed, although the share of households reporting to have a primary school within a 30 minute walk increased from 69 percent in 2005 to 74 percent in 2007 and 77 percent in 2008, it has remained at the latter level until 2011 (IRCBP, 2012). See Annex Table 2.4 for the distribution of households according to the distance to the nearest secondary school.

Table 2.7: Distribution of Children (Aged 6-11 Years), by Distance to Nearest Primary School and Area of Residence, 2007

Percent

Time to the Nearest Primary School	Age Groups		Total
	Urban	Rural	
Less than 15 minutes	66.7	47.6	54.0
15-29 minutes	24.5	19.0	20.9
30-44 minutes	6.2	13.5	11.1
45 minutes or more	2.6	19.9	14.1
Total	100.0	100.0	100.0

Source: CWIQ, 2007.

Table 2.8 provides some additional insight into the relationship between the distance to school and out-of-school. The figures reveal that the further the distance to the nearest primary school, the higher the proportion of children not attending: the out-of-school rate rises from 22.8 percent for those households located less than 15 minutes away from a primary school to 52.2 percent for those located more than 45 minutes away. This pattern holds particularly in rural areas, where the variation is also stronger. Further evidence shows that primary access is particularly at risk for rural children living over 45 minutes away from a primary school: their primary access probability is barely 56 percent, against 78 percent for their peers living less than 15 minutes away (see Annex Table A2.2).

Table 2.8: Share of Out-of-School (Children Aged 6 to 11 Years), by Distance to Nearest Primary School and Area of Residence, 2007

Percent

Time to the Nearest Primary School	Age Groups		Total
	Urban	Rural	
Less than 15 minutes	13.2	29.6	22.8
15-29 minutes	12.1	31.7	24.0
30-44 minutes	25.5	42.0	38.9
45 minutes or more	7.2	55.2	52.2
Average	**13.6**	**36.7**	**29.0**

Source: CWIQ, 2007.

As for access, the distance to school can have a detrimental effect on primary school retention. As shown in Table 2.9, the probability of completing primary for those children who enrolled in Grade 1 drops from 89.4 percent for those living within 15 minutes of the nearest school, to 77.1 percent for those living more than 45 minutes away, a difference of more than 12 percentage points. These global findings are heavily influenced by the figures for rural children however: the probability of completing primary being lowest among rural students living over 45 minutes away from the nearest primary school (72.8 percent). Urban children, once enrolled, tend to stay in school even when the school is located far away.

Table 2.9: Primary School Retention Probability, by Distance to Nearest Primary School and Area of Residence, 2007

Percent

Time to the Nearest Primary School	Age Groups		Total
	Urban	Rural	
Less than 15 minutes	95.2	77.9	89.4
15-29 minutes	94.5	79.3	88.7
30-44 minutes	97.5	82.9	89.9
45 minutes or more	99.5	72.3	77.1
Total	**95.3**	**77.8**	**88.2**

Source: CWIQ, 2007.

Note: The table provides the probability of having reached Grade 6 for those children who attended Grade 1.

Grade Continuity

As far as primary retention is concerned, the existence of schools offering all grades, allowing pupils to complete a full primary cycle within the same institution, can also be an important factor. Where schools do not offer all grades (referred to for convenience as incomplete schools), pupils are obliged to seek an alternative institution to continue and complete their education. In many cases this puts children at risk of dropout, as second choice schools will invariably be less accessible.

Table 2.10 below conveys the status of primary schools in terms of the number of grades offered and their respective enrollment.[23] It shows that 64 percent of primary schools in Sierra Leone offer all six primary grades on average. Of the incomplete primary schools, 13 percent offer five grades, 10 percent offer four grades and 13 percent offer three grades or less (See Annex Table A2.3). When school ownership is taken into account, community schools stand out, as considerably less than the average offer the full primary cycle (only 38.4 percent). The proportion of government, mission, private and other schools offering six grades ranges from 59 percent to 68 percent.

Table 2.10: Status of Primary Schools and Enrollment, by Number of Grades Offered and School Ownership, 2010/11

Percent

	School Status			Student Enrollment		
	Incomplete (< 6 Grades)	Complete (All 6 Grades)	Total	Incomplete (< 6 Grades)	Complete (All 6 Grades)	Total
Community	61.6	38.4	100.0	43.7	56.3	100.0
Government	32.0	68.0	100.0	28.1	71.9	100.0
Mission	32.8	67.2	100.0	26.4	73.6	100.0
Other agencies	41.1	58.9	100.0	18.4	81.6	100.0
Private	35.6	64.4	100.0	15.9	84.1	100.0
Total	**36.1**	**63.9**	**100.0**	**27.8**	**72.2**	**100.0**

Source: EMIS database 2010/11.

23 To adequately perform this analysis would have required data on school enrollment by grades for two consecutive years, as some schools might open subsequent grades over the years. Should this be the case, the figures presented here would tend to slightly overestimate the share of incomplete schools.

It should be noted that although a majority of students (72.2 percent) attend schools offering all six grades, 27.8 percent of children are at risk of dropout before completion of the cycle due to grade discontinuity. In community schools this proportion reaches a high 43.7 percent.

Other Supply-Side Factors

Other school-related factors can provide further insight into the supply-side dimension of access and retention. Table 2.11 presents data on issues faced by primary pupils enrolled in 2007. The lack of textbooks is the issue mentioned by most pupils (41 percent). Although a new distribution of textbooks has taken place since 2007, the provision has not been so effective due to financial and managerial constraints. To address this problem, the government is expected to roll out a nationwide programme to provide a set of core textbooks to every pupil in the near future. Other issues related to fees, facilities and teachers were mentioned by between 19 and 25 percent of pupils.

Table 2.11: Issues Faced by Enrolled Primary Pupils, by School Ownership, 2007

Percentage of Pupils Facing a Given Issue

	School Ownership				Total
	Government	Mission	Private	Community	
Lack of books	32.9	45.6	20.1	55.4	40.6
High fees	20.4	23.3	58.0	25.3	23.8
Facility Issues	*18.9*	*27.7*	*7.0*	*44.3*	*25.0*
Facilities in bad condition	12.0	15.5	3.0	24.8	14.5
Lack of space	6.9	12.2	4.0	19.6	10.5
Teacher Issues	*14.7*	*17.1*	*4.6*	*49.7*	*18.5*
Too few teachers	6.6	9.4	3.0	27.0	9.6
Poor quality of teaching	5.7	5.4	1.1	17.9	6.4
Teacher often absent	2.5	2.2	0.5	4.8	2.5
No issue faced	48.3	32.9	32.5	19.2	37.6

Source: CWIQ, 2007.

The situation varies slightly according to school ownership, with community school students reporting issues with books, facilities and teachers in much higher proportions than their peers enrolled in other schools. Although much fewer pupils enrolled in private schools declare facing issues with their schools, the fees are nevertheless perceived to be too high by a majority (58 percent) and this proportion is by far the highest of all school types. Indeed, this is an issue for only 20 to 25 percent of pupils of government, mission and community schools. This is somewhat surprising in the case of government and mission school pupils, who are supposedly exempt from paying school fees. Two possible explanations can be offered: (i) that fees other than tuition fees are collected; and (ii) that some schools levy school fees while waiting for school fee subsidies to be received.

It is also worthy of note that 38 percent of pupils declare that they do not face any of the issues listed. Interestingly, this proportion is highest among children enrolled in government schools (48 percent) and lowest for community school pupils (19 percent).

Demand-Side Factors

Although supply-side factors no doubt have a major impact on school access and retention, demand-side factors also affect schooling patterns. Schooling costs, be they direct (fees, transportation, meals, education inputs, uniforms, and so on) or the opportunity cost of education (related to the forgone family income derived from children's participation in household activities) may restrict households' ability to send their children to school. They may also favor early dropout, especially when the perceived benefits associated with schooling tend to decrease as costs surge. Some school characteristics (such as the curricula, the distance to school, the quality of teaching, the school environment, and so on) might also make parents reticent to send their children to school. Such demand-side factors are examined in this section.

Table 2.12 provides the main reasons why some children have never been to school, for individuals aged 6 to 14 years. Economic reasons for nonattendance, linked either to the high costs associated with schooling (37 percent of the cases) or the need for the child to work (12 percent of the cases) are those most cited by households. More targeted support to the poorest households would help to alleviate the financial burden of education.

Table 2.12: Proportion of Children (Aged 6-14 Years) Having Never Been to School, by Reason and Age Group, 2007

Percent

	Reason for Never Having Been to School						
	Child too young	School too far	School too expensive	Child is working	Education is pointless	Child is ill	Other
6-8 Years	40.3	17.9	33.2	4.8	4.2	2.1	18.6
9-11 Years	10.0	11.5	43.7	19.4	9.3	3.0	24.6
12-14 Years	2.3	10.2	39.5	22.0	12.6	3.8	27.7
Total	**25.0**	**14.8**	**37.1**	**11.9**	**7.2**	**2.7**	**21.9**

Source: CWIQ, 2007.

The second reason evoked by household heads for the nonattendance of their child is related to the age of the child, considered too young to go to school in 25 percent of the cases overall, although this is particularly an issue where the child is aged between six and eight years (40 percent of the cases). This probably explains why so many children enter school at a late age. Given the importance of starting school at the official age (the risk of dropout tends to increase with the age of the child as opportunity costs increase), more communication from the authorities on the benefits of starting school at the official age could be helpful.[24] Expanding preschool enrollment has also been acknowledged to improve the age at which children start primary school.

Disentangling Primary and JSS Access and Retention Factors

The household surveys used for the elaboration of this report (MICS4, 2010 and CWIQ, 2007) do not allow the comprehensive identification of the determinants of nonattendance or dropout. At best, they can highlight the most vulnerable categories of children and consider whether their prevailing characteristics are risk factors. The identification of these risk factors has been conducted on the basis of logistic regression models based on MICS4, 2010 data.

24 By the time pupils complete primary, most of them are in their teens: 37 percent are 14 years or more.

Table 2.13: Logistic Regression Model for Primary and JSS Access and Retention, 2010

	Primary		JSS	
	Access	Retention	Access	Retention
Gender				
Boy (Ref. Girl)	ns	++	ns	+++
Area of Residence				
Urban (Ref. Rural)	ns	ns	ns	ns
Wealth Quintile				
Q2 (Ref. Q1 – Poorest)	++	ns	ns	ns
Q3 (Ref. Q1 – Poorest)	++	ns	ns	ns
Q4 (Ref. Q1 – Poorest)	++++	++	++	ns
Q5 – Richest (Ref. Q1 – Poorest)	++++++	+++	++++++	++
Region				
East (Ref. South)	++	ns	ns	ns
North (Ref. South)	++	ns	ns	ns
West (Ref. South)	++	ns	ns	ns
Gender of Head of Household				
Female (Ref. Male)	++	ns	ns	ns
Mother's Education				
Primary (Ref. None)	++	ns	ns	ns
Secondary or Higher (Ref. None)	++	++++	ns	ns
Father's Education				
Primary (Ref. None)	++	ns	ns	ns
Secondary or Higher (Ref. None)	+++	++	ns	ns
Pseudo R^2	0.127	0.89	0.60	0.85

Source: MICS4, 2010.

Note: The more + signs, the higherthe odds ratio (compared to the reference category). ns: non-significant (at the 5% significance level).

For each of the two levels considered in the analysis, the explained variables are the probability of attending the level (access) and the probability of reaching the last grade of that level for pupils who accessed Grade 1 (retention). The explanatory variables include the gender of the individual, the area of residence, the wealth quintile of the household, the region/province of residence, the gender of the head of household and the level of instruction of the parents. It was not possible to include a supply variable, such as the existence of a school in the immediate vicinity of the individual's home.[25]

25 There is evidence in the literature that distance to school is a factor having a major impact on access, but also on retention. As shown earlier, a sizable proportion of children live far from a primary school (25 percent live 30 minutes' walk away or more). The physical access to secondary schools is even more difficult, with 75 percent of households living 30 minutes or more away, highlighting the very limited supply of secondary schools (IRCBP, 2012).

The results are summarized in Table 2.13 above, which pinpoints the following:

Access and Retention to Primary

(i) Children living in the poorest households are more likely to be out-of-school than those living in wealthier households; completion of primary by those pupils enrolled is most likely for children from the households belonging to the two wealthiest quintiles;

(ii) Whereas gender disparities in access to primary are not significant, boys are more likely than girls to complete primary once they have been enrolled;

(iii) Children living in the South face the greatest risk of never attending school;

(iv) Children living in households whose head is female have greater chances of going to school; and

(v) Children whose parents are not educated are more likely to remain out-of-school and, if they do enroll, not to reach the end of the cycle.

Access and Retention to JSS

(i) Access to JSS is more likely among children from households belonging to two wealthiest quintiles and completion by enrolled children is more likely among those from the wealthiest quintile; and

(ii) Although there is no gender disparity in access to JSS, boys are more likely to complete JSS once they have been enrolled. Causes such as early pregnancy are often thought to explain the low retention of girls in lower secondary.

Children's socioeconomic backgrounds tend to determine their chances of having a normal basic education. Indeed, being a girl, living in a poor household, having uneducated parents or living in the South region are factors that all increase the risk of never being educated or of dropout. Nevertheless, household wealth represents the most influential factor affecting children's schooling. Further analysis, of both the qualitative and quantitative varieties, is necessary to better understand which supply and demand-side factors have the greatest impact on nonattendance or early dropout, in order to take appropriate policy measures.

Key Findings

Enrollment has increased in all education subsectors over the 2000-10 period, particularly for secondary. Demand for JSS is particularly strong as a result of the higher primary completion rate, to which the education system has responded favorably by increasing capacity at this level.

The GER for primary was 122 percent in 2010/11, indicating that Sierra Leone is, in principle, able to accommodate all of its primary school-aged population. The preprimary GER is particularly low (6.5 percent) in comparison to other African countries with similar GDP per capita. For JSS (62 percent), SSS (32 percent) and tertiary education (388 students per 100,000 inhabitants) on the other hand, enrollment rates are all above the average of comparable SSA countries. NFE programme coverage remains low, with literacy programmes benefiting only 7.4 percent of the target population.

The role of the private sector in school provision varies by level: although minor for primary (3 percent) and lower secondary (6 percent), the private sector is quite substantial at senior secondary (25 percent) and preprimary levels (41 percent).

Universal primary education is yet to be reached. Although the access rate to the first grade of primary was estimated at 120.5 percent in 2010/11, it is nevertheless estimated that 14 percent of a generation of children did not have access to primary school in 2010 (against 20 percent in 2003/04). In the same vein, the primary completion rate, while having steadily increased over the period, stood at just 76 percent in 2010/11.

Gross intake rates to the first and last grades of secondary have improved since 2004/05. For lower secondary the access rate increased from 44.7 percent to 58.7 percent and the completion rate from 30.7 percent to 48.6 percent in 2010/11. For upper secondary, the access rate increased from 14.2 percent to 26.4 percent, whereas the completion rate increased from 10.1 percent to 25.9 percent. Overall, Sierra Leone is well positioned in relation to other SSA countries with low GDP per capita, for all these indicators.

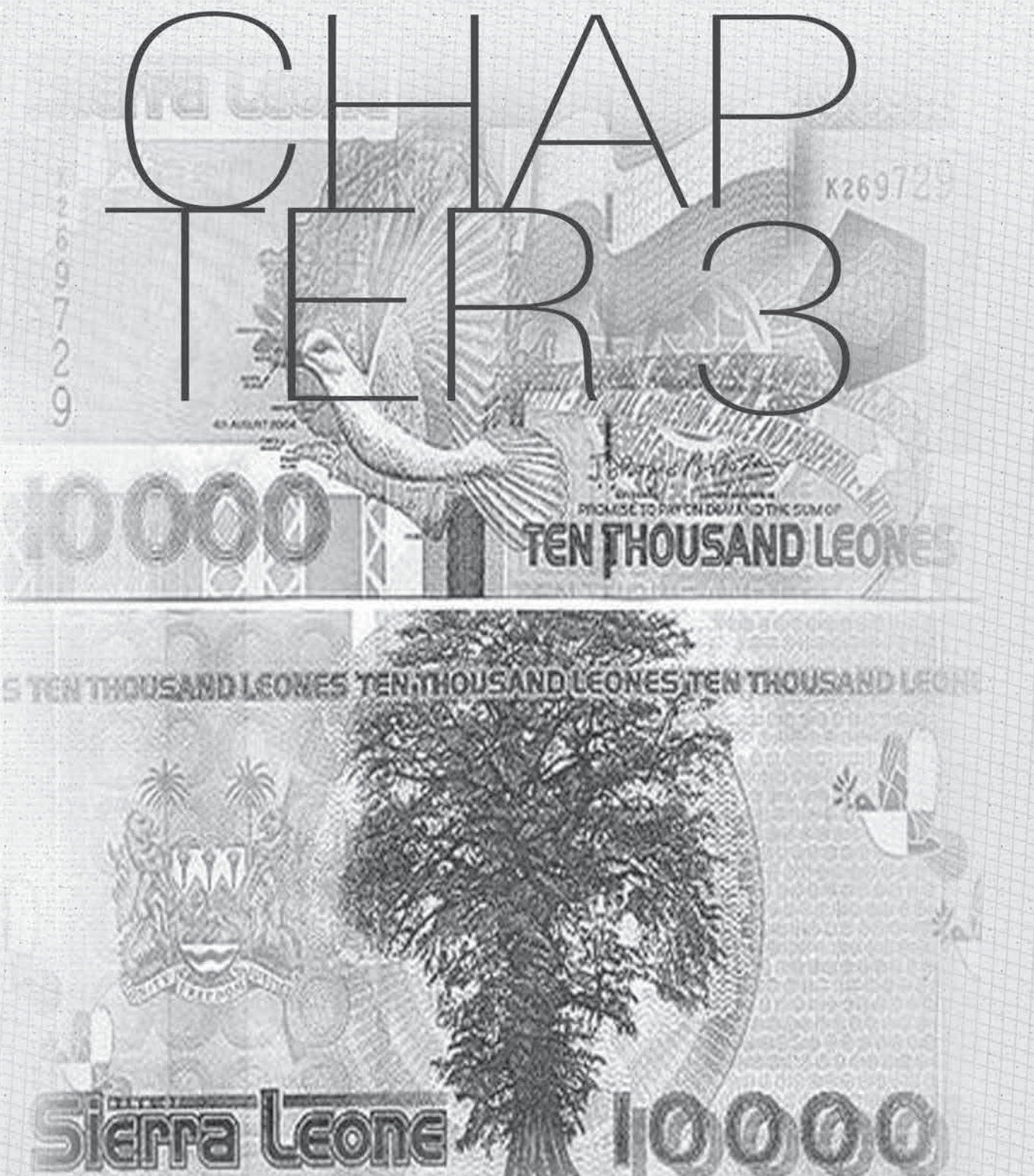
In 2010, the number of out-of-school children was estimated at 233,000 approximately for primary and a further 74,000 for JSS, representing 22 percent and 19 percent of the respective official school-aged groups. Access to school remains an issue facing out-of-school children, although late entry certainly contributes: in 2010, 40 percent of Grade 1 new entrants were aged seven years and above. Nevertheless, the share of children having never attended school is lower among more recent cohorts of pupils, suggesting an improvement towards achieving universal access.

Supply and demand-side factors both influence schooling decisions. On the supply-side, the further the distance to the nearest primary school, the higher the out-of-school rate. In addition, grade discontinuity (or incomplete schools) put 28 percent of primary students at risk of dropping out before they complete the cycle. Demand-side factors also account for nonattendance. Poverty limits households' capacities to send their children to school and keep them there. Age also appears to be a major reason behind families' decisions to not enroll their children. It was also observed that, whereas there were no gender disparities in access to primary and JSS, boys were more likely to complete the cycle once enrolled.

Sierra Leone

EDUCATION COUNTRY STATUS REPORT

CHAPTER 3



CHAPTER 3: Cost and financing

As shown in the first chapter of this report, education spending remained grossly stable over 2004-10 and slightly improved thereafter. Nevertheless, despite increasing efforts, education expenditure remains comparatively low, equivalent to 3.5 percent of GDP. It is important in this context to better understand how resources have been used and if possible to identify potential cost-saving measures for specific expenditure items or education subsectors.[26]

This chapter will provide some insight into the process of allocation of public recurrent education resources: (i) between education subsectors (from preprimary to higher, including TVET and adult and nonformal education); and (ii) within each subsector, between key items such as personnel emoluments and other charges. While the role of households and communities in funding education services is believed to be important, they will only be briefly analyzed here due to data constraints.

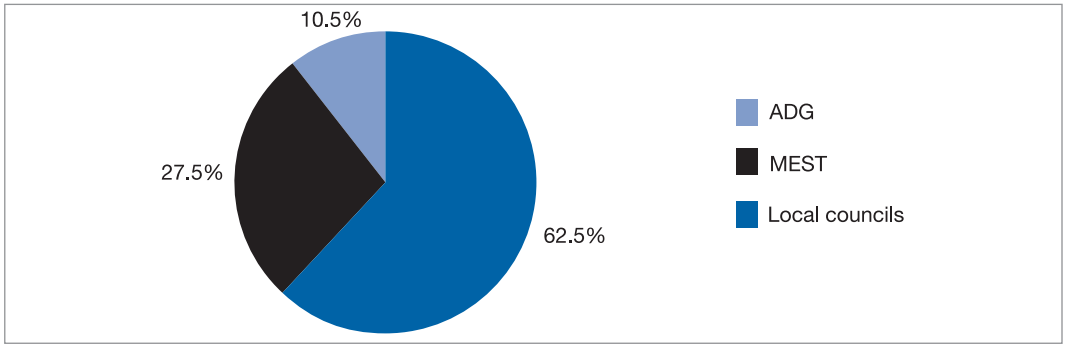
Composition of the Public Recurrent Education Budget

Since 2004, various entities have been involved in financing the education sector: the Ministry of Education, Science and Technology (MEST) deals with major recurrent non-salary and development expenditures; the Accountant-General's Department (AGD) of the Ministry of Finance (MoFED) is in charge of the payroll of civil servants employed in the education sector; and the Local Government Finance Department (LGFD) is responsible for basic non-salary recurrent expenditure as well as some development expenditures for basic schools (See Annex Note 3.1 for further details on devolved education functions).[27]

Since the devolution process initiated by MEST in 2004, a growing share of the total education budget has been channeled directly to schools via local governments: by 2010, 10.5 percent of the total public education budget (excluding the external funding of development expenditure) was managed by local councils. Figure 3.1 below also shows that the greatest share of resources (62 percent) is handled by the AGD-MoFED, whereas MEST is responsible for 27 percent.

Figure 3.1: Distribution of Total Public Recurrent Education Expenditure, by Implementing Institution, 2010

Percent



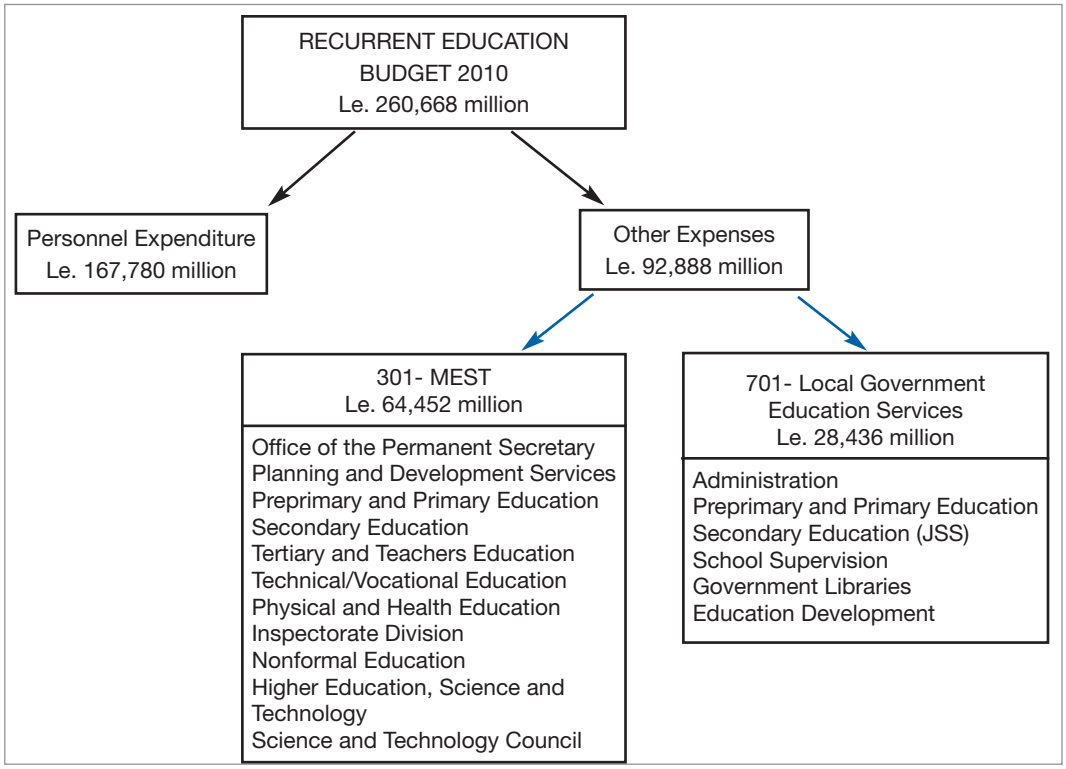
Source: MoFED.

26 2010 data are primarily used in this chapter, being the latest available at the time of the analysis.

27 MoFED authorizes all the government's payments. Whereas ADG is centralized, the LGFD is an arm of MoFED responsible for all devolved functions. Administrative issues are dealt with by two ministries: MEST and MLGRD (the Ministry of Local Government and Rural Development).

This section focuses on recurrent education expenditure, which as well as representing the lion's share of total public education expenditure (94 percent), involves fixed expenses such as salaries and other expenses required to ensure the smooth running of schools. Figure 3.2 illustrates the different public channels used to finance recurrent expenditure in 2010.

Figure 3.2: Public Spending Channels of the Recurrent Education Budget, 2010



Trends in Recurrent Education Expenditure Subsector Allocations[28]

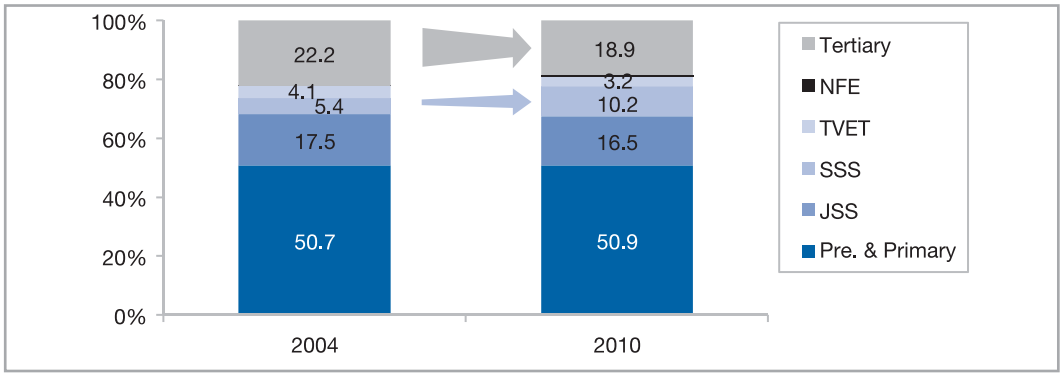
The allocation of public recurrent education resources has witnessed some changes over 2004-10. Preprimary and primary education still receive the highest share (51 percent). Primary alone is allocated 49 percent, in line with the FTI benchmark of 50 percent, highlighting the sustained priority given to this subsector by MEST (See Figure 3.3). The share allocated to JSS has also varied little, standing at about 17 percent over the period. The main adjustment has been the increase in the allocation for SSS, which has almost doubled to over 10 percent. This increase has occurred mainly at the expense of tertiary education, whose budget share has dropped from 22 percent to 19 percent. The share allocated to TVET has witnessed the greatest relative drop, from four percent to three percent, and nonformal education is still poorly publicly funded, with just 0.3 percent of the recurrent education budget in 2010.

Whereas the evolution observed in higher education could be associated with a more balanced financing of the sector between public and private providers, the drop observed in JSS financing is of concern, as the sector is expanding. The relative drop in resources for TVET also raises questions with respect to the subsector's adequate development and certainly contrasts with MEST's stated wish "to increase the number of high quality TVET courses and to shift from the definition of TVET as the lesser alternative to mainstream" (MEST, 2009).

28 Due to the difficulty in obtaining consistent and reliable data by level since 2004, the analysis uses data for 2004 (the baseline - see World Bank, 2007) and 2010, the latest year for which data are available.

Figure 3.3: Distribution of Public Recurrent Education Expenditure, by Level, 2004 and 2010

Percent



Source: World Bank, 2007 and authors' computations based on MoFED data.

Compared to other countries with similar schooling structures, Sierra Leone places relatively more emphasis on primary, as well as on JSS (16.5 percent, against 13.4 percent for the LIC average) and tertiary (18.9 percent, against an LIC average of 16.1 percent), but invests less than the LIC average in nonformal education and TVET (See Table 3.1 below). Based on this simple comparison, it appears that Sierra Leone could channel further resources away from higher education to TVET.[29]

Table 3.1: Distribution of Recurrent Education Expenditure, by Level, Sierra Leone and LICs, 2010 or MRY

Percent

	Primary	JSS	SSS	TVET	Tertiary	Other
Sierra Leone	**49.3**	**16.5**	**10.2**	**3.2**	**18.9**	**1.9**
Benin	53.2	8.8	4.9	5.7	22.0	5.4
Burundi	46.4	12.1	12.3	6.1	18.0	5.1
CAR	44.8	12.1	9.5	1.3	24.1	8.2
Gambia, The	50.3	22.9	9.6	2.6	12.1	2.5
Guinea-Bissau	51.7	14.2	22.5	2.3	6.4	2.8
Liberia	29.3	8.6	4.2	15.7	18.0	24.2
Mali	36.5	16.7	12.9	9.9	17.6	6.4
Niger	60.2	11.9	4.4	3.4	10.3	9.8
Average	**46.6**	**13.4**	**10.0**	**5.9**	**16.1**	**8.1**

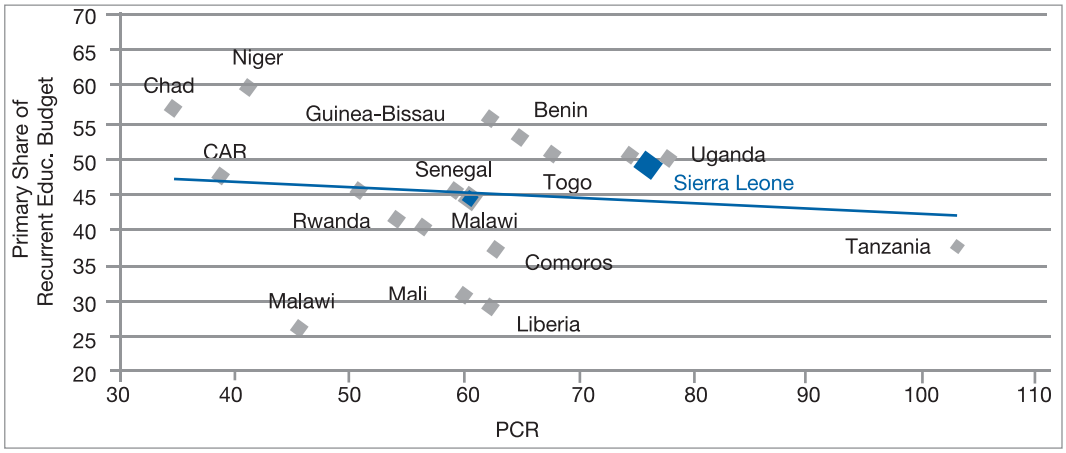
Source: Annex Tables A3.1 and A3.2 for Sierra Leone; Pôle de Dakar UNESCO/BREDA for other countries.
Note: Data for LICs with similar education system structures to Sierra Leone were recalibrated according to the 6-3-3 norm (6 years of primary and 3 years of lower and upper secondary each), to ensure comparability.

29 Although higher education has recently benefited from a relative increase in resources, there is no confirmation at this stage that this will be recurrent.

To better contextualize the comparison, it is worthwhile taking into account the differences in countries' progress towards universal primary education (UPE). Countries that are closer to achieving UPE (measured by the primary completion rate – PCR) should allocate a greater proportion of their education expenditure to postprimary levels, the demand for secondary and higher education being higher. In the same vein, countries still facing challenges with respect to UPE would be expected to prioritize the primary subsector in their budget allocations. Figure 3.4 shows that Sierra Leone's primary share of the education budget is in line with that of countries with similar PCRs, such as The Gambia and Uganda.

Figure 3.4: Primary Completion Rate and Priority Given to Primary in Education Expenditure, 2010 or MRY

Percent



Source: Pôle de Dakar UNESCO/BREDA.

Note: Both the PCR and the primary share of the recurrent budget have been calibrated to a 6-year cycle for comparative purposes

The Nature of Recurrent Education Expenditure

The forthcoming analysis focuses mainly on primary and secondary education levels, as various constraints were faced in the analysis of TVET and higher education data: (i) transfers from the MEST cover various expense types, including teacher and non-teacher staff salaries as well as institutional and development costs, it not always being feasible to establish their respective amounts or shares; and (ii) HLIs and TVET institutions also raise funds of their own, unaccounted for in official statistics.

Table 3.2: Distribution of Recurrent Expenditure by Education Level and Type of Expenditure, 2010

Percent

	Payroll		Non-Teacher Salary Items						(Non-Teacher Salary
	School Level	Central Level	Admin.	Pedagogical (1)	School Fee Subsidy	Exams	Social (2)	Special Needs Schools (3)	
Preprimary	99.5	0.3	0.3	0.0	0.0	0.0	0.0	0.0	(0.5)
Primary	80.6	0.9	3.7	2.7	9.6	2.0	0.0	0.5	(19.4)
JSS	73.0	1.2	4.2	1.7	0.0	10.2	9.7	0.0	(27.0)
SSS	69.9	1.3	2.0	0.4	0.0	17.1	9.3	0.0	(30.1)
Total	**77.9**	**1.0**	**3.5**	**2.1**	**6.1**	**5.7**	**3.3**	**0.3**	**(22.1)**

Source: Annex Tables A3.1 and A3.2.

Note: (1) Pedagogical items include textbooks, teaching and learning materials, science equipment and reagents. (2) Social spending includes JSS girls' fee subsidy and food inputs for public secondary boarding schools. (3) Special needs schools refer to primary schools hosting handicapped children that receive government grants.

Teacher and Teaching Staff Salaries

As is the case in most countries, teacher salaries constitute the largest share of recurrent education expenditure in Sierra Leone (See Table 3.2). The share drops gradually with each education level, from almost 100 percent for preprimary to 70 percent for SSS, the share for primary standing at 81 percent.

Two categories of teachers are found at primary and secondary levels: (i) approved teachers who have an employment agreement with the MEST and a payroll identification number (PIN), who are effectively civil servants; and (ii) non-approved teachers hired directly by schools and generally paid either by school fee subsidies, parent-teacher associations (PTA) or parents, via illegal fees charged by schools.

A total of 35,190 staff was recorded on the sector payroll in 2010, accounting for an overall wage bill of Le 168 billion (See Table 3.3 below).[30] Primary education accounts for 69 percent of all school-level staff, absorbing 62 percent of the respective wage bill, whereas JSS and SSS respectively account for 15 percent and 8 present of staff and absorb 19 percent and 11 percent of the wage bill. Barely 2.5 percent of all preprimary school staff are on the payroll, absorbing an equivalent share of the total wage bill. The number of TVI/TVC teachers on the government payroll is equivalent to four percent of the total, whereas just one percent (362 staff members) was purportedly employed by the MEST at the central level.[31]

Education sector salaries comply with the general civil servant salary scale. There are 11 Grades, each comprising 9 to 11 echelons (See Annex Table A3.3 for further detail). The entry grade is determined by academic qualifications, experience and the type of position held previously. Whereas unqualified primary teachers are recruited at Grades 1 to 3, qualified primary teachers start at Grade 4 and JSS and SSS teachers are normally recruited at Grades 6 and 7, respectively.

It is not possible to compute staff wages by grade of seniority and type of position.[32] The average total teacher income by education level can however be computed (See Table 3.3). Gross income ranges from 2.4 units of GDP per capita at the primary level to 3.6 units at SSS.[33] Teachers of technical senior secondary streams are relatively poorly paid, at 2.8 units of GDP per capita, a level close to that of primary teachers.

Table 3.3: Number of Staff on Payroll, Gross Wage Bill and Average Annual Gross Salary, by Level, 2010

	Number of Staff	Wage Bill (Million Le)	Annual Salary		Total Gross Income (Uts of GDP p.c.)
			Thousand Le	Multiple of the Primary Wage	
MEST	362	2,905	8,033	1.88	4.6
School level	*34,829*	*164,875*	—	—	—
Preprimary	887	3,938	4,441	1.04	2.5
Primary	24,241	103,613	4,274	1.00	2.4
Secondary	*8,212*	*50,001*	*6,089*	*1.42*	*3.5*
JSS	5,276	31,470	5,964	1.40	3.4
SSS	2,936	18,531	6,312	1.48	3.6
TVI/TVC	1,489	7,323	4,917	1.15	2.8
Total (Average)	**35,190**	**167,780**	**(4,768)**	**(1.12)**	**(2.7)**

Source: Payroll Unit, MoFED. See also Annex Table A3.4.

30 Accurate staff numbers are hard to come by (See Data Limitations).

31 This number might be underestimated, as staff with no grade were not recorded and payroll data are erratic, varying by up to 25% from one month to the next, possibly due to the establishment of short term contracts based on short-term needs.

32 EMIS data does not properly record teacher status and qualifications, whereas payroll data do not breakdown wages by grade of seniority. MEST payroll data does however provide a breakdown by grade of seniority (See Annex Table A3.4).

33 Should the same scale apply, gross annual income would range from 2.0 units of GDP p.c. for untrained teachers and steadily increase to 2.3 units for Teacher Certificate holders, 3.0 units for Higher Teacher Certificate holders, 3.8 units for primary deputy head teachers and 5.6 units for primary head teachers.

It is important to note that basic wages, although extremely low, represent only a small share (11.5 percent) of teachers' total gross income, much of which is received in the form of allowances (incentives, medical cover and rent and transportation subsidies) and grants (See Table 3.4 below).[34]

Table 3.4: School Staff Gross Wage Components, 2010

	Total Wage Bill		Average Salary	
	Million Le	%	Le	Units of GDP p.c.
Basic Salary	18.9	11.5	543,251	0.3
Allowances	47.0	28.5	1,349,897	0.8
Grants	98.9	60.0	2,840,705	1.6
Total	**164.9**	**100.0**	**4,733,854**	**2.7**

Source: Authors' computations based on data from the Payroll Unit, MoFED.

Annual promotions to the next echelon are automatic, whereas promotion to the next grade is based either on a change in the position held or new qualifications as a result of skills upgrading. Note also that basic salaries are also regularly adjusted in line with inflation. Despite this, the opportunities for wage progression for new teachers are limited by the flat structure of the scale for low grades. Over 2008-10, basic salaries rose by 16.7 percent, or 2.7 percent in real terms (inflation was 13.9 percent over the period). In 2011, the wage bill increased by 40 percent while the number of teachers was constant, providing a further 2.2 percent increase in real teacher wages.[35]

Nevertheless, as staff numbers have increased for all levels since 2004, a relative decrease in per teacher costs has occurred at both primary and secondary levels (See Table 3.6). The drop is more pronounced at JSS and primary (16 percent) than SSS (11 percent), slightly widening the wage gap between primary and SSS teachers, from 41 percent in 2004 to 48 percent in 2010.

Table 3.5: Number of Personnel and per Teacher Costs, by Level, 2004-10

Number and GDP per Capita

	Teaching Staff (Number)			Cost per Teacher (GDP p.c.)		
	2004	2010	% Increase	2004	2010	% Increase
Primary	17,668	24,241	37%	2.9	2.4	-16%
Secondary	*5,791*	*8,1212*	*42%*	*4.1*	*3.5*	*-15%*
JSS	4,389	5,276	20%	4.1	3.4	-16%
SSS	1,402	2,936	109%	4.1	3.6	-11%

Source: World Bank, 2007, Table 3.3 and authors' computations.

34 The basic wage represents 58 percent of the total gross salary of MEST staff at the central level.

35 The government has shown a keen interest in improving the welfare of civil servants (including teachers) over the past few years, to improve morale and output. Accordingly, salaries have recently been reviewed, including an across-the-board raise for teachers. An ongoing pay reform programme is further expected to significantly improve civil servants' conditions of service, funded in part thanks to the savings achieved through the elimination of ghost teachers through the biometric identification of staff. Moreover, a Teaching Service Commission has been set up for the hiring, firing and determining the conditions of service of teachers. These developments will ultimately determine teachers' pay packages over the coming years.

Even considering all emoluments, Sierra Leonean teachers earn less than their counterparts in most other countries in the region, regardless of the level taught (See Table 3.6 below). Primary teacher emoluments represent 2.4 units of GDP per capita in Sierra Leone, second lowest only to those of Congo, less than half the subsample average (of 5.3 units) and markedly below the FTI benchmark of 3.5 units. Concerns are also raised about postprimarylevels, where weak remuneration could favor the emigration of the best secondary teachers to neighboring countries.

Table 3.6: Average Teachers' Remuneration, Sierra Leone and LICs, 2010 or MRY

Units of GDP per Capita

	Primary	JSS	SSS
Niger	11.0	7.4	8.6
Mali	7.8	5.6	6.6
Benin	6.6	5.4	5.4
Malawi	6.6	11.6	11.6
Togo	6.1	8.9	11.6
CAR	5.8	6.5	6.7
Côte d'Ivoire	5.7	8.8	9.4
Uganda	5.4	—	—
Subsample Average	5.3	6.2	6.8
Cameroon	3.6	5.2	5.5
The Gambia	2.7	2.8	3.0
Guinea-Bissau	2.6	3.4	3.4
Rwanda	2.6	6.4	7.3
Sierra Leone	2.4	3.4	3.6
Congo	1.8	2.0	2.5
Ratio Subsample Average/SL	**2.2**	**1.8**	**1.9**

Source: Table 3.3 for Sierra Leone; Pôle de Dakar UNESCO/BREDA for other countries.

This situation is partly linked to the low level the education budget represents within GDP. Furthermore, the comparatively high share of salary expenditure within the total education budget leaves few funds for non-wage recurrent spending (See Table 3.7 and the related analysis below). Thus Sierra Leone has little leeway for potential wage expansion at present, unless more funds are directed to the education sector, as in 2011, when the government opted to increase the education budget.[36] However, improving efficiency in the use of human resources is also desirable, especially considering the evidence of under-utilization of teachers' time at secondary levels.[37]

Non-Teacher Salary Expenditure

Non-teacher salary expenditure is low by regional standards. Table 3.2 above shows that on average, just 22 percent of recurrent expenditure is devoted to costs other than teachers' remuneration (including salary and benefits). The share of the education budget devoted to non-teacher salary items ranges from 19 percent for primary, to 27 percent for JSS and 30 percent for SSS. At the preprimary level, almost no funds

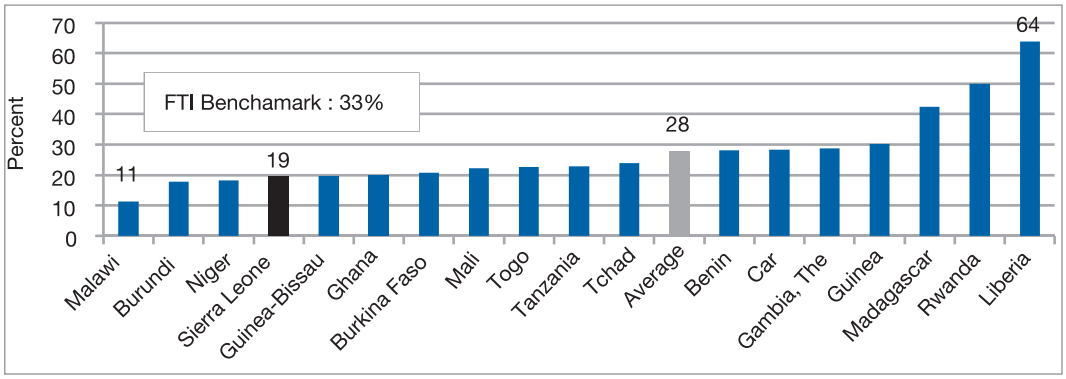
36 In 2011 the education sector benefited from an important budget increase, including a 40 percent increase in the teaching staff payroll (while holding teacher numbers constant), implying a substantial increase in average teacher income to 2.8 units of GDP p.c. for primary, 3.9 units for JSS and 4.1 units for SSS.

37 An initial simulation of secondary level teacher workloads indicates that 9 hours per week are worked on average, well below the 15-18 hour formal workload.

are available to cover such costs. For primary, the share is considerably lower than that of other LICs (27.7 percent on average) and well below the FTI benchmark of 33 percent (See Figure 3.5 below). This highlights the fact that very few resources are left for education inputs that support student learning conditions in public primary schools.

Figure 3.5: Non-Teacher Salary Recurrent Primary Education Expenditure, Sierra Leone and LICs, 2010 or MRY

Percent



Source: Table 3.2 for Sierra Leone; Pôle de Dakar UNESCO/BREDA for other countries.

Most non-teacher salary expenditure is accounted for at the school level: 83 percent for primary, 84 percent for JSS and 89 percent for SSS (See Table 3.7). At the primary level, school fee subsidies (SFS) are the main cost (52 percent), dealt with below. Administrative and pedagogical spending represents a further 20 percent. At the secondary level, examination costs are the greatest expenditure item (up to 57 percent for SSS), with social spending accounting for at least a further 30 percent (36 percent for JSS).

Table 3.7: Breakdown of Non-Teacher Salary Recurrent Expenditure, by Level, 2010

Percent

	Preprimary	Primary	JSS	SSS	Total
School Level					
SFS/SNS (3)	0.0	52.1	0.0	0.0	29.2
Other Admin	0.0	6.3	4.1	0.0	4.6
Pedagogical (1)	0.0	13.9	6.4	1.2	9.7
Exam	0.0	10.3	37.8	56.8	25.8
Social (2)	0.0	0.0	35.8	30.8	14.9
Subtotal	**0.0**	**82.7**	**84.0**	**88.8**	**84.1**
Central and Local Level Management					
Staff Salaries			4.4	4.4	4.5
Other Recurrent Expenditure	51.9	12.8	11.5	6.7	11.4
Sub-total	**100.0**	**17.3**	**16.0**	**11.2**	**15.9**
Total Non-Teacher Salaries	100.0	100.0	100.0	100.0	100.0
Share in total budget	**0.5**	**19.4**	**27.0**	**30.1**	**100.0**
Share that goes to school	**-**	**82.7**	**84.0**	**88.8**	**84.1**

Source: Annex Tables A3.1 and A3.2.
Note: (1) Pedagogical items include textbooks, teaching and learning materials, science equipment and reagents. (2) Social spending includes JSS girls' fee subsidy and food inputs for public secondary boarding schools. (3) Special needs schools refer to primary schools hosting handicapped children that receive government grants.

Administrative and Pedagogical Spending

In 2010, 59 percent of non-teacher salary recurrent expenditure (13 percent of total recurrent expenditure) was allocated to administrative and pedagogical costs at the primary (including preprimary) and secondary levels, 43 percent of which was allocated directly to schools, the remaining 16 percent being allocated to central and local sector management (See Table 3.7 above).

At the primary level, 90 percent of non-teacher salary expenditure is allocated to administrative and pedagogical expenses overall, most of which is for administration, the school fee subsidies alone accounting for over half (SFS funds can also be spent on pedagogical and learning materials). At the secondary level, administrative and pedagogical costs account for a much lower share: 26.4 percent of non-teacher salary spending for JSS and just 12.4 percent for SSS.

The level of funds allocated to pedagogical materials (teaching and learning materials and textbooks) can directly affect the quality of teaching and learning. That it should be so low in Sierra Leone is cause for concern. At the primary level, just 14 percent of non-teacher salary spending is allocated to pedagogical expenses (1.7 percent of total recurrent education expenditure). Although part of the school fee subsidies can be used to cover some pedagogical materials and donors have supported the purchase of textbooks since 2008, this is low. At the lower secondary level, pedagogical items represent barely six percent of the non-teacher salary budget, whereas for senior secondary they are insignificant. Secondary school textbooks are bought by students, although at subsidized prices. However, teaching and learning materials are to be provided by MEST.

School Fee Subsidies[38]

School fee subsidies (SFS) absorb the lion's share of primary level non-teacher salary spending (52 percent), and as such are worthy of special mention.[39] The subsidy was introduced in 2003 following the fee-free primary education policy. The SFS is paid to schools according to their enrollment, as per the MoFED school census. Initially for government and government-assisted schools, following the devolution of SFS to local councils in 2009, community schools have also benefitted from them.

So far, no guidelines on how SFSs should be used at the school level have been issued. Funds are generally used to pay for non-PIN teachers and minor repairs. Locally, the SFS is considered too low to cover schools' regular operating costs.[40] Furthermore, significant delays in the payment are noted.[41] The confluence of these factors has sometimes resulted in head teachers levying illegal fees from parents or overstating their enrollment to increase the amount of their subsidy.

Although the devolution of the management of the subsidy (and more generally of basic education) to local councils could improve service delivery, it is important to ensure that councils are adequately prepared for the task. Efficient budgetary execution of the various education grants will prove crucial to the smooth functioning of schools. School-level fund monitoring mechanisms could be implemented to help in this respect, as greater outreach to families could help to quell concerns about transparency (MEST, 2011).

38 SFS include subsidies to schools catering for children with special needs throughout this report.
39 Or 6.4 percent of total recurrent education expenditure.
40 The amount of the subsidy is Le 9,000 per student per school year, equivalent to US$ 2.2 in 2010.
41 Based on evidence from the field and the backlog of expenses in the budget.

Examination Fees

Currently, local councils cover the examination fees for all primary school (NPSE) and lower secondary (BECE) exams, while MEST covers the cost of senior secondary exams (WASSCE) for first-time candidates from government, government-subsidized and community schools. Examination fees account for a quarter (26 percent) of non-teacher salary recurrent expenditure (5.7 percent of the total recurrent education budget) and increase at each level: from 10 percent for primary to 38 percent for junior secondary and a high 57 percent for senior secondary. Exam fees represent 2 percent, 10 percent and 18 percent of the recurrent education budget for primary, JSS and SSS respectively.

Potential cost savings could be made, especially for the WASSCE where fees could be paid directly by candidates. Indeed, most students finishing senior secondary are from the wealthiest families and could potentially afford the fees (See later Table 6.4). Furthermore, BECE fees could also be paid directly by families, except for candidates from the poorest households, who should continue to be subsidized. Finally, it would help to correct some issues with the governance of the examination programme. The list of eligible students is not properly managed, so that some second-time candidates do still not pay the fee as they should, as the WAEC initial list of candidates is not validated.

Social Spending

Social spending accounts for almost 15 percent of primary and secondary non-teacher salary recurrent expenditure. Such spending consists exclusively in supporting education programmes at the secondary level, namely fee subsidies for girls in JSS and food inputs for public secondary boarding schools. In 2010, social spending absorbed 36 percent of non-teacher salary expenditure at JSS and 31 percent at SSS, mostly devoted to the boarding school feeding programme (72 percent and 100 percent respectively).

The Girl Child Education policy was introduced in 2003 to encourage girls completing primary to pursue their education to JSS level. Initially piloted in the Northern and Eastern regions, the initiative was later scaled up to cover the whole country. The subsidy was originally intended to cover enrollment fees, uniforms, teaching and learning materials, textbooks and the NPSE fee. Due to its high costs, only the school fee subsidy is maintained today. The fee exemption is tied to success in each grade (no dropout or repetition is allowed) and regressive: it covers all three terms of JSS 1, two terms of JSS 2 and just one term of JSS 3.[42] Despite the devolution of JSS management to local councils, the allocation of girl's school fees is still performed at the central level, based on a list of enrolled girls prepared by schools and verified by district education officers.

At the senior secondary level, social spending consists exclusively in the supply of food to public secondary boarding schools. This programme absorbs nearly 31 percent of the SSS non-teacher salary recurrent budget (9.3 percent of SSS recurrent education spending).

A series of cost-saving measures could be implemented with respect to secondary level social spending. Indeed, given the high cost of running social programmes at this level on the one hand, especially in the current context of low resources, and their relevancy in the light of the fact that secondary schools tend to host relatively better-off students on the other, more appropriate needs-based targeting might improve their impact. The girls' subsidy programme for instance, although not expensive (it represents 10 percent of non-teacher salary costs at the JSS level, or 2.7 percent of recurrent education spending), is probably supporting girls whose families do not need the subsidy. Given its comparatively resource-thirsty nature, the school feeding programmes offer the scope for greater savings still, while maintaining the subsidy for the truly needy pupils only. At the senior secondary level, the supply of food to public boarding schools represents 31 percent of the non-teacher salary recurrent budget (or 9.3 percent of SSS spending). A final

42 The low level of support to JSS 2 and JSS 3 pupils calls the impact of the measure into question.

cost-saving measure at the SSS might include having WASSCE candidates pay their examination fees directly. The savings could be usefully devoted to spending on items that would directly impact learning outcomes. For instance, although not shown here, resources devoted to school supervision are virtually inexistent (0.4 percent of the recurrent education budget for primary and secondary); more adequate financing would enable the inspection department and its staff to better perform their role.

The issue of delays in the transfer of social subsidies to schools, as per the backlogs in the national budget, is also of some concern. As for the SFS, delays have been recorded in the payment to schools of funds for food supplies, textbooks, teaching and learning materials and WAEC fees. Illegal fees are sometimes charged to parents as a consequence, which could ultimately limit the expected positive impact of the programmes. Strengthening both central and local education staff capacities for the planning, budgeting and monitoring of funds and activities should be made a priority to ensure services are adequately delivered and their quality enhanced.

Transfers to Tertiary and TVET Institutions

Higher education and TVET institutions receive transfers/subsidies from MEST, contributing to wage and non-wage expenses.[43] In 2008, 154 tertiary-level TVET institutions of the 380 registered with the MEST received support for salaries, 25 of which also received other government grants.However, most institutions rely on other resource leverage mechanisms (student fees, consultancies, donor funds and so on) to support their operations. Higher education subsidies are reassessed annually on an incremental basis, although the amounts bear no relation to student enrollment projections or unit costs.

Higher education institutions also receive transfers from the MEST in the form of grants for students wishing to study at university (called Grant-in-Aid) and who comply with the set criteria. In 2010, the grants represented 9 percent of tertiary recurrent expenses (Le 4,521 million), 13 percent of which were used to pay for students abroad. Grants generally cover the direct tuition-related expenses (university and exam fees, games and sport fees, medical expenses and development costs such as maintenance) of beneficiary students and are paid directly to the institution. As such, the grants do not constitute in an additional source of income for the institutions.

A screening mechanism aims to ensure the neediest students benefit.[44] Nevertheless, higher learning institution students are generally from the wealthiest households and graduates tend to enjoy better working conditions and pay than their less educated co-workers, calling into question the equity of the grants (See Chapter 6). These arguments, among others, have led a growing number of countries in the region to explore alternative cost-sharing mechanisms for higher education, mainly in the form of student loans. Such options, as well as other public-private partnership approaches, would enable Sierra Leone to reduce its heavy investment in tertiary education, shifting some of the resources towards lower levels.

Public per Student Spending

Per student spending (unit costs) are computed in Table 3.8 on the basis of total public expenditure data and student enrollment in public and grant-aided schools. Unit costs rise with each level: from Le 111,530 for primary to Le 186,849 for JSS, Le 316,061 for SSS and Le 2,118,011 for tertiary education. With unit costs of Le 179,655, preprimary is slightly more expensive than primary.

43 There are no guidelines on how to use these subsidies. Although subsidy claims show that most of the amount is used for the payment of salaries, their actual use is uncertain as the funds are fungible and public subsidies tend to mingle with HLIs' own resources to cover all costs.

44 Priority is given to: (i) all female students of science and engineering; (ii) unqualified rural teachers enrolled in a distance education teacher certificate programme; (iii) students of languages, arts, mathematics, sciences, medicine, agriculture, TVET and early childhood education, all of which are under-subscribed; and (iv) students with special needs (NEP, 2010). In addition, beneficiaries are chosen according to merit and an interview-based needs assessment.

Table 3.8: Recurrent Public Unit Costs, by Level, 2004 and 2010

	Preprimary & Primary			Secondary			Tertiary **
	Prep.	Primary *	Total	JSS	SSS	Total	
2010							
Unit Costs (Le)	179,655	111,530	112,807	186,849	316,061	221,313	2,118,011
Multiple of Primary	1.6	1.0	1.0	1.7	2.8	2.0	18.8
% of GDP p.c.	10.2%	6.4%	6.4%	10.6%	18.0%	12.6%	120.7%
2004							
Unit Costs (Le, Constant 2010)	—	—	103,103	302,361	327,591	307,992	3,135,768
Multiple of Primary	—	—	1.0	2.9	3.2	3.0	30.4
% of GDP p.c.	—	—	6.9%	20.1%	21.8%	20.5%	208.8%
2004-10 Variation	—	—	+ 9%	-38%	-4%	-28%	-32%

Source: Annex Tables A3.1 and A3.2 for recurrent costs for 2010; World Bank, 2007 for 2004 data.
Note: * Excludes transfers to private schools. ** Excludes bursaries for students abroad.

In constant prices, education unit costs have decreased at all levels since 2004, except for primary (including preprimary), which has recorded a nine percent increase. The reduction has been particularly significant for JSS (38 percent) and tertiary education (32 percent), whereas for SSS unit costs it has been more modest (4 percent). With this general drop in the level of postprimary unit costs, the difference between primary and postprimary levels has narro narrowed: in 2004 the cost to the government of a JSS pupil was 2.9 times that of a primary pupil whereas by 2010 it was down to just 1.7 times that cost. Similarly for SSS and tertiary, where the cost ratios dropped from 3.2 to 2.8 and from 30.4 to 18.8 respectively.

In regional context, per student costs in Sierra Leone are among the lowest, especially at postprimary levels (See Table 3.9). Sierra Leone's public recurrent unit costs are 2.1 times and 2.6 times lower than the average of LICs considered here for JSS and SSS respectively, a situation that could jeopardize the quality of teaching at these levels. The situation stems from the weak share of education in GDP, which in per capita terms is among the region's lowest.

Although the government has opted to increase the education budget in 2011, the reallocation of resources across levels as discussed above could further help to ensure the adequate development of basic and secondary education, crucial to the country's economic development.

Table 3.9: Public Recurrent Unit Costs, Sierra Leone and various LICs, 2010 or MRY

% of GDP per Capita

	Primary	JSS	SSS	Tertiary
Niger	21.3	37.8	106.8	400.0
Burundi	16.9	43.3	147.2	735.8
Togo	12.8	23.1	28.6	137.9
Benin	11.8	10.8		113.9
Average	9.5	21.9	47.1	214.0
Tanzania	9.3	20.1		420.0
Liberia	9.1	21.2	26.9	117.9
Mali	8.9	20.2	74.8	104.9
The Gambia	8.8	11.5	23.4	91.2
Chad	7.8	12.1	21.6	181.1
Guinea	7.2	10.8	4.4	71.5
Rwanda	7.1	39.9	45.1	402.7
Uganda	6.7	19.1		99.5
Sierra Leone	6.4	10.6	18.0	120.7
Madagascar	5.6	8.6	15.9	131.6
Guinea-Bissau	5.4	9.9		78.2
CAR	4.2	12.0	23.5	123.6
Ratio Subsample Average/SL	**1.5**	**2.1**	**2.6**	**1.8**

Source: Table 3.8 for Sierra Leone; Pôle de Dakar UNESCO/BREDA for other countries.

Breakdown of Unit Costs

It is equally helpful to estimate the breakdown of unit costs on the basis of average teaching conditions (See Annex Note 3.2). The major components include: (i) teacher salaries, the main expenditure item for all education systems; (ii) the pupil-teacher ratio; and (iii) other recurrent expenditure items, including salaries for non-teaching personnel, learning materials, administration costs, and so on. Such a breakdown provides a very synthetic overview of the weight of the different factors and may allow to assess where potential trade-offs can be made. The comparison of 2010 data with 2004 data will also help to identify how the factors considered have evolved over the years and which ones drive unit costs in 2010.

Table 3.10 confirms that teacher wages constitute the major share of unit costs at all levels, ranging from 70 percent for SSS to 81 percent for primary (including preprimary) in 2010. The weight of teacher salaries in total unit costs has risen at the primary level (from 69 percent in 2004) and to a lesser extent at the lower secondary level (from 70 percent to 73 percent over 2004-10), while receding marginally at the upper secondary level. This evolution has coincided with a relative drop in the cost related to almost all other factors.

Exam costs are an exception. Their relative share has been multiplied by a factor varying between 1.4 (JSS) and 2.6 (SSS), to represent 10 percent and 18 percent of total unit costs in 2010 for JSS and SSS respectively, and 2 percent for primary. Note that at postprimary levels, exams are the second most budget-consuming post after teacher wages in 2010.

Table 3.10: Breakdown of Public Recurrent Unit Costs, by Level, 2004 and 2010

Percent

	2004				2010			
	Prep. & Primary	JSS	SSS	Tertiary	Prep. & Primary	JSS	SSS	Tertiary (1)
Unit Cost ('000 Le, 2010)	103	302	328	3,136	113	187	316	2,118
School-level Salaries (2)	69.1%	69.8%	71.7%	—	81.1%	73.0%	69.9%	—
Average (Units of GDP p.c.)	2.9	4.1	4.1	7.2	2.4	3.4	3.6	—
Student-Staff Ratio	61:1	29:1	26:1	4:1	47:1 (2)	44:1 (2)	29:1 (2)	—
Other charges	*30.9%*	*30.2%*	*28.3%*	—	*18.9%*	*27.0%*	*30.1%*	—
Central-Level Salaries	2.6%	4.3%	4.4%	—	0.9%	1.2%	1.3%	—
Admin	*2.5%*	*5.6%*	*5.2%*	—	*3.6%*	*4.2%*	*2.0%*	—
Central	2.5%	5.6%	5.2%	—	0.9%	1.3%	1.4%	—
Local Councils	--	--	--	—	2.7%	2.9%	0.6%	—
Pedagogical	11.4%	2.3%	2.1%	—	2.6%	1.7%	0.4%	—
Exam	0.9%	7.3%	6.7%	—	1.9%	10.2%	17.1%	—
School Fee Subsidy	13.5%	0.0%	0.0%	—	9.8%	0.0%	0.0%	—
Social	0.0%	10.7%	9.9%	15.0%	0.0%	9.7%	9.3%	8.1%

Source: World Bank, 2007 for 2004 (See also Annex Table A3.5).
Note: (1) For tertiary it was not possible to distinguish the nature of different costs, except for social spending. (2) Only staff on the payroll are included.

Pedagogical spending has particularly suffered over the years, as shown by the important drops in the respective shares for the upper secondary (down 82 percent) and primary levels (down 77 percent). In 2010, pedagogical and learning materials represented barely 2.6 percent of primary, 1.7 percent of JSS and 0.4 percent of SSS unit costs.

Pupil-Teacher Ratios

Given the weight of teaching salaries in unit costs, further analysis of the wage bill may help to better understand the underlying forces at stake in the evolution of per pupil spending. Total salary spending is determined by two factors: (i) the average teacher salary; and, (ii) the pupil-to-teacher ratio (PTR). PTRs, in addition to providing some insight into teaching conditions, are a strong determinant of unit costs, analyzed in this light here. PTRs are also of particular interest as they embody the policy trade-off between quality and quantity: within the constraints of a set budget, providing pupils with a good learning environment implies offering low PTRs, whereas giving priority to maximum enrollment implies high ones.

As shown by the earlier analysis of wages, average salaries have decreased at all levels, by between 11 percent for SSS and 16 percent for primary and JSS (See earlier Table 3.5). Simultaneously, teaching conditions have evolved, deteriorating considerably at the lower secondary level (the PTR having increased from 29:1 in 2004 to 44:1 in 2010) and marginally at the upper secondary level (the PTR having risen from 26:1 to 29:1 over the period), while improving sharply at the primary level (the PTR having dropped from a high 61:1 in 2004 to 49:1 in 2010).[45] These changes explain the variable increase observed in the salary component of unit costs over 2004-10.

45 PTRs here are based only on school staff on the payroll.

Regional comparisons show that PTRs in Sierra Leone are slightly higher at the secondary level than the average for other LICs considered in Table 3.11 (44:1 for JSS against 40:1 on average; and 29:1 for SSS against 26:1 on average). This no doubt contributes to reduce Sierra Leonean secondary unit costs. At the primary level however they are lower than the average (47:1, against 52:1).

Table 3.11: Student-Teacher Ratios in Public Schools, Sierra Leone and Various LICs, 2010 or MRY

Student-Teacher Ratio

	Primary	JSS	SSS
Liberia	24		
Ghana	34	17	21
Niger	40	35	15
Gambia, The	41	41	28
Togo	44	47	52
Benin	47	36	19
Sierra Leone	47	44	29
Guinea	48	25	25
Guinea-Bissau	48	25	25
Burundi	52	43	20
Average	52	40	26
Mali	53	45	26
Burkina Faso	55	86	26
Madagascar	55	42	22
Tanzania	55	55	21
Rwanda	62	29	24
Malawi	80	20	
CAR	92	57	37
Ratio Subsample Average/SL	**1.1**	**0.9**	**0.9**

Source: Table 3.10 for Sierra Leone; various CSRs for other countries.

Note: Only staff on the payroll are included.

Household Financing

Data on household contributions to education is scarce (See Table 3.12). The only data that could be mobilized for this analysis are derived from the 2011 INSPSS report that provides information on the school experience of one child attending primary from each household surveyed (IRCBP, 2012).

Table 3.12: Household Spending and Public Education Expenditure, Primary Level, 2010

Leones and Percent

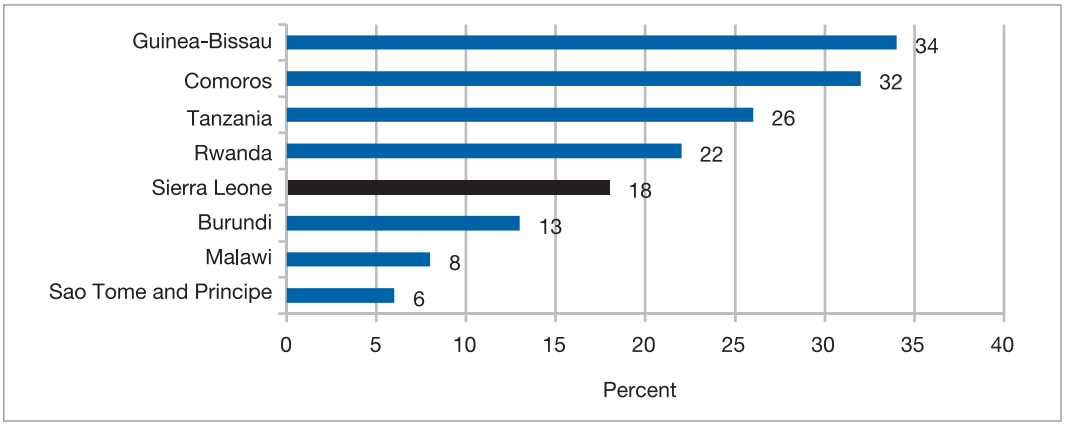
	Amount	Share
Household Spending per Child (Le) (1)	23,964	–
Public Household Spending (Billion Le)	28.6	18.2%
Public Recurrent Spending (Billion Le) (2)	128.6	81.8%
Total Spending (Billion Le)	157.2	100.0%

Source:(1) Adapted from IRCBP, 2012; (2) Annex Tables A3.1 and A3.2.

In 2010, the median amount invested by parents on their children' schooling was Le 23,964 (Le 23,745 in government and mission schools and Le 30,530 in non-government schools), against Le 112,807 by the government.[46] Households thus contribute to 18 percent of primary schooling expenses, while the public sector covers the remaining 82 percent. Compared to other countries for which similar information was available, household contributions to primary education in Sierra Leone are quite reasonable (See Figure 3.6).

Figure 3.6: Share of Household Education Spending within Total Recurrent Education Budget, Sierra Leone and Various LICs, 2010 or MRY

Percent



Source: Table 3.12 for Sierra Leone; Pôle de Dakar UNESCO/BREDA for other countries.

Nevertheless, despite the abolition of primary school fees in 2002/03, 56 percent of households sending their children to public schools still pay fees (See Table 3.13). Similarly, although textbooks and notebooks should be supplied free of charge in public schools, 10 to 15 percent of parents still have to purchase these items. As pointed out by IRCBP: "Government efforts have resulted in considerable progress in decreasing the percentage of households paying for textbooks, notebooks and school fees" (IRCBP, 2012). Indeed, in 2008 the share of households paying for these items was much higher (33 percent, 89 percent and 65 percent, respectively). However, uniforms absorb the greatest amount of spending (after school fees for private pupils), being paid by 97 percent of households sending their children to public schools in 2011, at an average cost of Le 24,600 per child.

46 These figures are derived from the median household contributions of Le 28,000 for children in public and mission schools and Le 36,000 for children non-government schools, for 2011. The figures have been deflated to 2010 prices.

Table 3.13: Primary School Related Household Expenses, by School Type, 2011

Percent and Leones

	Share of Households Paying (%)	Average Amount Paid (Le)	Median Amount Paid (Le)
Uniforms			
Government	98	24,370	20,000
Mission	97	25,344	20,000
Community	89	21,562	15,000
Private	98	55,300	40,000
Textbooks			
Government	10	11,579	8,000
Mission	10	18,784	10,000
Community	5	12,419	5,000
Private	7	41,687	25,000
Notebooks			
Government	15	7,912	6,000
Mission	20	10,373	6,000
Community	16	6,381	5,000
Private	9	14,264	12,000
Fees			
Government	54	15,159	6,000
Mission	56	20,529	9,000
Community	56	13,530	9,000
Private	90	348,944	180,000
Community Teachers			
Government	36	7,795	5,000
Mission	43	8,998	5,000
Community	64	9,547	6,000
Private	6	15,686	15,000
Miscellaneous			
Government	82	24,909	13,002
Mission	85	26,659	13,888
Community	84	17,654	12,000
Private	68	35,748	20,000

Source: IRCBP, 2012 (See also Annex Table A3.6).
Note: Based on a sample of 3,674 households, whose children are distributed as follow: 33% in public schools, 54% in mission schools, 6% in community schools, 5% in private schools and 2% in other school types.

Families continue to contribute highly to education costs other than school fees. Beyond the fee-free primary education policy, the achievement of universal primary education will therefore involve further alleviating the financial burden on households, particularly for the poorest families. The government may consider targeted financial-support programmes for the neediest students, with a focus on relieving the financial burden on households for expenses other than school fees, to ensure that such students are given the opportunity to complete their basic education.

Key Findings

Composition of the Public Recurrent Education Budget

Primary education absorbs the highest share (49.3 percent) of recurrent education spending, highlighting the sustained priority given to this subsector by MEST. The share allocated to SSS has almost doubled (to 10.2 percent), at the expense of JSS and higher education whose respective shares have dropped from 17.5 percent to 16.5 percent and from 22.2 percent to 18.9 percent. Whereas the evolution in the tertiary allocation could be associated with more balanced public-private cost-sharing, the drop observed in the JSS allocation is cause for concern as the sector expands.

Sierra Leone places relatively more emphasis on primary than other LICs, as well as on JSS (that receives 16.5 percent of the recurrent education budget, against 13.4 percent on average) and higher education (18.9 percent in Sierra Leone, against 16.1 percent on average). On the other hand, the investment in TVET is below average and has witnessed a relative drop in its share, from 4.1 percent to 3.2 percent. This raises issues with respect to the subsector's adequate development and suggests that further resources could be channeled away from higher education towards TVET.

Although the level of salaries is low, the share of salary expenditures is high, leaving Sierra Leone with little leeway for potential wage expansion, under current conditions. School-level salaries represent over 80 percent of the primary education budget and about 72 percent of the budget for secondary. Despite the government having opted to increase the education budget to improve teacher pay, the more efficient use of existing human resources should also be encouraged, especially given the evidence of under-utilization of teachers' time at the secondary level.

Non-teacher salary expenditure is low against regional standards. The share ranges from 19 percent for primary to 27 percent for JSS and 30 percent for SSS, whereas the share is almost nil at the preprimary level. The share for primary is much lower than in other LICs (28 percent on average) and well below the FTI benchmark of 33 percent. This highlights the fact that very little resources are left for education inputs that support student learning conditions.

Significant cost-savings could be realized in non-teacher salary spending, especially in terms of postprimary social programmes and exam fees. Given that postsecondary students tend to come from wealthier households, the relevancy of subsidizing JSS girls' fees, secondary school feeding and BECE and WASSCE exam fees should be evaluated. Providing such support on a needs-tested basis could allow the MEST to make considerable savings without jeopardizing the impact of such programmes, just as the promotion of public-private partnerships at the tertiary level could significantly reduce its financial burden.

Delays in the transfer of much devolved spending impact negatively on the daily running of basic schools. In the current devolution context, making sure that central and local council staff and school management committees have the required capacities to plan, budget and monitor funds and activities is crucial to ensure that services are adequately delivered and their quality enhanced. In this regard, EMIS systems able to provide accurate and reliable education sector data to the relevant decision-making levels are fundamental.

Unit Costs

Unit costs in Sierra Leone are among the lowest in the region, especially at postprimary levels. At junior and senior secondary levels, public recurrent unit costs are respectively 2.1 and 2.6 times lower in Sierra Leone than for the average LIC. This situation could jeopardize the quality of teaching at those levels.

Low secondary unit costs are the result of relatively low teacher wages and higher STRs, as well as the low education budget relative to GDP. Sierra Leone salaries are systematically lower than those in other countries in the region. Primary teacher salaries for example, are equivalent to 2.4 units of GDP per capita in Sierra Leone, compared to 5.3 units on average in the region, and below the FTI benchmark of 3.5 units. The level of postprimary salaries is also of concern, as weak pay could encourage the emigration of teachers to neighboring countries offering better pay, potentially depleting Sierra Leone of its best human resources.

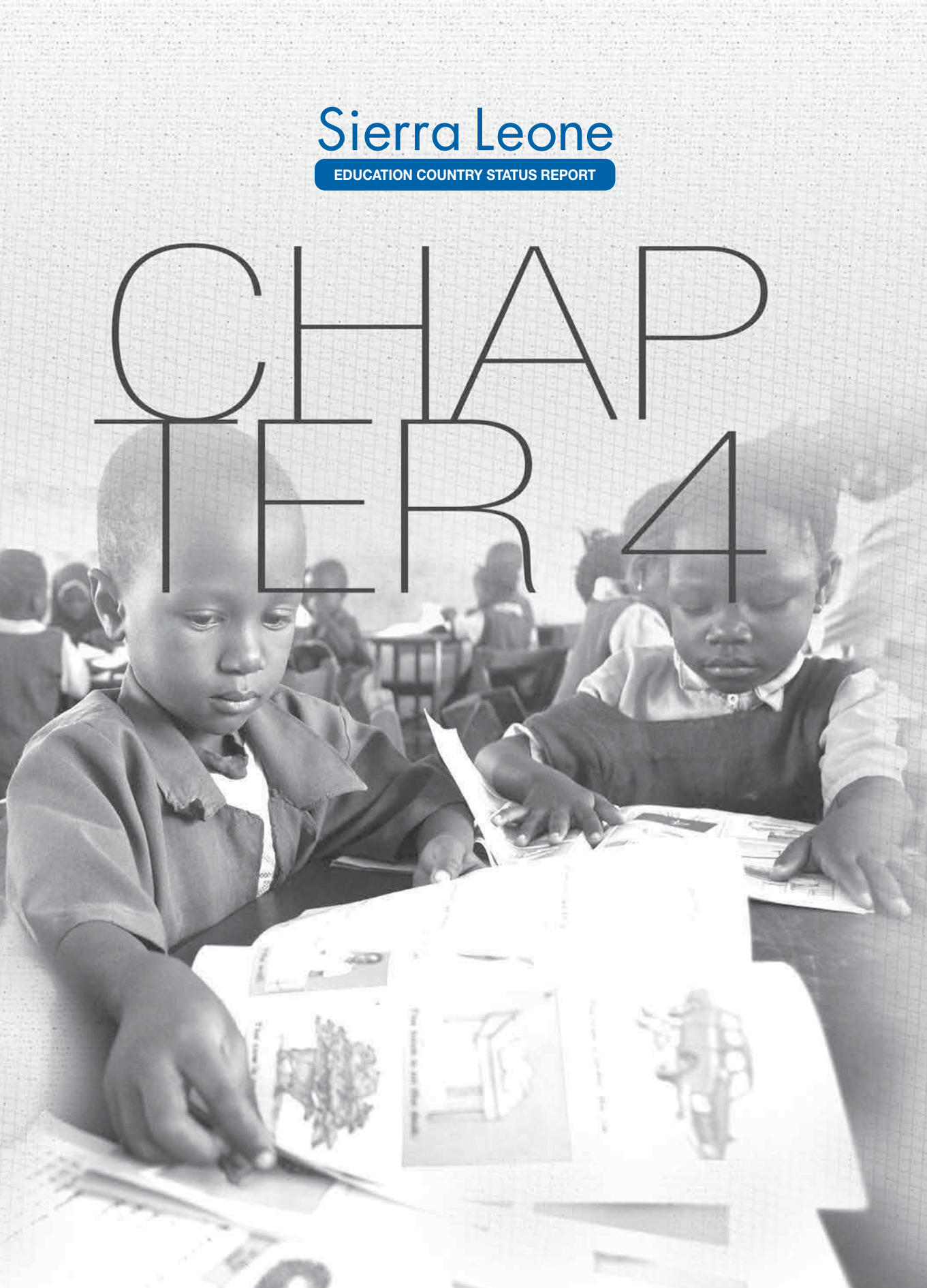
Private Education Spending

Household contributions to primary education were estimated at 18 percent of total primary recurrent education expenditures in 2010. It is disconcerting that despite the official abolition of school fees in 2002/03, many households enrolling their children in public schools still pay fees. Families also contribute highly to other costs, the most expensive being uniforms. The government may consider targeted financial support programmes for the neediest students, relieving the financial burden on households for non-fee expenses, to ensure that such students are given the opportunity to complete their basic education.

Sierra Leone

EDUCATION COUNTRY STATUS REPORT

CHAPTER 4



CHAPTER 4: Internal efficiency and learning outcomes

The objectives of education systems are not limited to increasing school enrollment, but also to offering services of quality. In many countries in Africa the quality of education is becoming a major issue. Sierra Leone is not an exception and concerns have been raised that the current expansion of the education system might further jeopardize quality.

The concept of quality in education is complex, and can cover many realities. It can refer to the level and type of education inputs. Education resources however, although contributing to quality, do not guarantee it. Quality also refers to outputs, or what students actually learn. In this perspective, an education of quality would be one that ensures that students acquire the set competencies and skills.[47] Measuring learning achievements is therefore critical. Thirdly, education outcomes are a gage of quality, in as much as education systems provide individuals with the social and professional skills they need to prosper, and society with the human capital required for its national development. Finally, quality can refer to the process of transforming education resources into outputs and outcomes; in this instance it is measured by the internal efficiency of the system (a factor of repetition and dropout).

In this chapter, the analysis of quality will focus on three aspects: (i) internal efficiency, reviewing levels of repetition and computing the internal efficiency coefficient; (ii) learning outcomes at the primary, JSS and SSS levels; and (iii) the determinants of performance, highlighting school, classroom and teacher characteristics that could improve it.

Internal Efficiency of the Education System

Analyzing student flows within a cycle and assessing an education system's internal efficiency entails comparing the number of students who access the first year of the cycle with those who reach the final year of that same cycle in the set timeframe. Repetition and dropout affect the system's internal efficiency, as they entail a waste of public resources and a lost opportunity to improve human capital: in the case of repetition, because the cost of two years of schooling must be covered for pupils to achieve the same learning outcomes as one; and in the case of dropout, because students do not validate their level or achieve the set learning outcomes, despite the cost of a year of education being incurred. Furthermore, early primary dropout is often associated with future illiteracy, as evidence shows that a minimum of six years of formal primary schooling are required for a person to achieve sustainable literacy. This section will first review repetition levels, before measuring the internal efficiency of both basic and secondary education.[48]

47 This approach is the one proposed by the EFA goal on quality, and is favored over the education input focus because what students actually learn in school is what most matters and is what the system will be held accountable for. Education inputs, although important, are preferably examined not on the basis of generic norms, but according to their impact on learning outcomes, in relation to their cost. This cross-referencing of learning outcomes and costs is crucial to develop sound education policies, and is discussed in Chapter 7.

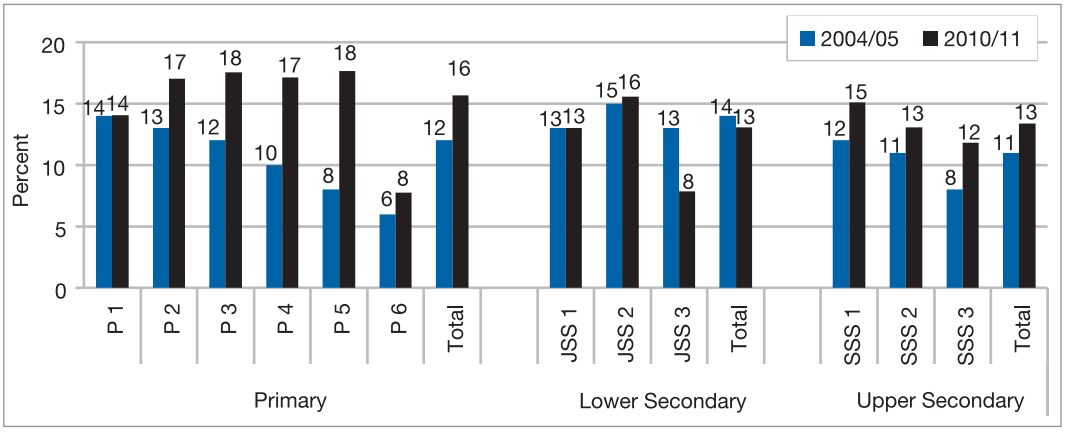
48 The computation of dropout and repetition rates requires enrollment data for two consecutive years/grades (pseudo-longitudinal profiles). As such data were not available in 2010, the transversal schooling profile was used throughout this chapter to compute the dropout rates, and the percentage of repeaters for 2010 was computed instead of repetition rates.

Repetition Trends

The level of repetition in Sierra Leone is cause for concern. The shares of repeaters are globally high, at 16 percent for primary and 13 percent for junior and senior secondary (See Figure 4.1). Furthermore, the rate has increased in primary and senior secondary compared to 2004/05 (by four and two percentage points respectively), although it has slightly decreased at junior secondary (from 14 to 13 percent).

Figure 4.1: Proportion of Primary and Secondary Repetition, by Subsector and Grade, 2004/05 and 2010/11

Percentage of Repeaters



Source: World Bank, 2007 and EMIS, 2010/11.

The analysis of repetition by level and grade shows no regular pattern from one cycle to another. At the primary level, the share of repeaters increases rapidly between Grade 1 and Grade 2, then stabilizing at about 17 percent, before dropping for Grade 6 to 8 percent. For JSS, the trend also follows a bell shape, peaking at 16 percent for JSS 2 before sharply falling to 8 percent for JSS 3. In senior secondary however, repetition decreases steadily over the cycle from 15 percent in SSS 1 to 12 percent in SSS 3.

Higher repetition could be linked to the implementation of the fee-free primary education policy, which has allowed children from various backgrounds to join school, including some who face difficult learning conditions at home. Indeed, the current official policy on repetition would tend to cap it, as only one year per cycle may be repeated by any given pupil, in addition to the last grade of the cycle if the student fails the corresponding exam. Further analysis would be required in the future to better understand this trend and strengthen and focus efforts to reduce repetition, given the detrimental effects of repetition.[49]

49 In addition to being costly, repetition often sends a negative signal to students and parents about children's academic abilities, which in a context of weak demand for schooling might encourage dropout (See Annex Note A4.1). Also, it is found to be ineffective unless weak pupils are offered remedial classes, which is not the case in Sierra Leone. Some countries have been successful in reducing repetition levels by dividing the cycle into subcycles and enforcing direct promotion policies for students within each.

Table 4.1: Share of Repeaters, by Level, Sierra Leone and Various LICs, 2010 or MRY/

Percent

	Primary	JSS	SSS
Tanzania	2.4	1.7	1.4
Niger	4.4	18.4	17.7
Gambia, The	5.6	3.5	4.5
Zambia	6.0	7.7	0.7
Ghana	6.5	3.1	2.7
Liberia	6.7	6.3	6.5
Senegal	6.3	15.2	18.2
Burkina Faso	10.1	25.0	23.5
Uganda	10.8	2.0	3.2
Average	11.9	12.9	11.5
Benin	11.8	24.1	20.5
Mali	12.9	17.6	15.4
Guinea-Bissau	14.0	16.0	6.4
Rwanda	13.8	4.1	5.6
Guinea	16.5	16.4	22.5
Sierra Leone	15.6	12.5	13.4
Malawi	18.3	5.7	8.3
Togo	22.1	26.3	22.1
Burundi	34.0	26.2	16.3

Source: Figure 4.1 for Sierra leone; Pôle de Dakar - UNESCO for other Countries.

The level of repetition is much higher than that observed in other countries in the region for primary (15.6 percent, against 11.9 percent on average) and slightly higher for SSS (13.4 percent, against a regional average of 11.5 percent), whereas for JSS it is on par with the regional average (at 12.9 percent - See Table 4.1).

Internal Efficiency Coefficients

The internal efficiency coefficient (IEC) is the indicator used to assess the level of resource wastage due to disruption in the flow of students caused by dropout and repetition.[50] The IEC is obtained by dividing the number of theoretical student-years required for a cohort of children to complete a level (the official duration of the cycle multiplied by the number of students enrolled at that level) by the number of effective student-years required by the cohort (taking repetition and dropout into account). Partial indicators can be derived to assess the proportions of wastage respectively attributable to repetition and dropout (See Table 4.2 below).

50 The term wastage is commonly used to refer to the inefficient use of resources, although not wishing to imply that students who only follow classes for part of a year (dropout) or those who repeat a year do not benefit, at least in part.

Table 4.2: Internal Efficiency Coefficients, by Level, 2004/05 and 2010/11

Percent, and Number of Years

	2004/05	2010/11
Primary		
Internal Efficiency Coefficient	58	63
Dropout-Related IEC (no Repetition)	65	75
Repetition-Related IEC (no Dropout)	89	84
Effective Student-Years Required for Completion	10.3	9.5
JSS		
Internal Efficiency Coefficient	81	79
Dropout-Related IEC (no Repetition)	95	90
Repetition-Related IEC (no Dropout)	86	88
Effective Student-Years Required for Completion	—	3.8
SSS		
Internal Efficiency Coefficient	88	86
Dropout-Related IEC (no Repetition)	98	99
Repetition-Related IEC (no Dropout)	90	87
Effective Student-Years Required for Completion	—	3.5

Source: World Bank, 2007 and EMIS, 2010/11.

At the primary level, internal efficiency reached 63 percent in 2010/11, meaning that 37 percent of public education resources were wasted on repetition and/or dropout. Indeed, the system required an average of 9.5 years to produce one primary school graduate, 3.5 years more than the official cycle duration (representing perfect efficiency). An improvement since 2004/05 is however noted, when the IEC was 58 percent. This is explained by the decrease in dropout over the period, leading to a 10 percentage point reduction in the related resource wastage (the dropout-related IEC improved from 65 percent to 75 percent over 2004-10). Dropout nevertheless remains the main source of inefficiency at the primary level, accounting for 61 percent of resource wastage. Despite being lower, repetition-related inefficiency has grown, from 11 percent to 16 percent.

The system's efficiency increases with each level. The 2010/11 IECs are 79 percent for JSS, rising to 86 percent for SSS. Unlike for primary, repetition is the greatest source of inefficiency in secondary education, accounting for 55 percent of resource wastage in JSS and 93 percent in SSS. At both secondary levels however, internal efficiency has dropped marginally over the period, by two percentage points. Combating repetition will be crucial to improve the overall efficiency of the Sierra Leonean education system, although addressing increasing levels of dropout at the primary and JSS levels will be also be important.

Interestingly, when compared to a sample of countries with similar income levels, Sierra Leone's internal efficiency is almost on par for primary (63 percent, against 67 percent on average) and is considerably better for secondary (See Table 4.3 below). The country boasts IECs well above average for both JSS (79 percent, against 68 percent for other LICs) and SSS (86 percent, against 72 percent on average).

Table 4.3: Internal Efficiency Coefficients, by Level, Sierra Leone and Various LICs, 2010 or MRY
Percent

	Primary	JSS	SSS
Tanzania	88	81	72
Niger	79	22	26
Gambia, The	76	82	84
Malawi	76	66	
Guinea	73	77	75
Benin	72	67	78
Mali	72	78	
Burkina Faso	69	59	64
Average	67	68	72
Sierra Leone	63	79	86
Guinea-Bissau	53	67	89
Burundi	42	67	76
Rwanda	39	82	91

Source: EMIS 2010/11 for Sierra Leone; Pôle de Dakar UNESCO/BREDA for other countries.

The lower repetition observed in the last grade of each cycle and the comparatively good internal efficiency coefficients for secondary may well have a common explanation, linked to the possibility that pupils with the greatest learning difficulties drop out in the earlier grades of a cycle. Thus an aptitude-based selection process may mean that those students reaching secondary are the best performing, and are hence less prone to later dropout or repetition. Another explanation could lie in the more flexible selection processes at secondary levels. More analysis is however needed to confirm this hypothesis.

Learning Outcomes

The assessment of learning outcomes is based on national examinations at the primary and secondary levels: the National Primary School Examination (NPSE), the Basic Education Certificate Examination (BECE), the West African Senior Secondary Certificate Examination (WASSCE) and two sample-based primary-level assessments. National examination results are a welcome source of data reflecting education quality issues, as they present the advantage of being both available and comparable at the national level.[51]

In Sierra Leone, the West African Examination Council (WAEC), a government-subsidized autonomous agency, is responsible for the administration of all national examinations. While NPSE and BECE are organized nationally, the WASSCE is administrated at the regional level, with the participation of Nigeria, Ghana, The Gambia and Liberia in addition to Sierra Leone.

Primary Level Learning Achievements

Whereas the NPSE remains the main tool to inform policy makers on students' learning achievements at the end of primary cycle, the Early Reading Assessment Survey and the Book Evaluation Survey, respectively supported by UNICEF and the World Bank, offer additional insight into the level of learning achieved by Sierra Leonean pupils throughout it, between Grades 1 and 3 and Grades 3 and 6, respectively.

51 Test conditions and correction protocols are usually homogeneous. However, the data do carry the following constraints: (i) they do not cover all competencies and so do not provide a comprehensive picture of learning achievements; (ii) they do not give information on students' backgrounds, as data are not available on an individual level; (iii) they do not always allow for international comparisons; and (iv) they can be calibrated to adjust the number of students admitted to the next level to the number of places available.

Early Reading Assessment Survey

The early reading assessment survey consists of a sample-based test that measures the basic foundations for literacy acquired by pupils in Grades 1, 2 and 3, through 11 indicators. It was designed to support and direct the development of improved teacher training, to achieve better results in the teaching of reading to primary pupils (Kuyvenhoven, 2011).[52] A baseline assessment was conducted at the beginning of the 2011 school year on 885 pupils from 28 schools selected for their representativity.[53]

The results indicate that the development of foundational reading skills is very low during the first three grades of primary (See Annex Table A4.1). More specifically, the analysis shows that after three years of schooling: (i) the great majority of children does not master the alphabet correctly or understand how it works; (ii) reading and comprehension skills are weak, as children show great difficulty in reading simple words and make little meaning of a reading passage; and (iii) the majority of Grade 1 children (53 percent) could not write their own names and were reluctant to even attempt writing a simple sentence.

Overall, the results show that by the end of Grade 3, not only are many children not able to read to learn but are still learning to read, meaning not only that they lack the most basic reading skills and knowledge to use books in subsequent grades, but they also lack the confidence in themselves to learn.

Children's failure to learn the alphabet after three years of primary school points to a significant pedagogical failure. It also raises the issue of the early use of English as the language of instruction and for nearly all printed learning materials. Indeed, its mastery by most teachers is barely adequate; by caregivers it is often nil. Much debate has ensued on the option of using local languages to teach early grades to ensure children learn basic literacy and numeracy skills from the very beginning of their education.[54]

52 The assessment was supported by UNICEF as a part of the Step-Up Reading Programme. The tools developed are very close to those of the Early Grade Reading Assessment (EGRA). See Annex Table A4.1.

53 Twelve pupils per grade and per school were selected randomly, boys and girls being equally represented. The test was given to pupils having completed each grade the previous year.

54 Although Sierra Leone comprises about sixteen different ethnic groups, each with its own language, Krio is the primary language of communication among them, spoken by a majority of the population.

55 The EGMA consists in sample-based nationally representative assessment designed to measure the most basic foundation skills for math acquisition in Grades 1 to 3, and assess the education system's quality of instruction. The EGMA test, individually administered, focuses on 6 dimensions that include number identification, quantity assessment, basic arithmetic and problem solving.

Box 4.1: Curriculum Issues in Sierra Leone

Curriculum monitoring and improvements are the responsibility of different entities. While the National Curriculum Research and Development Centre (NCRDC) deals with basic and secondary education curricula, the Tertiary Education Commission (TEC) is responsible for curricula and standards in tertiary level institutions. The National Center for Technical and Vocational Awards (NCTVA) is responsible for the technical and vocational sector.

School curricula are known today to be plight with many flaws:

(i) The lack of a curriculum framework;

(ii) The syllabuses are obsolete: the last comprehensive reviews/revisions of the syllabuses for primary, JSS and SSS were carried out between 2003 and 2004;

(iii) The unavailability/short supply of syllabuses in schools; and

(iv) The non-compliance with teaching syllabuses, as many SSS schools teach the WAEC syllabuses.

Aware of the pressing need to revise education content in order to make education relevant and responsive to development needs, the government has recently embarked on a series of curriculum revisions – that of the JSS core subjects in 2010 (language arts, math, social studies and integrated science) and French, and that of the primary curriculum (based primarily on the thematic areas of emerging issues, child-centered teaching techniques, reading and child-friendly schooling. The development of curriculum frameworks has also started, with the production of the JSS final draft framework, the primary school curriculum framework being due for completion in February 2013.

The curricula of tertiary and TVET institutions constitute a matter for concern. There have been increasing indications of a mismatch between the knowledge and skills that graduates from these institutions possess and what the evolving labor market requires. It would appear that the curricula of these institutions are not responding as quickly as desired to local and global economic and developmental changes. This indication ties up with the need for developing and reviewing those courses and programmes that are overtly relevant to meeting present national goals and emerging challenges to development. These should include programmes in nonformal education and early childhood education.

Note that the Curriculum Directorate at the MEST is currently short staffed, strongly constraining its capacity to implement these reforms.

Source: Based on ESR, 2012b.

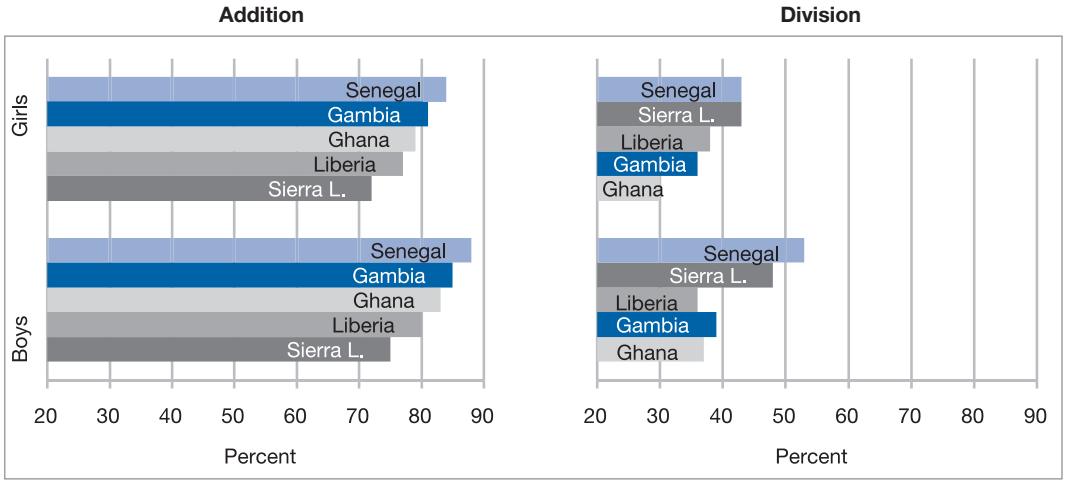
Mathematics Assessment at Upper Primary Grades

The World Bank and the government of Sierra Leone designed and implemented an impact evaluation of a textbook programme in 2008 and 2009. Data were collected on several dimensions of education service delivery, including learning achievements in basic numeracy, using a simplified version of the Early Grade Mathematic Assessment (EGMA).[55] The total sample included over 15,000 students of 337 government primary schools, from five randomly chosen councils covering all of Sierra Leone's regions: Kailahun in the Eastern region, Kambia in the Northern region, Pujehun in the Southern region and Western Area Urban and Western Area Rural for the Western region. Data were collected in May 2008 on Grade 3 and Grade 4 pupils and again in November 2009 on Grade 5 and 6 pupils (See Sabarwal, 2012 and 2012b).

Initial analyses show some improvement in math results between Grade 3 and Grade 6 (Sabarwal, 2012). More students were able to answer questions properly, although the percentage of correct answers tends to diminish with the complexity of the question. Indeed, although 97 percent of Grade 6 pupils could correctly answer the most simple question (3+6=9), only 72 percent gave the correct answer to a slightly more complex one (8/2=4 – See Annex Figure A4.1). It therefore appears that, like literacy, basic numeracy is not properly mastered by a sizeable share of primary completers, many of whom will proceed to JSS without the required knowledge.

Figure 4.2: Grade 5 Student Performance in Math, by Gender, Sierra Leone and Various LICs, MRY

Percentage (Mean Score)



Source: Sabarwal, 2012.

Similar tests administered in other West African countries enable to assess the relative performance of Grade 5 students in Sierra Leone (See Figure 4.2). Whereas in simple arithmetic Sierra Leonean students tend to fare the poorest, achieving a mean score of just 72 percent (against 80 percent on average for the countries considered), in more complex tasks such as division they tend to perform much better, ranking second best (with a mean score of 45 percent, above the sample average of 40 percent). This latter result, encouraging as it is, should be taken with caution as the best performing students in the sample are from Senegal, known to be among the poorest performing countries in terms of international learning assessment programme results such as the PASEC.

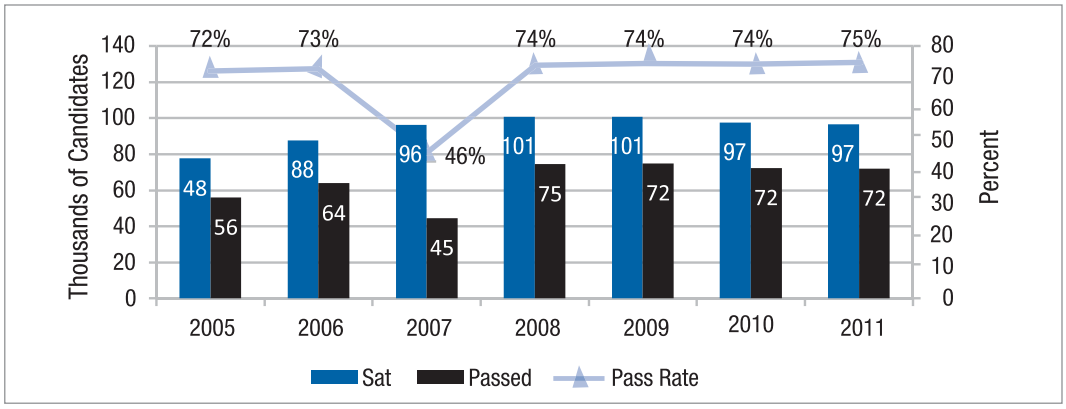
National Primary School Examination (NPSE)

The NPSE sanctions the end of the primary cycle. Candidates sit five subjects (math, English, verbal aptitude, quantitative aptitude and general Studies). The test is designed for results to be comparable year on year. Although it is a priori used as an internal measure of learning outcomes, its purpose is also and mainly to select students for public JSS.

The number of candidates sitting the exam has grown from 77,659 in 2005 to 96,533 in 2011 (See Figure 4.3). Numbers peaked in 2008 and 2009, corresponding to the first cohorts of pupils having fully benefited from the fee-free primary education policy, implemented in academic year 2002/03.

Figure 4.3: Number of NPSE Candidates and Graduates, and Pass Rate, 2005-11

Thousands and Percent



Source: MEST, 2012 (See also Annex Table A4.3).

A review of NPSE pass rates shows that the share of successful students has increased slightly, from 72 percent in 2005 to reach 75 percent in 2011.[56] However, the number of graduates provides a somewhat a different picture. Their number grew rapidly between 2005 (56,038) and 2008 (74,508), but has since started to slowly decrease: in 2011, just 72,166 candidates passed the exam. Although this drop is mainly driven by the reduced number of candidates sitting the exam, the evolution is thought to be very much policy-driven.

Although the computation of aggregate NPSE scores does not enable the analysis of results by subject (see Footnote 55), it does provide some insight into the performance of schools according to their ownership (See Table 4.4). Public schools are cause for the greatest concern, as not only is their pass rate (72 percent) below the average (75 percent) and the aggregate score of their pupils among the lowest of all school types, but they account for over 21 percent of candidates in 2011. Only community schools fare worse, with a pass rate of 69 percent; however, the number of their pupils sitting the exam is minor (5 percent of all NPSE candidates). The best results are recorded by private schools, both in terms of the pass rate (over 91 percent) and the aggregate score (of 280, well clear of the pass mark of 230), although this type of education benefits only a handful of students (3 percent of NPSE candidates).

56 A note of caution: an NPSE pass is currently defined as a weighted aggregate score of 230 out of 500 (the T-score), based on the results achieved in each of the five subjects and a continuous assessment mark that accounts for 10 percent. Given that the pass mark is set yearly by the MEST and that subject scores are standardized at the national level to have a mean of 50 and a standard deviation of 10, it is virtually impossible to assess students' real learning achievements. The T-score is more a reflection of how students perform vis-à-vis the average than their actual level, making trend comparisons and subject-based comparisons indicative at best.

Table 4.4: NPSE Candidates, Pass Rates and Average Scores, by School Ownership, 2011

Number, Percent and T-Score

	Number of Candidates	Share of Candidates	Pass Rate	Aggregate Score
Public	25,657	21.3%	72.0%	244.1
Community	6,408	5.3%	69.5%	244.7
Mission (Grant-Aided)	84,980	70.6%	75.6%	248.6
Private	3,352	2.8%	91.2%	279.9
Total	**120,397**	**100.0%**	**75.5%**	**249.4**

Source: EMIS, 2010/11 and NPSE 2011 results, WAEC

At this stage of the analysis it is impossible to tell whether the particularly poor results obtained by public and community school pupils is due to the greater intake in those schools of pupils with learning difficulties, poorer pedagogical effectiveness, or both. Whatever the reason, intervention is clearly needed, although a complementary study should first clarify the causes and identify possible courses of action.

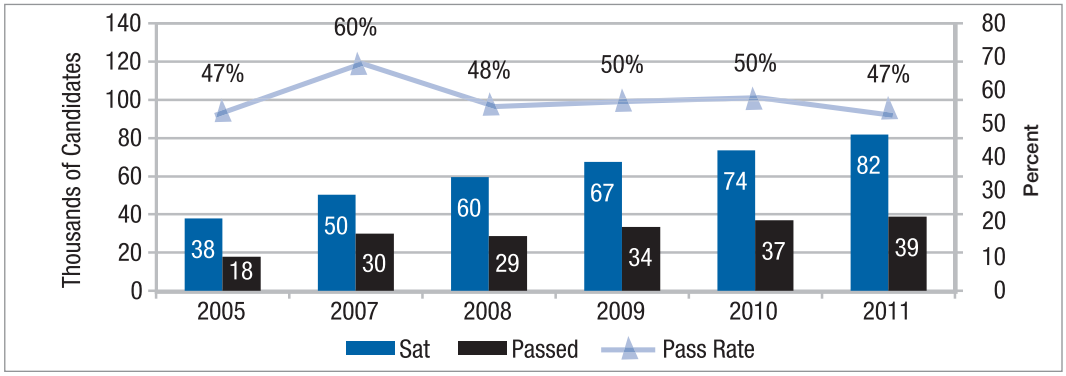
Secondary Level Learning Achievements

Basic Education Certificate Examination (BECE)

The BECE sanctions the completion of JSS. Candidates currently sit eight subjects, of which four are compulsory: language arts (the name given to English in Sierra Leone), math, social studies and integrated science. In order to obtain the certificate, students must pass four or more subjects, including language arts or math. The exam is also used to select students for SSS: whereas four BECE subject passes are sufficient for technical and vocational streams, for the general stream candidates must succeed in five or more subjects.

Figure 4.4: Number of BECE Candidates and Graduates, and Pass Rate, 2005-11

Thousands and Percent



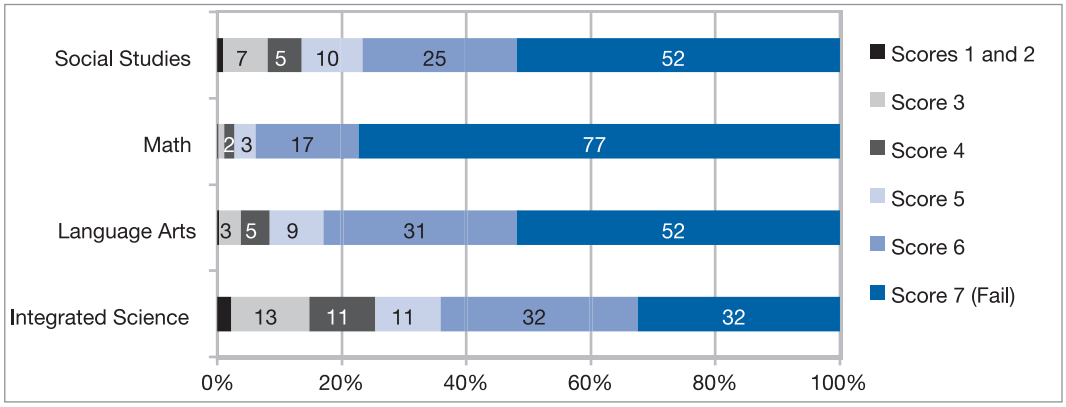
Source: WAEC/BECE results and authors' computations (See also Annex Table A4.4).

Note: The BECE pass rate includes all candidates achieving a pass in four or more subjects.

In 2011, 81,917 candidates sat the BECE, over twice the number of 2005, when 37,798 sat the exam (See Figure 4.4). The share of students passing the exam (if disregarding 2007 when the pass rate almost reached 60 percent) followed an upward trend until 2010, reaching 50.2 percent, before dropping in 2011 to 47.3 percent, slightly below its 2005 level. One possible explanation for this could be linked to the regulation of student flows between JSS and SSS, as the number of BECE graduates has more than doubled over the period (to reach 38,748 in 2011), unmatched by the number of available seats in upper secondary schools. It is also noted that many students having failed the NPSE are nevertheless granted access to JSS, which would have a downward impact on students' overall level of performance, throughout the cycle and at the exam.

Figure 4.5: Distribution of Student Scores in the Four BECE Core Subjects, 2011

Percent



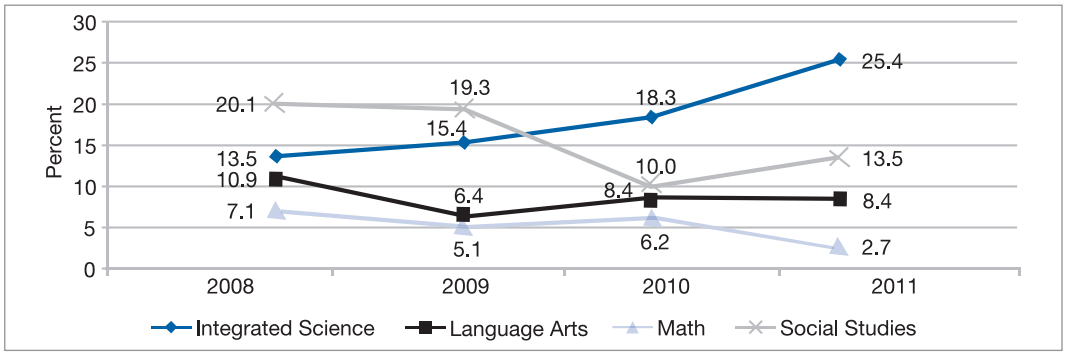
Source: BECE results, WAEC and authors' computations.

Students performances are poor however, as shown by their low achievement in the four core subjects (See Figure 4.5 above). The failure rate (Score 7) is over 50 percent in all core subjects but integrated science, and is particularly high in math (77 percent). Furthermore, over half of the students who are successful only achieve a Score 6, the lowest pass mark, and the share of all candidates obtaining a credit is 25 percent at best (in integrated science). Mathematics remains the core subject where results are the poorest, with only 3 percent of candidates obtaining a credit in 2011, against 8 percent in language arts and 14 percent in social studies. Very few students therefore properly master the core subjects by the end of JSS and most of those admitted to SSS start the cycle with a weak learning background.

Not only are BECE performances weak, but they have also deteriorated over the years. With the exception of integrated science in which the share of candidates obtaining a credit (Scores 1 to 4) has steadily increased over 2008-11, a deterioration in results is observed in all core subjects (See Figure 4.6). The drop is particularly significant for social studies (33 percent fewer candidates obtain a credit) and especially math (62 percent fewer candidates obtain a credit). Math results have also historically been the poorest among the core subjects, followed by language arts. These results tend to confirm what was foreseen on the basis of primary learning achievements: that the stark lack of mastery of the core subjects tends to limit learning and performance in the next cycle.

Figure 4.6: Share of BECE Candidates Achieving a Credit, by Core Subject, 2008-11

Percent



Source: BECE results, WAEC and authors' computations.

An analysis of BECE results by school type again indicates that private school students perform the best, with a pass rate of 73 percent, and that community school students perform the worst, with a pass rate of barely 42 percent (See Table 4.5 below). Mission schools however account for the greatest share of candidates (63 percent, against just 25 percent for private and community schools combined), who fortunately perform above average (55 percent pass the exam overall).

Table 4.5: BECE Candidates, Graduates and Pass Rates, by School Ownership, 2011

Number and Percent

	Candidates		Pass Rates (%)				
	Number	%	Overall	5 Passes or more, incl. LA or Math	4 Passes, incl. LA or Math	4 Passes, excl. LA and Math	5 Passes or more, excl. LA and Math
Public	4,436	20.0	50.3	37.2	8.1	2.6	2.4
Community	2,560	11.6	41.9	32.0	5.7	1.8	2.3
Mission	13,984	63.1	54.8	43.9	6.9	2.4	1.7
Private	1,181	5.3	72.7	64.6	5.4	1.6	1.1
Total (%)		**100.0**	**53.4**	**42.3**	**6.9**	**2.3**	**1.9**
Number	**22,161**		**11,833**	**9,364**	**1,532**	**514**	**422**

Source: WAEC/BECE results, 2011, EMIS 2010/11 and authors' computations.
Note: Based on a subsample of 158 JSS schools for which both EMIS and WAEC data could be reconciled. LA = Language Arts.

These findings are generally confirmed by the available data on student results by both core subject and school ownership (See Annex Figure A4.2). Only the math results of government school students stand out, as 85 percent of public candidates fail the subject. The better performance of students in private schools may be explained by the facts that: (i) unlike public candidates who face repetition constraints, they can decide when they are ready to sit the BECE; and (ii) they generally belong to the wealthier families that provide better learning environments at home and have a better mastery of the English language.

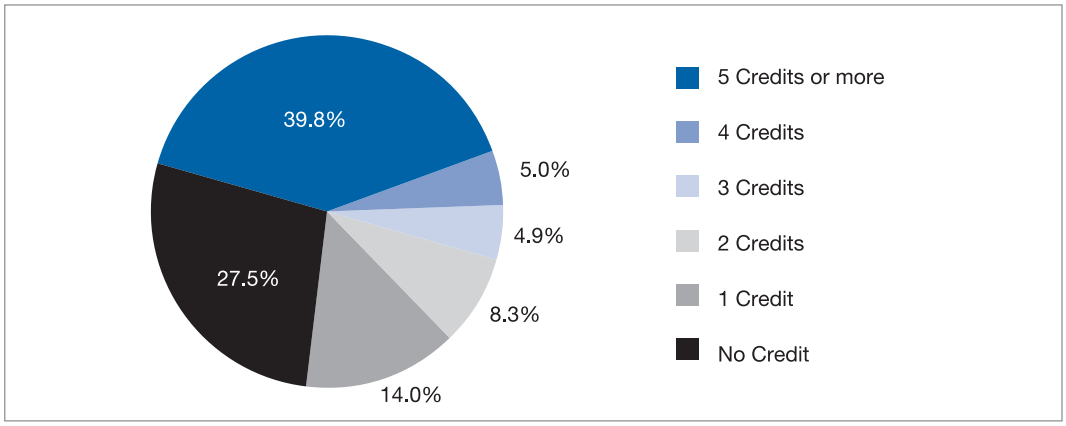
The West African Senior School Certificate (WASSCE)

The WASSCE was introduced by the WAEC in 1998 to replace the GCE Ordinary and Advanced level examinations. It sanctions the completion of SSS, constitutes the university admissions exam and is used to screen students for entry into other higher learning institutions.[58] It is administered twice in a year, in May/June and November/December, to offer private candidates the opportunity to improve their grades. The examination syllabus consists of 38 subjects covering science, technical, vocational, languages, arts and general subjects, among which candidates pick a minimum of 7 subjects including English language.

The number of students sitting the WASSCE has followed a steady upward trend, more than tripling since 2005, from 13,434 candidates to 44,790 in 2011, in line with the upward trend in enrollment following the creation of more senior secondary schools. Overall performance at the WASSCE is poor however, as 40 percent of candidates fail to obtain a credit in any subject in 2011 (See Figure 4.7 below).[59] Furthermore, only 10 percent obtain four credits or more and barely 5 percent obtain five credits or more (2,486 students in 2011), suggesting that higher education access is the privilege of just a fraction of candidates.[60]

Figure 4.7: Distribution of WASSCE Students, by Number of Credits Obtained, 2011

Percent



Source: WAEC/WASSCE results and authors' computations

The success rates (defined here as the share of candidates obtaining a credit) in English and math show that students' performance in math is particularly low, both in absolute terms and in comparison with English (See Figure 4.8). The respective rate has however improved since 2009, rising from 3.2 percent to 5.2 percent in 2010, marginally above its 2007 level (4.2 percent). Performances in English are also poor, and although apparently not following any particular trend, have slightly deteriorated, from 19 percent in 2009 to 14 percent in 2010, below the 2007 level of 17 percent.

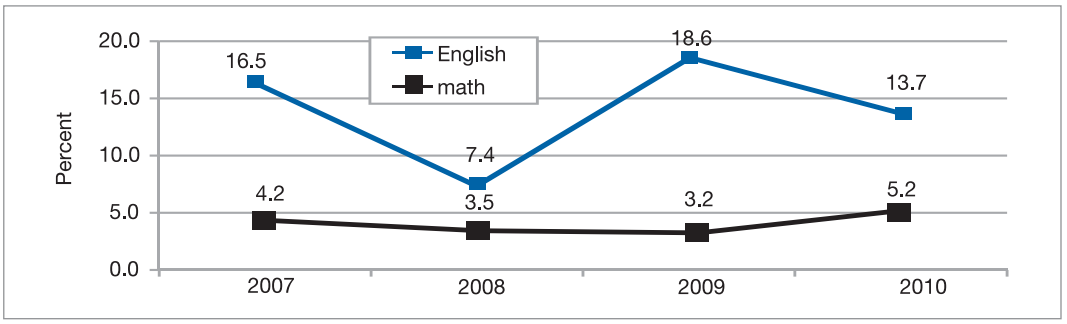
58 The minimum entry requirement is usually five or more credits for university, including English; four or more credits for polytechnics and the primary and secondary higher teacher certificates, including English; and two or three credits for the primary teacher certificate.

59 WASSCE scores incorporate a continuous assessment element, given a weight of 30 percent, and are standardized on a nine-point scale: Scores A1-C6 are credits, Scores 7 and 8 are passes and Score 9 is a fail. Note that unlike the BECE, no aggregate score is computed.

60 Data for 2010 indicate that 2,386 students (6.8 percent) obtained a credit (A1 to C6) in at least 5 subjects, among which just 639 students obtained five or more credits including English and mathematics, representing barely 1.8 percent of all candidates.

Figure 4.8: WASSCE English and Math Success Rates, 2007-10

Percent



Source: WAEC, 2009 and 2010.

Note: Success rates are here defined as the share of candidates obtaining a credit (Scores A1 to C6).

International comparisons confirm that Sierra Leonean students' performance is particularly weak, far below that of their Nigerian and Ghanaian counterparts, in terms of both English and math results (See Table 4.6). For English, the success rate of Sierra Leonean students is less than half that of those sitting the same exam in Nigeria and Ghana, whereas for math it is equivalent to barely 10 times lower. According to the WAEC Chief Examiners' 2008 report, poor performances could be due to *"i) candidates' inability to communicate well in the English Language, resulting in their inability to understand the requirements of the questions; ii) limited knowledge in all areas of the syllabus; iii) inability to (…) reason logically and calculate well in mathematics and mathematically related subjects"* (in Gbamanja, 2010).

Table 4.6: WASSCE Success Rates in English and Math, WAEC Countries, 2007-09

Percent

	English			Mathematics		
	2007	2008	2009	2007	2008	2009
Nigeria	30.2	35.0	41.6	46.8	57.3	47.0
Ghana	28.8	49.4	43.3	25.0	26.1	28.0
Sierra Leone	**16.5**	**7.4**	**18.6**	**4.2**	**3.5**	**3.2**
Gambia, The	6.5	3.1	13.1	3.3	2.6	3.2

Source: WAEC Gambia, 2009.

Note: Success rates are here defined as the share of candidates obtaining a credit (Scores A1 to C6).

It is tempting, when analyzing possible explanations for the overall low level of performance, to again blame the failure of previous education levels to build up the basic knowledge and competences required, especially in English. Students' poor mastery of the language is a hindrance to their performance not only in the subject, but in all exams, sat in that language. As indicated by the WAEC Examiners' 2008 report, *"the most common weaknesses was that the candidates were unable to read and understand the questions properly before attempting them. They were not able to follow simple instructions given to them (…) Some candidates misinterpreted the question while some did not understand the question at all"* (in Gbamanja, 2010). Both empirical and anecdotal evidence testify to the poor use of English by many teachers. In school and in class, teachers are reported to communicate in Krio, which further limits the adequate mastery of the English language, by both teachers and students.

Determinants of Performance [61]

This section aims to identify the factors that shape learning outcomes throughout the school system. Understanding the reasons of poor performance is complex, as they involve interwoven and intricate context-related, school-related and household-related factors. While certain school or class factors (class size, teaching practices, teacher characteristics, pedagogical choices, the availability of teaching and learning materials and so on) depend on education policies, many others do not, despite affecting learning achievements. These include student characteristics like gender, age and socioeconomic background, and certain school context characteristics such as location.

Multivariate analyses have been conducted here to shed some light on the potential underlying factors that explain poor performance (more detailed analyses could not be carried out due to major data constraints). These analyses determine which factors have a significant impact on learning outcomes by grasping the net effect of each (all other factors held constant), and assesses their magnitude. The analysis deals in turn with the respective determinants of student performance in terms of:

(i) Grade 5 math score;

(ii) NPSE pass rate and core subject scores; and

(iii) BECE pass rate and core subject results.

Caution is needed when analyzing the determinants of examination pass rates, as data shortcomings may lead to biased and counterintuitive results (See General Note No.1). Pass rates do however allow, to some extent, the identification of certain critical issues pertaining to education quality at the school level.

Determinants of Grade 5 Math Scores

The underlying econometric model used here is based on the simple ordinary least squares approach, applied to Grade 5 math scores at the school-level (See Annex Note A4.2for background analytical information). Table 4.7 provides a summary of the results, for those variables found to be significant.

61 Nevertheless, this approach remains quite challenging, due to important data limitations. In particular, robust analyses of factors affecting learning achievements require specific data which are not currently available.

Table 4.7: Net Effectof Significant Factors of Grade 5 Math Scores, School-Level, 2009

Points

	Net Impact on Scores (1)	Significance
Kailahun District (East) - Ref. Western Area Urban	-0.394	**
Pujehun District (South) - Ref. Western Area Urban	-0.315	**
G5 Pupil Absenteeism	-0.078	**
Teaching Practice Index	0.034	**
G3 Math Score (Baseline)	0.581	*
G3 Reading Score (Baseline)	0.747	**
(16 non-significant factors) (2)	—	ns
Constant	-0.518	ns
Number of observations	289	
R^2	14.97%	

Source: Book Impact Evaluation Database 2008-09 (See Annex Table A4.5 for the full detail).

Note: The unit of observation is the school. Pupils' scores have been normalized.

** Statistically significant at the 5% level. * Statistically significant at the 10% level.

(1) Isolated impact of a variable on G5 math scores, all other variables being held constant.

(2) Kambia (North) and Western Area Rural (Ref. Western Area Urban), Child Environment Index (baseline), G3 Share of Repeaters (baseline), Household Welfare Index (baseline), School Environment / Infrastructure Index, School Charges Fees, School External Assistance Index, School Received SFS, School Management Index, G5 Pupil to Teacher Ratio, Classroom Pedagogical Inputs Index, Share of Female Teachers, Teacher Characteristics Index, Teacher Absenteeism and Use of Pamphlet.

Reading Note: All other things being equal, scores in Kailahun district are 0.394 points lower than those in Western Area Urban.

The explanatory power of the model is weak: the factors considered in the model account for 15 percent of the variation in 2009 math scores at the school level. The analysis does however call for some reflection. The factors found to have a significant impact on scores are:

(i) *Location:* Schools from Kailahun and Pujehun districts obtain significantly lower scores than those in Western Area Urban, by respectively, 0.39 and 0.31 points, this being related to factors not adequately grasped here.

(ii) *Mastery of English:* The Grade 3 English score is the factor with the greatest impact, increasing Grade 5 math scores by 0.75 points. This illustrates the importance of mastering English to adequately master other subjects.

(iii) *Pupil absenteeism* has a weak but significant negative impact on math scores.[62] By reducing teaching or learning time (when it applies to teachers and students respectively), absenteeism prevents the complete coverage of the syllabus. Without considering unplanned school closures, late entry, casual holidays and the practice of double shifts, a large amount of instructional time might be lost.

(iv) *Teaching Practice:* The Teaching Practice Index (related to the use of pedagogical materials) has a weaker still impact, yet also significant, positively impacting scores by ensuring better class/subject preparedness.

62 Absenteeism is pervasive among Grade 5 students (29 percent of the sample were absent the day of the test) and low among teachers (8 percent, low in regional context).

Box 4.2: Instructional Time

Official instructional time in Sierra Leone is low by international standards (800 annual hours); effective instructional time is less still. In addition to pupil and teacher absenteeism, teaching and learning time are affected by late entry, casual school holidays and unplanned school closures. The practice of double shifts alone cuts 233 hours off normal teaching time, or 25 percent (700 hours' average, against 923 hours for single shifts - World Bank, 2007). How time in class is used is of greater importance however. Further insight is needed to adequately assess the impact of double shifts on learning outcomes. Findings from an unpublished explanatory study on instructional time estimate at 40 percent the amount of time lost per year, or 312 hours out of 800 (Thompson, 2004, in Gbamanja, 2010).

Known to be today a major correlate of learning outcomes, increasing instruction time and reducing absenteeism should be a priority for education policy makers. Indeed, it is widely recognized that teaching time is a key correlate of learning outcomes, especially for disadvantaged children who may have very few opportunities to learn outside school (Millot and Jane, 2002 and Abadzi, 2006, cited in Majgaard and Mingat, 2012). Effective school practices such as keeping a daily attendance record and adapting the school calendar to the agricultural one may help improve student attendance, whereas teacher absenteeism might be reduced through improved management practices at the school level, including close monitoring of teacher attendance by school heads (Majgaard and Mingat, 2012).

A review of the factors found not to have a significant effect on math scores (see the list in the note to earlier Table 4.7) can however be just as informative, as well as raising a number of avenues for further research.

(i) *Textbooks:* The fact that the availability of textbooks (Pedagogical Inputs Index) has no effecton math scores is counterintuitive, as research has demonstrated that they are of the most cost-effective interventions to improve learning outcomes (Majgaard and Mingat, 2012). The result observed here probably highlights a major feature of textbook use in Sierra Leone. Where available, textbooks are rare (0.2 useful books per student on average) and just a third of teachers allow students to take them home. Thus their effectiveness, even when available, is sorely limited[63].

(ii) *Pamphlets* are produced by teachers and sold to pupils when textbooks are unavailable. They are believed to be a *"poor substitute for teaching materials [and to] contribute to poor students' performances"* (in Gbamanja, 2010). The Pamphlet variable was included as a stand-alone variable in the model to test this belief, but appears to not have a significant impact on math scores, although the effect's signis negative.

(iii) *School infrastructure* and *teacher characteristics* are not found to impact on math scores, which raises inter alia the question of the relevancy of training (that is dealt with below).

(iv) *School management:* The model also highlights the limited role played by variables related to school management, such as having active school management committees and parent-teacher associations (SMC/PTA), receiving visits from the District Education Officer and receiving support from the community and other stakeholders. The lack of significance of the former raises questions on the actual role played by such committees and school inspectors, calling for further research.

(v) *Gender:* Last but not least, the multivariate analysis conducted with data on pupil characteristics corroborates the systematic and strong negative impact of being female, suggesting detrimental attitudes towards girls may exist in schools (See Chapter 6). Further research is urgently required.

63 A sizeable number of books (equivalent to twice the stock available in classrooms) lay idle in the head teacher's office. This situation was also highlighted in Sabarwal, 2012b.

Box 4.3: Parent-Teacher Associations

Parent-teacher association (PTA) and school management committee (SMC) meeting and inspection functions can provide further effective measures to improve teacher attendance and motivation, with desirable domino effects on not only instructional time, but also retention, and student performance. There is scope to further explore the functioning of parent-teacher associations (PTAs) and the extent to which parents and communities are involved in decisions related to schools and their monitoring. It is believed that greater involvement of communities and other local education actors can contribute to strengthened supervision of schools and teachers, greater teacher and head teacher accountability and increased household interest in and concern for education.

Determinants of NPSE Results[64]

Two models have been run using logistical and linear regressions respectively. Whereas the first model deals with the general pass rate correlates (examining the impact of factors on the likelihood of achieving a score of 230 or above), the second one analyzes correlates of subject scores (not shown). Results are displayed for location, school ownership, classroom and pedagogical factors, school facilities and teacher characteristics (See Table 4.8).

Table 4.8: Net Effect of Significant Factors on NPSE Pass Rates, School-Level, 2011

Points

	Net Impact On Pass Rate (1)	Significance	Value (%/Mean) (School)
Council Location (Ref. Freetown)			
Bo City, Bo, Bombali, Bonthe, Kenema City, Kenema, Koidu City, Koinadugu, Kono, Port Loko, Pujehun	0.091 – 0.182	***	1.4 – 11.5
Kambia, Moyamba, Tonkolili	0.061 – 0.077	**	5.8 – 10.8
Private Ownership (Ref. Government school)	0.151	***	6.4
Classroom/Pedagogical Organization			
Under 25 Grade 6 Pupils per Stream (Ref. ≥ 40)	-0.093	***	48.6
Share of Repeaters in Grade 6	-0.211	**	4.0
School Facilities			
Is Approved	0.047	*	85.3
WFP Support	0.063	***	27.8
Has a Canteen	0.155	***	1.3
Share of Female Staff	0.128	***	21.4
(20 non-significant factors) (2)	—	ns	—
R^2	9.17%		
Average Pass Rate	0.778 (77.8%)		
Number of Observations	1,513		

Source: NPSE/WAEC, 2011 and EMIS, 2010/11 (See Annex Table A4.6 for the full detail).

*Note:*The unit of observation is the school. Pass rate corresponds to aggregate of 230 and above. *** Statistically significant at the 1% level. ** Statistically significant at the 5% level. * Statistically significant at the 10% level.

(1) Isolated impact of variable on NPSE pass rates, all other variables being held constant, providing the percentage point change in the examination pass rate in response to a 1 percentage point change in the corresponding variable at the expense of the share of the reference group. So, for instance, the difference in the pass rates between a private school and a public school is 15 percentage points.

(2) Bonthe Municipal, Kailahun, Makeni City and Western Area Rural Councils, Community and Mission Schools, Non-Mixed Schools, Head in Post, 25=<PPSP6<40, Share of Repeaters, Share of Female Students, Share of Female Students in Grade 6, School Has a Bank, Water, Electricity, Toilets or a Library, Share of Classrooms in Need of Repair, Share of Qualified Staff and Staff Experience.

64 Based on a dataset of 2,003 schools out of 3,937 (all school types offering Grade 6). School-level WAEC/Examination data and school-level EMIS data were merged for 2010/11 using similar WAEC codes. Not all data could be reconciled as not all schools had a WAEC code. Also, schools with similar codes and those with more than 15% Grade 6 candidates were deleted from the sample.

The explanatory power of the model is here again weak, the observed variables explaining only 10.4 percent of the variation in 2011 NPSE pass rates, meaning that many other factors not included in the model are more determinant. Those factors observed here include:

(i) *Location:* With the exception of schools in Kailahun, Bonthe Municipality, Makeni City and Western Area Rural councils, whose pass rates are similar to those in Freetown, schools in all other councils tend to outperform their Freetown counterparts. The systematic use of double-shifts in Freetown could negatively impact on learning outcomes.[65] Further research is required.

(ii) *Private schools* are found to have 15.1 percentage points higher NPSE pass rates than their public counterparts, a considerable impact. Nongovernment schools may attract students from more favorable socioeconomic and cultural backgrounds and are known to provide greater instructional time than government-owned or subsidized schools (1050 hours and 700 hours respectively – World Bank, 2007), both strong predictors of good results. In addition, it is believed that teachers in private schools display greater dedication, being directly accountable to their directors, who appreciate good pass rates.

(iii) *Small class size* in Grade 6 (number of students per stream) is in fact negatively correlated with performance. With 29 students per stream on average, Sierra Leone has some leeway to increase class size without harming learning outcomes.

Box 4.4: Pupil-Teacher Ratios

Majgaard and Mingat stress that "teacher management and allocation may be more critical than average PTR."Average PTRs usually hide wide disparities, due to the inconsistent allocation of teachers. This issue also applies to the allocation of teachers within schools, class sizes being larger at lower grades, often unacceptably so, whereas upper grades enjoy much smaller class sizes. Indeed, the number of students per stream falls steadily from 51 for Grade 1 to 26 for Grade 6. Overall, the results in terms of PTRs suggest that there is some leeway to increase class sizes without harming learning outcomes. This is corroborated by the literature on the subject that shows that under a certain size limit, the marginal impact of smaller class sizes on learning outcomes is in fact very slight (Behaghel and Coustère, 1999; Bernard, 2003; Michaelowa, 2003; and Verspoor, 2003 in Majgaard and Mingat, 2012).

(iv) *Grade 6 Repetition* is negatively correlated with performance, in line with the conclusions of current research that indicates that unless weak pupils are offered remedial classes, repetition does not improve their learning outcomes. While repetition is limited in Grade 6, its high levels throughout the cycle call for more focused efforts to reduce it.

(v) *School feeding* is positively and heavily correlated with NPSE pass rates. In schools with a canteen (just 1.3 percent of the sample), pass rates are 15 percentage points higher. Indeed, malnutrition is associated with delayed enrollment, low attendance and greater learning difficulties. Programmes also help to maximize children's ability to learn at school (WFP Support).

(vi) *School facilities:* Having water, electricity, a library, or toilets has no significant impact on NPSE pass rates. For libraries, the lack of effect could reflect the fact that only four percent of schools have one, but may not give them use (See Sabarwal, 2012b on textbook management at the school level).

65 Note that double–shifts are also practiced in Western Area and district municipalities where the lack of land prevents building additional schools to host the growing number of students.

(vii) *Teacher characteristics* play a minor role in explaining NPSE pass rate variations. Female teachers do have a significant impact however. All else being equal, the higher the proportion of female teachers in a school, the higher its NPSE pass rate. The impact is however limited (1.3 percentage point increase in the NPSE pass rate for a 10 percentage point increase in the share of female teachers in the school).

(viii) *Staff qualifications* do not have a significant impact on NPSE pass rates. This is in line with the findings on Grade 5 math scores above, but counterintuitive all the same. One possible explanation could be the generally low level of primary teachers' knowledge (See discussion of teacher training in Chapter 7).

Similar regressions were run to test for the impact of the variables on scores in the five main NPSE subjects. With few exemptions, the same variables are significant (See the summary in Table 4.9). Some school facilities such as electricity, water or a library have a positive impact, whereas some school practices (namely repetition) have a negative impact on subject scores (for math, qualitative aptitude and general studies). In most subjects (not math), mission schools tend to perform better than government schools.

Table 4.9: Effect of Significant School/Class Variables on NPSE Subject Scores, by Subject, *School-Level, 2011*

English	Mathematics	Qualitative Aptitude	Vocabulary Aptitude	General Studies
Mission Schools (+)	Private Schools (+)	Mission Schools (+)	Mission Schools (+)	Mission Schools (+)
Private Schools (+)	Share of Repeaters	Private Schools (+)	Private Schools (+)	Private Schools (+)
Share of Repeaters	(School-level) (-)	Share of Repeaters	Share of Repeaters	Head in Post (-)
(Grade 6) (-)	Approved School (+)	(Grade 6) (-)	(Grade 6) (-)	Share of Repeaters
Electricity (+)	Canteen (+)	Share of Repeaters	Approved School(+)	(Grade 6) (-)
Library (+)	Share of Female	(School-level) (-)	WFP Support (+)	Share of Repeaters
Canteen (+)	Teachers (+)	Share of Female	Electricity (+)	(School-level) (-)
Share of Female		Students (-)	Canteen (+)	Canteen (+)
Teachers (+)		Approved School (+)	Share of Female	Share of Female
		WFP Support (+)	Teachers (+)	Teachers (+)
		Water (+)		
		Electricity (+)		
		Canteen (+)		
		Share of Female		
		Teachers (+)		

Source: NPSE/WAEC, 2011 and EMIS 2010/11.
Note: Based on a model of subject scores using the ordinary least squares approach, with the same variables as in Annex Table A4.6. Only significant school/class related variables are indicated here. Based on data for 1,864 schools.

Determinants of BECE Results[65]

The analysis of factors affecting BECE results is similar to the one above, with two logistic models run on school-level data. The first model deals with the BECE pass rate correlates (analyzing the impact of factors on the share of students achieving a pass in at least four subjects); the second analyzes correlates of subject scores (the variance on the share of students achieving a credit in each of the four core subjects). Results are displayed for location, school ownership, classroom and pedagogical factors, school facilities and teacher characteristics (See Table 4.10).

65 Similar to the previous exercise, not all WAEC data and EMIS data could be reconciled, limiting the size of the final sample to 158 JSS schools (from.740 JSS schools with JSS 3 students).

Table 4.10: Net Effect of Significant Factors on BECE Pass Rates, School-Level, 2011

Points

	Net Impact On Pass Rate (1)	Significance	Value (%/Mean) (School)
District (Ref. Western Area Urban)			
Port Loko, Bo, Pujehun, Kailahun, Kenema	-0.503 to -0.292	***	2.0 - 12.9
Kono / Tonkolili	-0.237 / -0.222	*	7.7 / 3.2
Western Area Rural	0.260	**	5.8
Bonthe	0.358	*	1.3
School Organization			
Non-Mixed Schools	0.170	*	16.8
Head in Post	0.166	**	84.5
Classroom/Pedagogical Organization			
Under 40 JSS 3 Pupils per Stream (Ref. >75)	0.260	***	25.8
55-75 JSS 3 Pupils per Stream (Ref. >75)	0.147	***	24.5
Share of Female Students	-0.243	**	14.5
School Facilities			
Has Water	0.162	**	83.9
Has a Library	0.146	**	33.5
Has a Canteen	0.196	*	7.1
Staff Experience (Years)	-0.009	**	11.6
(19 non-significant factors) (2)	—	ns	—
R^2	42.70%		
Average Pass Rate	0.555 (55.5%)		
Number of Observations	149		

Source: BECE/WAEC, 2011 and EMIS 2010/11. (See Annex Table A4.7 for the full detail).

Note: The unit of observation is the school. Pass rate corresponds to the share of candidates achieving a pass in at least four subjects. *** Statistically significant at the 1% level. ** Statistically significant at the 5% level. * Statistically significant at the 10% level. ns: not significant.

(1) Isolated impact of variable on BECE pass rates, all other variables being held constant, providing the percentage point change in the examination pass rate in response to a 1 percentage point change in the corresponding variable, at the expense of the share of the reference group.

(2) Districts of Bombali, Kambia, Koinadugu, Moyamba, School Ownership of any kind, 40<PPSG3<=55, Share of Repeaters in School, Share of Repeaters in JSS3, School Has a Bank, Electricity, Toilets, a Laboratory, Is Approved or Gets WFP Support, Share of Classrooms in Need of Repair, Share of Female Staff and Share of Qualified Staff.

In this instance, the explanatory power of the model is reasonably strong, 42.7 percent of the variation in BECE pass rates being explained by the observed variables. Those factors found to have a significant effecton the pass rate include:

(i) *Location,* although the pattern is the opposite to that witnessed for the NPSE: here most districts fare worse than Freetown, with pass rates being 22 to 50 percentage points lower. Bonthe district is the only exception, with a pass rate outperforming that of Western Area Urban by 36 percentage points, all other things being equal (although the impact is statistically significant only at the 10 percent level).

(ii) *Non-mixed schools* have a positive although weakly significant (at the 10 percent level) effect on BECE pass rates, offering pass rates 17 percentage points higher than mixed schools. Further research is required.

(iii) *Head in post:* Schools whose director is present achieve significantly better pass rates, certainly as a result of better school management and greater monitoring of teachers. Empirical evidence tends to associate strengthened accountability mechanisms at the school and community levels with more efficient schools (Majgaard and Mingat, 2012).

(iv) *School facilities* continue to have a positive and significant effect on pass rates, although at BECE level the availability of a canteen is less significant, whereas having safe water and a library are more so. Their added value ranges from 15 to 20 percentage points.

(v) *Class size* in JSS 3 shows a proportionate and highly significant correlation with BECE pass rates. Thus schools with average class sizes under 40 pupils per stream display the most favorable variation, although schools with class sizes between 55 and 75 pupils also achieve systematically better pass rates than those with class sizes of 75 pupils or above (the effect is not statistically significant for mid-sized classes).

(vi) *Share of female students:* The higher the share of female students in a school, the lower the BECE pass rate, a cause for particular concern. This situation could highlight the existence of discriminatory practices against girls or the lack of support provided to girls to overcome their initial weaknesses, both negatively impacting on exam performance.

(vii) *Teacher experience* has a negative impact on BECE pass rates, which is counterintuitive. This might reflect growing job unsatisfaction or demotivation, and outdated skills and pedagogical approaches due to scare in-service training opportunities, among other hypothetical explanations. Further research is required.

On the other hand, school ownership, repetition (whether at the school level or at JSS 3), teacher gender and teacher qualifications no longer impact on results. In the case of school ownership, the finding suggests that the better results enjoyed by private schools in terms of the BECE might be correlated with better school resource endowments. For teacher qualifications, the lack of impact might be explained by poor teacher content knowledge, as for the NPSE, raising concerns about the initial entry level expected of Higher Teacher Certificate candidates and the nature of the training being offered.

Similar regressions (not shown) were run to test for the impact of the variables on obtaining a credit in the four main BECE subjects. Generally speaking, the same variables are found to be significant, although variations by subject are apparent (See Table 4.11). Mission (for math and science) and private schools (for integrated science) for instance are in fact found to outperform government schools in some subjects, while the share of female students has a significant and negative impact especially on results in the science and integrated science subjects. This latter finding calls for special attention, as this situation could trigger the early specialization of students, contributing to forge the stereotype that girls are not suited to science subjects, with consequences beyond JSS.

Table 4.11: Effect of Significant School/Class Variables on BECE Subject Credits, by Subject, 2011

English	Mathematics	Science	Integrated Science
Share of repeaters (School) (-)	Mission Schools (+)	Mission	Private Schools (+)
JSS3 Pupils per Stream <40 (+)	Approved School (+)	Schools (+)	JSS3 Pupil per
JSS3 Pupils per Stream 55-75 (+)	Share of Repeaters	JSS3 Pupils	Stream <40 (+)
Has a Laboratory (+)	(School) (-)	per Stream <40 (+)	Share of Female
Share of Classrooms in Need of	Head in Post (+)	Share of Female	Students (-)
Repair (-)	Canteen (+)	Students (-)	Staff Experience (-)
		Head in Post (+)	Canteen (+)
		Toilets (-)	Share of Classrooms in Need of Repair (-)

Source: BECE/WAEC, 2011 and EMIS, 2010/11.
Note: Only significant school/class-related variables are shown here. Based on data for 155 schools. Results refer to obtaining a credit in the related subject.

Key Findings

Internal efficiency is poor at the primary level, but improves significantly thereafter. At primary, 37 percent of resources are wasted on repetition and dropout, and 9.5 student-years is the average investment in a completer of the six year cycle. JSS and SSS are more efficient, wasting 21 percent and 14 percent of resources respectively, and better than the SSA averages. Whereas for primary the inefficiency is mainly dropout-related, repetition is the main source of inefficiency at JSS and SSS levels. Given the low level of learning outcomes, this appears to indicate that the education system should prioritize the quality of learning over and above the duration of individual schooling in tackling internal efficiency issues.

Repetition is particularly high for primary at 16 percent, well above the SSA average of 12 percent. It is also very high at JSS and SSS, at 13 percent, although almost in line with the SSA average. Repetition follows a bell shape by grade in primary (from 4 percent in Grade 1 to 18 percent in Grade 5 and 8 percent in Grade 6) as well as in JSS, but decreases with each grade in SSS (from 15 percent in SSS 1 to 12 percent in SSS 3).

Pupils' learning outcomes are generally very poor at all levels; deficiencies are apparent from the first grades of primary. The Early Grade Reading Assessment results show that by the end of Grade 3, many children are not able to read to learn but are still learning to read, lacking the most basic reading, writing and comprehension skills (over 50 percent could not write their own name) to properly pursue their schooling.

Primary leavers' basic literacy and numeracy skills are weak, putting students at a disadvantage in JSS. Only 72 percent of Grade 6 pupils could correctly solve 8/2=4, and Grade 5 pupil performance in sums is worse than that of Senegal, The Gambia, Ghana and Liberia. Overall, the NPSE (end of primary exam) pass rate has improved marginally, from 72 percent in 2005 to 75 percent in 2011, although this may reflect the expansion in the number of seats in JSS, for which the NPSE is effectively the admissions exam.

Junior secondary results are scarcely better, and have barely improved since 2005. The overall BECE (end of JSS exam) pass rate (the share of students passing at least four subjects) was barely 47 percent in 2011. The results by subject are equally low, with a failure rate of over 50 percent in all core subjects but integrated science. Math performance is particularly poor, with a 77 percent failure rate and just 3 percent of candidates obtaining a credit.

Senior secondary results are improving, but are still far behind other WAEC countries. Almost 40 percent of students failed to obtain a single WASSCE (end of SSS exam) credit and only 10 percent achieved credits in four or more subjects. The English success rate is low, having dropped from 17 percent to 14 percent over 2007-10. Performance in math is weaker, with a success rate of just 5.2 percent in 2010 and only 3.2 percent of candidates achieving a credit (compared with 47 percent for Nigeria) in 2009.

Private and mission schools generally perform better than government and community schools: 73 percent of private candidates obtain a BECE pass in at least 4 subjects, against 55 percent for mission school, 50 percent for government school and 42 percent of community school candidates.

The main factors negatively impacting on primary results are repetition, absenteeism, and class size. The lack of adequate coverage of the syllabus associated with various practices that reduce instructional time are also believed to play a major negative role. Poor results in BECE and WASSCE on the other hand are clearly affected by the inadequate preparation of students during their early education, resulting in poor mastery of basic literacy and numeracy, and the inability of the system to compensate for these initial shortcomings.

Policy Orientations

It is worth recalling here the major limits pertaining to the type of analysis performed above. Indeed, the econometric models developed explain a relatively minor part (10 percent to 40 percent) of school-level differences in student learning outcomes, which clearly indicates that other variables not capture here are at stake. To identify and understand them will require in-depth analysis based on school visits, which will also enable the documentation of best practices for future replication and the compilation of school-level data necessary to run more sophisticated methods of analysis. The analysis has nevertheless highlighted some important findings that can be capitalized to improve student's learning outcomes.

Raising the quality of the education system as a whole is essential, given the general low level of learning achievements observed. This will require a multi-pronged strategy, as shown by the array of possible actions listed below. However, a major priority must be to rapidly tackle the low mastery of basic literacy and numeracy skills by early grade students, as they are a core prerequisite for further learning and have a considerable impact on children's schooling patterns. Indeed, poor results in BECE and WASSCE are a blunt consequence of inadequate preparation in the early years of school and the inability of the system to compensate for these initial shortcomings. However, a better understanding of what the tests effectively assess will also prove necessary given the high levels of failure.

Based on the factors that were found to have a significant impact in the statistical models above, a series of measures could help improve learning outcomes at the basic education level. Some are known to be particularly cost-effective, such as:

(i) Increasing teaching time to the recommended annual hours;

(ii) Fighting student and teacher absenteeism through better attendance records and monitoring;

(iii) Ensuring repetition is used only in last resort by setting up remedial classes;

(iv) Improving the consistency of teacher postings across schools and streams to ensure they remain within targets (See Chapter 7); and

(v) Encouraging the use of appropriate pedagogical practices.

Some further comments and recommendations are also worth making here:

(i) The use of English as the main teaching language in primary education merits reflection, given that few students adequately master it. The use of local languages, at least for the early grades, should be considered as an alternative.

(ii) Further analysis of girls' underperformance would help to set up adequate remedial measures.

(iii) Early childhood development programmes should be promoted and enrollment in preschool encouraged to allow children, especially those from disadvantaged groups, to enter primary school better prepared.

(iv) All students should have a textbook in all core subjects and be allowed to use them at home.

(v) Regularly assessing learning achievements in primary schools with relevant national and internationally comparable tools will help to orient appropriate policy decisions. Sierra Leone is already piloting a National Learning Assessment for primary Grade 4. Further options to consider include: (i) Literacy benchmarks at early grades, that allow teachers and parents to adequately monitor pupils' achievements and weaknesses and to set up remedial measures on time and track progress; (ii) Participating in a regional (PASEC or SACMEQ) and/or international (EGRA/EGMA) standardized assessment to clearly position Sierra Leone with respect to other countries; (iii) Establishing school and local-level quality monitoring mechanisms, such as school record cards; and (iv) Promoting parental awareness of the quality of education.[67]

(vi) Further analysis on classroom and school learning activities is required. The way classes are handled by teachers and the way schools are managed are key factors affecting quality.[68]

(vii) Teachers' pedagogical and academic skills and knowledge need to be assessed, and appropriate measures taken to ensure that they are developed, as they are crucial to improve the overall quality of the education system.

(viii) Regional disparities and gender inequalities are issues that require special attention (See Chapter 6).

(ix) Reducing disparities and improving learning achievements will require an effective decentralized education quality monitoring system. Greater school-level data is required to identify which schools produce poor NPSE/BECE or WASSCE candidates, assess why and provide them with specific relevant support, whereas the availability of NPSE raw scores by subject (before adjusting to a mean of 50 and standard deviation of 10) would allow to monitor performance in each subject examined over time and to take appropriate action to address deficiencies.

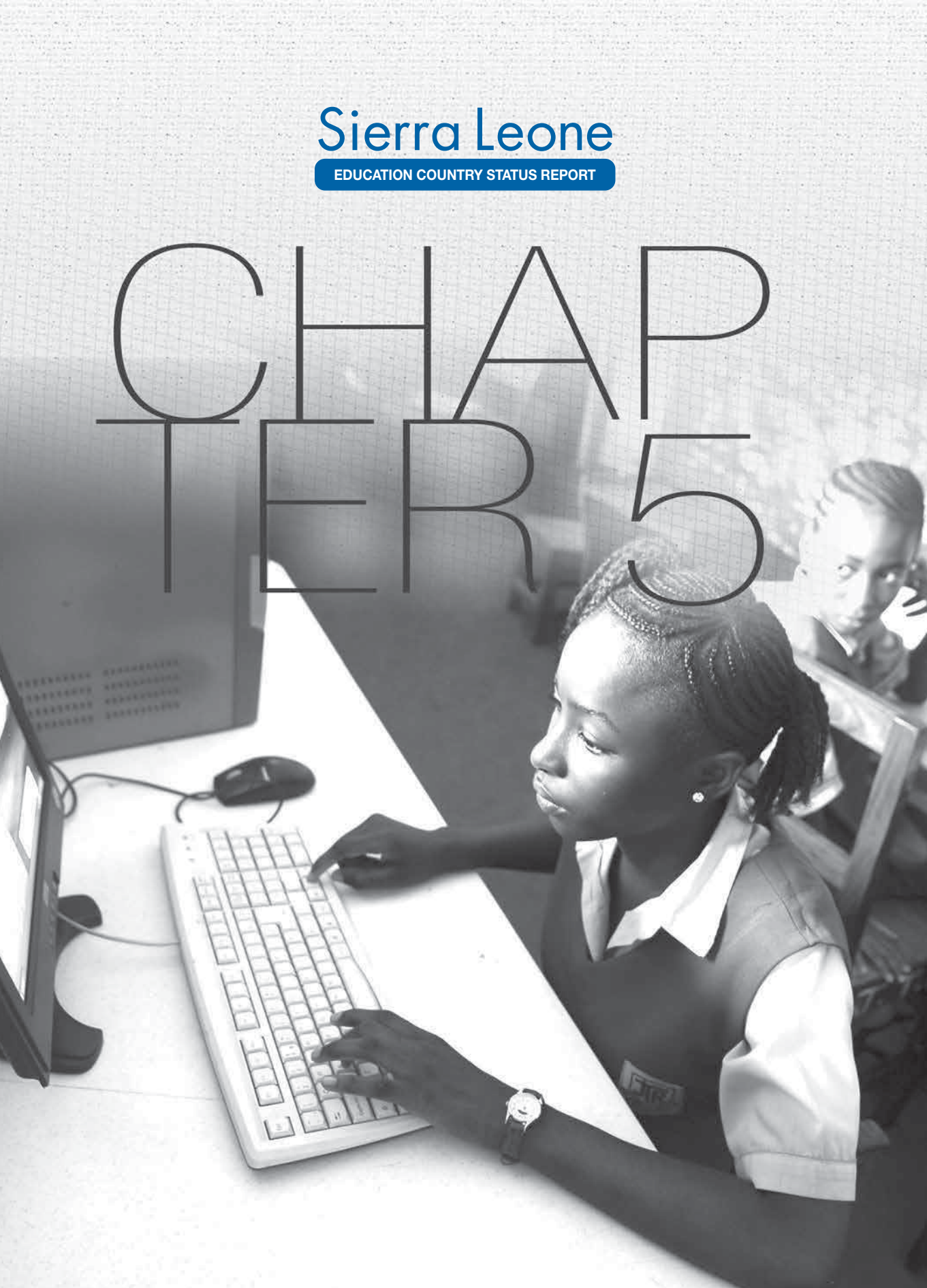
67 In a recent survey, 96 percent of parents sending their children to a primary school were satisfied with their children's learning, up from 89 percent in 2008, with little variations by type of school (IRCBP, 2012).

68 This "classroom effect" or «teacher effect,» which also refers to teacher motivation, charisma, talent, pedagogical skills and interaction with students, is known to significantly influence student learning, explaining up to 24 percent of learning outcome variations (See the PASEC work at www.confemen.org/le-pasec and Bernard et al. 2004).

Sierra Leone

EDUCATION COUNTRY STATUS REPORT

CHAPTER 5



CHAPTER 5: External efficiency

The previous chapters examined Sierra Leone's education system in terms of enrollment, internal efficiency, financing, and learning outcomes. External efficiency is related to the impact of education and training on economic and social development, or more generally speaking, on people's lives.

Sierra Leone's Poverty Reduction Strategic Paper for 2013-17 (PRSP) recognizes that human resource development is the bedrock of poverty reduction and sustainable socioeconomic development. It asserts that the overall objectives of the education sector are to provide quality basic education for all Sierra Leoneans and support manpower development for key sectors of the country's economy.

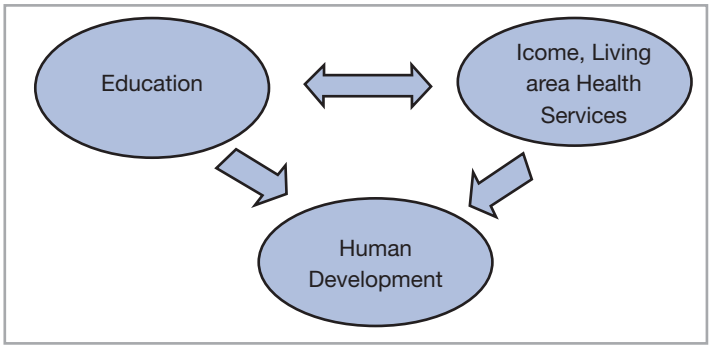
The analysis here first focuses on the effect education has on social behavior and human development, and secondly reviews the relevance of Sierra Leonean education and training to the labor market.

Impact of Education and Training on Social Behavior

Net Impact of Education on Social Behavior

This section describes the net impact of different education levels on human development in Sierra Leone. It is important to underline the importance of capturing the net impact of education (where the impact of other factors is controlled) rather than the gross impact (where the impact of other factors and the impact of education are combined). This is all the more important as such factors are usually correlated with the education an individual has received: they are interdependent (See Figure 5.1). To be sure to solely assess the net impact of education the appropriate methodology is to run econometric models that capture the impact of education on human development behaviors, using the other factors as control variables.

Figure 5.1: The Education, Income and Human Development Triangle



Source: Authors' elaboration.

The present analysis is based on data from the MICS IV, 2010. It provides statistically valid estimates at household and individual levels of a number of indicators related to the well-being of women aged 15 to 49 years and children under five years old.[69] The relationship between schooling and a number of social outcomes, particularly for women (age at first childbirth, knowledge of HIV/AIDS, child mortality, female

69 Econometric models were used to analyze the data in order to establish the relationship between education and a number of human development variables at the individual level. Logistic regressions were used for binary outcomes, using dummy variables, and the ordinary least squares approach was adopted for continuous variable outcomes.

genital mutilation, and so on) has been computed after controlling for the impact of other factors such as area of residence and age. The analysis also outlines the contribution of each grade and level of education to human development outcomes. Table 5.1 offers a summary of the results.

Table 5.1: Simulated Net Impact of Education on Various Social Behaviors, 2010

	Average	Highest Grade Attained				
		None	Primary	JSS	SSS	Higher
Fertility						
Women's Age at First Childbirth						
20-29 Years **	20.0	18.9	18.8	20.2	20.7	20.9
Use of Contraception						
20-29 Years (%) ***	25.1	8.6	22.8	30.5	36.6	39.3
Total Number of Live Births						
44-49 Years **	5.3	6.1	5.4	5.1	4.7	4.5
Maternal & Child Health						
Robability of Using Tetanus Toxoid during Pregnancy						
20-29 Years (%)*	95.7	92.9	95.6	96.5	97.3	97.7
Probability of Using Anti-Malarial Preventive Treatment during Pregnancy						
20-29 Years (%) **	81.7	78.7	81.3	82.6	83.7	84.4
Probability (Risk) of Delivering at Home						
20-29 Years (%) **	41.0	53.6	42.8	37.5	32.6	29.4
Probability (Risk) of at Least One Child Dying						
44-49 Years (%) **	49.4	66.5	54.2	47.7	41.3	37.2
Female Genital Mutilation						
Probability (Risk) of Approving FGM of Daughters						
20-29 Years (%) **	58.8	79.4	63.3	53.5	43.5	37.0
15-49 Years (%) *	59.9	78.9	66.4	56.2	43.7	34.7
HIV/AIDS Knowledge (Women Aged 20-29 Years)						
Score (/6) ***	4.2	2.9	4.0	4.6	5.2	5.6
Probability of Being among the 40% Poorest Households (Head of Household)						
(%) ***	27.0	51.6	29.7	19.0	10.8	6.9

Source: Authors' calculations based on MICS, 2010 data.
Note: *** Statistically significant at the 1% level; ** statistically significant at the 5% level; * statistically significant at the 10% level (the lower the percentage, the greater the confidence in the result). All figures are the result of econometric models identifying the simulated net impact of education with other variables held constant (age, area of residence and so on). For instance, the simulated net probability of using tetanus toxoid during pregnancy for a woman with higher education is 97.7 percent. This rate is for a simulated individual with the same age and area of residence as an average Sierra Leonean. With the exception of the probability of being poor, all variables concern women only.

Table 5.1 shows that education has a strong net impact on almost all the social behaviors analyzed.

Fertility

All three fertility indicators in Table 5.1 are clearly affected by education. Results indicate the strong positive effect that education has on birth control. Educated women wait for significantly longer before having children. Age at first childbirth ranges from 18.9 years for uneducated women to 20.9 years for those with higher education, equivalent to a difference of two years. The results show that the progression is gradual with each successive level of education. Simulations also show that age at first childbirth is slightly higher still for more recent generations and that their behavior seems to be more greatly influenced by the duration of their education.

Education also contributes to reduce the total number of children women have. The average number of live births for women aged 44 to 49 years is high in Sierra Leone, at 5.3 births.[70] Uneducated women give birth six times on average, and this figure does not vary substantially for women with primary education. On the other hand, the average number of births drops by 0.7 for women with upper basic and is reduced by 1.4 for those with complete secondary. After 14 years of education (secondary school and two years of higher education), the average number of births drops by 1.6, meaning that women with higher education have 4.5 children on average, all other things being equal.

The same findings hold in terms of the use of contraception. On average, 25 percent of Sierra Leonean women use birth control methods. Education clearly affects their behavior, as the share increases with each level. The probability of using contraception ranges from 8 percent for uneducated women to 39 percent for those having attended university.

Maternal and Child Health

Educated women are more likely to adopt attitudes that are beneficial to their own health and that of their children. The risk of giving birth at home decreases slightly for those with lower basic education, from 53.6 percent for the uneducated to 42.8 percent, and drops considerably for women with 14 years of education, to 29.4 percent, all other things being equal.

Evidence from the MICS data shows that 95.7 percent of women nationwide take tetanus toxoid during pregnancy. Education can explain a difference of up to five percentage points: 92.9 percent of uneducated women use tetanus toxoid, whereas almost 98 percent of university graduates do so. Similar patterns were found in the probability of women taking medicine to prevent malaria during pregnancy.

Although the average probability of losing at least one child during their lifetime is 49.4 percent for all Sierra Leonean women, the variation by level of education is significant. Uneducated women face an average likelihood of losing a child of 66.5 percent, whereas mothers with basic education face a 54.2 percent risk, and the probability drops to 37.2 percent for women with higher education, all other things being equal.

Female Genital Mutilation

Education also positively influences the behavior of women in terms of female genital mutilation. Whereas 79.4 percent of uneducated mothers approve the practice for their daughters, only 37.0 percent of mothers with 14 years of education do so, all other things being equal. The impact is more significant on younger women (aged 20 to 29 years). On average, 59.9 percent of women aged 15 to 49 years are in favor of the practice, against 58.8 percent of those aged 20 to 29 years.

70 Only women aged 44 to 49 years are considered because they are unlikely to have more children later in life.

AIDS Knowledge

Sierra Leone won recognition from the UN for steps taken to stabilize the HIV and AIDS prevalence at 1.5 percent. A major national challenge in this regard is to further reduce the prevalence rate or eliminate it all together. It is accepted that the most important prerequisites for reducing the prevalence of HIV are greater awareness, information on how the virus is transmitted and accurate knowledge of prevention strategies. The results of the MICS, 2010 survey indicate that people with lower levels of education are less knowledgeable about HIV/AIDS. Uneducated women correctly answered 2.9 out of six questions on average, compared to women with higher education who correctly answered 5.6 questions. There is no doubt that schooling contributes to strengthen people's understanding of the disease.

Probability of Being among the 40 Percent Poorest Households

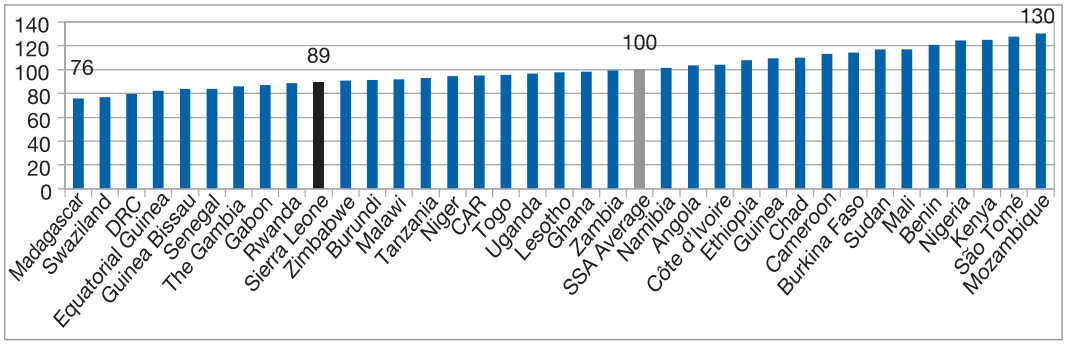
Education is also highly associated with poverty. The likelihood of being part of the poorest 40 percent of the population is 51.6 percent for uneducated men and women, but drops by almost 30 percentage points for the population with primary education to 29.7 percent, and by a further 23 percentage points for those with 14 years of education to a probability of just 7.0 percent, all other things being equal.

Cross-Country Comparison of the Social Impact of Primary Education

The social impact achieved by the Sierra Leonean education system is lower than that achieved by most Sub-Saharan African countries (See Figure 5.2 below). With an index of 89, Sierra Leone ranks barely tenth out of 36 countries, and its score is almost one standard deviation below the average.[71] This result may be related to the findings of Chapter 4 that underline the low quality of student learning.

Figure 5.2: Impact of Primary Education on Human Development, for 36 SSA Countries, 2007 or MRY

Standardized Index



Source: Calculations based on DHS/MICS/CWIQ household surveys including 17 social indicators (Majgaard and Mingat, 2012).

71 A cross-country comparable index was computed for 36 Sub-Saharan African countries to assess the impact of primary education (based on 6 years of schooling) on 17 human development variables (Majgaard and Mingat, 2012). The results were adjusted to obtain an average of 100 and a standard deviation of 15.

Comparison of Social Outcomes by Level and Cost-Benefit Analysis

It is possible to determine the respective contributions of each level of schooling to overall social outcomes. Such disaggregated data is relevant and helpful for at least the following two reasons: (i) For policy makers it helps to know which level of schooling is the most effective, to better target poverty reduction or human development efforts. Certain choices, especially regarding public investment, can be made accordingly; and (ii) The duration of schooling varies from one level to another, as do costs. Data on the extent to which each education level affects human development outcomes therefore enables to establish cost-benefit ratios for each level and grade.

On average, the primary cycle represents almost half (44 percent) of the total social impact of education on the behaviors considered (See Table 5.2 below). Secondary (combining junior and senior secondary) and higher education respectively account for 42 percent and 14 percent of the impact. When accounting for the number of years per cycle, a year of primary education accounts for 7.3 percent of the total social impact, a year of secondary for 7.0 percent and a year of higher education for 7.4 percent (See Table 5.3 below). On this basis, each year of schooling in Sierra Leone has a marginal impact on social behavior of approximately 6.7 percent.

The evidence also points to the following findings in terms of specific behaviors that are most affected by a given education level:

(i) *Primary education* has the highest impact on six out of the ten types of social behaviors considered. In particular, about half of the expected total impact on the use of contraception, the use of tetanus toxoid during pregnancy and the use of anti-malarial preventive treatment is achieved by the time women complete primary; the remaining half of the impact being attributed jointly to secondary and higher education.

(ii) *Secondary education* has the highest impact on three of the ten types of social behaviors considered: knowledge of HIV/AIDS, the likelihood of approving the genital mutilation of daughters and the probability of at least one child dying. The level accounts for approximately 40 percent of the change in behavior.

(iii) *Higher education* is the level that most influences the probability of being among the poorest 40 percent of the population, accounting for 39 percent of the total impact. Overall, the impact of different levels is more equally distributed than for other indicators however. Primary education accounts for about 33 percent whereas the impact of secondary is estimated at 28 percent.

Table 5.2: Distribution of the Social Impact of Education, by Level and Type of Behavior, 2010

Percent

		Primary	JSS	SSS	Higher	Total
Control of Fertility	Age at First Childbirth	45	20	25	10	100
	Total Number of Live Births **	44	19	25	12	100
	Use of Contraception	46	25	20	9	100
Maternal and Child Health	Probability of Home Delivery	45	22	20	13	100
	Use of Tetanus Toxoid during Pregnancy	56	19	17	8	100
	Use of Malaria Prevention Medicine during Pregnancy	46	21	20	13	100
	Probability of at Least One Child Dying **	42	22	22	14	100
Female Genital Mutilation	Probability of Approval for Daughters	38	23	24	15	100
HIV/AIDS	Knowledge Score	41	22	22	15	100
Poverty	Probability of Being among the 40% Poorest	33	16	12	39	100
Average Social Impact for the Level		**43.6**	**20.9**	**20.7**	**14.8**	**100**

Source: Authors' calculations based on MICS, 2010 data.

Note: * All the statistics presented are based on two years of higher education. ** Computed for women aged 40-49 years. All other statistics are computed for women aged 20-29 years.

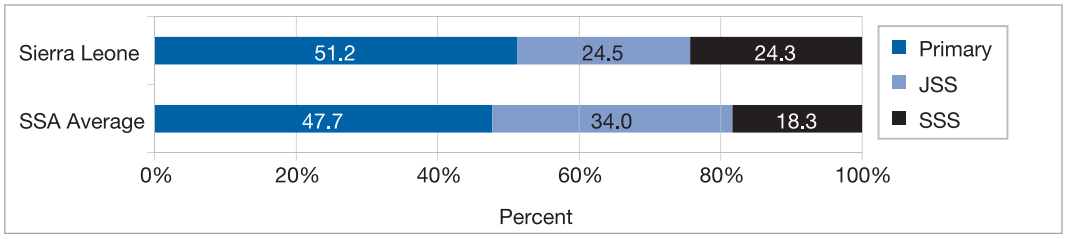
Reading Note: Table 5.2 provides the proportion in which each additional level of education contributes to the total impact, based on Table 5.1. For instance, for the probability of home delivery: (i) The total impact is 24.2 percentage points, the difference between the 53.6% probability of an uneducated mother giving birth at home and the 29.4% probability of a mother with higher education doing so; the impact of SSS is 4.9 p.p., the difference between the probabilities for a mother with JSS (37.5%) and one with SSS (32.6%). Therefore, SSS accounts for 20% (4.9 / 24.2) of the impact.

Cross-Country Comparison of the Social Impact by Level

The contributions to social outcomes of the various levels of education in Sierra Leone are broadly similar to those of Sub-Saharan Africa (See Figure 5.3 below). The relative social impact of primary education is slightly higher than the SSA average, at 51.2 percent. The difference is greater in the respective contributions of junior and senior secondary: the former is almost 10 percentage points lower for Sierra Leone than the SSA average (24.5 percent against 34.0 percent), while the latter is 6 percentage points higher (24.3 percent against 18.3 percent).

Figure 5.3: Distribution of the Social Impact of Education, by Level, Sierra Leone and SSA Average, 2010

Percent



Source: Table 5.2 for Sierra Leone; Majgaard and Mingat, 2012 for the Sub-Saharan African Average.

Note: Figures have been recalibrated to include primary, JSS and SSS levels only. Due to data comparability issues, higher education is not included, and the total social impact has been redistributed over the primary and secondary levels.

Finally, each cycle's contribution to the change in social behaviors can be confronted with its cost, as shown in Table 5.3. The results in the last row of the table underline the very high cost-efficiency of the Sierra Leonean primary cycle in human development terms, compared to the secondary and especially the tertiary levels. Indeed, the decreasing level of cost-efficiency with each level of education is notable. All costs being equal, the efficiency of the primary cycle in enhancing human development is two timeshigher than that of the secondary cycle and 20 times higher than that of tertiary education.

Table 5.3: Human Development Related Cost-Efficiency of Education, by Level, 2010

	Primary	JSS	SSS	Higher*
Average Social Impact of one Grade	7.3	7.0	6.9	7.4
Public Recurrent Unit Cost per Grade (As a Multiple of Primary) **	1	1.6	2.7	18.6
Cost-Efficiency Index = Impact / Cost x 100	0.073	0.044	0.026	0.004
Relative Cost-Efficiency (Primary = 100)	100	59.0	35.0	5.4

Source: Authors' calculations based on MICS, 2010 data.
Note: * Statistics based on 2 years of higher education. **Unit costs are computed in Chapter 3.

External Efficiency of Education with Respect to the Labor Market

This section examines the relevance of Sierra Leone's education and training system to its labor market. Governments invest in education to create a competent workforce that will contribute to their country's socioeconomic development. This goal is only achieved when education is relevant to a country's production system. It is therefore very important to regularly appraise school leavers' employment status to inform on and improve the quality and relevance of education system services.

Due to the lack of surveys specifically devoted to employment, the analysis here is based on the CWIQ, 2007. Consequently, the results presented are very limited. The available data did not enable a detailed comparison of the employment and earning prospects of graduates according to university subject areas or TVET programme types. Neither did they enable an analysis of labor market dynamics, income levels or the return on investment in education. Better analyses could be performed on the basis of the SLIHS, 2011 data (not accessible at the time of writing), and tracer studies of university and TVET graduates would provide valuable and relevant inputs to align education policies with labor market needs.[72]

The Sierra Leonean Workforce

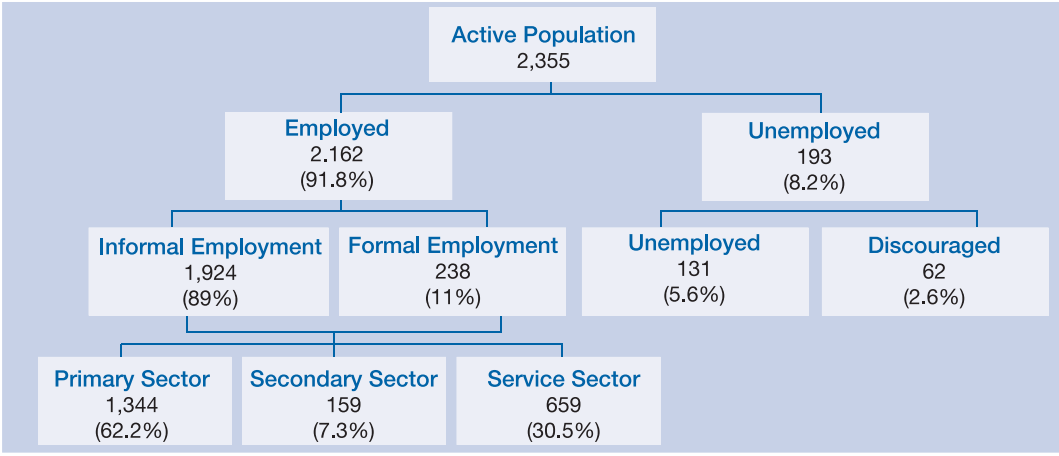
The workforce (the economically active population) includes both employed individuals, who provide labor for the production of goods and services, and the unemployed. According to the International Labor Organization (ILO), people having worked for at least an hour in a chosen reference week are regarded as employed, whereas people without work and actively seeking work are counted as unemployed. Finally, discouraged workers are the third category that constitutes the enlarged labor force. Discouraged workers are people who are technically available but are not actively seeking work, either because they believe no suitable job is available for them, or because they lack the required qualifications for the jobs that are available. Discouraged workers are included in the workforce for the purpose of this report.

72 Unfortunately, the former were not made available to the authors, and the latter are yet to be performed.

As illustrated in Figure 5.4, Sierra Leone's economically active population (individuals aged 15 years and above) is estimated at 2.4 million. The CWIQ survey showed that in 2007, 91.8 percent of the Sierra Leonean workforce was employed. The remaining 8.2 percent includes 2.6 percent of discouraged workers, meaning that the standard unemployment rate is of 5.6 percent. The survey results further underline that the younger generation (aged 15 to 24 years) has considerably greater difficulty in finding employment: 13 percent of them reported to be looking for a job, against only 7 percent of their older peers (aged 25 years and above).

Figure 5.4: Sierra Leonean Workforce (Individuals Aged 15 Years and Above), 2007

Thousands



Source: CWIQ, 2007 data.

The Informal Sector

As in many African countries, informal employment accounts for a vast majority of the workforce (89 percent).[73] The share of formal employment tends to increase marginally with age: it reaches 13.5 percent for individuals aged above 35 years, against just 11 percent on average. This indicates on the one hand that the formal sector has yet to take off in terms of job creation, and on the other that the younger generation has more difficulty in finding formal employment. With the exception of the secondary sector of the economy, men and women are relatively equally represented. However, women are more present in informal employment (94 percent of women) than men (83 percent).

Table 5.4: Distribution of the Active Workforce, by Status and Type of Job, 2007

Percent

	Sierra Leone	SSA Average
Formal Employment	*11.0*	*10.0*
Government	6.7	5.0
Private	4.3	5.0
Informal Employment	*89.0*	*90.0*
Agricultural	59.6	65.0
Non-Agricultural	29.4	25.0
Total	100.0	100.0

Source: CWIQ, 2007 data for Sierra Leone, World Bank data for SSA average.

73 The International Labor Organization defines the informal sector in terms of company characteristics and informal employment in terms of job characteristics. In this analysis, because data were collected at the household level, the latter concept of informal employment is used. Therefore informal employment comprises all informal jobs, whether performed in the formal sector, the informal sector, or household production.

Despite the relative importance of both informal employment and the agricultural sector in Sierra Leone, the level of informality in the workforce is similar to the averages for SSA countries (See Table 5.4).

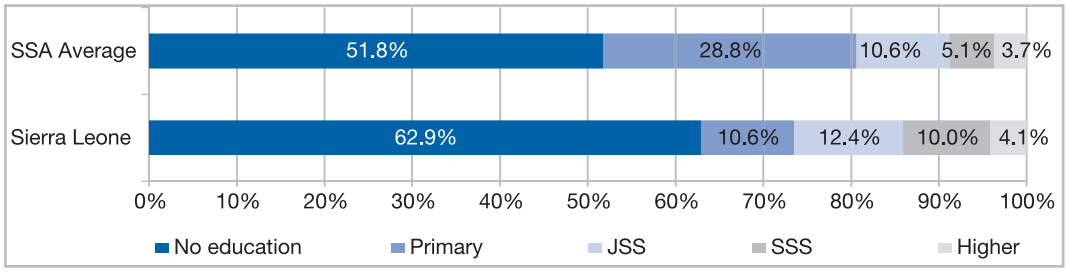
Educational Profile of the Adult Population

Having reviewed the composition of the labor market, it is important to analyze the current characteristics of human capital in Sierra Leone, to provide a first indication of the alignment or mismatch between the two.

Figure 5.5 below shows that almost sixty three percent of the adult population has no formal education or training in Sierra Leone, suggesting a general level of skills and knowledge that is likely to be a hindrance to productivity and economic growth, whatever the labor market's needs. By Sub-Saharan African standards, Sierra Leone's uneducated population is large, at 11 percentage points above the average. However, the proportion of Sierra Leoneans having attended lower secondary (JSS) or above is slightly higher at 26.5 percent than the SSA average of 19.4 percent.

Figure 5.5: Distribution of the Adult Population by Highest Education Level attained, Sierra Leone and SSA Average, 2007

Percent



Source: CWIQ, 2007 data for Sierra Leone, World Bank data for SSA average.
Note: The figures cover populations aged 15 years and above, based on available comparable data.

The main requirement to insure minimal productivity in the predominant informal sector (both agricultural and non-agricultural) is that human capital should have at least primary education. Approximately 27 percent of the adult population has this level or above, or 24 percent of informal workers, suggesting a potential shortfall of skills for the sector of 65 percent (See Table 5.4 and Figure 5.5).[74] The more modern formal sector is more reliant on skills acquired during senior secondary education and above. A combined total of 14.1 percent of adults reached senior secondary or higher education. This proportion is higher as the 11percent of the adult population with formal jobs, implying that the better educated population will face high unemployment until the formal sector expands.

Employment Perspectives

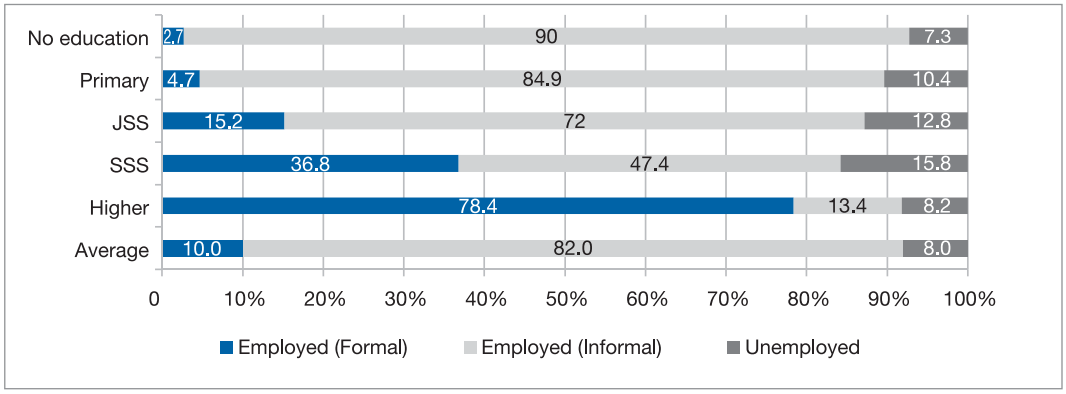
Employment Status of the Workforce

In order to further analyze the external efficiency of the education system in terms of its relevance to the labor market and individual employment perspectives, it is important to cross the distribution of the population according to their employment status with the distribution of human capital by education level, effectively obtaining a computation of individuals' employment status according to the highest level of education achieved (See Figure 5.6 below).

74 This shortfall is even sharper when excluding individuals with higher education levels who are less likely to occupy informal jobs.

Figure 5.6: Employment Status of the Active Workforce, by Highest Education Level Attained, 2007

Percent



Source: CWIQ, 2007 data for Sierra Leone, World Bank data for SSA average.

Note: The figures cover populations aged 15 years and above, based on available comparable data.

Logically, individuals with no education or only having completed the primary cycle are mainly employed in informal jobs (90 percent and 85 percent respectively). The unemployment rate for uneducated individuals, at seven percent, is below the national average of eight percent, and the lowest rate of all education level groups. This is probably because they are the most suitable candidates to fill the skills gap in the informal sector outlined above, and are more likely to accept low paid jobs out of necessity and for sustenance.

Individuals with higher education are the next group least affected by unemployment (only eight percent are concerned), despite them primarily working in the contracted formal sector (78 percent). The risk of being unemployed is the highest for senior secondary school leavers, at 16 percent. This is most likely explained by the increase in the reservation wage with each level of education.[75]

Although senior secondary school leavers represent the primary pool of candidates for the formal sector (3.7 percent of the workforce), even before university graduates (3.2 percent), the lack of formal employment opportunities obliges most of them (47 percent) to accept informal employment.

The School-to-Work Transition

The school-to-work transition refers to the process through which youth leave school and gain their first work experience. It is one of the most decisive steps in determining a person's likelihood of escaping poverty, and because of this fact it deserves special attention.[76]

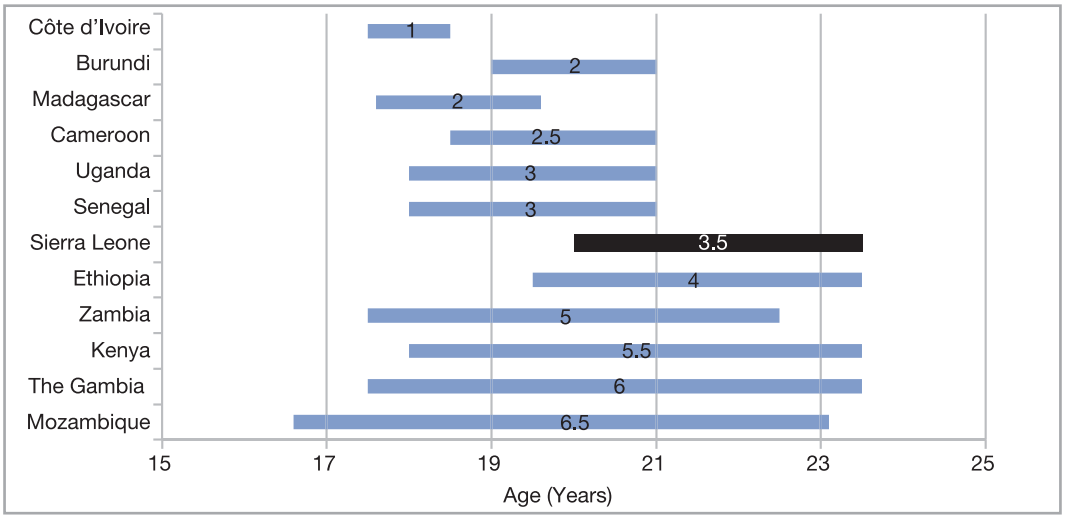
Figure 5.7 provides the duration of the school-to-work transition for Sierra Leone and a selection of comparable African countries. It shows that the starting point of the transition in Sierra Leone (the average age at which individuals leave school for work) is 20 years, and the final point of the transition (the average age at which individuals effectively start their first job) is 23.5 years.

75 The reservation wage is the lowest wage at which somebody would accept a job. Individuals having attended senior secondary expect better salaries and are therefore less likely to find jobs that match their expectations in the Sierra Leonean economic context.

76 The average duration of the school-to-work transition is not a commonly used indicator, and as such does not have a widely accepted definition or measure. This report adopts the operational definition used by the Organization for Economic Co-operation and Development. The transition is defined as starting at the lowest age by which one quarter of a cohort has left full-time schooling, and as ending at the lowest age by which a majority is no longer in school and has found regular employment. The duration of the transition is defined as the difference between these two ages in the life of a population cohort. See Galley and Meyer, 1998.

Figure 5.7: Average Duration of the School-to-Work Transition, Sierra Leone and other African Countries, 2007

Years



Source: CWIQ, 2007 data for Sierra Leone and Pôle de Dakar data for other countries.

On average then, Sierra Leoneans need three and a half years to find active employment. This is close to the average of neighboring countries, where the transition ranges from 1 year (Côte d'Ivoire) to 6.5 years (Mozambique). These averages conceal the fact that the duration of the school-to-work transition varies according to the level of education, gender and the area of residence.

Employment Status According to the Time Elapsed since the End of Training

Young school leavers are generally more prone to unemployment than their more experienced peers. School leavers' exposure to the economic context also varies according to their level of education, and unemployment rates are strongly correlated with the level of initial training, especially as individuals start their working life. In 2007, 37 percent of the new workforce (those having ended their initial training less than five years previously) was unemployed, against 9 percent of the workforce with over 10 years of experience. A queue phenomenon has apparently been created: many young people joining the labor force only find a job after years of searching.

As illustrated in Table 5.5, the unemployment rate of individuals having left school within the last five years and educated to the primary level is 48 percent, whereas that of higher education leavers (having graduated within the last five years also) is 39 percent.

Women generally face less unemployment than men. In 2007, the unemployment rate for women having ended their studies within the last five years was 25 percent, against 46 percent for men. Various factors may explain this: (i) Young women more often choose to train in health and social subjects, after which finding a job is often faster; (ii) Women are more prone to resume their studies or begin complementary training; and (iii) The reservation wage among women is lower. Among higher education graduates, the female unemployment rate is virtually half that for men, for both youth and more experienced personnel.

Table 5.5: Unemployment Rate, by Education Level, Gender, and Time Elapsed since Initial Training, 2007

Percent

	Time Elapsed since the End of Initial Training		
	0 - 5 Years	6 - 10 Years	11 Years or more
Men			
Primary	48	16	8
JSS	39	26	11
SSS	55	27	10
Higher	39	18	6
Sub-total	**46**	**23**	**9**
Women			
Primary	30	13	12
JSS	17	20	13
SSS	32	36	10
Higher	27	7	5
Sub-total	**25**	**17**	**10**
Total	**37**	**20**	**9**

Source: CWIQ, 2007 data

The statistics presented in Table 5.5 indicate that finding employment becomes easier with time and experience. For men, the likelihood of finding a job increases from 54 percent (for those having left school in the past five years) to 77 percent (for those having entered the workplace 6 to 11 years previously). For women, the likelihood of being employed is higher, and also increases, from 75 percent to 83 percent. The global probability of employment reaches 91 percent ten years after leaving school.

Employment Quality According to the Time Elapsed since the End of Training

Entering the workforce is not only about finding a job; the quality of the employment found should also be considered. Job insecurity is among the greatest workforce concerns in developing countries.[77]

Generally speaking, 55 percent of the active workforce having left school between 2002 and 2006 had an insecure job in 2007 (See Table 5.6). This tendency does not appear to decrease with experience in the workplace; it is even estimated that 56 percent of individuals having left school over ten years earlier had unstable employment, one percentage point higher. It is noteworthy that women face greater job insecurity, although less acutely as their level of education increases.

Higher education graduates are virtually unexposed to job insecurity; fewer than 10 percent are confronted with the issue, on average. On the other hand, the kind of employment that is an almost unavoidable first career step for youth in many countries is also qualified as insecure, despite it being a flexible contribution to the training process, offering youth the opportunity to gain their first work experience, which will be capitalized later in their careers.

77 Insecure work refers to short-term work with few or no social benefits. In household surveys, free-lance and unremunerated family workers are considered to be among the active population with insecure jobs.

Table 5.6: Share of School Leavers in Insecure Employment, by Education Level, Gender and Time Elapsed since Initial Training, 2007

Percent

	Time Elapsed since the End of Initial Training		
	0 - 5 Years	6 - 10 Years	11 Years or more
Men			
Primary	73	85	83
JSS	85	65	65
SSS	32	40	44
Higher	14	5	11
Sub-total	**57**	**45**	**49**
Women			
Primary	89	94	94
JSS	80	86	88
SSS	60	56	58
Higher	1	12	12
Sub-total	**53**	**64**	**67**
Total	**55**	**54**	**56**

Source: CWIQ, 2007 data.

Employment Perspectives by Area of Activity

In 2007, 2.1 percent of the active workforce had left school less than five years earlier. Identifying their sectors of employment provides an idea of the activity areas that have jobs to offer to young school leavers. Table 5.7 below provides the distribution of all recruitments having taken place over the 2002-06 period, by type of activity.

Table 5.7: Distribution of Recruitment by Type of Activity, 2002-06

Percent

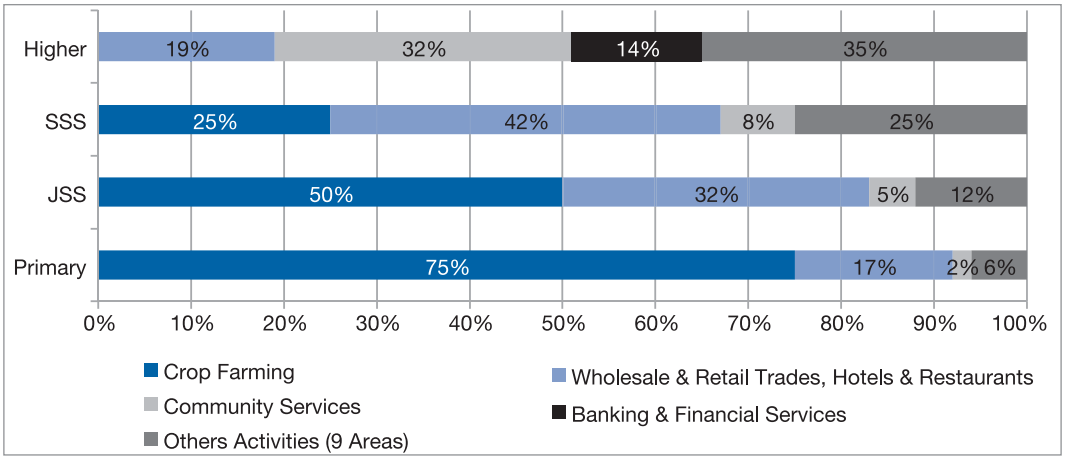
Area of Activity	Share
Crop Farming	47
Wholesale/Retail/Hotels & Restaurants	27
Community Services	8
Manufacturing/Processing	4
Construction	3
Mining/Quarrying	2
Electricity/Gas/Water Supply	2
Transport, Storage, Communications	2
Banking/Financial Services	2
Livestock/Poultry	1
Forestry/Logging	1
Fishing	1
Total	**100**

Source: CWIQ, 2007 data.

Between 2002 and 2006, 47 percent of school leavers were recruited into crop farming, 27 percent by the wholesale, retail and tourism sector and 8 percent by community services. Jointly accounting for more than 80 percent of all jobs offered over the period, these three areas are clearly those that offer most opportunities to young school leavers. As they offer many lowly qualified jobs, they provide youth with the opportunity to gain their first work experience.

Figure 5.8: Main Areas of Employment for Recent School Leavers, by Education Level, 2002-06

Percent



Source: CWIQ, 2007 data.

The distribution of new recruits among activity areas according to their education level is also instructive (See Figure 5.8 above). Indeed, it appears that primary and junior secondary school leavers are mainly recruited into crop farming (75 percent and 50 percent respectively). The sectoral distribution of senior secondary school leavers and higher education graduates is more heterogeneous. The former mainly work in wholesale, retail and tourism (42 percent), followed by crop farming (25 percent). University graduates on the other hand are mainly recruited into community services (32 percent), wholesale, retail and tourism (19 percent), and banking and financial services (14 percent).

Key Findings

Impact of Education and Training on Social Behavior

The net impact of education on human development is noteworthy. Many fertility and maternal and child health indicators improve with education: the average age at first childbirth rises, women have fewer children and the probability of at least one child dying drops. Gains are greater in urban areas, regardless of the availability of local health services. The probability of poverty also drops considerably. In spite of these positive impacts Sierra Leone ranks just 28th out of 37 SSA countries in terms of the impact of primary education on human development, which may be related to the comparatively low quality of education.

On average, the primary cycle represents almost half (44 percent) of the total social impact of education on the behaviors considered. Secondary (combining junior and senior secondary) and higher education respectively account for 42 percent and 15 percent of the impact.

External Efficiency of Education with Respect to the Labor Market

The distribution of the workforce shows that 89 percent is in informal employment. The younger generation (15 to 24 years) has more difficulty finding work (unemployment rate of 13 percent, compared with 7 percent for the generation aged 25 and above). The size of the formal sector is similar to other SSA countries. Agriculture accounts for 60 percent of informal sector employment, below the SSA average of 65 percent.

Close to 63 percent of the Sierra Leonean adult population is uneducated, which is higher than the SSA average (52 percent). The proportion for whom primary is the terminal level (10 percent) is much lower than the SSA average (28 percent), and conversely larger shares have completed junior secondary (13 percent, against 11 percent), senior secondary (10 percent, against 5 percent) and higher education (4 percent, against 3 percent).

Individuals with higher levels of education are the least exposed to unemployment (only 8 percent are affected) and they work mainly in formal jobs (78 percent). Unemployment is below the national average for the uneducated however, probably due to their increased willingness to accept low paid informal jobs. In 2007, 37 percent of the workforce having ended their initial training between 2002 and 2006 was unemployed, against 9 percent of the workforce with over ten years of experience. The risk of being unemployed is the highest for senior secondary school leavers. They face the highest probability of unemployment of all, at 16 percent. This is most likely explained by the increase in the reservation wage with each level of education.

The average duration of the school-to-work transition is estimated at three and a half years. Indeed, the average age of individuals leaving school for work in Sierra Leone is 20 years, whereas the average age of individuals starting work (looking work) is 23.5 years.

Job insecurity is common. Generally speaking, 55 percent of the workforce having left school between 2002 and 2006 had an insecure job in 2007. Higher education graduates achieve the greatest level of job security, at over 90 percent.

Crop farming, wholesale, retail and tourism and community services are the sectors that recruited most students between 2002 and 2006. About 47 percent of active school leavers found work in crop farming, 27 percent in wholesale, retail and tourism and 8 percent in community services. Jointly accounting for more than 80 percent of the jobs offered over this period, these sectors are clearly those that provide young school leavers with most opportunities. Primary and junior secondary school leavers mainly enter into crop farming and senior secondary school leavers work mainly in wholesale, retail and tourism, whereas higher education graduates are mostly found working in community services.

Greater data must be made available to provide relevant inputs for education policy making purposes, to formulate specific recommendations in terms of prioritizing areas of study and types of programmes, to best contribute to the country's economic growth through enhance employability and productivity. Further interesting areas of study include: (i) A detailed analysis of how different types of university studies and TVET programmes compare in terms of employment and earning prospects; and (ii) An analysis of labor market dynamics, income and the return on investment in education. There is a need to improve the TVET Information System and to set up a mechanism to monitor the employment of graduates of the different TVET and HE programmes (including graduate tracer studies that will capture in detail the supply and demand of the modern labor market, particularly with the surge of mining, construction and other emerging industries).

Policy Orientations

In a context of limited resources, the education sector's claim on public resources needs to be justified by evidence of its contribution to improving the welfare of the population. In this regard, the benefits in terms of social behavioral change are undeniable, but the link between education and the labor market warrants closer consideration.

At the high end of the educational ladder, investments per student are costly and are intended to equip students with specialized skills to perform modern formal sector jobs. However, as these jobs are created by economic growth, it is important to manage the expansion of higher education accordingly.

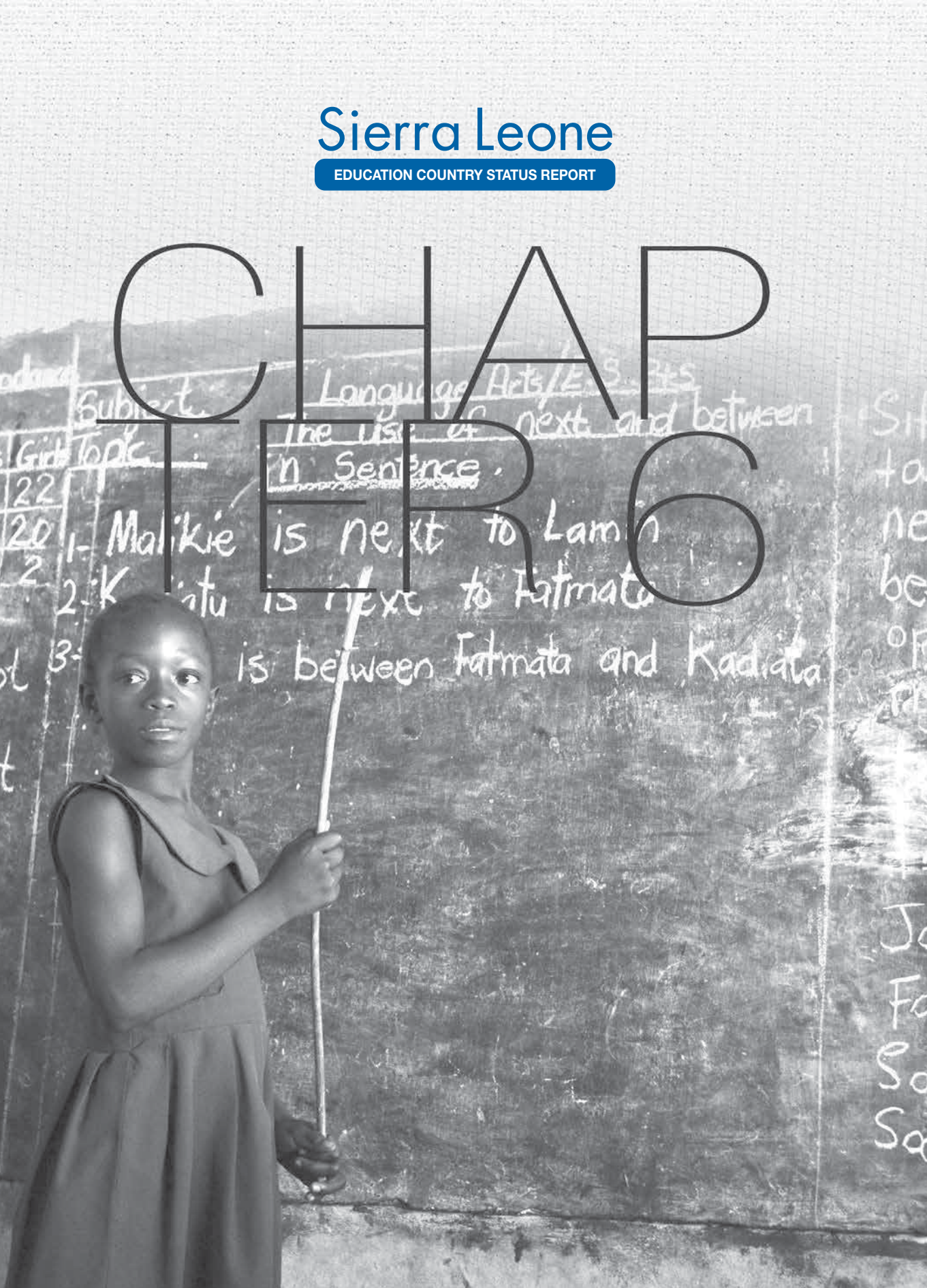
At the low end of the educational ladder, investments are less costly and are intended to equip students with the general purpose skills of basic literacy and numeracy. Such skills are effective in traditional agriculture and informal sector work, and generate non-market social benefits as well.

In Sierra Leone, these broad policy directions in managing the alignment between education and the labor market need to be strengthened, particularly by ensuring that basic education is prioritized in the allocation of public spending. As the situation is not static, regular monitoring and evaluation will be key to ensuring that policies are adjusted to maintain a good balance between the skills the education system supplies and those the labor market can absorb.

Sierra Leone

EDUCATION COUNTRY STATUS REPORT

CHAPTER 6



CHAPTER 6: Equity and disparities

The issue of equity in education is of crucial concern, firstly because the achievement of Education for All involves the implementation of an inclusive education system, without any form of discrimination. Secondly, as education constitutes one of the priority axes in all poverty reduction and social equity strategies, it is only logical that guaranteeing education for all should be an important element. Finally, beyond explanations based on social justice concepts (that everyone should have equal chances), the search for equity in education also responds to an economic effectiveness objective, given that an inequitable system cannot guarantee that the most capable individuals are those that reach the highest levels.

Ensuring equity entails implementing measures aimed at reducing existing disparities in education access, retention, and learning at all levels of the system, regardless of individuals' intrinsic characteristics such as gender, family background and area of residence.

The main objective of this chapter is to provide answers to the following three fundamental questions: (i) Do all Sierra Leonean children have the same chances of access to different education levels regardless of their gender, area of residence, and social background? (ii) What disparities exist in terms of learning outcomes, by level and type of education, student characteristics and region/district? And (iii) Does education expenditure benefit children of different socioeconomic characteristics equally, keeping in mind that the most capable individuals should be encouraged to pursue their education to the highest level?

The analysis of disparities will be based mainly on MICS, 2010 data that allow the disaggregation of schooling indicators previously used in Chapter 2 by gender, family wealth, residence (urban/rural) and region, as well national examinations data.

Disparities in Enrollment

Table 6.1 below displays enrollment by age group and parity indexes according to gender, socioeconomic status, and location for 2010 and 2003/04, underlying the following principal findings:

(i) *Gender disparities* in enrollment are slight. It is estimated that in 2010, 22 percent of girls aged 6 to 11 years were out of school, against 25 percent of boys. This minor gap in favor of girls is inverted for older age groups. Thus the share of out-of-school girls aged 12 to 14 years is 20 percent, against 17 percent for boys. For the 15 to 17 years age group, the respective shares are 35 percent and 27 percent. In comparison with the figures for 2003/04, the disparities are slightly reduced for the 12 to 17 years age group.

(ii) *Household wealth* explains the most serious disparities in children's enrollment. It is estimated that only 60 percent of children aged 6 to 11 years from the poorest households were enrolled in 2010, against 93 percent of children from the wealthiest households. This considerable gap is equally apparent in the later age groups. In comparison with the 2003/04 estimates, the distribution has worsened. The improvement in school coverage has benefitted the wealthy more than it has the poor.

(iii) *Disparities by area of residence* are apparent for all age groups. It is estimated that 26 percent of children aged 6 to 11 years living in rural areas were not enrolled in 2010, against 17 percent of their urban peers. These rates are estimated at 22 percent and 13 percent respectively for the 12 to 14 years age group, and 35 percent and 23 percent for the 15 to 17 years age group. In comparison with the results of the previous diagnosis carried out in 2004, disparities by area of residence are slighter.

(iv) *Disparities across regions* are also considerable: in 2010, whereas 90 percent of children aged 6 to 14 years and 85 percent of those aged 15 to 17 years were enrolled in the Western Area, in the Southern Region only 69 percent of the 6 to 11 years age group, 75 percent of the 12 to 14 years age group and 60 percent of the 15 to 17 years age group were enrolled.

Table 6.1: Share of Children Enrolled, by Age Group, Gender, Area of Residence, Wealth Quintile and Region, 2003/04 and 2010

Percent and Parity Indexes

Age (Years)	6-11		12-14		15-17	
	2003/04	2010	2003/04	2010	2003/04	2010
Gender						
Girls	76	78	72	80	54	65
Boys	74	75	81	83	70	73
Parity Index (Girls/Boys)	*1.027*	*1.042*	*0.889*	*0.973*	*0.771*	*0.889*
Wealth Quintile						
Q1 (Poorest)	54	60	70	61	49	46
Q2	70	69	71	74	57	58
Q3	75	78	75	83	60	68
Q4	72	84	79	89	68	79
Q5 (Wealthiest)	78	93	88	93	74	85
Parity Index (Q1/Q5)	*0.692*	*0.647*	*0.795*	*0.657*	*0.662*	*0.546*
Area of Residence						
Rural	67	74	70	78	53	65
Urban	88	83	85	87	74	77
Parity Index (Rural/Urban)	*0.761*	*0.892*	*0.824*	*0.896*	*0.716*	*0.847*
Region						
Northern	70	72	73	77	54	67
Southern	76	69	77	75	61	60
Eastern	71	82	73	88	61	72
Western Area	81	91	86	92	75	85
Parity Index (Northern/Western)	*0.864*	*0.799*	*0.849*	*0.840*	*0.720*	*0.786*
Total	**75**	**76**	**76**	**81**	**62**	**70**

Source: Authors' calculations based on MICS IV, 2010 data and World Bank, 2007.

Disparities also exist within regions, by district. In 2010 for instance, the share of enrolled children aged 6 to 11 years ranged from 57 percent in the Bonthe district of the Southern Province to 94 percent in Western Area Urban, a gap of 37 percentage points (See Table 6.2). Similar spans are found in the district enrollment rates of other age groups. In the east and the west, disparities between districts are relatively slight, whereas in the Northern and Southern Provinces, apart from enrollment rates being generally lower, the disparities between districts are much greater. In addition to Bonthe, the districts of Pujehun in the Southern Province and Kambia, Koinadugu and Port Loko in the Northern Province are those where enrollment is the weakest.

Table 6.2: Share of Children Enrolled, by Age Group and District, 2010

Percent

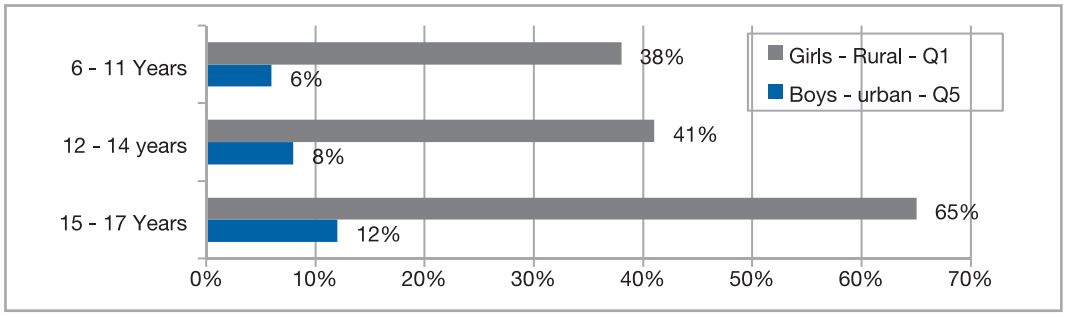
	6-11 Years	12-14 Years	15-17 Years
	2003/04	2010	2003/04
Eastern	*82*	*88*	*72*
Kailahun	86	93	78
Kenema	79	86	69
Kono	79	84	71
Range	*(7 p.p.)*	*(9 p.p.)*	*(9 p.p.)*
Northern	*72*	*77*	*67*
Bombali	79	85	79
Kambia	67	74	71
Koinadugu	65	76	61
Port Loko	67	74	56
Tonkolili	80	75	66
Range	*(15 p.p.)*	*(11 p.p.)*	*(23 p.p.)*
Southern	*69*	*75*	*60*
Bo	77	84	66
Bonthe	57	63	51
Moyamba	68	73	57
Pujehun	66	71	59
Range	*(12 p.p.)*	*(21 p.p.)*	*(15 p.p.)*
Western	*91*	*92*	*85*
Western Rural	80	91	74
Western Urban	94	92	87
Range	*(14 p.p.)*	*(1 p.p.)*	*(13 p.p.)*
Sierra Leone	76	81	70
Range	*(37 p.p.)*	*(30 p.p.)*	*(36 p.p.)*

Source: Authors' calculations based on MICS IV, 2010 data.
Note: p.p.: percentage points.

The first observation derived from this analysis is that gender disparities, although apparent, are slighter than those related to area of residence or income, the latter having the greatest overall effect. However, disadvantages tend to be cumulative: considering the three dimensions of gender, area of residence and socioeconomic background shows that girls from the poorest households in rural areas are the most disadvantaged group in terms of education access, in contrast to boys from the wealthiest families in urban areas. In 2010, whereas over 90 percent of rich urban boys were enrolled, 40 percent of poor rural girls aged 6 to 14 years and 65 percent of those aged 15 to 17 years were out-of-school (See Figure 6.1 below).

Figure 6.1: Share of Out-of-School, by Age Group and Socioeconomic Extremes, 2010

Percent



Source: Authors' calculations based on MICS IV, 2010 data.

Disparities in Access and Retention

A more detailed analysis of the chances of accessing different education levels enables to establish if disparities existed at the time of first enrollment or if they appeared in the course of schooling careers. Table 6.3 below presents the share of a cohort of children that access the first and last grades of each level, according to their gender, household wealth, and area of residence, as well as the retention rates for each cycle and the transition rates.

(i) *Gender:* Although boys and girls have the same chances of accessing Grade 1, disparities appear in the course of schooling careers, in favor of boys.[78] They are relatively weak at the primary level but accentuate throughout junior and senior secondary. It is estimated that 86 percent of a cohort has access to Grade 1, regardless of gender. This share drops to 68 percent for boys and 65 percent for girls by the last grade of primary. At the end of upper secondary, access rates are estimated at 32 percent for boys against just 14 percent for girls. Girls' retention rates are lower than boys' at every level. The primary to JSS transition rate is the same for boys and girls, but the JSS to SSS rate is more favorable to boys.

(ii) *Household Income:* Disparities in access and schooling profiles according to children's socioeconomic backgrounds are immediately apparent at every education level. It is estimated that 35 percent of a cohort of children from the poorest households do not have access to Grade 1, against just 4 percent of those from the wealthiest households. Disparities increase gradually until the end of SSS, reached by only 1 percent of children from the poorest households, against 46 percent of those from the wealthiest. It is also apparent that the transitions between cycles are particularly unfavorable to the poorest children. The transition rate from primary to JSS for instance,

78 This result that appears to contradict that of Table 6.1 can be explained by higher repetition among girls.

is estimated at 96 percent for the wealthiest children, against 76 percent for the poorest. The retention within each cycle is equally weak for poor children, with rates of 62 percent for primary, 58 percent for junior secondary and just 10 percent for senior secondary, whereas these rates are over 80 percent for children from the wealthiest households. Retaining the poorest students in primary schools and ensuring their transition to postprimary cycles is a major challenge.

Table 6.3: Cohort Access, Retention and Transition Rates, by Gender, Household Income and Area of Residence, 2010

Percent and Parity Indexes

	Primary			TR	JSS			TR	SSS		
	GIR P 1	GIR P 6	RR		GIR JSS 1	GIR JSS 3	RR		GIR SSS 1	GIR SSS 3	RR
Gender											
Girls	86	65	75	88	57	35	62	58	20	14	71
Boys	86	68	79	89	60	51	85	69	35	32	89
Parity (G/B)	*1.00*	*0.96*	*0.96*	*0.99*	*0.94*	*0.69*	*0.73*	*0.84*	*0.58*	*0.46*	*0.80*
Wealth Quintile											
Q1 (Poorest)	65	41	62	76	31	18	58	40	7	1	10
Q2	81	48	58	79	38	26	69	54	14	5	36
Q3	87	62	71	83	52	40	77	46	18	9	47
Q4	94	72	76	90	64	48	75	66	32	23	73
Q5 (Wealthiest)	96	85	88	96	81	66	81	84	55	46	83
Parity (Q1/Q5)	*0.68*	*0.48*	*0.71*	*0.80*	*0.38*	*0.27*	*0.71*	*0.48*	*0.13*	*0.02*	*0.12*
Area of Residence											
Rural	84	59	70	85	50	35	70	53	19	10	55
Urban	90	76	85	93	71	56	80	79	44	39	88
Parity (R/U)	*0.94*	*0.77*	*0.83*	*0.91*	*0.70*	*0.62*	*0.88*	*0.68*	*0.42*	*0.26*	*0.63*
Region											
Northern	82	59	72	86	51	38	74	61	23	10	43
Southern	80	60	75	88	53	37	70	60	22	20	90
Eastern	90	64	71	87	55	39	71	52	20	17	82
Western Area	97	86	89	94	81	67	83	84	56	47	84

Source: Authors' calculations based on MICS IV, 2010 data.
Note: RR: Retention Rate; TR: Transition Rate.

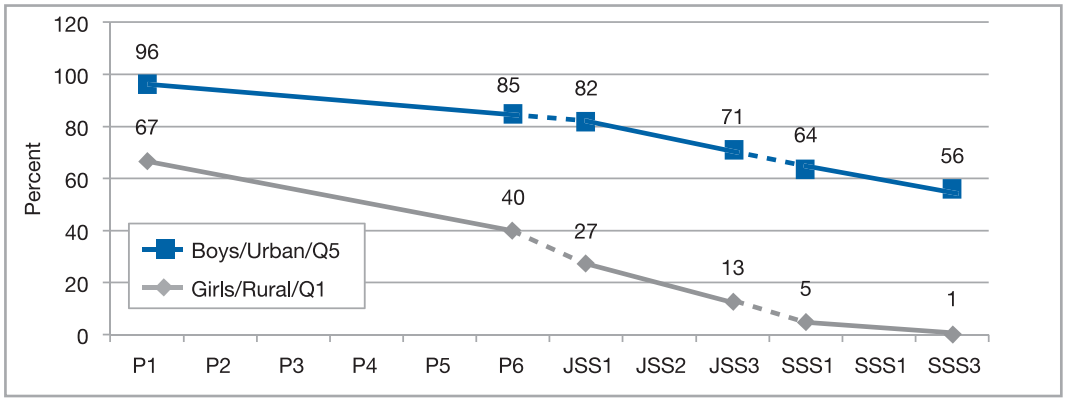
(iii) *Area of Residence:* The enrollment inequities by location observed earlier are explained by disparities in access, but especially retention. The share of children of a cohort accessing Grade 1 varies from 84 percent in rural areas to 90 percent in urban areas. Retention within cycles is also weaker for rural children, for whom the rates are estimated at 70 percent for primary and JSS and 55 percent for senior secondary. Among their urban peers, these rates are estimated at 85 percent for primary, 80 percent for junior secondary, and 88 percent for senior secondary.

(iv) *Regional disparities:* The analysis shows a clear divide between the Western Area, home to the capital Freetown, and the other regions. The access gap between regions is apparent from Grade 1, opposing the Western Area and Eastern Province to the Northern and Southern Provinces. In the former it is estimated that 97 percent and 90 percent of a cohort access primary education respectively, whereas in the latter, the respective rates are 82 percent and 80 percent. The Northern, Eastern and Southern Provinces share the same access indicators at the end of junior secondary, although divergences appear at the end of senior secondary, for which the Northern Province's access is lowest, at just 10 percent. Primary and JSS retention is again weakest in the Northern, Southern and Eastern Provinces (ranging from 71 percent to 75 percent). Retention is most alarming for senior secondary in the Northern Province however, where it is estimated that just 43 percent of the students beginning the cycle complete its three years. In other regions, this figure ranges from 82 percent to 90 percent.

Here again, disadvantages tend to be cumulative. It is estimated that one out of three poor rural girls do not access school and that just 60 percent of those that do complete the primary cycle (see Figure 6.2). Just 5 percent of children belonging to this most disadvantaged group access senior secondary and 1 percent completes the cycle, against 64 percent and 56 percent of rich urban boys, respectively. The effect of extremely weak intra-cycle retention and cycle to cycle transition rates for poor rural girls contribute to this situation.

Figure 6.2: Cohort Access Rates for the Extreme Groups, 2010

Percent



Source: Authors' calculations based on MICS IV, 2010 data (See also Annex Table A6.1).

Social Selectivity in Enrollment

Table 6.4 below provides children's social characteristics (gender, area of residence, level of income and region) by highest level of education attained. It offers a structural and cumulative view of inequalities considering the entire population aged 5 to 24 years (those never enrolled, those currently enrolled, and those having dropped out of school). Two complementary interpretations can be made of the data presented: (i) Vertically, the table shows the distribution of youth by characteristic (wealth quintile, gender, or area of residence) for each education level, the last column providing their share within the overall population. (ii) Horizontally, the relative importance of each population group can be followed through successive education levels.

Among young people with no formal education for instance, those from the two poorest quintiles are over-represented (at 31 percent and 25 percent of the uneducated, whereas they represent only 18 percent and 19 percent of the population). Children belonging to the wealthiest 20 percent of households are under-represented on the other hand. Similar findings are reached by area of residence and gender. Both girls and rural children are over-represented among those having never enrolled in comparison to their respective shares of the total population. Conversely, young people living in urban areas, boys, and those from the wealthiest families are over-represented at the higher levels of the education pyramid.

Table 6.4: Distribution of the Population Aged 5 to 24 Years According to the Highest Level Attained, by Gender, Area of Residence, Wealth Quintile and Region, 2010

Percent

Age (Years)	Highest Level of Education Attained					Total
	None	Primary	Junior Secondary	Senior Secondary	Higher	
Gender						
Girls	53	52	45	35	46	**49**
Boys	47	48	55	65	54	**51**
Wealth Quintile						
Q1 (Poorest)	31	16	10	4	0	**18**
Q2	25	20	13	7	1	**19**
Q3	20	22	19	11	4	**20**
Q4	15	23	26	24	13	**21**
Q5 (Wealthiest)	9	19	33	54	81	**22**
Area of Residence						
Rural	76	70	58	40	17	**67**
Urban	24	30	42	60	83	**33**
Region						
Northern	42	37	36	26	11	**37**
Southern	28	22	20	17	14	**23**
Eastern	22	28	23	17	8	**25**
Western Area	8	13	21	40	67	**15**
Total	**100**	**100**	**100**	**100**	**100**	**100**

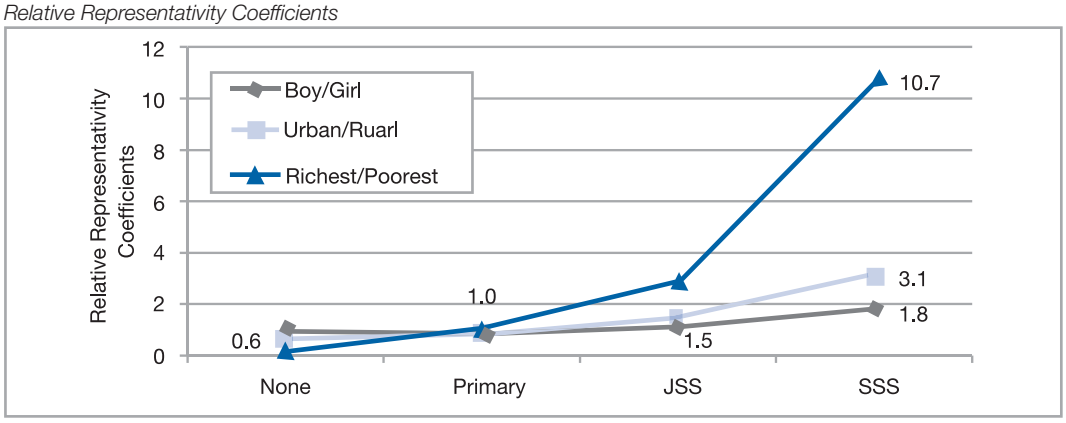
Source: Authors' calculations based on MICS IV, 2010 data.

It is also worthy of note that the share of youth from the poorest quintiles decreases with each successive terminal level, as is the case with rural children. This finding is less pronounced in terms of gender. The gradual attrition of children with unfavorable characteristics is much more marked in terms of income levels than in terms of other socioeconomic characteristics. Children from households belonging to the first four wealth quintiles gradually disappear from education, to the benefit of those from the last quintile. This confirms that gender disparities, although very real, are slighter than those related to income or area of residence.

The relative representativity coefficients derived from Table 6.4 and represented in Figure 6.3 below enable to appreciate the magnitude of the disparities.[79] They clearly show that socioeconomic background has a greater impact on disparities than area of residence and gender. Disparities according to income level are relatively weak to inexistent for primary education, but deepen at the junior secondary level and become very significant at the senior secondary level. The population reaching senior secondary is almost entirely composed of children from the wealthiest households: such children's representativity is 11 times higher than that of those from the poorest households. In terms of gender, the under-representation of girls compared to boys is apparent from JSS onwards, but is comparatively weak compared to the level of income and area of residence.[80]

Figure 6.3: Relative Representativity Coefficients, by Socioeconomic Characteristic and Education Level, 2010

Relative Representativity Coefficients



Source: Authors' calculations based on MICS IV, 2010 data. Derived from Table 6.4.

Disparities in Learning Outcomes

Gender Disparities

Gender parity in the number of candidates presenting the Sierra Leonean examinations (the NPSE, the BECE and the WASSCE – see Chapter 4), has been steadily improving. Parity among NPSE candidates has almost been reached, with 48 percent of female candidates in 2011, having risen steadily from 39 percent in 2005 (See Annex Tables A4.3 and A6.2). The share of girls sitting the BECE has increased from 36 percent to 42 percent over the period, whereas the share of those sitting the WASSCE has increased from 30 percent to 36.4 percent, a rise which conceals a significant increase in numbers, by a factor of four. These figures could be partly explained by the government policy to support girls' education, encouraging their enrollment and retention. Efforts need to be sustained however, as parity is still far from being reached.

Boys systematically outperform girls, at all levels. At the NPSE, in 2011, for every 100 male graduates, there were 95 girls (GPI of 94.8), whereas at the BECE, there were only 79 female graduates (See Table 6.5 below). Just 30 percent of female candidates sitting the BECE obtain the result required to enter SSS (passes in five subjects or more, including language arts and math), against 40 percent of male candidates,

79 The representativity of a group is measured as the ratio between its share of the population enrolled at a given level and its share of the total population (of children aged 5 to 24 years).

80 The gender curve does not show that gender-related disparities do in fact deepen throughout education cycles because of the scale used (variations are comparatively weak when plotted against other types of disparity).

making the transition to SSS more stringent for girls. Although this could be associated with the relatively higher proportion of girls with greater learning difficulties entering JSS as a result of the fee-free JSS policy for girls, it could also be the result of discriminatory practices in and outside the classroom. Further analysis is needed to understand the underlying issues at stake. Although the gap in NPSE pass rates has been closing tentatively since 2006 (increasing GPIs), that in BECE pass rates has tended to increase (dropping GPIs) in recent years.

Table 6.5: NPSE and BECE Pass Rates by Gender and Gender Parity Index, 2005-11

Number, Percent, and Ratio

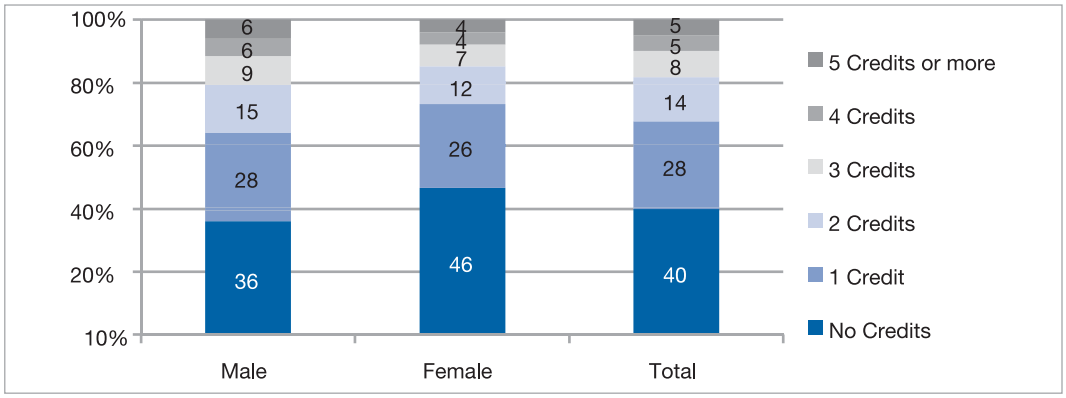
	NPSE			BECE					
	Pass Rates (%)		GPI	Pass Rate (4+ Passes)		GPI	5+ Passes (incl. LA or Math)		GPI
	Male	Female		Male	Female		Male	Female	
2005	74.2	68.8	92.71	51.1%	41.1%	0.80	37.4%	30.7%	0.82
2006	75.2	69.2	91.97	—	—	—	—	—	—
2007	74.7	69.4	93.02	63.3%	53.3%	0.84	47.2%	41.5%	0.88
2008	76.4	70.8	92.63	50.6%	44.5%	0.88	39.3%	35.5%	0.90
2009	76.0	72.6	95.61	54.0%	43.2%	0.80	39.6%	32.8%	0.83
2010	75.9	72.5	95.54	54.9%	43.2%	0.79	42.1%	33.0%	0.78
2011	76.7	72.7	94.81	54.9%	43.2%	0.79	39.7%	30.1%	0.76

Source: MEST, 2012 for NPSE, WAEC/BECE results and authors' computations. LA: language arts.

At the WASSCE, girls also perform less well than boys, registering more fails (zero credits) and fewer credits in at least four or five subjects (See Figure 6.4). Boys have not always outperformed at the WASSCE however: in 2008, for every 100 boys passing the exam (defined here as obtaining five credits or more), there were 107 girls (See Chapter 4 for further details on the marking system).

Figure 6.4: Distribution of Number of WASSCE Credits, by Gender, 2011

Percent



Source: WAEC, 2011.

Note: A credit includes all score from A1 to C6 (See also Annex Tables A6.7 and A6.9).

Girls' underperformance throughout their schooling is possibly related to their weaker foundation skills, not least in English. In terms of basic reading ability, Early Grade Reading Assessments show that girls steadily fall behind their male peers over Grades 1 to 3 (See Annex Table A4.2). While the gap between boys' and girls' overall average scores is less than one percentage point in Grade 1, it reaches almost four percentage points in Grade 3. Girls underperform boys in all items, except on the Grade 2 writing assessment where girls averaged 0.08 percentage points higher. This situation raises serious concerns and calls for further analysis to better understand the underlying issues, whether school of home-related.

Regional Disparities

The most striking feature of regional disparities is the East-West divide. On almost all counts, Western Area is the best performing region, and the Eastern Province is the worst: NPSE results, the BECE pass rates and subject scores and the WASSCE pass rate and results all show this pattern. The NPSE pass rate is the exception, as it is highest in the Southern Province and lowest in the Eastern Province and Western Area, although the difference is very slight. The Southern Province also performs well in terms of NPSE and WASSCE subject scores, just behind Western Area, but has indicators on par with the Eastern Province for both the BECE pass rate and subject results. Students from the Northern Province show the opposite trend: they perform poorly at the NPSE (their pass rate is less than one percentage point higher than that of the Eastern Province, with whom it shares the poorest results) and WASSCE, but achieve average BECE pass rates and scores.

NPSE

The disparities between the best and worst performing regions at the NPSE have narrowed since 2005, to less than five percentage points in 2011, having apparently been virtually eliminated. Pupils from the Southern Province obtained the best pass rate (78.4 percent) in 2011, although the Eastern Province was at the top of the ranks until 2009 (See Table 6.6). The Southern Province also hosts the lowest share of candidates (17 percent).[81] No regional variation is noted in terms of performance by gender: girls systematically underperform boys in similar proportions (See Annex Table A6.2).

Table 6.6: Share of NPSE Candidates who Passed all Papers, by Region, 2008 - 11

Percent

	2005	2008	2009	2010	2011
Northern	69.0	73.1	72.4	73.0	74.4
Southern	64.0	69.1	72.8	**77.0**	**78.4**
Eastern	**81.0**	**78.0**	**80.2**	75.0	73.8
Western Area	73.0	75.5	72.9	74.0	73.7
Total	**72.0**	**73.9**	**74.4**	**74.3**	**74.8**
Gap (Max-Min)	*17.0*	*8.9*	*7.8*	*4.0*	*4.7*

Source: World Bank, 2007 for 2005; WAEC/NPSE results for 2008-11.

Note: Region ranking first in bold; region ranking last in red. The difference between the pass rates of the Southern Province and other regions is statistically significant at the 1% level for 2011, whereas the difference between the Eastern Province and Western Area is not significant.

81 In 2011, the Northern Province accounted for most candidates, with 33,070 (34 percent), followed by the Western Area with 27,072 candidates (28 percent), the Eastern Province with 20,280 candidates (21 percent) and the Southern Province with 16,110 candidates (17 percent).

The Southern Province and the Western Area record the highest aggregate scores (See Annex Table A6.3). Although students in the Western Area perform the best in English, they lag behind in math and general studies. The poorest results are generally observed in the Northern and Eastern Provinces; with the exception of math, in which students in the Eastern Province obtain the best results.

BECE

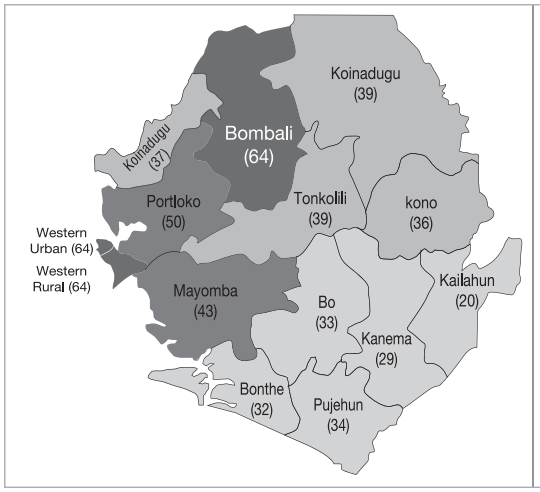
In 2011, the Western Area recorded the best performance in terms of the end of junior secondary exam (62 percent of candidates passed), followed by the Northern Province (48 percent) and the Southern Province (35 percent). The Eastern Province displayed the lowest share of candidates passing the exam (29.3 percent).[82] A striking 32 percentage point gap separates the best and worst performing regions. The Southern and Eastern Provinces however only account for just over a third of candidates (36 percent).[83]

Regional data hide wide disparities within regions and across districts (See Map 6.1). The worse performing districts remain in the Eastern and Southern Provinces with BECE pass rates (four and more subject passes) as low as 20 percent in Kailahun, and below 35 percent in Pujehun (34 percent), Bo (33 percent), Bonthe (33 percent) and Kenema (29 percent). At the top end, Bombali students do the best (64 percent pass) followed by Western Area Rural and Urban (64 and 62 percent respectively). This same pattern generally holds for students passing five subjects or more including language arts or math (the SSS entry requirement), although Bombali loses its place as leading district. This observation stresses the huge variability in the capacity of districts to produce graduates. Deeper analysis is needed to better understand the forces at stake in producing such variations in learning outcomes.

Map 6.1: BECE PASS Rates, by District and Number of Passes, 2011

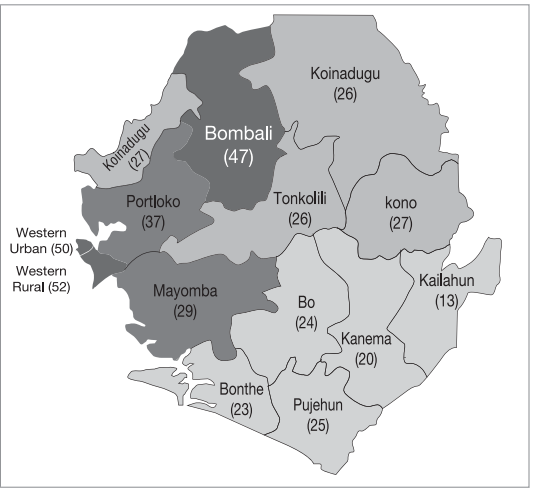
Percent

4+ Passes



Legend: Light: under 35%; medium: 35-40%; medium dark: 40-50%; dark: 51% and above.

5+ Passes, Including LA and Math



Legend: Light: under 25%; medium: 25-35%; medium dark: 35-45%; dark: 46% and above.

Source: WAEC/BECE data, 2011 and authors' computations (See also Annex Table A6.4). LA = Language Arts.

82 In 2005, the ranking of regions was somewhat different, with the Northern Province displaying the lowest pass rate, followed by the Southern and Eastern Provinces, while the Western Area was already outperforming others (with a pass rate 16 percentage points higher). More insight in needed to understand the underlying factors explaining these shifts.

83 With 27,936 candidates, the Western Area hosts the largest share of candidates (34 percent) followed by the Northern Province with 24,916 candidates (30 percent), the Eastern Province with 16,862 candidates (21 percent) and the Southern Province with 12,156 candidates (15 percent).

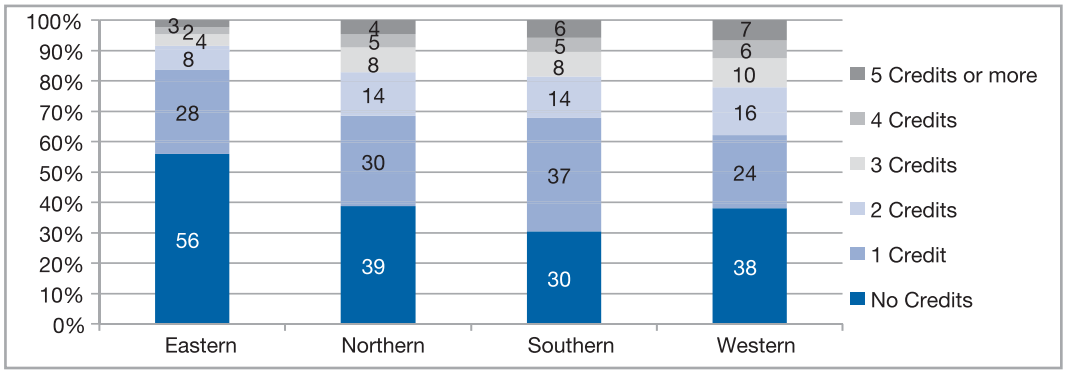
The strong regional disparities are also reflected in the subject scores. The above ranking continues to hold, with the Western Area displaying the best scores and the Southern and Eastern Provinces heavily lagging behind (See Annex Table A6.5). The results are again similar at the district level, with important disparities within regions and across districts (See Annex Table A6.6).

WASSCE

The Western Area has the best performance (13 percent of candidates obtained at least four credits) followed by the Southern Province (11 percent) and the Northern Province (9 percent – See Figure 6.5). The Eastern Province has both the highest share of students who failed to obtain a single credit in any subject (56 percent) and the lowest share of those obtaining four credits or more. This ranking has not varied since 2005 (World Bank, 2007).

Figure 6.5: Distribution of Number of WASSCE Credits, by Region, 2011

Percent



Source: WAEC/WASSCE results, 2011 (See also Annex Table A6.9).
Note: A credit includes all scores from A1 to C6.

In 2011, more than half the candidates (53 percent) were from the Western Area. Many children from other regions are known to enroll in senior secondary schools there as they are believed to be of better quality. This tends to increase the competition for places in SSS, particularly in Freetown, affecting class sizes.

Again, regional figures hide significant district-level disparities, both within regions and across districts (See Annex Table A6.8). WASSCE pass rates (the share of candidates obtaining four credits or more) are as low as 1 percent in Koinadugu and as high as 14 percent in Port Loko, both in the Northern Province. The poor performance in absolute terms in the Western Area Urban (with a pass rate of just 13 percent) particularly belies the assumption that high concentrations of qualified teachers and schools result in better student performance.

Equity in the Distribution of Public Education Resources

This section reviews the way in which individuals benefit from public education resources. It is based on the principle that as individuals gain access to the higher levels of education, they consume a greater share of public resources allocated to education systems. Two complementary levels of analysis can be considered:

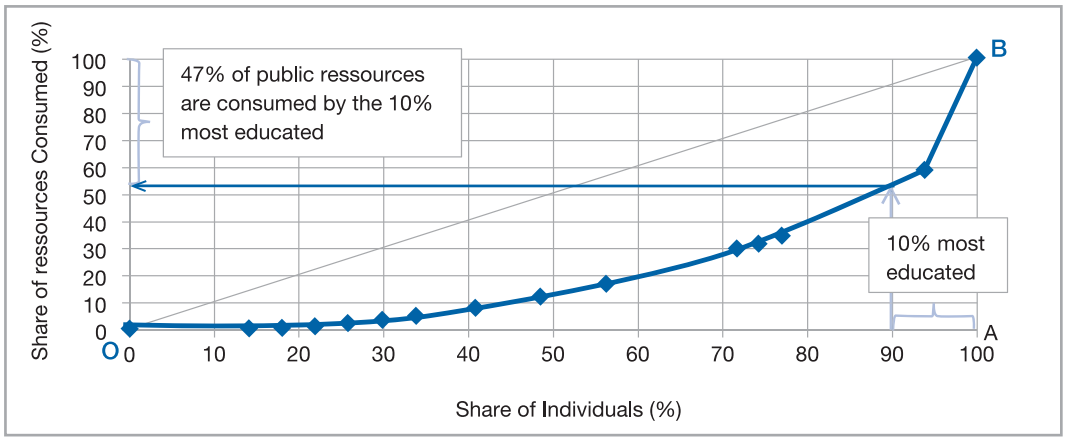
(i) *The structural distribution* of resources examines average schooling careers and the distribution of pupils according to their terminal education level on the one hand, and the breakdown of public per student spending on the other. From this perspective, the greater the share of a given age group that gains access to primary school and the weaker the increase in unit costs with each successive year, the more the distribution of public education expenditure will be considered structurally fair. Conversely, greater shares of out-of-school children and steeper increases in unit costs will indicate that a smaller number of individuals benefit from a comparatively greater share of resources, and the distribution of the resources allocated to the sector will be structurally inequitable.

(ii) *A distributive analysis* then establishes, within each structural envelope determined, how the disparities in enrollment by socioeconomic characteristic (gender, area of residence and so on) will entail social inequities in the consumption of public education resources. This determines the social selectivity in the allocation of public education resources.

The Structural Distribution of Public Education Resources

This analysis is based on the distribution of a cohort of pupils by terminal education level (the highest level attained) and the corresponding public unit costs, to determine the amount of public resources effectively consumed by the cohort at each terminal schooling level. The Lorenz curve is computed on the basis of the last two columns of the table presented in Annex Note A6.1, which plot the share of individuals for whom a given level is the highest attained and the related share of resources they have consumed (See Figure 6.6).

Figure 6.6: Lorenz Curve of the Distribution of Public Education Resources, 2010

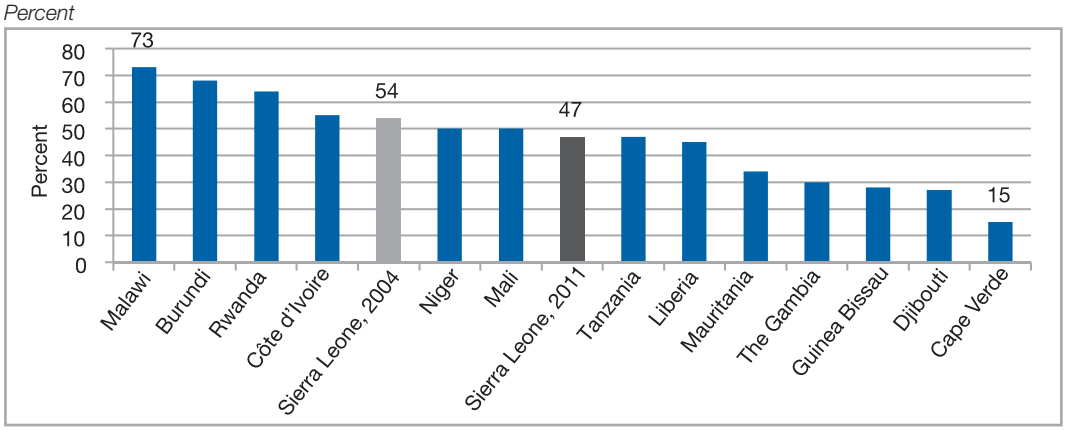


Source: Derived from Annex Note A6.1.

The area between the blue Lorenz curve and the OB line (which refers to perfect equity) reflects the degree of concentration in the distribution of public education resources among different groups. The greater this area, the higher the concentration of resources and greater the inequity in their consumption. The measure of this area, and its relation to the OAB triangle that represents perfect iniquity (where one individual consumes 100 percent of resources), enables the computation of the Gini coefficient that synthesizes the concentration in the distribution of public resources. In the case of Sierra Leone, the Gini coefficient is 0.60 for 2010.

Other interesting information can be derived from Figure 6.6. For instance, the share of individuals (x-axis value) can be read off the graph for the point equivalent to 50 percent of resources. This simple exercise indicates that the 87 percent least educated individuals consume the same amount of education resources as the 13 percent most educated. It is more common however to read off the graph the share of resources consumed (y-axis value) for the point equivalent to the 10 percent most educated, corresponding to 90 percent of individuals. In this case, the reading indicates that the 90 percent least educated individuals consume 53 percent of resources, or more to the point, that the 10 percent most educated individuals consume 47 percent of education resources.

Figure 6.7: Share of Education Resources Consumed by the 10 Percent Most Educated, Sierra Leone and Various African Countries, 2010 or MRY



Source: Authors' computations based on World Bank, 2007 and Figure 6.6 for Sierra Leone; Pôle de Dakar database for other countries.

The share of education resources consumed by the 10 percent most educated individuals is an indicator commonly used in cross-country comparisons. Figure 6.7 compares this indicator in Sierra Leone with that of other African countries. On the one hand it shows that Sierra Leone is in an average position when compared to similar countries; on the other, it indicates that inequity in the distribution of resources has improved quite significantly over the decade, as in 2004 the 10 percent most educated consumed 54 percent of resources, or seven percentage points more than in 2011.

Social Selectivity in the Consumption of Public Education Resources

The previous analysis examined the degree of equity in the distribution of education resources among individuals, showing that a small number of children benefit from a large share of resources. This section will adopt another angle, by assessing the level of consumption of public education resources according to the socioeconomic characteristics of the groups.

Table 6.7 relates the unit costs of each level of education to the results of earlier Table 6.4 that show the distribution of youth according to the highest level attained, by socioeconomic characteristics. This enables to determine the population groups that most benefit from public education expenditure. The first column of the table provides the percentage of public resources accumulated by each group. By dividing this share by the weight of group in the reference population (here youth aged 5 to 24 years), ratios are obtained that can be used to compute appropriation indexes. These represent the relationship between the ratio for each group and that of the reference category for that group. These indexes determine the factor by which a given group consumes more resources than the chosen reference group, taking each group's size into account.

Table 6.7: Social Disparities in the Consumption of Public Education Resources, 2010

Age (Years)	All Education Levels Combined			
	% of Education Spending Consumed (a)	% of Each Group in the 5-24 Yrs Population (b)	Ratio R = (a) / (b)	Appropriation Index I
Income Group				
Q1 (The Poorest 20%)	5	18	0.253	1.0
Q2	7	19	0.358	1.4
Q3	11	20	0.534	2.1
Q4	20	21	0.944	3.7
Q5 (The Wealthiest 20%)	**58**	**22**	**2.634**	**10.4**
Gender				
Girls	43	49	0.877	1.0
Boys	**57**	**51**	**1.118**	**1.3**
Area of Residence				
Rural	37	67	0.547	1.0
Urban	**63**	**33**	**1.919**	**3.5**

Source: Authors' calculations based on Table 6.4 and Annex Note A6.1.

Table 6.7 again underlines the inequity in the distribution of public education resources, here indicating that the wealthiest 20 percent of households benefit from 58 percent of public spending for education, consuming over 10 times more resources than the poorest 20 percent of households (who absorb barely 5 percent). The distribution of education resources by household income is the least equitable. The degree of inequity by area of residence is also high, as urban children absorb 3.5 times more resources than their rural peers, explained in part by the higher probability urban children face of pursuing their education to higher levels. Finally, boys benefit from 30 percent more resources than girls.

Key Findings

Disparities in Enrollment, Access and Retention

Household wealth explains the greatest disparities in children's enrollment, for all age groups, and the distribution is worsening, both over time and with each successive level. The increase in school coverage has benefitted the wealthy more than the poor. Whereas an estimated 35 percent of children from the poorest quintile never access Grade 1, against just 4 percent from the wealthiest quintile, 99 percent never access SSS 3, against 54 percent for Q5 children. Transition and intra-cycle retention rates are also particularly unfavorable to the poorest children.

Disparities by area of residence are apparent for all age groups, fuelled especially by weak retention in rural areas, although they are gradually subsiding. Disparities across regions are considerable on the other hand, showing a systematic and clear divide between the Western Area and other regions (90 percent of children aged 6 to 14 years were enrolled in the Western Area, against about 70 percent in the Southern Regionin 2010). The Southern and Northern Regions lag behind in terms of access to primary, whereas the Eastern and Northern Regionsdisplay the lowest primary retention rate and the Northern Regionhas the lowest secondary retention.

Gender disparities in access to education are slight, but tend to deepen gradually as children progress through school. Marginally more boys aged 6 to 11 years were out-of-school in 2010 (25 percent, against 22 percent for girls), whereas the gap is inverted for older age groups. Indeed, girls' retention rates are lower than boys' at every level and although the primary to JSS transition rate is the same for boys and girls, the transition from JSS to SSS is more favorable to boys. Thus, although 86 percent of children access Grade 1 (boys and girls alike), just 14 percent of school-aged girls access SSS 3, against 32 percent of boys.

Although gender disparities are slighter than those related to area of residence or income, disparities tend to be cumulative: In 2010, whereas over 90 percent of rich urban boys were enrolled, 40 percent of poor rural girls aged 6 to 14 years and 65 percent of those aged 15 to 17 years were out-of-school. Only 1 percent of poor rural girls complete secondary, against 56 percent of rich urban boys.

Disparities in Learning Outcomes

Although gender parity in the number of candidates sitting national examinations has been steadily improving, boys outperform girls in almost every other respect. Whereas the gender gap in NPSE pass rates has been closing tentatively since 2006, the gap in BECE pass rates has tended to increase. In 2011, only 30 percent of female BECE candidates obtained the results required to enter SSS, against 40 percent for boys. At the WASSCE girls also register more fails and fewer credits in at least four subjects than boys. Girls' underperformance throughout their schooling is possibly related to their weaker foundation skills, not least in English, as shown by their worsening performance in early reading over Grades 1 to 3.

The most striking feature of regional disparities in learning outcomes is the East-West divide. On almost all counts, Western Area is the best performing region, and the Eastern Province is the worst: NPSE results, the BECE pass rates and subject scores and the WASSCE pass rate and results all follow this pattern. The NPSE pass rate is the exception, as it is highest in the Southern Regionand lowest in the Eastern Region and Western Area, although the difference is very slight. Regional figures also hide significant district-level disparities.

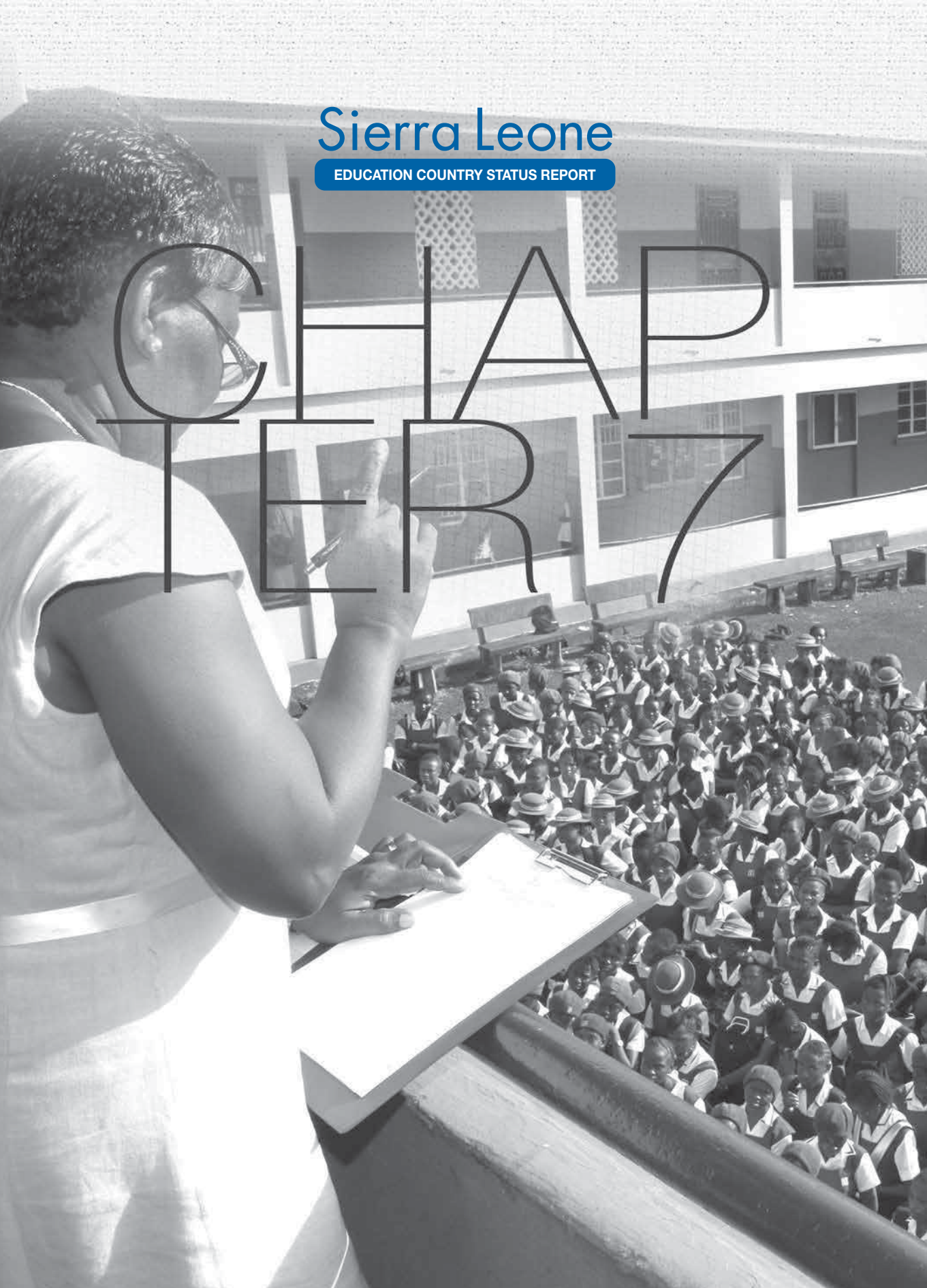
Equity in the Distribution of Public Education Resources

The distribution of public education resources has improved significantly since 2004, but is still inequitable. In 2011 the share of resources absorbed by the 10 percent most educated was 47 percent, in line with the SSA average, down from 54 percent in 2004. Nevertheless, children from the wealthiest quintile still consume 10 times more public education resources than those from the poorest quintile, and those from urban areas 3.5 times more than their rural counterparts. The financing of the education system therefore tends to strengthen inequities between groups. More action is needed to ensure that the poor gain access to and remain in schools.

Sierra Leone

EDUCATION COUNTRY STATUS REPORT

CHAPTER 7



CHAPTER 7: Management issues

Beyond educational policy, which defines structural choices with respect to the organizational modes and resources made available to each level of education, management intervenes in the processes through which these decisions are actually implemented with a view to producing the expected results. A well-functioning education system is one that has operative mechanisms that ensure the efficient and effective allocation of resources across schools (administrative management) and whose schools enable a maximum of students to acquire the required skills and competencies (pedagogical management).

This chapter will successively address four complementary dimensions of management: (i) the administrative management of teachers; (ii) teacher allocations (the consistency of teacher postings) at central, district and school levels; (iii) economies of scale and optimal school size; and (iv) pedagogical management and the school-level transformation of resources into student learning achievements. The analysis will focus on primary and secondary schools. EMIS data will be used to analyze teacher deployment, and BECE and NPSE data for pedagogical management issues.[84]

Administrative Issues in Primary and Secondary Schools

Teachers are crucial to the delivery of good quality education because they are directly responsible for equipping students with the necessary skills and knowledge. Furthermore, teacher salaries account for the largest share of recurrent education expenditure, so it is crucial that they are managed effectively. This section will start by briefly presenting the institutional aspects of teacher management, before describing the main teacher training modalities and ending with a description of teacher characteristics.

Institutional Aspects of Teacher Management

Teacher Recruitment and Deployment to Schools

Public teacher management issues such as recruitment, deployment, transfer, replacement, promotion and supervision are carried out by various actors, namely MEST, MOFPED, and district councils. At the primary level, the Ministry of Education is responsible for determining and approving the teaching staff employable for each academic year, based on ceiling figures provided by MOFPED. These are normally determined on the basis of a pupil-teacher ratio of 45:1, applied to the total enrollment of each school for that year.

At present, there is no clear-cut policy on teacher posting. However, the employing authorities (city and district councils' education secretaries) mostly deploy teachers according to needs. Newly recruited teachers are posted to schools where vacancies are available and may be transferred at the behest of their employer. Indeed, the responsibility for recruiting teachers ultimately lies with individual schools and school management committees (SMC).[85]

84 The overestimation of the workforce and the pupil population in the EMIS database makes it difficult to precisely determine the real student population and number of teaching staff, meaning that PTRs in this report are indicative. However, the variation in PTRs is likely to reasonably reflect district-level disparities. Public and government-aided school teacher numbers were estimated on the basis of those with a registered personal identification number (PIN), which is subject to some assumptions (See General Note No.1).

85 For primary schools, the education secretary of the local council and SMC members normally sit on the committee. For secondary schools, the interview panel usually includes the board of governors, the principal being expected to co-opt the heads of the department needing to fill the vacancy.

Vacancies are advertised on the radio and/or in local newspapers and interested candidates are selected by written application and interview. Once the hire is endorsed by MEST, teachers are added to the payroll. This can take a long time, and many teachers are still waiting.

Eligible teachers should normally be professionally trained and qualified. Where no such candidate is available, especially in areas noted for their paucity of qualified teachers, schools rely on unqualified candidates.[86] Such appointments are temporary and are renewable at the end of each academic year provided there is still no qualified person to fill the vacancy. School headmasters who receive assistance from community teacher associations recruit part-time teachers. Finally, in some special cases teachers from abroad are recruited to fill vacancies in subject areas where no qualified candidates are available locally. They are mostly graduate volunteers from the Peace Corps and the Nigerian Technical Aid Corps.

Teacher Retention, Incentives and Absenteeism

Little is known about teacher retention and attrition as no data on these issues are collected at present. Anecdotal evidence points to teachers leaving the profession for better pay and working conditions elsewhere, as to date there are still no extra incentives for teachers in remote areas (MEST, 2011). The Teaching Service Commission, once operational, will be responsible for designing an incentive strategy for teachers in remote areas, to improve demand for those posts. Little data is collected on absenteeism either. On the day the Book Assessment Survey was conducted in 2009, eight percent of teachers were absent, which is relatively low in regional context.[87] The availability at the school level of teacher attendance/time books to track teacher attendance/absenteeism could be an effective tool in monitoring teacher absenteeism and limiting its occurrence.

Teacher Training for Primary and Secondary Education

Teacher training is one of the main priorities of the government as stated in its 2010 Teacher Training Policy. Indeed, the conflict in Sierra Leone left the country depleted of its teaching labor force, at a time when the need for qualified and trained teachers was particularly acute, as student numbers surged with the implementation of the fee-free primary education policy in 2002/03. The number of teachers in need of training to obtain the qualifications in line with their positions is estimated at about 19,800 for primary, 5,200 for JSS and 1,400 for SSS in 2010/11. These figures are high compared to what the current teacher training system can currently support, estimated at 3,900 trainees for TC and HTC programmes in 2010/11 (See Table 2.3 in Chapter 2).

Teacher education is delivered by various types of institutions – two teacher training colleges (TTCs), three polytechnics and two public universities - throughout the four regions. They produce trained and qualified teachers for both primary and secondary schools. The training is either preservice or in-service, through lecture-based or distance-learning courses.[88] The qualifications obtained from the programmes offered and their entry requirements are presented in Annex Tables A7.1 and A7.2.

86 At the primary level, trained but unqualified teachers can be appointed but are normally encouraged to qualify at the earliest opportunity. At the secondary level, teachers for subjects such as French, math, science and accounting being scarce, the following applicants are considered: (i) graduates with no professional qualification (B. Eng., M. A., Ph. D., and B. Com.); (ii) holders of non-teaching diplomas and certificates (HND, Dip. Eng.); or (iii) GCE O-Level and A-Level/WASSCE holders with a minimum of five credits, including English.

87 This is not a nationally representative rate, not least because the presence of teachers and attendance of pupils drops considerably at other times of the year, according to the agricultural calendar and rainy season (See Chapter 4).

88 Some evidence, reaffirmed in Majgaard and Mingat, 2012, favors an approach of short pre-service training combined with more in-service training, to enhance student learning. While long pre-service trainings are costly and not always well targeted to teachers' future needs, they tend to overload TTCs and limit the number of potential trainees.

Pre-Service Training

The MEST is well aware of the current low quality of its teaching force and has undertaken a series of actions to improve teacher quality. Sierra Leone has a reasonable array of teacher training options as a result, to provide for every level. Teacher training colleges and polytechnics are the main providers of pre-service training for primary and junior secondary levels, whereas the universities train teachers for senior secondary schools. Primary teachers must hold at least a Teachers Certificate (TC) or Higher Teachers Certificate (HTC) and secondary teachers a HTC Secondary or an undergraduate university degree with a specialization in education. Technical and vocational institutes also offer courses for certain subject specializations taught in secondary, although the coverage is still partial.[89]

Further issues noted that can ultimately negatively impact on the quality of teachers include: (i) courses are theoretical, lacking teaching practice, pedagogical skills components, field trips and laboratories; (ii) programmes are at risk of becoming outdated due to lack of regular review; (iii) teaching methods are inadequate, essentially lecture-based, and exams test mainly cognitive skills and memory; and (iv) most students following TC or HTC Primary training are among the poorer WASSCE performers, which puts the starting level of teachers' competencies at a low level.[90]

In-Service Teacher Training and Career Development

In the absence of a teacher development policy as such, opportunities for teachers to upgrade are random. Teachers are granted study leave with pay by the MEST to pursue higher education programmes in teacher training colleges, polytechnics and universities. Other options include distance education programmes, like those taking up from the SABABU Education Training Programme for Untrained and Unqualified Teachers, 2003-08, or the one-year fast-track course offered by the MEST since 2009.[91] MEST also provide in-service refresher training, which in 2011 was to benefit over 2,500 teachers, and has launched a Teacher Management Training course for head teachers and SMC members. Finally, both the government and donors support teacher training through scholarships for training abroad. Note that to date there is no structured in-service training for nonformal, preprimary, special needs and TVET teachers.

While existing schemes provide some opportunities for teachers' career development, they remain insufficient. More is still needed to offer a coherent and efficient framework for teacher advancement. Some of the issues faced include: (i) the weak knowledge of teachers upon completion of their training; (ii) the lack of management courses for head teachers; (iii) conditions of promotion and pay.

The MEST is addressing these and more through strategies to increase the national teacher training capacity, such as the set up of a performance system, regulating teacher salaries according to their qualifications, and has recommended the establishment of a Teaching Service Commission, which would take overall responsibility for all key teacher management functions (recruitment, deployment, training,

89 The National Council for Technical, Vocational and Other Academic Awards (NCTVA) and Njala University award the Teachers Certificate (TC) and the Higher Teachers Certificate (HTC) to students who successfully complete their course. The University of Sierra Leone awards the Postgraduate Diploma in Education (PGDE) (Thompson and Mansaray, 2012).

90 There is evidence that academic entry requirements are sometimes relaxed to allow enough candidates to join TC and HTC programmes.

91 The regular three-year Teachers Certificate curriculum was compressed to be taught in one academic year. The course, while easily available, has been shown to improve teacher classroom practices; notwithstanding the fact that trainees scored poorly at the written examination leading to certification. The fact that entry requirements to the programme are particularly low may possibly account for this situation (Thompson and Mansaray, 2012).

discipline, pay and retirement). A policy on teacher training and development (along with a detailed action plan) has also been formulated but is yet to be implemented.[92]

Teacher Characteristics

In 2010/11, the total number of teachers in Sierra Leone was estimated at 38,125 for primary and 17,194 for secondary schools, up from 19,317 and 5,580 in 2004/05, representing a sharp increase: teacher numbers doubled for primary and more than tripled for secondary. Teachers have the following characteristics:

(i) *Gender*: Women still account for a minor share of teachers: barely 25 percent of primary, 14 percent of JSS and 8 percent of SSS teachers in 2010/11 (except at preprimary, where they account for 82 percent). Of major concern is that their participation in the profession has dwindled since 2004/05, despite the setup of mechanisms to favor their participation (See Table 7.1 below).[93]

Table 7.1: Share of Female, Qualified and Public/Government-Aided Teachers, by Level, 2004/05 and 2010/11

Number and Percent

	Preprimary	Primary	Secondary			Total
			JSS	SSS	Total	
2010/11 (Total)	*2,167*	*38,125*	*12,794*	*4,400*	*17,194*	*57,486*
% Female	82%	25%	14%	8%	12%	23%
% Qualified	42%	48%	59%	68%	61%	52%
% Public + GA	56%	94%	89%	86%	88%	91%
2004/05	—	19,316	—	—	5,580	24,896
% Female	—	32%	—	—	19%	—
% Qualified	—	59%	—	—	90%	—

Source: World Bank, 2007 and EMIS, 2010/11.

Note: The share of qualified teachers refers to those qualified for their level and position. GA: Government-aided schools.

92 The policy establishes the way in which the government will define and articulate the scope of the challenges affecting the development of teachers, enhance the related legal framework and strengthen the monitoring of teaching and of teacher training. It recognizes that producing highly trained teachers requires enhancing the capacities of teacher training institutions to manage the flow of pre-service and in-service teachers. It also recommends that the Tertiary Education Commission should have a far stronger supervisory role as a quality assurance measure. It commits to improving the financial and resource base of teacher training institutions and to ensuring that management has the capacity to effectively deliver both conventional courses and the increasingly popular distance learning courses (MEST, 2011).

93 Female students are given priority for tertiary education grants and preference for study leave with pay to complete in-service training. The growing number of female SSS/WASSCE graduates could provide a pool of potential female candidates for teacher education. However, 2010 data on TTI enrollment show that female students account for just a third of students (MEST, 2011). More investigation is needed to better understand the constraints faced by women in becoming teachers. Indeed, the importance of female teachers is widely recognized, as role models for all students, but particularly for female students in rural settings, where they teach girls to become active agents in community development. Female teachers are also often recognized as encouraging girls' enrollment, as well as favoring quality and retention (See Haugen et al., 2011).

(ii) *Qualifications:* Barely half of teachers are qualified for their level and position. The problem is most acute at primary and preprimary levels (48 percent and 42 percent of teachers were qualified in 2010/11, respectively), the highest share of qualified teachers being found at SSS (68 percent). The situation has worsened since 2004/05, particularly at the secondary level, where the share of qualified teachers has dropped by 29 percentage points, from 90 percent to 61 percent.

(iii) *Status:* Public and government-aided school teachers account for 91 percent of the teaching force, about 52,300 in total in 2010/11, the broad majority in primary schools (69 percent - EMIS)[94]. Only about 60 percent have a PIN however (are on the payroll); 62 percent at the primary level, 58 percent at JSS and 72 percent at SSS (See Table 7.2). Those with no PIN are volunteers or community teachershired directly by schools and are mostly not qualified (See Annex Table A7.3).

(iv) *Location:* District-level endowments of qualified, female and PIN teachers are also very uneven and disparities tend to be highly concentrated (See Annex Table A7.4); the same districts tend to have low shares of all three (such as Kambia, Koinadugu, Kono), average (Bombali, Bonthe and Tonkolili) or above average shares of both qualified, female and permanent teachers (Western Area Urban and Bo).

Table 7.2: Share of Female, Qualified and PIN Public Sector School Teachers, by Level, 2010/11
Number and Percent

	Preprimary	Primary	Secondary			Total
			JSS	SSS	Total	
Total	*1,219*	*35,986*	*11,360*	*3,777*	*15,137*	*52,342*
% Female	81%	24%	14%	8%	12%	22%
% Qualified	46%	48%	59%	69%	62%	52%
% with a PIN	38%	62%	58%	72%	61%	61%

Source: UIS and EMIS, 2010/11.

Consistency in Teacher Deployment

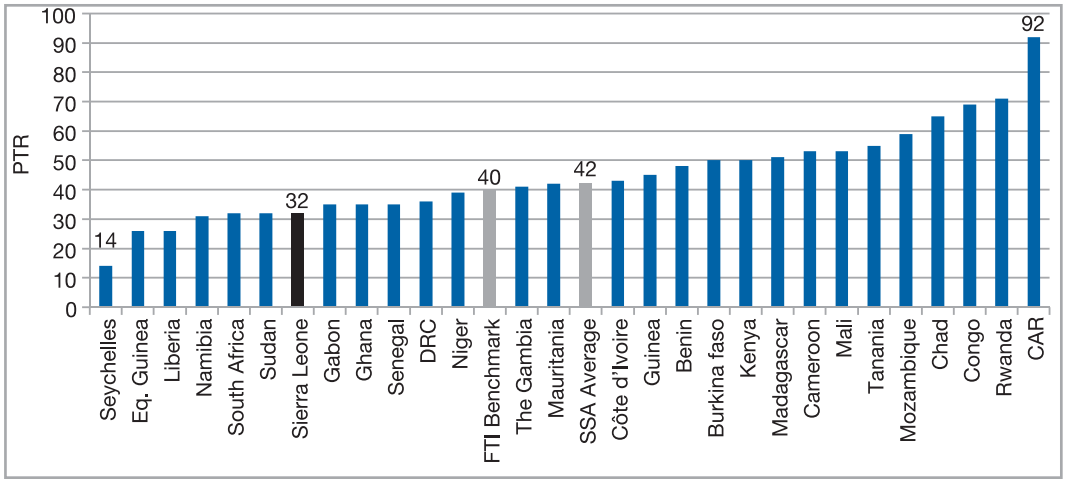
Pupil-Teacher Ratio

At the national level, the average pupil-teacher ratio (PTR) in primary public and government-aided schools is 32:1, considering all teachers regardless of their status. This is well below the national target of 45:1, the SSA average of 42:1 and the FTI benchmark of 40:1 (See Figure 7.1). At the secondary level, average PTRs are again lower than the national targets set, at 21:1 in JSS (against a target of 30:1) and 23:1 in SSS (against a target of 25:1 – World Bank, 2007). The supply of teachers is likewise favorable when compared to SSA averages, of 40:1 for both secondary levels, suggesting that there is room to use teaching staff more efficiently in Sierra Leone.

94 See General Note No. 1 on the limitations of teacher number estimations. Due to divergences in EMIS data used here and the payroll data used in Chapter 3, the estimated PTRs differ.

Figure 7.1: Pupil-Teacher Ratios, Public and Government-Aided Primary Schools, Sierra Leone and SSA countries, 2011 or MRY

Average Number of Pupils per Teacher

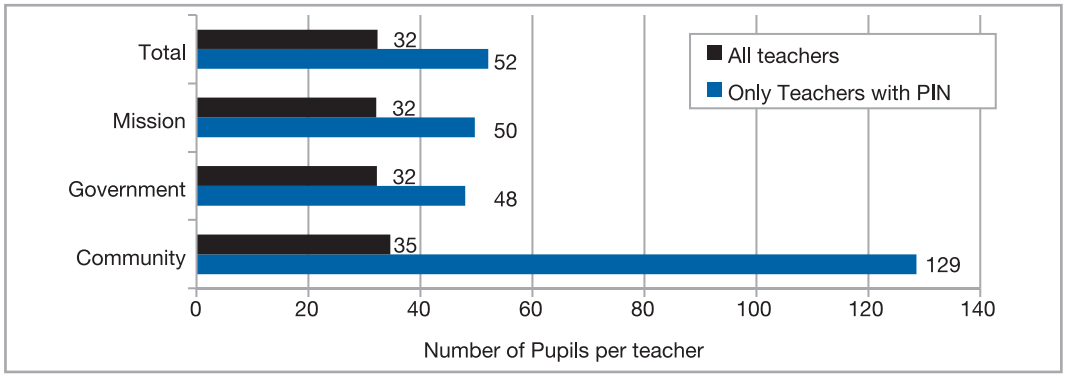


Source: Authors' calculations based on EMIS, 2010 for Sierra Leone and Pôle de Dakar UNESCO/BREDA for SSA countries.
Note: SSA average computed on the basis of 39 countries with data, of which a selection are shown here.

PTRs have dropped at all levels since 2004/05, although particularly at the primary level where the national PTR stood at 66:1 in 2004/05 (all school types considered, including private), more than twice the 2010/11 ratio, of 32:1. At the secondary level, the PTR (all school types considered, including private) dropped from 36:1 in 2004/05 to 21:1 in 2010/11. The recruitment of non-PIN staff has been instrumental in the change of these figures. It is estimated that, by excluding them from the computation, PTRs would be as high as 52:1 for primary (See Figure 7.2). In mission and government schools, this has allowed PTRs to reach 32:1, from a high 50:1 and 48:1 respectively.

Figure 7.2: Primary Pupil-Teacher Ratio and Pupil-PIN Teacher Ratios, by School Type, 2010/11

Number of Pupils per Teacher



Source: Authors' calculations based on EMIS, 2010 data.

Regional and District-Level Pupil-Teacher Ratios

Given that teacher postings are mainly decided at the district level (at least as far as primary teachers are concerned), a closer examination of the situation prevailing at subnational levels provides some initial insight into the efficiency and consistency of the teacher allocation process (See Table 7.3 below).

At the primary level, the average district ratio varies from 27:1 in Western Area Urban to 46:1 in Pujehun, and at JSS, from 16:1 in Bo to 27:1 in Kono. At SSS the disparities between districts are starker still, with PTRs varying between 12:1 in Moyamba and 31:1 in Kenema. Although the data is not disaggregated by urban and rural areas, the district PTRs do suggest that class sizes are generally larger in rural schools, as predominantly rural districts such as Pujehun, Koinadugu and Kailahun have the greatest PTRs, of 46:1, 39:1 and 36:1 respectively.

District-level disparities in teacher deployment can be explained by various factors, that often include: (i) teachers' preference to work in urban areas with access to better services and training opportunities; (ii) the reduced professional mobility of married female teachers; (iii) the growing demand of diploma-holding primary school teachers to work in the newly opened secondary schools; and (iv) the hard working and housing conditions in remote zones, that make them less attractive. As noted above, there is currently no incentive package to attract teachers to remote zones and retain them there.

This result highlights some of the limitations of the decentralization process as shown by pervasive district and school-level disparities.

Table 7.3: Pupil-Teacher Ratios, Public and Government-Aided Schools, by District and Level, 2010/11

Number of Pupils per Teacher

District	PTR		
	Primary	JSS	SSS
Northern	***33***	***21***	***20***
Bombali	31	22	21
Kambia	23	21	24
Koinadugu	39	24	22
Port Loko	32	20	15
Tonkolili	29	21	18
Southern	***34***	***17***	***21***
Bonthe	36	18	27
Moyamba	32	18	12
Pujehun	46	22	16
Eastern	***33***	***25***	***25***
Bo	32	16	23
Kailahun	33	24	16
Kenema	31	25	31
Kono	37	27	23
Western Area	***28***	***21***	***25***
Western Area Rural	30	17	17
Western Area Urban	27	22	26
Sierra Leone	**32**	**21**	**23**

Source: Authors' calculations based on EMIS, 2010 data.
Note: Includes all teachers in public and government-aided schools, regardless of their status.

School-Level Consistency in Teacher Deployment

School-level data show greater disparities still in PTRs, which vary from 2:1 to 284:1. It is important to ensure teachers are adequately allocated to schools for both efficiency and equity reasons. In a context of limited resources and even of teacher shortages, the effective allocation of teachers is key to achieving educational objectives and reducing disparities between schools, and can also impact on teacher workload and motivation, particularly in remote zones.

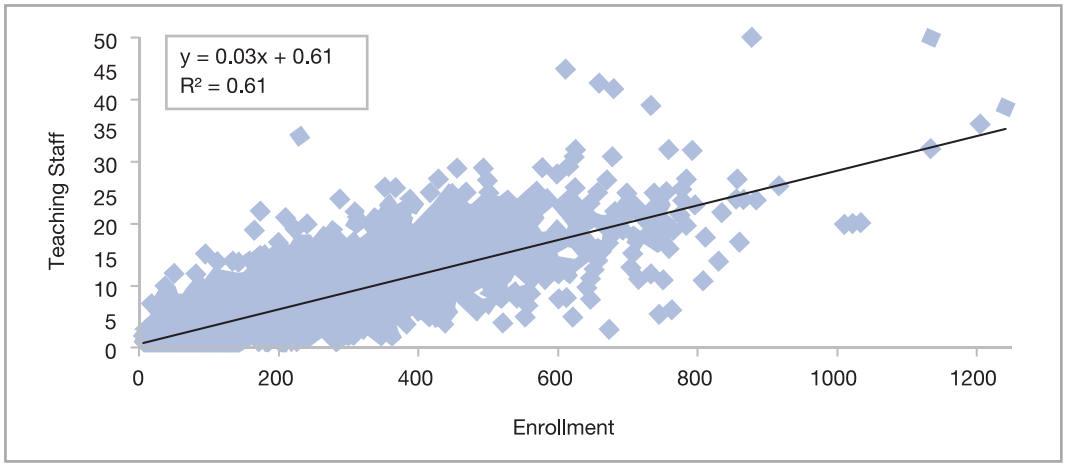
The above review of national and district-level PTRs can be refined by analyzing the degree of coherence in teacher postings at the school level, based on the principle that the number of teachers should be proportional to the number of students (schools with roughly the same student enrollment should have roughly the same number of teachers). Indeed, if teachers are not proportionately distributed across schools according to student enrollment, investments in recruiting more teachers may well be wasted, there being no guarantee that new teachers will be placed where they are most needed.

The consistency of teacher allocation among schools is assessed on the basis of the determination coefficient (R^2), to indicate the share of teacher postings that are explained by the number of pupils in a school. Its complement, the degree of randomness ($1-R^2$), effectively provides a measure of the degree of inconsistency in teacher deployment. A high degree of randomness indicates that unknown factors carry a significant weight in the determination of the number of teachers to be allocated to a school.

Primary Level

Generally speaking, the relationship between the number of pupils and the number of teachers in public and government-aided primary schools is positive (See Figure 7.3). The number of teachers increases with the number of pupils. There are however significant disparities, affecting a vast majority of schools, as shown by the dispersal of points around the (black) relevance line. For instance, in primary schools with about 500 pupils, the number of teachers ranges from 8 to 25, whereas schools with 15 teachers may have to cater for anything between 90 and 850 pupils.

Figure 7.3: School-Level Relationship between the Number of Pupils and the Number of Teachers, Public and Government-Aided Primary Schools, 2010/11



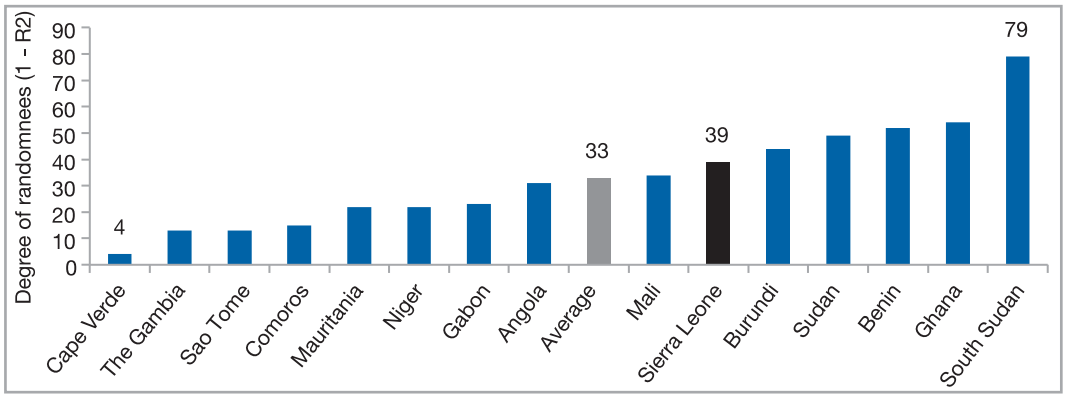
Source: EMIS 2010/11.
Note: The unit of observation is the school. The determination coefficient (R^2) for public schools only is 0.52.

The determination coefficient (R^2) of the regression is 0.61 for all public and government-aided schools (and 0.52 for public schools alone) indicating that in 39 percent of cases the number of teachers allocated to primary schools is determined by factors other than the number of pupils enrolled (48 percent for public schools alone). By way of comparison, the degree of randomness is 42 percent for community schools and 38 percent for mission schools, indicating that the allocation of teachers in public schools is the most random.

Compared to other countries in the region, the degree of randomness in Sierra Leonean teacher allocations is high. Although the list of Sub-Saharan African countries in Figure 7.4 below is by no means exhaustive, it illustrates that the allocation of teachers in Sierra Leone is among the most inconsistent. This further underlines the particularly poor teacher allocation process across schools in Sierra Leone, and the need for the redeployment of staff. Further research on the unobserved factors is called for.

Figure 7.4: Degree of Randomness in the Allocation of Public and Government-Aided Primary School Teachers, Sierra Leone and Various African LICs, 2011 or MRY

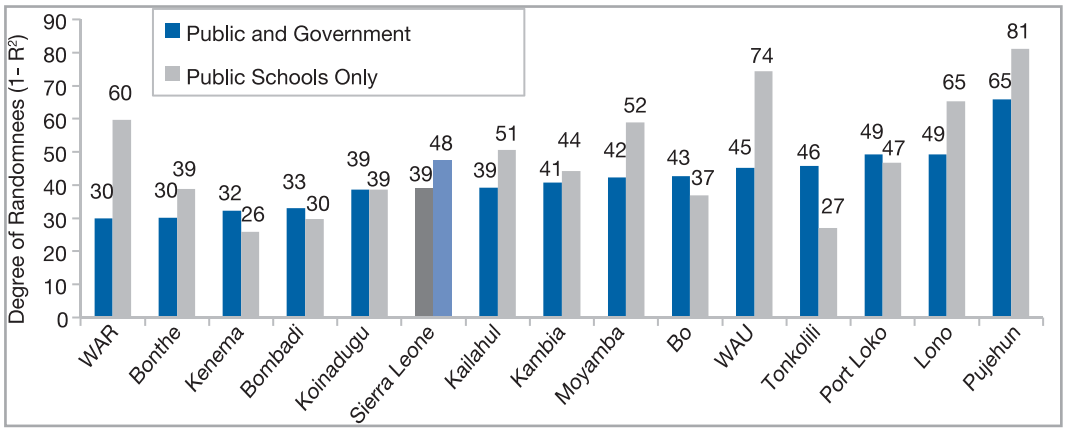
Percent



Source: Authors' calculations based on EMIS, 2010/11 for Sierra Leone and Pôle de Dakar UNESCO/BREDA for SSA countries.

As was to be expected given the range of district-level PTRs presented above, the degree of randomness in teacher allocations varies considerably by district, from 30 percent in Western Area Rural to 66 percent in Pujehun, for both public and government-aided schools (See Figure 7.5).

Figure 7.5: Degree of Randomness in the Allocation of Teachers to Public and Government-Aided Primary Schools, by District and School Type, 2010/11



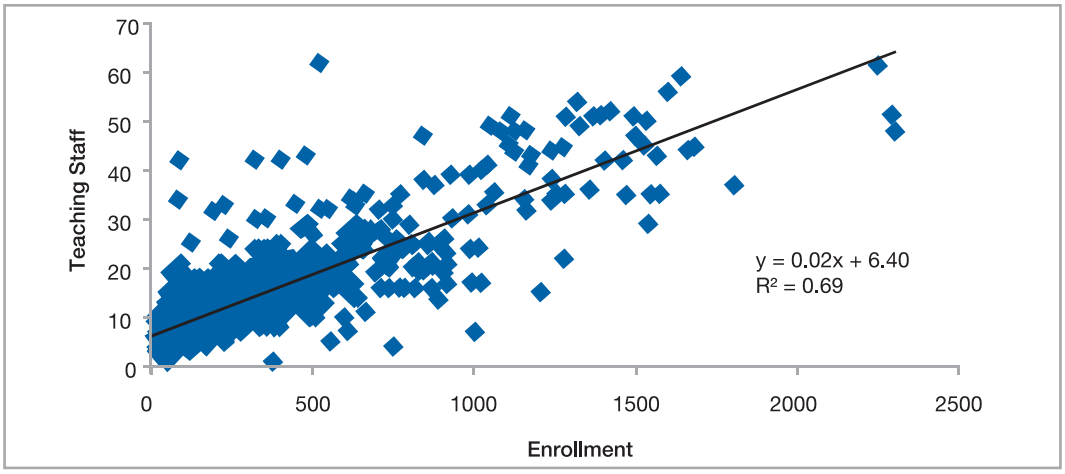
Source: EMIS, 2010/11.

For public schools only the range is broader still, from 27 percent in Tonkolili to 81 percent in Pujehun. Great incoherence in teacher postings is found in Pujehun (66 percent), Kono (49 percent) and Port Loko (49 percent), as well as Western Area Urban and Rural, Moyamba and Kailahun for public schools, whereas the most consistent teacher allocations are made by Bonthe (30 percent randomness), Kenema (32 percent) and Bombali (33 percent).

Secondary Level

Figure 7.6 presents the scatter-plot distribution of junior secondary schools according to the respective numbers of teachers and pupils. As for primary education, there is a globally positive relationship between the number of teachers and the number of pupils in schools. The dispersal of the points around the relevance line is lower than observed in the case of primary education, suggesting that overall, the allocation of teachers is more consistent in junior secondary. Indeed, the determination coefficient (R^2) is slightly higher, at 0.69. Thus the proportion of teacher postings that are explained by factors other than student enrollment numbers is 31 percent in public and government-aided junior secondary schools (and is 33 percent on average in senior secondary schools).

Figure 7.6: School-Level Relationship between the Number of Pupils and the Number of Teachers, Public and Government-Aided JSS Schools, 2010/11



Source: EMIS, 2010/11.
Note: The unit of observation is the school.

While these figures suggest a more consistent allocation of secondary teachers to schools than in primary, they nevertheless highlight relatively high inefficiencies in the deployment of secondary teachers to schools. Better understanding how the deployment process functions will be needed to remove potential inefficiencies and ensure that teachers are posted where they are most needed.

This process of improving the equity in the allocation of teachers across schools/districts will be greatly helped by improved management practices and effective monitoring tools. In a context of limited resources and even of teacher shortages, an effective allocation of teachers is keys to achieve educational objectives (among them an optimal use of teachers and a reduction in disparities between schools in terms of supervision conditions). There is significant scope to rationalize the use of teachers through their enhanced allocation that ultimately will help reduce both PTRs and disparities in staff distribution.

Optimal School Size and Economies of Scale

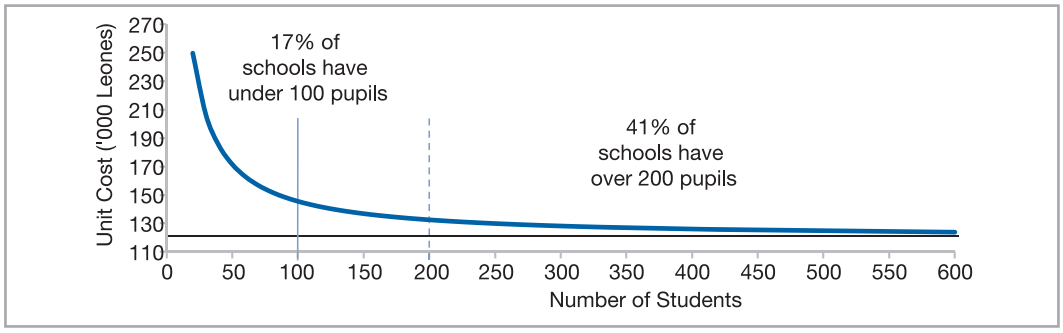
When analyzing global or average trends, it is implicitly assumed that per student costs are constant, regardless of the size of the school in which students are enrolled. This hypothesis does not always hold because of economies of scale that exist in certain fixed costs, such as the remuneration of specialized teachers and of school administrative and support staff. These costs fall as enrollment increases. Likewise, we know that an additional pupil does not necessarily lead to the recruitment of an additional teacher. By increasing the number of pupils and maintaining a constant number of teachers, the pupil-teacher ratio is increased and unit costs drop. Thus, variable costs also affect unit costs. There are of course other supply factors to consider: (i) increasing the size of schools may prove incompatible with the step-up of access to education, as it may involve having fewer, larger schools, further from children's homes; and (ii) beyond a certain limit, increasing class sizes can have a negative impact on the quality of learning.

The question of optimal school size is thus raised. What is the appropriate balance between achieving savings in teacher training and recruitment that could ultimately affect quality, and providing reasonable access to education? The analysis in this section is based on staff remuneration, which constitutes the bulk of school-level public education expenditure. The practical approach adopted consists primarily in determining the size of school at which the gain realized by adding an extra pupil is minimal (See Annex Note A7.1 for a description of the methodological principles). The graphic representation of unit cost curves with simulated enrollment numbers help to determine optimal class size; illustrations for the primary and secondary levels are presented below.

Primary Level

Figure 7.7 below shows how primary unit costs decrease as student numbers increase in public and government-aided schools. Schools with under 30 pupils may have unit costs as high as Le 250,000, but these drop quickly to about Le 150,000 for schools with 50 pupils, and eventually stabilize at around Le 120,000.[95] Thus the smallest schools could realize considerable economies of scale by increasing their numbers, even marginally. Although it is not possible to determine a single optimal size for schools because of other supply-side factors to be considered, this analysis does provide an indication of the ranges which appear to be economically sensible.

Figure 7.7: Relationship between Unit Costs and the Number of Students in Public and Government-Aided Primary Schools, 2010/11



Source: Authors' simulation based on the equation of Figure 7.3 and average teacher salaries, Chapter 3 (See also Annex Note A7.1).
Note: Unit costs consist only of staff wages.

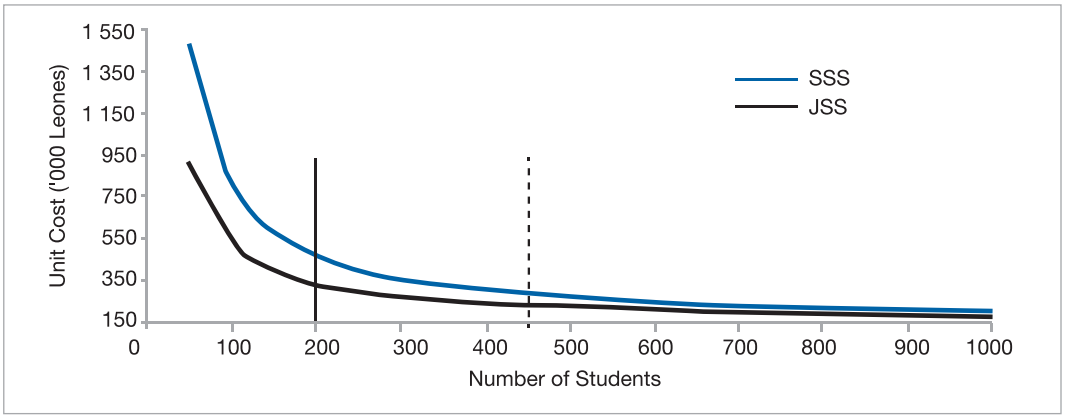
95 These figures are higher than those presented in Chapter 3 because of the computation approach used here, using a same salary value for all teachers, regardless of their rank, and assuming that all teachers are allocated consistently according to school enrollment.

For schools with under 100 pupils, unit costs tend to be very high, whereas for those with over 200 pupils, the savings per additional pupil are nearly insignificant. This suggests that the optimal school size could be within the 100 to 200 pupils' range and that smaller schools should be avoided as they are costly to run. Currently, 17 percent of schools have less than 100 pupils. Conversely, schools with significantly more than 200 pupils (41 percent of primary schools are in this group) could potentially be split to provide greater access to pupils, without any significant increase in running costs (although capital costs would of course be incurred).

Secondary Level

At the secondary level, the optimal school size range, again based on economies of scale in unit costs, is higher than for primary schools, being between 200 and 450 pupils (See Figure 7.8 below). Below 200 pupils per school, substantial savings could be made by increasing enrollment, and above 450 pupils, further economies of scale are minor. Average school sizes are close to 350 pupils for JSS and 600 pupils for SSS, within an acceptable range. However, in both cycles, there is nevertheless ample room to realize cost savings given the very large number of small schools. Indeed, about 47 percent of junior secondary and 28 percent of senior secondary schools have under 200 pupils. Teacher specialization at the secondary level makes small schools particularly expensive to run, precisely because of the lack of economies of scale in their use.

Figure 7.8: Relationship between Unit Costs and the Number of Students in Public and Government-Aided Secondary Schools, by Cycle, 2010/11



Source: Authors' simulation based on average teacher salaries, Chapter 3 (See also Annex Note A7.1).
Note: Unit costs consist only of staff wages.

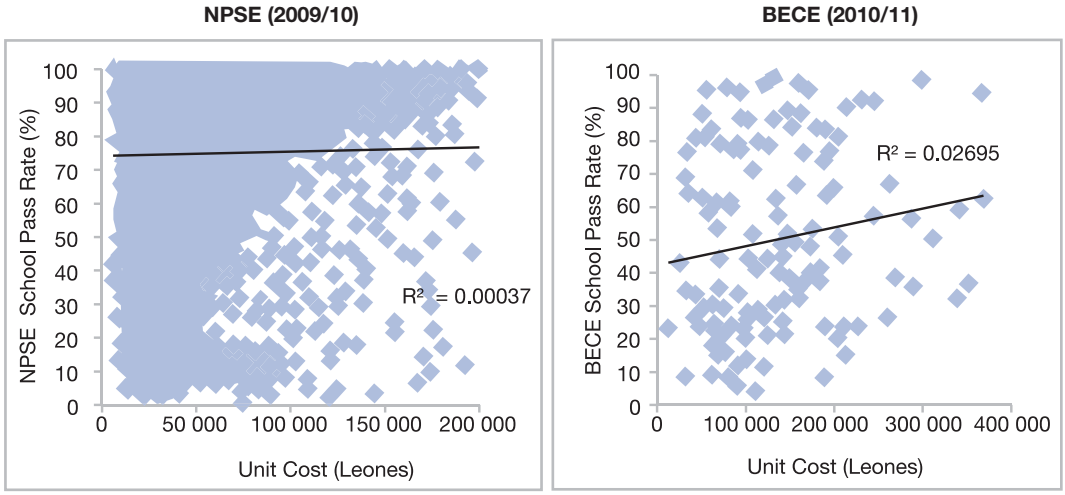
Pedagogical Management

The final section of this chapter deals with how effectively the resources that schools receive are transformed into learning outcomes. Data does not permit to discriminate between different schools' contexts and resources and adjust the expectations of the output of each accordingly. It is however possible to carry out a comparison between schools, assuming they are equal in every other respect, by plotting the pass rates in end-of-cycle examinations for each against the resources they were allocated. The resources considered here are limited to the unit cost of teaching salaries, computed at the school level.

In a well-managed system, the transformation of education resources into learning achievements by schools would be expected to be reasonably homogenous across schools on the one hand, and to show a marked positive relationship on the other, with schools with higher unit costs achieving better results.

Figure 7.9 below shows that in Sierra Leone this is far from the truth. For the two levels considered (NPSE and BECE), there is no tangible relationship between the resources mobilized and the results obtained (the R^2 value is almost nil). The dispersion of points in the graphs indicates that better endowed schools do not systematically perform better and that schools with poor results are not always comparatively underfinanced. Indeed, at the primary level, the concentration of schools in the upper left hand corner rather indicates that the best NPSE pass rates are achieved by schools with lower unit costs. These patterns are not unique to Sierra Leone and can be found in most African countries.

Figure 7.9: School-Level Relationship between Pass Rates and Unit Costs in Public and Government-Aided Schools, 2010



Source: EMIS 2010/11, WAEC data and Chapter 3.
Note: The unit of observation is the school.

Although based on partial information, this analysis shows an extremely weak relationship between schools' resources and its students' academic performance. This could suggest, among other issues, that the pedagogical management of schools is poor and little focused on results. It is a fact that exam results are currently not used to monitor performance at the school level.

Also, beyond the issue of resource allocation, the way resources are used and managed at the school and classroom levels is key. This encompasses a multitude of factors, that in addition to those covered in Chapter 4 include: (i) teachers' accountability; (ii) head teachers' management skills, leadership and ability to motivate their staff; and (iii) setting up appropriate monitoring and supervision tools and accountability mechanisms to ensure resources are correctly spent. These merit further brief attention here:

(i) *Teachers' and head teachers' accountability* is an area that can encompass the role of the community as well as inspectorate monitoring of school results and supervision of school functioning. Improving accountability mechanisms at the local level is known to have an effective impact on learning outcomes.[96] The forthcoming introduction of a school report card system is a positive development in this respect and may help to reinforce accountability between parents, schools and district education officers.

(ii) *Management capacities* are being reinforced by the MEST with the support of donors, training head teachers and SMCs to plan, budget and monitor funds, a praiseworthy initiative that should rapidly be scaled up to ensure all head teachers and SMCs benefit, and providing schools with a specially developed education management manual. The introduction of performance-based contracts for head teachers and teachers could be a further helpful measure.

(iii) *Data collection and monitoring* tools will prove crucial to improve schools' productivity and efficiency, especially in the context of decentralization. All subnational education management levels would ideally have access to timely and quality data to effectively plan, deliver and monitor the quality of basic education. Such a decentralized information system would further help to correct inequities in resource allocations and school performance (access, retention, learning achievements and so on).

Key Findings

The teaching profession is male dominated, women only accounting for barely 25 percent of primary, 14 percent of JSS and 8 percent of SSS teachers in 2010/11. Of major concern is that their participation in the profession has dwindled since 2004/05. Barely half of teachers are qualified for their level and position, the problem being most acute at primary and preprimary levels (52 percent of primary, 41 percent of JSS and 31 percent of SSS teachers are not qualified). Public and government-aided school teachers account for 91 percent of the teaching force, about 52,300 in total in 2010/11, the broad majority in primary schools, but only about 60 percent have a PIN (are on the payroll).

The proportion of unqualified teachers has in fact witnessed an upward trend since 2004/05, when 40 percent and 10 percent of primary and secondary teachers were not qualified, suggesting that despite its broad scope, the teacher training system is facing difficulties to adequately respond to the growing demand for teachers following the surge in primary and secondary enrollment, boosted by the implementation of the fee-free primary education policy.

Consistency in Teacher Deployment

At the national level, the average pupil-teacher ratio (PTR) in primary public and government-aided schools is 32:1, considering all teachers regardless of their status. This is well below the national target of 45:1, the SSA average of 42:1 and the FTI benchmark of 40:1. At the secondary level, the PTR (all school types considered, including private) dropped from 36:1 in 2004/05 to 21:1 in 2010/11. However, the recruitment of non-PIN staff since 2004/05 has been instrumental in shaping these figures; by excluding them from the computation, PTRs would be as high as 52:1 for primary.

District-level disparities in the PTR are high, and suggest that class sizes are generally larger in rural schools. At the primary level, the average district ratio varies from 27:1 in Western Area Urban to 46:1 in Pujehun, and at JSS, from 16:1 in Bo to 27:1 in Kono. At SSS the disparities between districts are starker still, with PTRs varying between 12:1 and 31:1. At the school level, PTRs range from 2:1 to 284:1.

96 Core strategies include: (i) improving information generation and dissemination on school rights and responsibilities, inputs, outputs and outcomes; (ii) increasing the autonomy of schools by favoring school-based management approaches; and (iii) setting up the correct teacher incentives by linking pay or tenure directly to performance (Bruns et al., 2011).

Analyses show poor consistency in teacher allocation across schools, both at the primary and secondary levels. The degree of randomness in teacher allocations in 2010/11 was 39 percent for primary schools, 31 percent for JSS and 33 percent for SSS, indicating that a high share of postings are determined by factors other than school size. Indeed, these coefficients are much higher for Sierra Leone than for many Sub-Saharan African countries. Important variations are again observed across districts.

Optimal School Size

The ranges of school size that appear to be optimal from an economic perspective are of 100 to 200 pupils for primary and 200 to 450 pupils for secondary. Schools with sizes below these ranges could achieve significant economies of scale by increasing their enrollment (17 percent of primary, 47 percent of JSS and 28 percent of SSS schools), whereas schools with sizes beyond these ranges face comparatively insignificant and decreasing savings by expanding. Nevertheless, distance to school is one of a number of supply-side factors to take into consideration when addressing optimal school size and Sierra Leone's current school network focuses on proximity over size.

Pedagogical Management

The school-level relationship between resources and results is particularly weak, at both primary and secondary levels. For the two levels considered here (NPSE and BECE pass rates), there is no tangible relationship between the resources mobilized and the results obtained.

The way resources are used and managed at the school and classroom levels is thus key, encompassing a multitude of factors, that include: (i) head teachers' management skills, leadership and ability to motivate their staff and (ii) setting up appropriate monitoring and supervision tools and accountability mechanisms to ensure resources are correctly spent.

Policy Orientations

Overall, the results in terms of PTRs suggest that there is some leeway to increase class sizes without harming learning outcomes. There is also clearly scope to rationalize the use of existing staff rather than recruit more teachers, which would involve improving the allocation of teachers to primary and secondary schools to ensure deployment is more consistent and equitable, providing untrained or unqualified teachers with the training and skills they require, as well as an assessment of the opportunity of formalizing the status of non-permanent teachers.

Given that management approaches to teacher shortages based on gap-filling may not be effective for postings that teachers are reticent to accept for remoteness, hardship or family reasons, it would be advisable to offer a specific incentive package to attract and retain teachers in remote zones. This could include cash benefits, a hardship or relocation allowance, fast-track career progression and/or preferential access to training and learning materials and improved school environment facilities (including teachers' quarters).

Improving supervision and accountability mechanisms at the local level may be effective interventions to ensure the more efficient use of education inputs and resources at the school level, and the need for an adequate and effective decentralized information and monitoring system is urgent. Decentralized financial and human resource management systems are also known to improve fiscal management and accountability systems.

Annex Table 1.4: Trend in major Macroeconomic Indicators, 2004-2013

	2004	2005	2006	2007	2008	2009	2010	2011*	2012**	2013**	2004-11 Growth Rate	
											TOTAL	ANNUAL
GDP (Current, Leone billion) (1)	3 858.8	4 696.3	5 511.7	6 345.1	7 304.0	8 183.2	10 084.2	12 601.8	18 611.4	21 182.0	226.6%	18.4%
GDP (Constant, Leone billion base 2010) (1)	7 475.0	7 801.0	8 139.2	8 790.7	9 268.1	9 562.0	10 084.2	10 686.9	14 160.0	16 182.1	43.0%	5.2%
GDP Deflator (base 2010) (2)	51.6	60.2	67.7	72.2	78.8	85.6	100.0	117.9	131.4	130.9	128.4%	12.5%
Inflation (annual growth rate, %)	14.2	12.1	9.5	11.7	14.8	9.2	17.8	18.5	11.5	9.1	30.3%	3.9%
Real GDP Growth (annual growth rate, %)	6.5	4.4	4.3	8.0	5.4	3.2	5.5	6.0	32.5	14.3	-7.6%	-1.1%
GDP structure (%) (***)												
Agriculture, Forestry, and fishing	49.0	50.1	50.9	53.4	54.0	54.5	53.5	52.8	42.0	na	7.8%	1.1%
Industry	10.9	10.5	10.7	10.1	8.6	7.9	8.5	8.8	27.3	na	-19.3%	-3.0%
Services	36.5	35.7	34.6	32.7	33.6	33.9	34.3	34.6	27.7	na	-5.2%	-0.8%
Exchange rate (Leone USD, period average) (3)	2 697	2 881	2 962	2 985	2 981	3 386	3 978	4 349	4 454	4 620	61.3%	7.1%
Population (Median variant Million) (2)	5.0	5.1	5.2	5.3	5.5	5.6	5.7	5.9	6.0	6.2	18.3%	2.4%
GDP per Capita (Current price, Leone)	775 326	921 838	1 056 512	1 187 505	1 334 425	1 459 226	1 754 743	2 139 529	3 081 356	3 421 971	176.0%	15.6%
GDP per Capita (Constant price, Leone - Base 2010)	1 501 913	1 531 259	1 560 158	1 645 205	1 693 262	1 705 081	1 754 743	1 814 411	2 344 374	2 614 230	20.8%	2.7%
GDP per Capita (Constant price, USD - Base 2010)	557	532	527	551	568	504	441	417	526	566	-24.7%	-4.0%

Source: (1) MoFED, (2) SSL, (3) Bank of SL and IMF. (*) Exclude taxes and FISIM. * provisional data, ** estimation. *** The sum of the contribution of the sectors including taxes less subsidies should add up to 100%.

Annex Table A1.2: Government Revenue, Expenditure and Deficit in Real Terms, 2004-11 and 2012 Projection

Share of GDP and Percent

	2004	2005	2006	2007	2008	2009	2010	2011*	2012 **
Total Government Revenue	16.0	16.4	15.3	12.2	12.7	15.3	15.4	17.3	12.4
Domestic Revenues	9.3	8.9	9.0	8.5	9.1	9.2	10.0	11.3	8.6
Grants	6.7	7.5	6.3	3.8	3.6	6.1	5.4	6.0	3.7
As % of Total Revenues	42.1	45.8	41.1	30.8	28.6	40.0	35.1	34.7	30.3
Total Government Expenditures	17.8	17.6	16.6	13.2	16.7	17.7	20.6	20.3	15.1
Recurrent Exp.	14.4	13.2	12.7	10.4	11.8	12.2	12.8	12.4	9.7
Including Interest	3.4	2.7	2.2	1.8	1.6	1.3	1.6	1.9	1.4
Development Exp. (Incl. Net Lending)	3.5	4.3	3.9	2.7	4.9	5.5	7.8	7.9	5.4
External	2.8	3.8	3.1	2.1	3.9	4.2	4.3	6.0	3.7
Domestic	0.7	0.6	0.8	0.7	1.0	1.3	3.5	1.9	1.7
Deficit Including Grants	-1.9	-1.3	-1.3	-0.9	-4.1	-2.5	-5.2	-3.0	-2.7
Deficit Excluding Grants	-8.6	-8.8	-7.6	-4.7	-7.7	-8.6	-10.6	-9.0	-6.5

Source: MoFED and authors' computations.

Note: * Provisional data. ** Estimation.

Annex Table A1.3: Government Education Expenditure, 2004-11

	2004	2008	2009	2010	2011	2004-11 Growth	
						Total	Annual
Total Education Expenditure							
(Million Le, Current)	*127,538*	*245,837*	*347,483*	*337,038*	*441,416*	*246%*	*19.4%*
Recurrent	113,111	184,900	230,882	260,668	386,243	241%	19.2%
(% of Total)	89%	75%	66%	77%	88%	n.a.	n.a.
Development	*14,427*	*60,937*	*116,602*	*76,371*	*55,173*	*282%*	*21.1%*
Domestic	730	4,256	231	4,274	2,122	191%	16.5%
Foreign	13,697	56,681	116,371	72,097	53,051	287%	21.3%
(% of Development)	95%	93%	100%	94%	96%	n.a.	n.a.
(Million Le, Constant 2010)	*247,059*	*311,944*	*406,029*	*337,038*	*374,339*	*52%*	*6.1%*
Recurrent	219,111	234,621	269,781	260,668	327,550	49%	5.9%
Development	*27,947*	*77,323*	*136,247*	*76,371*	*46,789*	*67%*	*7.6%*
Domestic	1,414	5,400	270	4,274	1,800	27%	3.5%
Foreign	26,533	71,923	135,977	72,097	44,989	70%	7.8%
(% of GDP)	3.3%	3.4%	4.2%	3.3%	3.5%	6%	0.8%
(% of Total Public Expenditure)*	22.8%	22.3%	25.8%	17.6%	19.0%	-17%	-2.6%
Recurrent Education Expenditure							
(% of GDP)	2.9%	2.5%	2.8%	2.6%	3.1%	5%	0.6%
(% of Recurrent Public Expenditure)*	26.6%	24.9%	25.7%	23.1%	29.1%	10%	1.3%
(% of Domestic Resources)	31.7%	27.9%	30.8%	25.9%	27.1%	-15%	-2.2%
(per School-Aged Child, Constant Le)**	149,613	—	—	152,136	184,257	23%	3.0%

Source: MoFED and authors' computations.

Note: * Excluding debt service. ** Includes the population aged 6 to 17 years.

Annex Table A1.4: Donor Support to the Education Sector, 2008-11

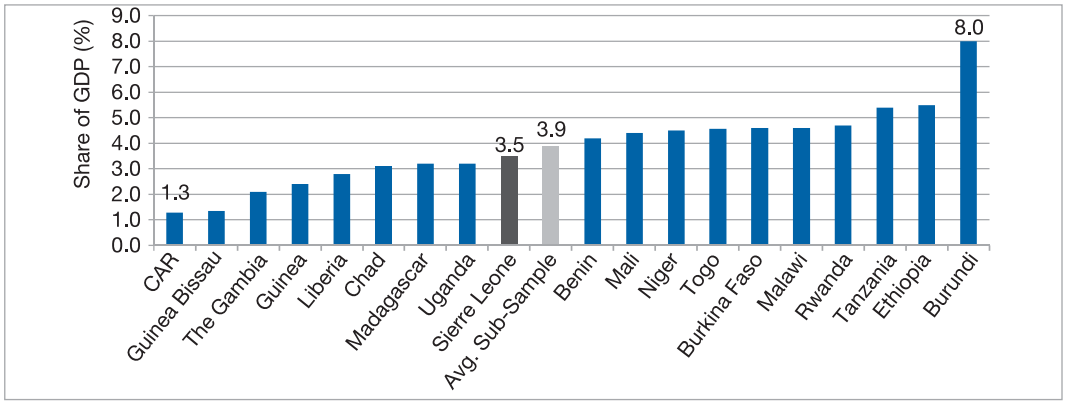
Current USD and Percent

	2003/04	2010
African Development Bank (AfDB)	19,806,972	23.7%
UNICEF	18,354,091	21.9%
World Bank (IDA)	12,909,018	15.4%
World Food Programme (WFP)	5,876,727	7.0%
Germany/GIE	5,325,248	6.4%
UK/DFID	4,337,290	5.2%
Sweden/SIDA	2,851,887	3.4%
Arab Bank for Economic Development in Africa (BADEA)	2,289,626	2.7%
European Commission (EC)	2,285,079	2.7%
Global Partnership for Education (GPE)	1,911,233	2.3%
Ireland/Irish Aid	1,598,196	1.9%
US/USAID	1,469,692	1.8%
Japan/JICA	1,319,694	1.6%
Italy/Italian Cooperation	828,945	1.0%
The Netherlands	778,757	0.9%
UNFPA	598,333	0.7%
Islamic Development Bank (IDB)	465,379	0.6%
UNDP	220,000	0.3%
Canada/CIDA	213,323	0.3%
Switzerland	100,682	0.1%
Norway	72,088	0.1%
Spain	68,021	0.1%
UNHCR	15,828	0.0%
Saudi Arabia	13,493	0.0%
Total	**83,709,602**	**100%**

Source: DACO/MoFED and authors' computations.

Annex Figure A1.1: Education Budget as a Share of GDP, Various African LICs, 2011 or MRY

Percent



Source: Pôle de Dakar UNESCO/BREDA.

Annex Note A1.1: Methodological Note on Population Data - Breaking Five-Year Age Groups into Single Ages for 2010

For the calculation of education indicators requiring population data in this report, national data have been used. More precisely, data derived from the 2004 Population and Housing Census – Analytical Report on Population Projection for Sierra Leone, a joint publication produced by the United Nations Population Fund (UNFPA), Statistics Sierra Leone (SSL), and the European Union (EU), have been utilized and slightly adjusted.

An adaptation of the available data was necessary because the population projections were available by five-year age group, whereas single age data were necessary to obtain the proper school-aged populations (3-5 years, 6-11 years, 12-14 years and 15-17 years). Despite the fact that age-specific school population projections (6 to 17 years old) were available, the data were not used because of irregularities that would have made smoothing necessary. Therefore, for the purpose of this report, Sierra Leone population projections by five-year age group and gender for 2010 using the medium variant have been used, and modified to better suit the needs of the analysis.

For the adjustment, a trend line was applied to the available five-year age group data.[97] Different trend line options are available (exponential, logarithmic and so on). The choice should depend on the trend that best suits the original data as well as on the determination coefficient (R^2) which provides a measure of the adequacy of the trend line to the original curve (the closer R^2 is to 1, the better).

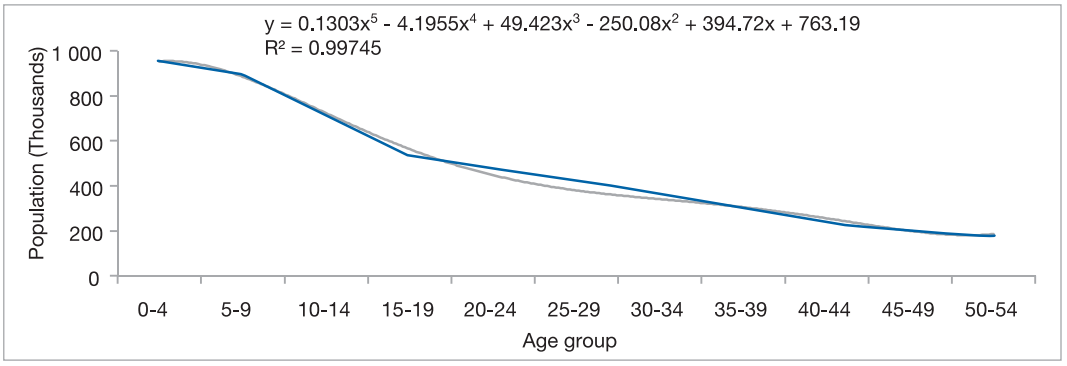
For this exercise, the polynomial (5th degree) trend line was chosen, providing the following equations and coefficients, by gender:[98]

Male: $y = 61.559x^5 - 1{,}977.7x^4 + 23{,}183x^3 - 115{,}851x^2 + 171{,}648x + 403{,}850$ ($R^2 = 0.9978$).

Female: $y = 68.739x^5 - 2{,}217.8x^4 + 26{,}240x^3 - 134{,}228x^2 + 223{,}076x + 359{,}339$ ($R^2 = 0.9971$).

Smoothed Population, by Gender and Age Group, 2010

Thousands of Individuals



Source: Author's computations based on Appendix 3 (Projected Population of Sierra Leone by Age Group and Sex 2010, Medium Variant) in PHC, 2004.

Note: Blue – Original population estimates by 5 year age group; Red – CSR estimates by single age, smoothed and adjusted

97 The age groups chosen for this exercise are 0-4 to 50-54 years.

98 The "x" corresponds to a value given for each single year of age. For instance, x corresponds to 1 for children less than 12 months old, to 1.2 for children aged one year old, 1.4 for children aged two years old, and so on.

CSR Population Estimates, by Gender, 2010

Number and Ratio

Age	Male	Female	Total	Sex Ratio (M/F)	Age	Male	Female	Total	Sex Ratio (M/F)
0	101,653	99,443	201,096	1.02	28	36,687	38,151	74,839	0.96
1	101,272	99,944	201,216	1.01	29	35,937	37,418	73,355	0.96
2	100,072	99,471	199,543	1.01	30	35,219	36,717	71,936	0.96
3	98,194	98,185	196,379	1.00	31	34,513	36,026	70,539	0.96
4	95,766	96,232	191,998	1.00	32	33,800	35,322	69,122	0.96
5	92,906	93,745	186,650	0.99	33	33,061	34,589	67,649	0.96
6	89,718	90,843	180,562	0.99	34	32,280	33,808	66,088	0.95
7	86,298	87,636	173,934	0.98	35	31,447	32,967	64,413	0.95
8	82,728	84,218	166,946	0.98	36	30,550	32,056	62,606	0.95
9	79,083	80,674	159,757	0.98	37	29,586	31,070	60,657	0.95
10	75,427	77,077	152,504	0.98	38	28,555	30,009	58,564	0.95
11	71,814	73,492	145,306	0.98	39	27,459	28,878	56,337	0.95
12	68,291	69,973	138,264	0.98	40	26,309	27,688	53,997	0.95
13	64,897	66,565	131,461	0.97	41	25,120	26,457	51,577	0.95
14	61,662	63,303	124,965	0.97	42	23,916	25,209	49,125	0.95
15	58,610	60,218	118,828	0.97	43	22,723	23,977	46,700	0.95
16	55,759	57,329	113,088	0.97	44	21,580	22,801	44,381	0.95
17	53,120	54,652	107,772	0.97	45	20,531	21,730	42,260	0.94
18	50,697	52,195	102,893	0.97	46	19,627	20,823	40,450	0.94
19	48,493	49,961	98,453	0.97	47	18,932	20,148	39,080	0.94
20	46,502	47,945	94,447	0.97	48	18,516	19,785	38,301	0.94
21	44,717	46,143	90,860	0.97	49	18,461	19,822	38,283	0.93
22	43,127	44,541	87,667	0.97	50	18,857	20,362	39,219	0.93
23	41,715	43,125	84,841	0.97	51	19,808	21,517	41,325	0.92
24	40,467	41,878	82,345	0.97	52	21,427	23,414	44,841	0.92
25	39,361	40,780	80,141	0.97	53	23,840	26,192	50,032	0.91
26	38,377	39,808	78,185	0.96	54	27,186	30,004	57,189	0.91
27	37,493	38,940	76,433	0.96	Total	2,584,146	2,655,254	5,239,400	0.97

Source: From the figure above and authors' computations.

CHAPTER 2 ANNEXES

Annex Table A2.1: Gross Enrollment Rates, Sierra Leone and Various African LICs, 2011 or MRY

Percent

	Preprimary	Primary	Lower Secondary	Upper Secondary	Tertiary
Benin	8	109	59	22	956
Burkina Faso	3	75	29	8	313
Burundi	7	134	33	7	355
Central African Republic	5	93	16	6	241
Chad	1	92	30	17	186
Democratic Republic of the Congo	4	93	48	22	592
Eritrea	13	49	45	21	194
Ethiopia	4	90	37	6	333
Gambia, the	36	88	66	35	447
Ghana	69	106	80	32	854
Guinea	13	92	46	24	839
Guinea-Bissau	5	117	53	27	351
Liberia	141	96	43	25	408
Madagascar	10	154	41	13	340
Malawi	23	118	21	16	61
Mali	4	80	48	15	514
Niger	5	71	21	4	116
Rwanda	18	156	36	9	562
Sierra Leone	**7**	**122**	**62**	**32**	**451**
Togo	8	128	60	26	638
Uganda	13	128	34	12	383
United Republic of Tanzania	37	112	39	4	335
SSA Subsample Average (Excluding Sierra Leone)	**20**	**104**	**42**	**17**	**429**
Ratio Sierra Leone/Subsample	**0.3**	**1.2**	**1.5**	**1.9**	**1.1**

Source: Table 2.2 for Sierra Leone; Pôle de Dakar UNESCO/BREDA for other countries.

Annex Table A2.2: Primary School Access Probability, Children Aged 6-13 Years, by Distance to Nearest School and Area of Residence, 2007

Percent

Time to Nearest Primary School	Urban	Rural	Total
[00-05 min[	93.6	76.5	83.8
[05-10 min[	93.6	81.6	87.1
[10-15 min[	92.4	76.7	86.0
[15-30 min[	93.3	75.9	83.7
[30-45 min[	79.7	73.6	75.3
45 min or more	94.8	55.6	59.7
Total	**92.3**	**73.1**	**80.9**

Source: CWIQ, 2007.

Annex Table A2.3: Distribution of Primary Schools According to the Number of Grades Offered, by School Ownership, 2010/11

Percent

	Number of Grades Offered						
	1	2	3	4	5	6	Total
Community	1.5	6.2	16.6	18.9	18.4	38.5	100.0
Government	0.6	0.7	11.4	8.1	11.2	68.0	100.0
Mission	0.2	1.3	9.5	8.9	12.9	67.0	100.0
Other	0.0	5.9	17.6	8.8	8.8	58.8	100.0
Private	1.0	3.6	8.4	10.0	12.6	64.4	100.0
Total	**0.5**	**1.9**	**10.6**	**9.9**	**13.2**	**63.9**	**100.0**

Source: EMIS database.

Annex Table A2.4: Distance to the Nearest Secondary School, 2007-11

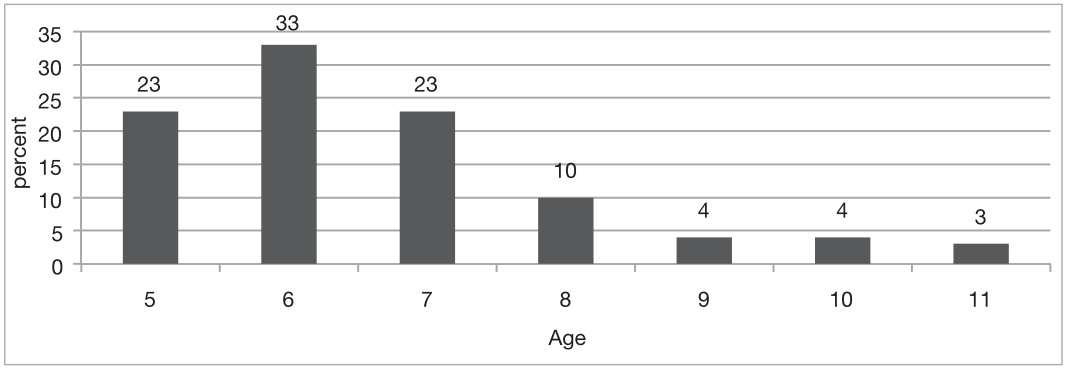
Percentage of Households

	2007	2008	2011
Under 15 min	20	20	20
15-30 min	7	7	5
30-60 min	14	17	17
1-2 hours	19	22	31
Over 2 hours	29	31	27
Do not know	12	3	<1

Source: IRCBP, 2012.

Annex Figure A2.1: Age Distribution of Primary Grade 1 Pupils at Enrollment, 2010

Percent

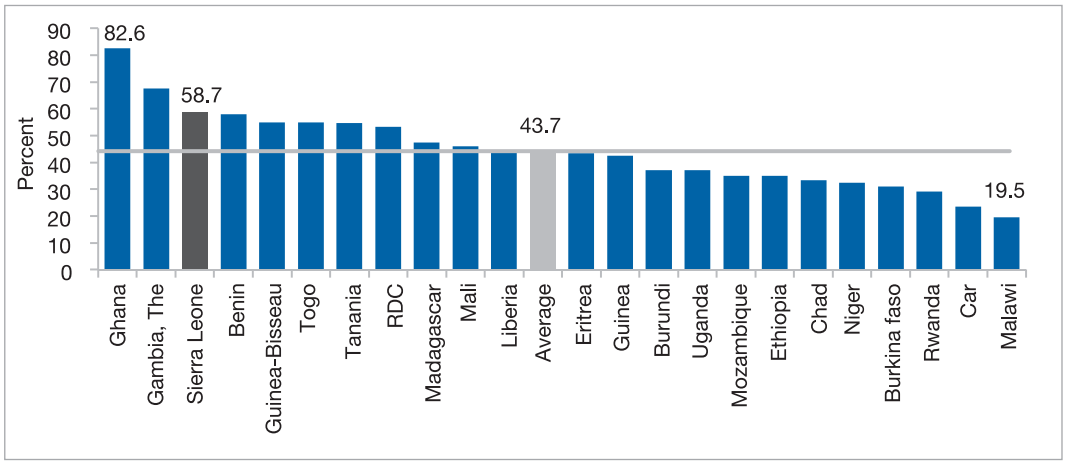


Source: Authors' calculations based on MICS IV, 2010 data.

Note: The figures take all pupils into account, including repeaters.

Annex Figure A2.2: **Gross Intake Rate to JSS 1, Sierra Leone and Various African LICs, 2011 or MRY**

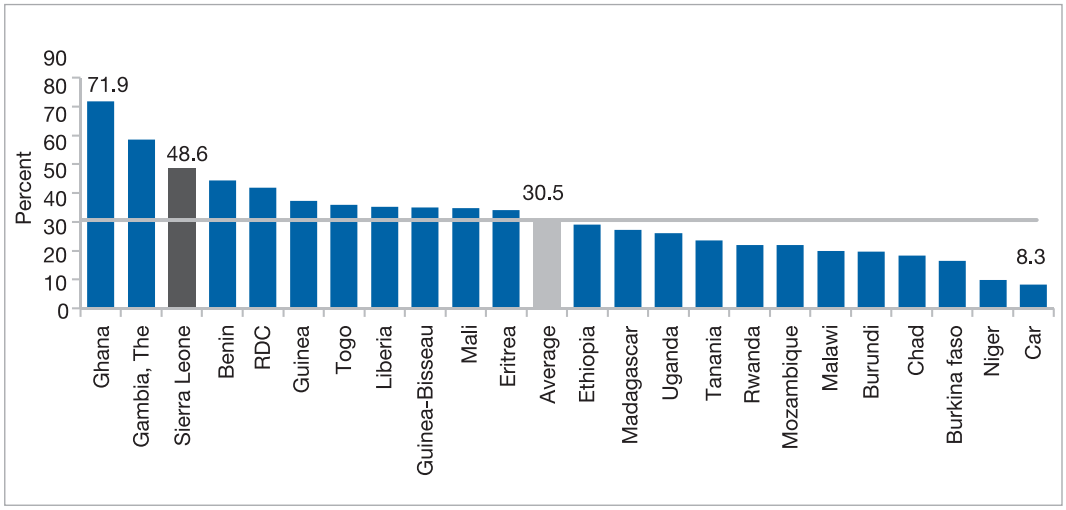
Percent



Source: Pôle de Dakar UNESCO/BREDA.

Annex Figure A2.3: **JSS Completion Rate, Sierra Leone and Various African LICs, 2011 or MRY**

Percent



Source: Pôle de Dakar UNESCO/BREDA.

CHAPTER 3 ANNEXES

Annex Table A3.1: Distribution of Recurrent Expenditure, by Level and Type, 2010

Million Leones

	Preprimary	Primary	JSS	SSS	Total
School level					
Teachers' Salaries	3,938	103,613	31,470	18,531	157,551
School Fees Subsidies/SNS (3)	0	13,023	0	0	13,023
Other administrative	0	1,565	475	0	2,040
Pedagogical (1)	0	3,477	740	100	4,317
Exam	0	2,584	4,398	4,541	11,523
Social (2)	0	0	4,172	2,463	6,636
Sub-total	**3,938**	**124,262**	**41,256**	**25,635**	**195,090**
Central / Local Management					
Staff Salaries	10	1,133	514	356	2,013
Other Recurrent Expenditure	11	3,201	1,344	537	5,092
Sub-total	**21**	**4,334**	**1,858**	**892**	**7,105**
TOTAL	**3,958**	**128,596**	**43,114**	**26,527**	**202,195**

Source: Authors' estimates based on MoFED data.

Note: (1) Pedagogical items include textbooks, teaching and learning materials, science equipment and reagents. (2) Social spending includes JSS girls' fee subsidy and food inputs for public secondary boarding schools. (3) Special needs schools refer to primary schools hosting handicapped children that receive government grants.

Annex Table A3.2: Distribution of Recurrent Expenditure, by Level and Type, 2010

Million Leones

	Wage Bill	Adminis-tration	Pedagogi-cal (1)	School Fees Subsidy	Exam	Social (2)	Special Needs' Schools (3)	Transfer (4)	Total	%
Preprimary	3,948	11	0	0	0	0	0	0	3,958	1.5%
Primary	104,745	4,766	3,477	12,395	2,584	0	628	0	128,596	49.3%
Secondary	50,871	2,247	812	0	8,939	5,938	0	0	69,641	26.7%
JSS	31,984	1,819	740	0	4,398	4,172	0	0	43,114	16.5%
SSS	18,887	537	100	0	4,541	2,463	0	0	26,527	10.2%
TVET	7,450	137	0	0	0	0	0	730	8,317	3.2%
Tertiary	465	501	0	0	0	4,521	0	43,809	49,295	18.9%
NFE	301	325	0	0	0	0	0	235	861	0.3%
Total	**167,780**	**7,986**	**4,289**	**12,395**	**11,523**	**10,459**	**628**	**44,774**	**260,668**	**100%**

Source: Authors' estimates based on MoFED data.

Note: (1) Pedagogical items include textbooks, teaching and learning materials, science equipment and reagents. (2) Social spending includes JSS girls' fee subsidy and food inputs for public secondary boarding schools. (3) Special needs schools refer to primary schools hosting handicapped children that receive government grants. (4) Transfers cover teaching and non-teaching staff salaries as well as running and development costs.

Annex Table A3.3: Basic Salary Grade Table (Effective January 1st, 2010)

Grade	Qualification	Spinal Point	Annual Salary (Le	Unit of GDP p.c	Grade	Qualification	Spinal Point	Annual Salary (Le)	Unit of GDP p.c.
1	Untrained with no O Level	1	782,449	0.45	7	Deputy Head Teacher, Graduate with Diploma (Primary)	1	2,735,812	1.56
		11	1,369,286	0.78			8	4,172,219	2.38
		Average increment	53,349				Average increment	179,551	
2	Untrained with 3+ O Level	1	891,238	0.51	8	Senior Teacher (Secondary)/ Head Teacher (Primary)/ Vice Principal (JSS)	1	3,564,490	2.03
		11	1,559,666	0.89			10	6,451,729	3.68
		Average increment	60,766				Average increment	288,724	
3	RSA Stage 3 (Completed)	1	1,018,426	0.58	9	Vice Principal (SSS)/Principal (JSS)	1	4,526,337	2.58
		11	1,782,245	1.02			9	7,785,299	4.44
		Average increment	69,438				Average increment	362,107	
4	TC and Graduate Trained	1	1,241,983	0.71	10	Principal (SSS)	1	6,242,113	3.56
		10	2,080,321	1.19			9	9,987,381	5.69
		Average increment	83,834				Average increment	416,141	
5	TEC/TC/OND/ OTD	1	1,517,979	0.87	11		1	10,894,182	6.21
		9	2,428,766	1.38			4	10,894,182	8.51
		Average increment	101,199				Average increment	1,008,153	
6		1	1,959,573	1.12					
		9	3,135,316	1.79					
		Average increment	130,638						

Source: Authors' elaboration, based on data from the Accountant General's Department, MoFED.

Annex Table A3.4: MEST Staff Gross Salaries, by Grade, 2010/11

Leones and Share of GDP per Capita

	Monthly Gross Wage (Le)	Annual Gross Wage (Le)	Share of GDP p.c.
Grade 1	195,255	2,343,054	1.8
Grade 2	210,445	2,525,336	1.9
Grade 3	230,774	2,769,289	2.1
Grade 4	248,136	2,977,637	2.3
Grade 5	279,785	3,357,421	2.5
Grade 6	329,130	3,949,558	3.0
Grade 7	417,810	5,013,715	3.8
Grade 8	621,657	7,459,881	5.6
Grade 9	710,958	8,531,495	6.5
Grade 10	828,200	9,938,406	7.5
Grade 11	1,327,004	15,924,054	12.0
Grade 12	1,790,282	21,483,383	16.3
Grade 13	2,358,015	28,296,180	21.4
Average	**526,105**	**6,313,266**	**4.8**

Source: MoFED Payroll data, 2010-11.

Annex Table A3.5: Breakdown of Recurrent Public Unit Costs, by Level, 2004 and 2010

Leones, Constant 2010 Prices

	2004				2010			
	Prep. & Primary	JSS	SSS	Tertiary	Prep. & Primary	JSS	SSS	Tertiary (1)
School-level Salaries [2]	71,165	211,397	235,027	—	91,528	136,387	220,789	—
Other charges								
Central-Level Salaries	2,728	12,855	14,310	—	973	2,229	4,236	—
Admin	2,595	16,997	17,130	—	4,065	7,884	6,395	—
Central	*2,595*	*16,997*	*17,130*	—	*1,048*	*2,402*	*4,566*	—
Local Councils	—	—	—	—	*3,017*	*5,482*	*1,830*	—
Pedagogical	11,766	6,833	6,863	—	2,959	3,208	1,189	—
Exam	916	21,980	21,971	—	2,199	19,060	54,102	—
SFS/SNS	13,933	—	—	—	11,083	-	-	—
Social	—	32,298	32,291	471,806	—	18,083	29,350	171,317
Total Unit Costs	**103,103**	**302,361**	**327,591**	**3,135,768**	**112,807**	**186,849**	**316,061**	**2,118,011**

Source: World Bank, 2007 for 2004.

Note: (1) For tertiary it was not possible to distinguish the nature of different costs, except for social spending. (2) Only staff on the payroll are included. SFS/SNS: School fee subsidies/Special needs' schools.

Annex Table A3.6: Public Primary School-Related Expenses, 2007-11

Percent and Leones

		2007	2008	2011	2008-11 Change
Uniform	Share of Households Paying	91	91	97	+
	Mean Amount Paid	24,384	15,914	25,618	+
	Median Amount Paid	16,000	14,000	20,000	
Textbooks	Share of Households Paying	45	33	10	-
	Mean Amount Paid	32,718	15,481	16,617	
	Median Amount Paid	15,000	10,500	10,000	
Notebooks	Share of Households Paying	82	89	19	-
	Mean Amount Paid	22,638	5,701	9,429	
	Median Amount Paid	6,000	4,800	6,000	
Fees	Share of Households Paying	59	65	56	-
	Mean Amount Paid	8,111	14,454	30,231	
	Median Amount Paid	5,000	5,000	9,000	
Community Teachers	Share of Households Paying	48	35	40	
	Mean Amount Paid	2,609	3,909	8,652	
	Median Amount Paid	2,000	2,000	5,000	
Miscellaneous	Share of Households Paying	77	66	84	+
	Mean Amount Paid	6,128	7,527	25,787	
	Median Amount Paid	4,000	3,100	13,890	

Source: IRCBP, 2012.

Note: Figures marked with a +/- represent a statistically significant increase or decrease over 2008, at the 5% level.

Annex Note A3.1: Devolved Education Functions and Financing

While the decentralization process was initiated in 2004 (based on the Local Government Act of 2004), the actual devolution of functions and resources started in 2005. In the education sector, this has translated into the devolution of the administration and management of schools from the MEST to local councils. In this configuration, the councils were to have full control and supervision of all preprimary, primary and JSS schools by 2008, including such functions as the recruitment and payment of teachers, the provision of textbooks and teaching materials and the rehabilitation and construction of schools (See column (a) of the table below). To ensure service delivery was not disrupted, fiscal decentralization followed shortly, consisting in various grants made to local councils or directly to schools via their bank account, depending on the activity supported. Grants across local councils (LCs) are distributed using a formula, generally based on school enrollment or the number of schools (See column (d) in the table below).

By early 2011, not all functions supposed to be devolved to local councils were indeed devolved, following various constraints ranging from the unclear delineation of roles and responsibilities between actors at various levels, the lack of adequate funding and poor local capacities to handle new charges and so on. This is particularly relevant to the recruitment and payment of teachers, which is still performed at the central level. In addition, many delays in the disbursement of SFS as well as in the procurement and distribution of textbooks and teaching materials have been recorded, ultimately jeopardizing the smooth running of schools. Indeed, to face money shortages, some school heads charge parents illegal fees. Strengthening both central and local council staff capacities in planning, budgeting and the monitoring of funds and activities, but also those of school management committees (SMCs), should become a priority to ensure that services are adequately delivered and their quality enhanced. In this regard, having an EMIS system able to provide accurate and reliable data on the education sector to relevant decision levels is an urgent requirement.

Another concern is the current allocation formula used for most grants, which by simply relying on enrollment, do often not allow for an equitable distribution of funds per pupil. Indeed, a more equitable distribution of resources would require a formula that takes into account the base-line needs of schools/district councils. Also, more precisely assessing the appropriate level of grants, especially for school fees, would be necessary. Indeed, the low level of school fee subsidies has led some head teachers to inflate the number of declared enrollment and/or ask parents for money.

Devolved Education Functions and Financing

Devolved Education Functions (a)	Financing Structures at the Local Level (b)	Financing Mechanisms (c)	Formula (d)
Primary Education			
• Recruitment of teachers • Payment of staff salaries • Provision of teaching and learning materials • Payment of school fee subsidies • Provision of furniture • Rehabilitation and reconstruction of schools • Staff development, etc.	• School fee subsidy • Teaching and learning materials • Textbooks • Exam fees – NPSE Note: • The recruitment and payment of teachers is still performed at central level	• SFS: direct transfer into council's education bank account • Textbooks and teaching and learning materials: procurement by MEST in collaboration with LCs and distributed to LCs • Exam fees:direct payment to WAEC	Based on enrollment
Junior Secondary Education			
• Payment of exam fees • Payment of staff salaries • Provision of furniture • Provision of subsidized textbooks	• Textbooks – secondary • Science equipment – JSS • Exam fees – BECE	• Textbooks and teaching and learning materials: procurement by MEST in collaboration with LCs and distributed to LCs • Science equipment: Direct transfer into council's education bank account • Exam fees: direct payment to WAEC	Based on enrollment
School Supervision	School monitoring and supervision, teacher training, etc.		Based on the number of schools
Administration	Running of district education offices; stationery, fuel, repairs and maintenance, etc.	Direct transfers into council's education bank account	Based on the number of schools
Education Development	Construction, reconstruction, rehabilitation, computer centers, furniture, etc.	Direct transfers into council's education bank account	Based on enrollment and a lump sum
Libraries		Direct transfers into council's education bank account	Based on a lump sum and projected literate population

Annex Note A3.2: Unit Cost Decomposition

Three main factors affect the level of public unit costs:

- Teacher salaries (TS);
- The student-teacher ratio (STR) - the lower the STR the higher the unit cost; and
- Recurrent expenditures other than teacher salaries (ORE).

Their impact is derived from the following equation:

$$UC = \frac{REXP}{Epub}$$

$$UC = TPR \times \frac{REXP}{TPR} \times \frac{1}{Epub}$$

$$\frac{REXP}{TPR} = \frac{1}{\frac{TPR}{REXP}} = \frac{1}{\frac{REXP - ORE}{REXP}} = \frac{1}{1 - \frac{ORE}{REXP}} = \frac{1}{1 - \%ORE}$$

$$UC = TPR \times \frac{1}{1 - \%ORE} \times \frac{1}{Epub}$$

$$UC = TS \times \frac{Tpub}{Epub} \times \frac{1}{1 - \%ORE}$$

$$UC = TS \times \frac{1}{STRpub} \times \frac{1}{1 - \%ORE}$$

Legend

UC	Unit cost
REXP	Recurrent expenditures
Epub	Enrollment in public schools
TPR	Teacher payroll
ORE	Other recurrent expenditures (but teacher salaries)
%ORE	% of Other recurrent expenditures
Tpub	Number of public teachers (on the payroll)
TS	Average teacher salary
STRpub	Student-teacher ratio in public schools

Annex Table A4.1: UNICEF Reading Assessment - Baseline Indicator Assessment Summary

Grade 1 N=297	Asmt. 1. Phon. awrns /10	Asmt. 2 Letter naming. /26	Asmt. 3 sign/sound relat. /10 pairs	3B. Lett. Id.d /10	Asmt. 4. onset.rime. /12	Asmt. 4 Sight HiFreq. /20	Asmt. 5 passage wd. Read._/34	5B Read compr._/5	Asmt. 6 Writing. Stage 8-1	6B . Name write._/3	Asmt. 7. Oral English skills _/5
average per #	0.41	10.52	0.49	3.53	NA	2.24	2.08	0.60	1.68	1.39	1.59
average in %	4%	40%	5%	35%	NA	11%	6%	12%	No perf/ scribble	no	
median	0	8	0	2	NA	0	0	0	1	1	1
Grade 2 N=296	Asmt. 1. Phon. awrns /10	Asmt. 2 Letter naming. /26	Asmt. 3 sign/sound relat. /14 pairs	3B. Lett. Id.d /14	Asmt. 4. onset.rime. /12	Asmt. 5 Sight HiFreq. /40	Asmt. 6 passage wd. Read. 36 words	6B Read compr._/5	Asmt. 7 Writing. Stage 1-8	7B . N ame write. _/3	Asmt. 8. Oral English skills _/5
average per #	0.93	18.01	1.33	7.44	2.36	10.13	6.07	1.15	3.10	2.38	2.14
average in %	9%	69%	9%	53%	20%	25%	17%	.23%	Identifiable letters	Initial let. Corr.	
median	0	21	0	8	1	5	0	1	3	3	2
Grade 3 N=292	Asmt. 1. Phon. awrns /10	Asmt. 2 Letter naming. /26	Asmt. 3 sign/sound relat. /14 pairs	3B. Lett. Id.d /14	Asmt. 4. onset.rime. /12	Asmt. 5 Sight HiFreq./40	Asmt. 6 passage wd. Read. 55 words	6B Read compr._/5	Asmt. 7 Writing. Stage 1-8	7B . Name write._/3	Asmt. 8. Oral English skills _/5
average per #	1.47	22.34	1.63	9.73	3.36	17.32	10.49	1.08	4.84	2.73	2.59
average in %	15%	86%	12%	69%	28%	43%	19%	22%	3 -4 letter–sound corr.	Yes. 20% exception	
median	0	25	0	10	2	16	2	0	5	3	3

Source: Kuyvenhoven, 2011.

Note: Figures refer to average grade performances. To be ready to read, young readers should score 100 percent in all indicators. Unlike some content-based assessments, early readers must achieve complete abilities and understanding in all the areas outlined if they are to read. As stressed by Kuyvenhoven, all these features develop concurrently, and tend to overlap and develop dissimilarly in children who are learning to read. However, variations in individual development, childhood experiences and environments and other factors mean that children learn to read at different rates, in different ways and for different reasons.

Annex Table A4.2: Average Performances in Early Reading Ability, Grades 1, 2 and 3, by Gender, 2011

Percent and Percentage Points

	Overall Average	Alphabet Letter Recognition	Phonic Abilities Segmentation Sign-Sound; Onset-Rime	Word Recognition sight and Passage Word	Comprehension	Writing
Grade 1						
Girls	2,728	10.49/26	4.15%	8%	9.80%	Level 1.56
Boys	2,595	10.54/26	4.80%	10.47%	14%	Level 1.80
Difference	2,595	-0.19 pp	-0.65 pp	-2.47 pp	-4.20 pp	- 0.24 pp
Grade 2						
Girls	27.29%	17.56/26	11.75%	20.12%	22.40%	Level 3.14 Identifiable letters
Boys	28.98%	18.47/26	13.13%	22.09%	23.80%	Level 3.06 / Identifiable letters
Difference	-1.69 pp	-3.5 pp	-1.38 pp	-1.97 pp	-1.40 pp	0.08 pp
Grade 3						
Girls	34.76%	22.07/26	15.53%	28.72%	19.80%	Level 4.64 / Evidence of conventions and some phonic ability
Boys	38.74%	22.60/26	20.77%	33.72%	23.60%	Level 5.05 / Evidence of conventions and some phonic ability
Difference	-3.98 pp	-2.04 pp	-5.24 pp	-5.00 pp	-3.80 pp	-0.41 pp

*Source:*Kuyvenhoven, 2011.

Annex Table A4.3: Number of Candidates and Graduates who Passed All NPSE Papers, by Gender, 2005-11

Number

	Candidates			Graduates (Passed All Papers)		
	Male	Female	Total	Male	Female	Total
2005	48,213	29,446	77,659	35,779	20,259	56,038
2006	52,881	34,882	87,763	39,782	24,135	63,917
2007	56,077	40,191	96,268	41,864	2,791	44,655
2008	56,223	44,611	100,834	42,945	31,563	74,508
2009	54,326	46,511	100,837	41,261	33,775	75,036
2010	51,349	46,117	97,466	38,981	33,448	72,429
2011	49,764	46,769	96,533	38,163	34,003	72,166

Source: MEST, 2012.

Annex Table A4.4: BECE Graduates and Pass Rates, 2005-11

Number and Percent

	Distribution of Pass Rates							
	5 Passes or more Incl. LA or Math (SSS/WASSCE)		4 Passes only Incl. LA or Math (SSS/Tech Voc)		4 Passes only Excl. LA and Math (SSS/Tech Voc)		5 Passes or more Excl. LA and Math (SSS/Tech Voc)	
	Number	%	Number	%	Number	%	Number	%
2005	13,224	35.0%	1,929	5.1%	1,433	3.8%	1,356	3.6%
2007	22,658	45.1%	2,267	4.5%	2,446	4.9%	2,571	5.1%
2008	22,543	37.9%	3,478	5.8%	1,565	2.6%	1,181	2.0%
2009	24,937	37.0%	3,277	4.9%	2,590	3.8%	2,790	4.1%
2010	28,265	38.5%	4,593	6.2%	2,329	3.2%	1,703	2.3%
2011	29,192	35.6%	5,983	7.3%	2,057	2.5%	1,516	1.9%

Source: WAEC/BECE results and authors' computations. LA: Langage Arts.

Annex Table A4.5: Net Impact of Factors on Grade 5 Students' Math Scores, School Level, 2009

Points

	Net Impact on Scores (1	Significance
District		
Kailahun (Eastern)	**-0.394**	**
Kambia (Northern)	0.085	n.s.
Pujehun (Southern)	**-0.315**	**
Western Area Rural	-0.124	n.s.
Western Area Urban	Ref	
Child Environment Index (Baseline)	0.026	n.s.
G3 Share of Repeaters (Baseline)	-0.026	n.s.
Household Welfare Index (Baseline)	-0.022	n.s.
G3 Math Score (Baseline)	0.581	*
G3 Reading Score (Baseline)	**0.747**	**
School Environment / Infrastructure Index	-0.013	n.s.
School Charges Fees	0.031	n.s.
School External Assistance Index	0.049	n.s.
School Received SFS	-0.101	n.s.
School Management Index	-0.045	n.s.
G5 Pupil Absenteeism	**- 0.078**	**
G5 Pupil to Teacher Ratio	0.064	n.s.
Classroom Pedagogical Inputs Index	0.001	n.s.
Share of Female Teachers	-0.018	n.s.
Teacher Characteristics Index	0.005	n.s.
Teacher Absenteeism	-0.028	n.s.
Teaching Practice Index	**0.034**	**
Use of Pamphlet	-0.044	n.s.
Constant	-0.518	n.s.
Number of observations	289	
R^2	14.97%	
Average Score (Normed-Centered)	-0.046	

Source: Book Impact Evaluation Database 2008-09.

Note: The unit of observation is the school. Pupil's scores have been normalized. *** Statistically significant at the 1% level. ** Statistically significant at the 5% level. * Statistically significant at the 10% level. (1) The net impact refers to the isolated impact of a variable on NPSE pass rates, all other variables being held constant.

Reading Note: All else being equal, scores in Kailahun district are lower than those in Western Area Urban by 0.394 points.

Annex Table A4.6: Factors Affecting NPSE Pass Rates, School Level, 2011

Points

	Net Impact On Pass Rate (Marginal Effect in pp) (1)	Significance	Value (%/Mean) (School)
Council			
Bo City	0.092	***	3.5
Bo	0.132	***	5.9
Bombali	0.151	***	6.2
Bonthe	0.182	***	3.0
Bonthe Municipal	0.012	n.s.	0.3
Kailahun	-0.041	n.s.	4.1
Kambia	0.066	**	7.9
Kenema City	0.124	***	2.0
Kenema	0.140	***	5.9
Koidu City	0.146	***	1.4
Koinadugu	0.105	***	4.9
Kono	0.091	***	3.6
Makeni City	0.020	n.s.	1.4
Moyamba	0.077	**	5.8
Port Loko	0.107	***	11.5
Pujehun	0.120	***	4.0
Tonkolili	0.061	**	10.8
Western Area Rural	0.024	n.s.	4.6
Freetown	Ref.		12.9
School Ownership			
Government	Ref.		18.2
Community	0.008	n.s.	4,8
Mission	0.025	n.s.	70.6
Private	0.151	***	6.4
School Organization			
Non mixed schools	-0.054	n.s.	2.7
Head in Post	-0.017	n.s.	91.5
Classroom/Pedagogical Organization			
Grade 6 Pupils per Stream: under 25	-0.093	***	48.6
Grade 6 Pupils per Stream: 25-40	-0.028	n.s.	25.6
Grade 6 Pupils per Stream: 40and above	Ref.		25.7
Share of Repeaters in Grade 6	-0.211	**	4.0
Share of Female Students in School	0.050	n.s.	49.8
Share of Female Students in Grade 6	0.034	n.s.	46.8
School Facilities			
Has a Bank	0.037	n.s.	95.1
Is Approved	0.047	*	85.3
WFP Support	0.063	***	27.8
Has Water	-0.003	n.s.	74.9
Has Electricity	-0.034	n.s.	5.5
Has Toilets	0.014	n.s.	76.9
Has a Library	-0.055	n.s.	4.2
Has a Canteen	0.155	***	1.3
Share of Classrooms in Needs of Repair	0.010	n.s.	58.0
Staff Characteristics			
Share of Female Staff	0.128	***	21.4
Share of Qualified Staff	-0.008	n.s.	47.7
Staff Experience (Years)	-0.0003	n.s.	12.7
R^2	9.17%		
Average Pass Rate	0.778 (77.8%)		
Number of Observations	1,513		

Source: WAEC/NPSE, 2011 and EMIS, 2010/11.
Note: The unit of observation is the school. Pass rates correspond to aggregate scores of 230 and above.
*** Statistically significant at the 1% level. ** Statistically significant at the 5% level.* Statistically significant at the 10% level. n.s.: not significant.
(1) Isolated impact of variable on NPSE pass rates, all other variables being held constant, providing the percentage point change in the examination pass rate in response to a 1 percentage point change in the corresponding variable at the expense of the share of the reference group. So, for instance, the difference in the pass rates between a private school and a public school is 15 percentage points.

Annex Table A4.7: Factors Affecting BECE Pass Rates, School Level, 2011

Points

	Net Impact On Pass Rate (Marginal Effect in pp) (1)	Significance	Value (%/Mean) (School)
District			
Bombali	0.076	n.s.	5.8
Kambia	0.120	n.s.	1.9
Koinadugu	0.100	n.s.	1.3
Port Loko	-0.292	***	12.3
Tonkolili	-0.222	*	3.2
Western Area Rural	0.260	**	5.8
Western Area Urban	Ref.		32.9
Bo	-0.368	***	12.9
Bonthe	0.358	*	1.3
Moyamba	-0.122	n.s.	5.8
Pujehun	-0.503	***	2.0
Kailahun	-0.366	***	2.6
Kenema	-0.312	***	4.5
Kono	-0.237	*	7.7
School Ownership			
Government	Ref.		14.2
Community	0.101	n.s.	12.9
Mission	0.093	n.s.	57.4
Private	0.115	n.s.	15.5
School Organization			
Non mixed schools	0.170	*	16.8
Head in Post	0.166	**	84.5
Classroom/Pedagogical Organization			
JSS 3 Pupils per Stream: under 40	0.260	***	25.8
JSS 3 Pupils per Stream: 41-55	0.092	n.s.	25.8
JSS 3 Pupils per Stream: 56-75	0.147	***	24.5
JSS 3 Pupils per Stream: 76 and above	Ref.		23.9
Share of Repeaters in School	-0.017	n.s.	9.7
Share of Repeaters in JSS 3	-0.038	n.s.	4.4
Share of Female Students	-0.243	**	14.5
School Facilities			
Has a Bank	0.024	n.s.	91
Is Approved	-0.091	n.s.	90
WFP Support	0.108	n.s.	3.9
Has Water	0.162	**	83.9
Has Electricity	-0.062	n.s.	28.4
Has Toilets	-0.142	n.s.	91
Has a Library	0.146	**	33.5
Has a Laboratory	0.036	n.s.	25.8
Has a Canteen	0.196	*	7.1
Share of Classrooms in Needs of Repair	-0.040	n.s.	49.3
Staff Characteristics			
Share of Female Staff	-0.005	n.s.	47.7
Share of Qualified Staff	0.265	n.s.	61
Staff Experience (Years)	-0.009	**	11.6
R^2	42.70%		
Average Pass Rate	0.555 (55.5%)		
Number of Observations	149		

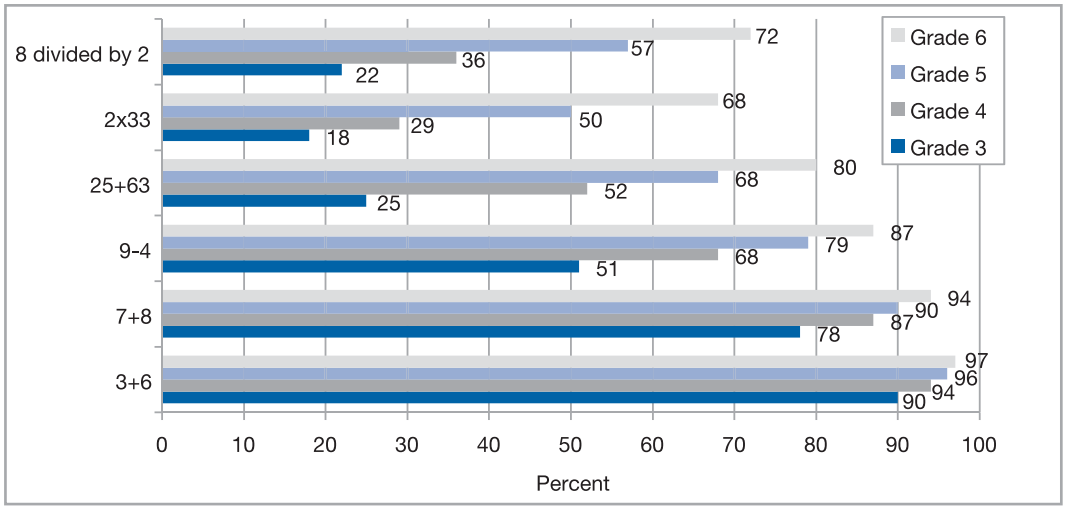
Source: WAEC/BECE, 2011 and EMIS, 2010/11.

Note: The BECE pass rate corresponds to 4 subject passes or more.

*** Statistically significant at the 1% level. ** Statistically significant at the 5% level. Statistically significant at the 10% level.n.s.: not significant.

(1) Isolated impact of variable on BECE pass rates, all other variables being held constant, providing the percentage point change in the examination pass rate in response to a 1 percentage point change in the corresponding variable at the expense of the share of the reference group. So, for instance, all other things been equal, the difference in the pass rate in a private school versus a public school is 12.8 percentage points.

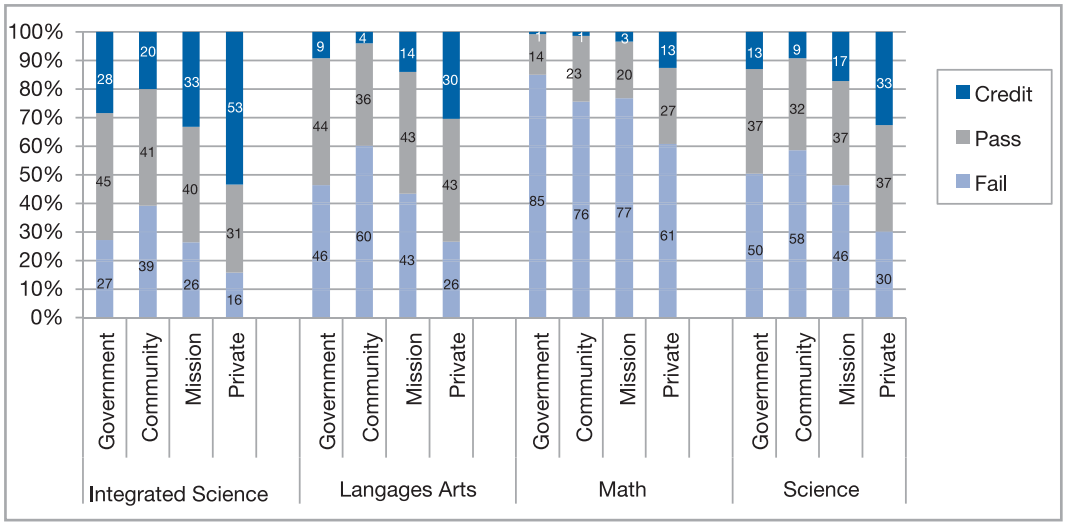
Annex Figure A4.1: Student Performance in Selected Math Questions, by Grade, 2008-09
Percentage (Mean Score)



Source: Sabarwal, 2012.

Annex Figure A4.2: Distribution of Students According to Scores Obtained in the Four BECE Core Subjects, by School Ownership, 2011

Percent



Source: WAEC/BECE, 2011 and EMIS 2010/11 and authors' computations.
Note: Based on a subsample of 158 JSS schools for which EMIS and WAEC data could be reconciled.

Annex Note A4.1: The Negative Impact of Too High a Level of Repetition - A Summary of Evidence
Source: Pôle de Dakar, UNESCO/BREDA, 2005.

The debate on repetition is not new. Supporters of repetition point out the sequential nature of learning, the need for classes to be homogenous, a failing student's loss of interest in the class and the motivating effect of sanctions as factors that make it effective. Opponents sustain that a student's disinterest in repeating a class is the first step toward dropout and decry the subjective ways decisions to repeat are taken, along with the cost of an extra school year.

Knowledge based on solid empirical studies has progressed, particularly in the context of African countries, and the main results show the negative effects of too high a level of repetition, which can be summed up as follows:

(i) *The decision to oblige a student to repeat a year is not always fair.* A student's knowledge and skills are not the only explanation for repetition. Decisions often depend on subjective factors, such as the student's relative position in the class, the environment, schooling conditions, and the teacher's qualifications (PASEC, 1999). In Côte d'Ivoire for example, more than 30 percent of repeaters are not in the lower third of students at the national level, as measured by the standard PASEC assessment test.

(ii) *The impact of repetition on learning achievements is not empirically proven.* Macroanalyses show that the argument aimed at justifying students' repetition by reasons linked to the quality of education cannot be empirically verified (Mingat and Sosale, 2000). Good education systems (those achieving a high level of student learning) can have high or low repetition. The same is shown in school-level studies (for instance in Benin, Chad, and Cameroon) which conclude that with equal resources and environments, schools where students have repeated the most grades do not have better results at the end of the cycle (Brossard, 2003; World Bank, 2004 and 2005). Finally, analyses at the individual level show that students (except the especially weak) who are made to repeat a year do not improve more by repeating than by moving on to the next grade (PASEC, 1999and 2004).

(iii) *There is a significant negative effect on dropout. Studies at the country, school and individual levels reinforce this point.* At the macro level, studies show that repetition increases dropout rates during the cycle and that this remains the main obstacle to reaching universal primary education (Mingat and Sosale, 2000 and Pôle de Dakar, 2002). The families of students who repeat a year feel that their children are unsuccessful and do not benefit from being at school. As opportunity costs are always an argument against school attendance, repetition encourages parents to take their children out of school. Mingat and Sosale estimate that one more percentage point of repeaters results in a 0.8 percentage point increase in the dropout rate. They also show that these negative effects are even more distinct among population groups whose demand for schooling is already low (girls, children from underprivileged economic environments). For girls, the effect of one more percentage point is estimated to be a 1.1 point increase in the dropout rate.

(iv) *The results of school-level analyses point to similar results.* In Chad, with all other factors being equal, one more percentage points of repetition are related to a 0.53 percent lower survival rate (World Bank, 2005). At the individual level, studies also confirm this trend. In Senegal, at a given student level, the decision to make a Grade 2 student repeat a year increases the risk of the student dropping out at the end of the year by 11 percent (PASEC, 2004).

(v) *Costs are affected.* Repetition costs the system two years of study while only one year is validated. In other words, for a given budget constraint, repeating students occupy places that overload classes and may prevent other children from going to school. The link between repetition and the PTR is empirically demonstrated (Mingat and Sosale, 2000 and Pôle de Dakar, 2002).

Bruns, Mingat and Rakotomalala (2003) observed that among the highest performing African countries in terms of universal primary education over the 1990–2000 period, the average share of repeaters was 10 percent, which is lower than the current African average (16 percent). This benchmark of 10 percent has been established as a reference value within the FTI indicative framework. The practices (because repetition really is about practices and habits rather than an objective system of remedial action designed to improve student learning) vary greatly. The repetition rate ranges from under 3 percent to 40 percent. Thirty one of the 43 countries for which data was available had over 10 percent repetition. In all, the analysis does not recommend the generalized automatic promotion of students to the next grade (which poses other problems), but leads to the conclusion that a figure of 10 percent repetition is both desirable and possible.

By way of conclusion, efficient intra-cycle student flow management requires:

(i) *An improvement in the survival rate during the cycle.* It is necessary to eliminate dropout in the primary cycle to attain universal primary education. In the other cycles, in view of the fact that learning programmes are put together according to homogenous units per education cycle, dropout during a cycle represents a waste of resources, as the system invests in years of study that do not yield the expected results (the completion of the cycle); and

(ii) *The reduction of repetition in countries where it is high.* Although the perspective of teachers who make students repeat a year when they have not acquired all the required knowledge is understandable, education systems cannot realistically accept a repetition rate over 10 percent. This represents an additional cost for which the pedagogical efficiency is not proven and seriously reduces the chances of achieving full universal primary education.

Annex Note A4.2: Background Information on Grade 5 Math Score Analysis

The underlying econometric model is based on the simple ordinary least squares approach, applied to school-level Grade 5 math scores, using the Book Impact Evaluation Grade 5 results in math in 2009. For statistical reasons, the score has been normed and centered, to avoid the influence of measurement units. The standardization removes scales and as such allows an interpretation of the coefficients using the standard deviation (a measure of dispersion) of the explanatory variable.

Due to various data constraints, it was not possible to construct a coherent pupil/class-level database for both 2008 and 2009, nor was it possible to match pupils' scores over years. The analysis was therefore carried out at the school level, by aggregating school-level data on children enrolled in Grade 5 in 2009 and tested in math only. Because some schools were lost over the two rounds, the final total number of schools in the sample was 289.

To better capture some specific types of variables, various indexes were computed, based on several individual variables available in the questionnaire. Indeed, many of these variables tend to be correlated, diluting the overall information. The following synthetic indexes were therefore used, that group together variables displaying homogeneous features:

(i) *Children Home Environment Index:* if the primary caretaker, if the parent, if English is spoken and or written by the caretaker, if the child went to Koranic school, and if the child is given extra lessons at home.

(ii) *Household Index:* dwelling characteristics.

(iii) *School Environment/Infrastructure Index:* state of the main building, number of functional toilets per student, if the school has water and electricity, distance to the main road and to the district education office.

(iv) *School External Financial Support Index:* if the school received materials (such as teaching and learning materials, furniture, building supplies, food, books and so on) and if the school received support from the community.

(v) *School Management Index:* if the school has a SMC and/or a PTA, the frequency of their meetings and the number of DEO/local council visits over the past six months.

(vi) *Classroom Pedagogical Inputs:* books per students in the four core subjects and the availability of seats, teacher seats and desks and blackboard.

(vii) *Teacher Characteristics Index:* qualification, years of experience, mother tongue similar to the one mainly spoken by students, and if had received full pay.

(viii) *Teaching Practice Index:* if students are allowed to take textbooks home and on what occurrence, and if teacher has written lesson notes and lesson plan.

CHAPTER 6 ANNEXES

Annex Table A6.1: Cohort Access and Parity for the Extreme Groups, 2010

Percent and Parity Index

	Poor Rural Girls	Rich Urban Boys	Parity Index
GIR - Grade 1	67	96	0.70
GIR - Grade 6	40	85	0.47
Primary Retention	*59*	*89*	*0.66*
Primary to Junior Secondary Transition	*69*	*96*	*0.72*
GIR- JSS1	27	82	0.33
GIR- JSS3	13	71	0.19
Junior Secondary Retention	*49*	*86*	*0.56*
Junior to Senior Secondary Transition	*39*	*91*	*0.43*
GIR - SSS 1	05	64	0.08
GIR - SSS 3	01	56	0.01
Senior Secondary Retention	14	87	0.16

Source: Authors' calculations based on MICS IV, 2010 data.

Annex Table A6.2: Number of Candidates who Sat and Passed the NPSE, by Gender and Region, 2011

Number, Percent and Ratio

	Total			Male			Female			GPI
	Canditates with Scores for All Papers	Passes	Pass Rate	Canditates with Scores for All Papers	Passes	Pass Rate	Canditates with Scores for All Papers	Passes	Pass Rate	
Northern	33,070	24,615	74.4%	18,057	13,811	76.5%	15,013	10,804	72.0%	94.1
Southern	16,111	12,637	78.4%	8,362	6,737	80.6%	7,749	5,900	76.1%	94.5
Eastern	20,280	14,962	73.8%	10,402	7,846	75.4%	9,878	7,116	72.0%	95.5
Western	27,072	19,951	73.7%	12,943	9,769	75.5%	14,129	10,182	72.1%	95.5
National	**96,533**	**72,165**	**74.8%**	**49,764**	**38,163**	**76.7%**	**46,769**	**34,002**	**72.7%**	**94.8**

Source: WAEC/NPSE, 2011 and authors' computations.

Annex Table A6.3: NPSE Regional Average Aggregate and Paper/Subject T-Scores, by Region and Gender, 2011

Number and Score

	Gender	Candidates	Average Scores					
			Qualitative Aptitude	Verbal Aptitude	Math	English	General Studies	Aggregate
Northern	Male	18,057	49.92	49.73	50.04	49.20	50.55	249.43
	Female	15,013	48.85	48.93	49.66	47.85	50.24	245.53
	Total	33,070	49.43	49.37	49.87	48.58	50.41	247.66
Southern	Male	8,362	50.58	50.71	50.95	50.35	52.28	254.87
	Female	7,749	49.37	49.65	50.21	49.58	51.64	250.45
	Total	16,111	50.00	50.20	50.60	49.98	51.97	252.74
Eastern	Male	10,402	50.35	50.46	51.30	49.30	49.65	251.06
	Female	9,878	49.35	49.76	50.90	47.91	49.60	247.51
	Total	20,280	49.86	50.12	51.10	48.62	49.63	249.33
Western	Male	12,940	51.53	50.99	48.78	53.10	48.79	253.18
	Female	14,129	50.66	50.39	48.59	52.64	48.63	250.91
	Total	27,069	51.07	50.67	48.68	52.86	48.71	251.99
West-SN	Male	3	48.00	58.33	46.00	61.00	53.67	267.00
National	**Male**	**49,764**	**50.54**	**50.37**	**50.13**	**50.43**	**50.19**	**251.66**
	Female	**46,769**	**49.59**	**49.67**	**49.69**	**49.59**	**49.85**	**248.39**
	Total	**96,533**	**50.08**	**50.03**	**49.92**	**50.02**	**50.03**	**250.07**

Source: MEST, 2012.

Annex Table A6.4: Distribution of BECE Graduates, by District, 2011

Number and Percentage

	District	Number of Candidates	Global Pass Rate (4 Passes or more		Distribution of Pass Rates			
					5 Passes or more Incl. LA or Math (SSS/WASSCE)		4 Passes Incl. LA or Math (SSS/Tech Voc)	
			Graduates	%	Graduates	%	Graduates	%
Northern	Bombali	6,888	4,415	64.1	3,256	47.3	578	8.4
	Kambia	2,925	1,094	37.4	797	27.2	191	6.5
	Koinadugu	2,711	1,047	38.6	711	26.2	234	8.6
	Port Loko	6,185	3,111	50.3	2,309	37.3	490	7.9
	Tonkolili	6,207	2,425	39.1	1,600	25.8	577	9.3
Southern	Bo	8,251	2,744	33.3	1,987	24.1	430	5.2
	Bonthe	796	256	32.2	183	23.0	48	6.0
	Moyamba	2,192	942	43.0	639	29.2	132	6.0
	Pujehun	917	314	34.2	230	25.1	45	4.9
Eastern	Kailahun	3,446	701	20.3	453	13.1	109	3.2
	Kenema	8,468	2,448	28.9	1,691	20.0	547	6.5
	Kono	4,948	1,797	36.3	1,320	26.7	355	7.2
West-SN	West Rural	4,173	2,669	64.0	2,181	52.3	284	6.8
	West Urban	23,810	14,787	62.1	11,835	49.7	1,963	8.2
National		**81,917**	**38,750**	**47.3**	**29,192**	**35.6**	**5,983**	**7.3**

Source: WAEC/BECE, 2011 data. .

Annex Table A6.5: Distribution of Students According to Scores Obtained in the Four BECE Core Subjects, by Region, 2011

Number and Percentage

	Integrated Science	Language Arts	Math	Social Studies
Northern				
Candidates	24,826	24,820	24,834	24,833
Credit	27%	5%	3%	12%
Pass	44%	40%	24%	39%
Fail	29%	55%	74%	49%
Subtotal	100%	100%	100%	100%
Southern				
Candidates	12,137	12,131	12,130	12,134
Credit	16%	6%	1%	9%
Pass	41%	31%	9%	28%
Fail	43%	63%	90%	63%
Subtotal	100%	100%	100%	100%
Eastern				
Candidates	16,829	16,829	16,830	16,829
Credit	16%	5%	1%	7%
Pass	40%	32%	9%	26%
Fail	44%	63%	90%	66%
Subtotal	100%	100%	100%	100%
Western Area				
Candidates	27,779	27,833	27,836	27,831
Credit	33%	14%	5%	20%
Pass	42%	48%	28%	39%
Fail	24%	38%	67%	41%
Subtotal	100%	100%	100%	100%

Source: WAEC/BECE, 2011.

Annex Table A6.6: Distribution of Students According to Scores Obtained in the Four BECE Core Subjects, by District, 2011

Percent

	District	Integrated Science			Language Arts			Math			Social Studies		
		Credit	Pass	Fail	Credit	Pass	Fail	Credit	Pass	Fail	Credit	Pass	Fail
Northern	Bombali	38.0	43.2	18.8	5.9	43.4	50.7	4.9	32.9	62.3	17.4	45.4	37.2
	Kambia	22.2	41.9	35.8	4.6	37.8	57.6	2.7	14.7	82.6	9.7	29.8	60.5
	Koinadugu	24.0	45.1	31.0	5.9	37.5	56.6	1.3	14.8	83.9	14.1	40.7	45.2
	Port Loko	27.7	44.0	28.3	6.9	42.6	50.5	1.4	20.9	77.7	10.8	39.0	50.1
	Tonkolili	19.3	45.4	35.3	2.4	36.6	61.1	1.5	25.2	73.3	8.2	34.5	57.3
Southern	Bo	14.4	40.9	44.7	6.9	30.4	62.7	0.8	6.2	93.1	9.1	26.4	64.5
	Bonthe	10.1	38.0	51.9	5.4	30.9	63.7	0.8	20.2	79.1	5.0	18.8	76.2
	Moyamba	24.1	44.6	31.2	4.9	35.9	59.2	0.2	10.8	89.1	13.0	35.2	51.9
	Pujehun	13.3	40.3	46.3	1.4	22.8	75.8	8.2	15.5	76.3	7.2	26.5	66.3
Eastern	Kailahun	8.5	32.1	59.4	1.7	19.3	79.0	0.5	2.3	97.2	5.8	20.5	73.7
	Kenema	16.1	42.5	41.5	5.7	32.1	62.2	0.5	9.4	90.1	7.0	25.8	67.2
	Kono	20.5	41.8	37.7	6.4	40.3	53.3	2.5	12.3	85.2	9.3	31.3	59.4
Western	Western Rural	28.3	43.0	28.7	10.1	52.6	37.3	4.9	32.5	62.5	25.2	39.0	35.7
	Western Urban	34.3	42.0	23.7	15.0	47.0	38.0	4.6	27.2	68.2	19.3	38.7	42.0
National		**25.4**	**42.2**	**32.5**	**8.4**	**39.7**	**51.9**	**2.7**	**19.9**	**77.3**	**13.5**	**34.5**	**52.0**

Source: WAEC/BECE, 2011.

Annex Table A6.7: Student Performance in WASSCE, by Gender, 2005-11

Percent and Gender Parity Index

	2005	2006	2007	2008	2009	2010	2011
4 Credits or more							
Male	10%	12%	12%	7%	n.a.	n.a.	12%
Female	6%	8%	8%	6%	n.a.	n.a.	8%
Total	**9%**	**11%**	**11%**	**7%**	**10%**	**n.a.**	**10%**
Number	1,143	1,752	2,034	1,563	2,755	--	4,682
GPI	0.65	0.67	0.68	0.80	--	--	0.67
5 Credits or more							
Male	5%	6%	6%	3%	5%	7%	6%
Female	3%	4%	4%	4%	5%	6%	4%
Total	**4%**	**6%**	**5%**	**3%**	**5%**	**7%**	**5%**
Number	594	930	934	790	1,414	2,386	2,486
GPI	0.64	0.61	0.71	1.07	0.87	0.92	0.67

Source: WAEC/WASSCE data and reports, 2009 and 2010.

Note: n.a.: Not available.

Annex Table A6.8: WASSCE Pass Rates (4 Credits or More), by District, 2011

Percent

	District	Integrated Science
Northern	Bombali	10
	Kambia	2
	Koinadugu	1
	Port Loko	14
	Tonkolili	8
Southern	Bo	12
	Bonthe	5
	Moyamba	6
	Pujehun	4
Eastern	Kailahun	5
	Kenema	4
	Kono	3
West-SN	Western Rural	13
	Western Urban	

Source: WAEC/BECE data, 2011.

Annex Table A6.9: WASSCE Success Rate in English and Math, by Region and Gender, 2007-10

Percent and Gender Parity Index

	2007	2008	2009	2010
Northern Province				
English				
Male	7.97	3.6	8.21	7.78
Female	3.49	0.93	4.13	3.45
GPI	0.44	0.26	0.50	0.44
Mathematics				
Male	3.68	4.9	2.38	2.5
Female	0.27	0.94	0.15	0.18
GPI	0.07	0.19	0.06	0.07
Southern Province				
English				
Male	15.26	7.38	17.95	12.75
Female	6.61	2.95	9.28	7
GPI	0.43	0.40	0.52	0.55
Mathematics				
Male	6.03	3.64	3.21	2.88
Female	0.46	0.63	0.24	0.53
GPI	0.08	0.17	0.07	0.18
Eastern Province				
English				
Male	6.6	3.06	12.2	5.32
Female	2.13	1.04	4.55	3.15
GPI	0.32	0.34	0.37	0.59
Mathematics				
Male	5.52	2.13	1.91	1.44
Female	0.18	0	0	0.37
GPI	0.03	-	-	0.26
Western Area				
English				
Male	24.16	9.79	25.83	19.22
Female	22.81	11.84	26.95	20.13
GPI	0.94	1.21	1.04	1.05
Mathematics				
Male	6.88	5.28	5.58	9.59
Female	1.73	1.66	2.87	6.34
GPI	0.25	0.31	0.51	0.66
Sierra Leone				
English	16.5	7.4	18.6	13.7
Male	16.9	7.2	18.6	13.6
Female	15.6	8.0	18.5	14.0
GPI	0.92	1.11	0.99	1.04
Mathematics	4.22	3.46	3.22	5.15
Male	5.6	4.5	3.9	5.7
Female	1.1	1.2	1.8	4.0
GPI	0.20	0.28	0.45	0.69

Source: WAEC/WASSCE reports, 2009 and 2010.

Note: The success rate is based on obtaining a credit.

Annex Note A6.1: The Structural Distribution of Public Education Resources

The estimation of the distribution of public resources across a pseudo-cohort of 100 children is explained below.

Structural Distribution of Public Education Resources among a Pseudo-Cohort of 100 Children, 2010

Grade	% of Cohort		Resources						
	Access*	Final Grade	Unit Cost (Le)	Duration	% of Population for whom it is at Least the Highest Grade Reached	Resources Consumed per Pupil	Resources Consumed by the Group (Le)	Resources Consumed by the Group % of Total	Cumulated Percentage
None	100	14	0		14	0	0	0	0
1	86	4	110,985	1	18	110,985	434,127	0	0
2	82	4	110,985	1	22	221,970	868,254	1	1
3	78	4	110,985	1	26	332,955	1,302,381	1	2
4	74	4	110,985	1	30	443,940	1,736,509	1	3
5	70	4	110,985	1	34	554,925	2,170,636	1	4
6	66	7	110,985	1	41	665,910	4,927,974	3	7
7	59	7	186,849	1	49	852,759	6,384,956	4	12
8	51	7	186,849	1	56	1,039,608	7,783,971	5	17
9	44	16	186,849	1	72	1,226,457	19,199,964	12	29
10	28	3	307,615	1	74	1,534,072	4,041,404	3	32
11	26	3	307,615	1	77	1,841,686	4,851,794	3	35
12	23	17	307,615	1	94	2,149,301	36,626,538	24	59
13+	6	6	2,118,011	4	100	10,621,345	63,303,216	41	100

Source: Authors' calculations based on MICS IV, 2010 data for grade access and Chapter 3 for unit costs.
Note: Each year of a given education level is considered to carry the same level of unit costs, equivalent to the average unit cost for that level as established in Chapter 3.

On the basis of the access rates to different education levels and their respective unit costs, the data pertaining to each terminal level of schooling are obtained, and the structural distribution of education resources that stems from them.

The table shows that 86 children of a cohort of 100 access the first year of primary. Thus, the 14 children who have never attended school have benefitted from no public education resources. Of the 86 children that access primary, 82 pursue to the second year. Thus, the four children whose terminal level of schooling was the first year of primary benefitted from less than one percent of public education resources. Similarly, only 59 children access the first year of secondary (JSS 1). The other 41 children, who at best finish their primary education, cumulatively consume just seven percent of public education resources. Finally, of the cohort of 100, 6 will reach higher education, and by that stage will have absorbed 41 percent of public education spending.

CHAPTER 7 ANNEXES

Annex Table A7.1: Teacher Training, Qualifications and Entry Requirements, by Level Targeted, 2012

	Qualification	Duration	Institution	Entry requirements
Preservice Residential (Lecture-Based) Training				
Prep.	TC Preschool	3 yrs	TTCs (PLTC)	3 WASSCE credits (Incl. English)
	Certificate (ECCE)	1 yr	FBC/USL	3 WASSCE credits (Incl. English)
	Diploma (ECCE)	2 yrs	FBC/USL	4 WASSCE credits (Incl. English)
	B.Ed. (ECCE)	4 yrs	FBC/USL, NU	5 WASSCE credits (Incl. English)
Primary	TC	3 yrs	TTCs, Polytechnics and NU	3 WASSCE credits (Incl. English)
	HTC Primary	3 yrs	TTCs, Polytechnics (EP, NP) and NU	4 W. credits (Incl. English) or TC + 3 years' experience
	B.Ed. (Primary)	3 yrs	NU, Polytechnics	HTC + 3 years' experience
	B.Ed. (Primary)	4 yrs	NU, Polytechnics	5 WASSCE credits (Incl. English)
JSS	HTC Secondary	3 yrs	TTCs (FTC), Polytechnics and NU	5 W. Cr. (Incl. Eng.) or TC + 3 years' exp. + 4 WASSCE
	B.Ed. (Secondary)	3 yrs	NU, Polytechnics	HTC Secondary + 3 years' experience
		4 yrs	NU, Polytechnics	5 WASSCE credits (Incl. English)
SSS	B.A.(Ed)/B.Sc.(Ed)	4 yrs	NU, Polytechnics (MMCET)	5 WASSCE credits (Incl. English)
	B.A.(Ed)/B.Sc.(Ed)	3 yrs	NU, Polytechnics (MMCET)	HTC Secondary
	Postgrad. Diploma (Ed)/ Masters (Ed)	1 yr	FBC/USL	First degree
	B.Ed.	1 yr	NU and all Polytechnics	HTC or 5 WASSCE credits (Incl. English)
	M.Sc./M.A.	3 yrs	NU	B.A./B.Sc. (1st or 2nd class)
In-Service Distance Learning Courses				
Primary	TC (Lower Primary)	3 yrs	TTCs and Polytechnics	Untrained/unqualified teachers with 2/3 years' experience
	TC	3 yrs	TTCs and Polytechnics	Untrained/unqualified teachers
	HTC Primary	3 yrs	TTC (PLTC) and Polytechnics (EP)	Untrained/unqualified teachers
	HTC Secondary	2 yrs	TTCs (PLTC) and Poly. (EP, NP)	Untrained/unqualified teachers

Source: Author's elaboration.

Acronyms: EP (Eastern Polytechnic), FBC/USL (Fourah Bay College - Division of Educational Studies of the University of Sierra Leone), FTC (Freetown Teachers College), HTC (Higher Teacher Certificate), MMCET (Milton Margai College of Education and Technology), NP (Northern Polytechnic), NU (Njala University), PLTC (Port Loko Teachers College),TC (Teachers Certificate).

Annex Table A7.2: Teachers Qualification Status for Each Level

Code	Type of Qualification	Level			
		Prep.	Primary	JSS	SSS
1	1-WASSEC/GCE 'O' & 'A' Level	NQ	NQ	NQ	NQ
2	2-Certificate/OND/HND	NQ	NQ	NQ	NQ
3	3-BA/BSc.	NQ	NQ	NQ	NQ
4	4-MA/MSc/MBA	NQ	NQ	NQ	NQ
5	5-M.Phil	NQ	NQ	NQ	NQ
6	6-PHD	NQ	NQ	NQ	NQ
7	7-TEC	Q	Q	NQ	NQ
8	8-TC Lower	Q	Q	NQ	NQ
9	9-TC	Q	Q	NQ	NQ
10	10-HTC(P)	Q	Q	NQ	NQ
11	11-HTC(S)	Q	Q	Q	NQ
12	12-B.ED	Q	Q	Q	Q
13	13-BA/BSc + Dip ED	Q	Q	Q	Q
14	14-BA/BSc ED	Q	Q	Q	Q
15	15-MED	Q	Q	Q	Q
16	16-MA/MSc. ED	Q	Q	Q	Q
17	17-M.Phil ED	Q	Q	Q	Q
18	18-PHD ED	Q	Q	Q	Q

Source: EMIS questionnaire.
Note: NQ - Not Qualified, Q - Qualified.

Annex Table A7.3: Teacher PIN Status and Qualifications in Public and Government-Aided Schools, by Level, 2010/11

Percent

	PIN-Teachers			Non-PIN Teachers		
	NQ	Q	Total	NQ	Q	Total
Preprimary	25	75	100	67	33	100
Primary	35	65	100	76	24	100
JSS	43	57	100	70	30	100
SSS	54	46	100	65	35	100
Total	**38**	**62**	**100**	**73**	**27**	**100**

Source: EMIS questionnaire.
Note: NQ - Not Qualified, Q - Qualified.

Table A7.4: Share of Female, Qualified and PIN Teachers, Public and Government-Aided Schools, by Level, Region and District, 2010/11

Percent

	Primary			JSS			SSS		
	Qual.	Fem.	PIN	Qual.	Fem.	PIN	Qual.	Fem.	PIN
Northern									
Bombali	56	22	56	44	11	53	56	5	82
Kambia	37	13	49	18	3	39	26	0	78
Koinadugu	33	12	47	23	5	41	21	3	74
Port Loko	48	21	60	36	9	52	28	8	70
Tonkolili	33	20	64	27	10	52	31	4	71
Southern									
Bonthe	28	22	64	20	9	51	40	7	78
Moyamba	39	18	62	26	10	53	29	12	67
Pujehun	40	13	64	24	7	68	48	3	78
Eastern									
Bo	51	27	71	49	17	69	49	8	77
Kailahun	46	10	56	22	4	60	22	4	73
Kenema	47	21	67	44	12	55	53	7	73
Kono	40	13	45	19	4	51	26	4	67
Western Area									
Rural	52	35	59	45	19	48	40	9	43
Urban	73	53	75	72	26	69	48	11	72
Sierra Leone	**48**	**24**	**62**	**43**	**14**	**58**	**42**	**8**	**72**

Source: Authors' calculations based on EMIS, 2010/11 data.

Annex Note A7.1: Modelizing Economies of Scale in School Size

The average relationship between the number of teachers and the number of students at the school-level can be represented by a linear curve (See Figures 7.3 and 7.7 for primary and JSS). The equations for each level that define this relationship are:

Primary	Number of teachers = 0.03 × Number of pupils + 0.61
JSS	Number of teachers = 0.02 × Number of pupils + 6.4
SSS	Number of teachers = 0.02 × Number of pupils + 10.7

With these equations, one can determine the total wage cost per school and the unit labor cost per pupil for each, on the basis of the following:

Wage bill = Average teacher's salary × Number of teachers
Unit labor cost = Wage Bill / Number of pupils

The equations indicated below for each level include in the teacher wage unit cost both the marginal cost and the allocation of fixed costs between students enrolled. The larger the school size (the number of students enrolled) the lower this latter component (fixed costs are distributed among a greater number of students). The respective curves are presented in Figures 7.8 and 7.9 in Chapter 7.

$$\text{Primary} \quad \text{Unit labor cost} = \frac{\text{Average salary} \times (0.03 \times \text{Number of pupils} + 0.61)}{\text{Number of pupils}}$$

$$\text{JSS} \quad \text{Unit labor cost} = \frac{\text{Average salary} \times (0.02 \times \text{Number of pupils} + 0.64)}{\text{Number of pupils}}$$

$$\text{SSS} \quad \text{Unit labor cost} = \frac{\text{Average salary} \times (0.02 \times \text{Number of pupils} + 10.7)}{\text{Number of pupils}}$$

Appendix

Limitations of the Net Enrollment Rate (NER) in Assessing Schooling Coverage
Source: Derived from Reuge, 2004.

The net enrollment rate (NER) is often used, in parallel to the gross enrollment rate (GER), to assess schooling coverage. The NER is the ratio between the number of enrolled pupils of official school-age and the total school-aged population for that year. It is thus often perceived as an indicator of participation, as it shows what proportion of the official schoolaged population actually attends school.

The major disadvantage of this indicator is that it only accounts for the education of those children who are within the official school-age range, thus failing to account for children who enroll early, or late; through repetition, some children may no longer be of official school-age for their year, despite attending. The NER therefore underestimates schooling coverage. Furthermore, in many African countries children's ages are often plagued by measurement errors, due to limited birth registration and/or the practice of changing children's ages to allow them to attend school, making the NER imprecise.

Neither is the NER any more able to adequately track the EFA goal that "all children should complete the entire cycle of primary schooling irrespective of their age" than the GER. Indeed, both provide average values for schooling over the cycle, and do not say much about pupils' schooling patterns. Different indicators and tools (such as schooling profiles) are required to obtain adequate information on access and retention. These data are of paramount importance for planners to develop adequate education policies.

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This second education Country Status Report for Sierra Leone is part of an ongoing series of country-specific reports being prepared by government teams technically supported by the World Bank, UNESCO and other development partners. It is a detailed analysis of the status and trends of the Sierra Leone education system, based on the latest available data. Its main purpose is to enable decision makers to orient national education policies on the basis of a factual diagnosis of the overall education sector and to provide relevant analytical information for the dialogue between the government, development partners and civil society. The Sierra Leone report offers not only traditional and basic schooling indicators, but also analyzes the performance of the education system in terms of access, internal efficiency, learning outcomes, external efficiency, equity, teacher management and the allocation and utilization of financial resources.

Government of Sierra Leone

Ministry of Education Science and Technology

SIERRA LEONE

Education Country Status Report

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