



PUBLIC EXPENDITURE REVIEW OF THE

# BASIC EDUCATION SECTOR IN BOTSWANA

November 2019



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November 2019

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# ACRONYMS AND ABBREVIATIONS

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BGCSE	Botswana General Certificate of Secondary Education
BMTHS	Botswana Multi-Topic Household Survey
DSE	Department of Secondary Education
ECCE	Early childhood care and education
EMIS	Education Management Information System
ETSSP	Education and Training Sector Strategic Plan
GDP	Gross domestic product
GER	Gross enrolment ratio
GFCF	Gross fixed capital formation
GoB	Government of Botswana
GPI	Gender Parity Index
HCI	Human Capital Index
HRDC	Human Resource Development Council
JCE	Junior Certificate Examination
MELPSD	Ministry for Employment, Labour Productivity and Skills Development
MFED	Ministry of Finance and Economic Development
MLGRD	Ministry of Local Government and Rural Development
MOBE	Ministry of Basic Education
MTERST	Ministry of Tertiary Education, Research, Science and Technology
NER	Net enrolment rate
PD	Professional development
PER	Public Expenditure Review
PIRLS	Progress in International Reading Literacy Study
PSLE	Primary School Leaving Examination
RNPE	Revised National Policy on Education
SACMEQ	Southern and Eastern African Consortium for Monitoring Educational Quality
SACU	Southern African Customs Union
SES	Socioeconomic status
ST	Student-teacher
TIMSS	Trends in International Mathematics and Science Study
TSM	Teaching Services Management
TVET	Technical and vocational education and training
UIS	Institute for Statistics
UNICEF	United Nations Children's Fund



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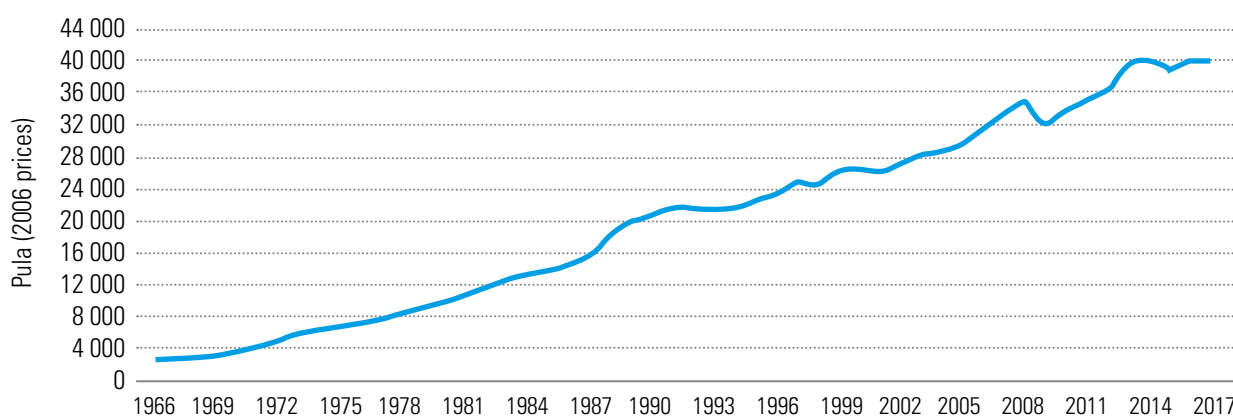
# EXECUTIVE SUMMARY

## COUNTRY CONTEXT – ACHIEVEMENTS TO DATE

**1. Botswana is an upper-middle-income country that has experienced substantial and sustained economic growth during the last half century.** It has registered an average gross domestic product

(GDP) growth rate of 8.3 percent per annum since independence in 1966, with more than a tenfold increase in the country's GDP per capita over the same period (Executive Summary Figure 1). This impressive growth performance is set to continue, and the National Development Plan 11 envisages average annual GDP growth of 4.4 percent between 2017/18 and 2022/23.

## EXECUTIVE SUMMARY FIGURE 1 GDP PER CAPITA AT CONSTANT 2006 PRICES, 1966-2017



Source: Authors' calculations based on data obtained from the Ministry of Finance and Economic Development (MFEF).

**2. Botswana's fiscal authorities have been prudent in managing the country's public finances.** Fiscal outcomes remain sound: the country's public debt burden is very low and the level of government spending is moderate by international standards, while government revenue levels are well-above the international average. Recent studies (e.g., the from the International Monetary Fund's Article IV consultations) have found that Botswana's fiscal position will remain sustainable in the short-to-medium term, but they caution that it may become difficult to sustain current levels of government spending in the long term if the expected

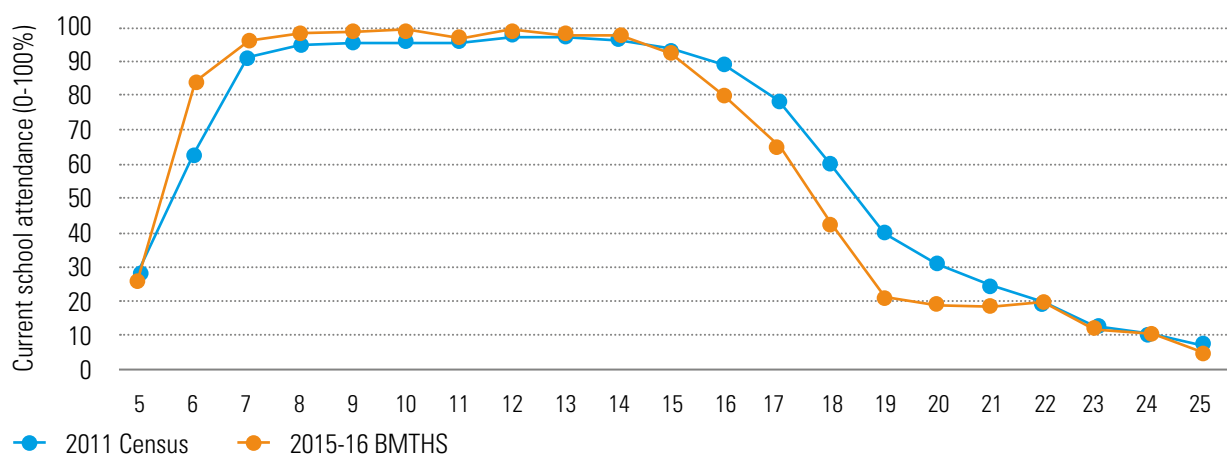
depletion of the country's diamond resources occurs.

**3. The country has used public revenue generated from the mining sector to lay the foundation for sustained economic development.** This includes the rapid expansion of the school system, approaching almost universal primary and junior secondary education. More than 90 percent of children up to the age of sixteen are enrolled in Botswana's formal education system (Executive Summary Figure 2). Students enrolled in primary schooling increased from only 67,100 in 1966 to 320,000 by the turn

of the century. There has also been a substantial increase in educational attainment levels of the adult population. As a result, authorities have created an education system with a high degree of equity in resource allocation, with resource flows to remote

rural areas not significantly lower than to urban schools. The country's education system has made it possible to sustain economic growth at a level that has transformed Botswana to an upper-middle-income country.

**EXECUTIVE SUMMARY FIGURE 2 PARTICIPATION IN EDUCATION BY AGE, 2011-2015/16**



Source: Analysis of 2011 Census data and 2015-16 Botswana Multi-Topic Household Survey (BMTHS).

**4. The Education and Training Sector Strategic Plan (ETSSP) 2015-2020 addresses the key challenges facing Botswana's education sector and identifies areas of improvement.** The plan emphasizes pre-primary education, teacher education, the enhanced participation of parents, and an expansion of technical and vocational education and training (TVET). It also stresses the importance of generating accurate data for strategic planning and transforming the management system for education. Unfortunately, inadequate fiscal resource commitments have prevented authorities from fully implementing the recommendations listed in the ETSSP.

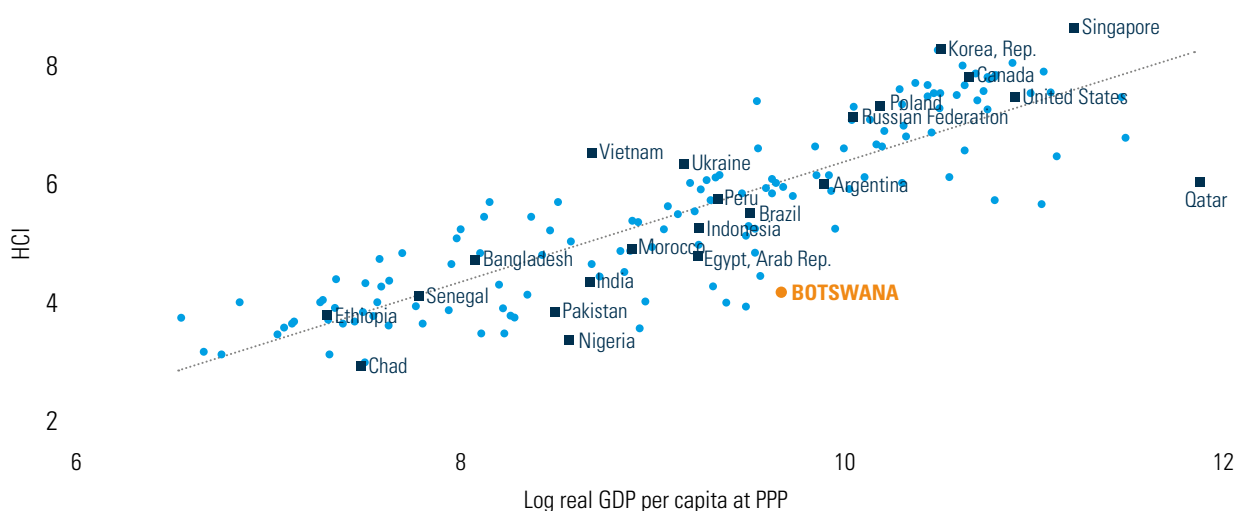
**5. While expanding access to education has been very successful, the Government of Botswana (GoB) is increasingly concerned about the quality of education.** The country's students score low on international and regional educational assessments (e.g., Trends in International Mathematics and Science Study (TIMSS) and Southern and Eastern African Consortium for Monitoring Educational Quality (SACMEQ)), and low service quality holds back the desired expansion of senior secondary education because of high failure rates on the Junior Certificate Examination (JCE) in Form 3 (Grade 10).

For the education system to support inclusive and sustained economic growth, Botswana needs to focus on improving the quality of education.

**6. Improved education quality is also important for the country to continue its transformation into a modern market economy.** Botswana's performance on the Human Capital Index (HCI), which reflects the amount of human capital that a child born today can expect to attain by the age of eighteen, is considerably lower than the average for upper-middle-income countries. Its HCI score of 0.42 is lower than many other countries at a similar level of economic development (Executive Summary Figure 3). The HCI is an indicator of a country's productivity and the level of economic growth it should be able to sustain based on its available human capital. Botswana's growth performance, therefore, is likely to be almost 60 percent lower than would have been possible without its deficit in human capital. Botswana's low HCI score is in large part due to the fact that the 8.4 years of education that children in Botswana can expect to successfully complete by the age of eighteen are equivalent to only 5.3 years once an adjustment is made for the quality of education. (World Bank, 2018c).



### EXECUTIVE SUMMARY FIGURE 3 HUMAN CAPITAL INDEX AND GDP PER CAPITA FOR SELECTED COUNTRIES



Source: (World Bank, 2018c).

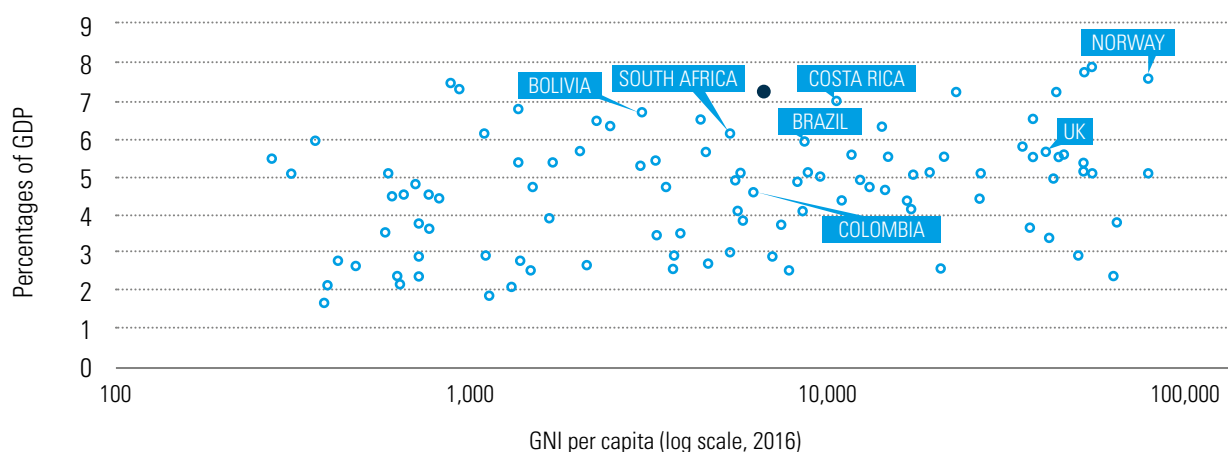
7. This Basic Education Public Expenditure Review (PER) was performed at the request of the GoB to assess fiscal expenditure in education and provide recommendations that could improve the performance of the country's school system. More specifically, the PER assessed the adequacy and sustainability of public education spending, the efficiency and effectiveness of resources used, the equity of education expenditures, and key management and governance issues in the education sector. The analysis focused on the efficiency of budget allocations across education levels and regions; educational outcomes, including student progression and dropout rates; cognitive outcomes, as measured by national examinations and assessments; equity of access; resources and outcomes across regions; gender and income groups; and the institutional context. The PER was informed by data from several sources, including the Education Management Information System (EMIS); the Ministry of Finance and Economic Development (MFED); the Ministry of Local Government and Rural Development (MLGRD); the 2011 population census; the Botswana Multi-Topic Household Survey (BMTHS) of 2015/6; various interviews with officials, principals, and teachers in the South East and south regions of Chobe; and the Botswana Examinations Council.

## BOTSWANA'S EDUCATION SYSTEM

### Education Expenditure

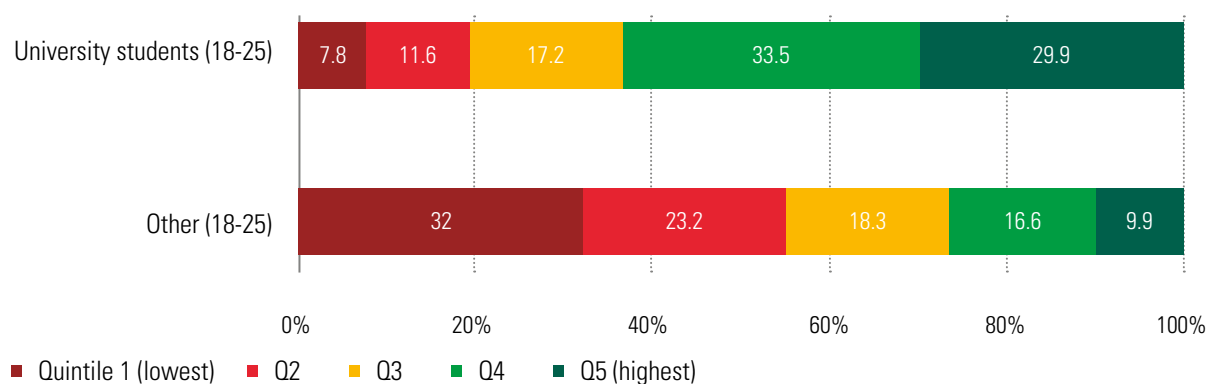
8. At 7.1 percent of GDP, or 22.2 percent of the government budget, Botswana's public spending on education is high relative to peers. Considering the country's level of economic development, Botswana spends more on education as a share of GDP than income peers such as Colombia, Brazil, Costa Rica, and South Africa (Executive Summary Figure 4). Yet, about one-third of the country's education budget is allocated to tertiary education, thus spending on school education is not particularly high. Moreover, Botswana's basic education budget is largely spent on salaries and other recurrent costs, leaving little scope for capital spending.



**EXECUTIVE SUMMARY FIGURE 4 GOVERNMENT EDUCATION SPENDING AS % OF GDP (MOST RECENT 3-YEAR AVERAGES), 2011-16**

9. The country allocates a large share of its education budget to tertiary education, both for subsidies to universities and bursaries/loans to university students. While per student spending is estimated at P9,534 (US\$893) in primary and P18,079 (US\$1,693) in secondary school, spending per tertiary student is estimated at about six times as much. This high level of spending on universities

is relatively inequitable, as the gross tertiary enrolment rate is only 23.4 percent. The poorest segments of the population are poorly represented among university students, while 63.4 percent of tertiary students come from the top two income quintiles (Executive Summary Figure 5). As a result, Botswana's relatively high level of spending on tertiary education favors more affluent households.

**EXECUTIVE SUMMARY FIGURE 5 SES QUINTILE BREAKDOWN OF STUDENTS AGED 18-25 BY UNIVERSITY ATTENDANCE, 2015-16**

Source: Botswana Multiple Topic Household Survey, 2015-16.

10. Given the relatively high level of public education spending, the availability of fiscal resources in the education sector is regarded as *adequate*. However, there will be pressure to shift resources to currently underfunded areas, including the construction of additional classrooms and schools or the provision of new textbooks, which would allow authorities to address the *current underutilization of teaching staff in secondary schools*.

### Education Administration Structure

11. Until 2017/18, all education in Botswana fell under the Ministry of Education and Skills Development (MOESD). In 2017/18, however, the MOESD's functions were rearranged, with two new ministries—the Ministry of Basic Education (MOBE) and the Ministry of Tertiary Education, Research and Technology (MTERST)—assuming most of the functions of the former ministry, except

for skills development, which was shifted to the Ministry of Employment, Labour Productivity and Skills Development (MELPSD). This institutional arrangement makes it more difficult to analyze the education budget over time.

12. The management of Botswana's education system is fragmented due to the involvement of various ministries and changes from the recent reorganization. MOBE is responsible for primary and secondary education, including one year of early childhood care and education (ECCE) preceding Grade 1 (pre-primary); the MTERST for tertiary education; the MELPSD for TVET; and the MLGRD is responsible for infrastructure, furniture, and stationery, as well as feeding programs for children in primary schools. The provision of ECCE is also decentralized and is the responsibility of district councils assisted by the MLGRD. Box A describes the education system's complex administrative structure.

### BOX A THE ADMINISTRATION STRUCTURE OF BOTSWANA'S EDUCATION SYSTEM

#### There is a three-tier administrative system:

- Headquarters, which is responsible for policy making and the overall strategic coordination of the education sector;
- Regional offices, which implement policies and coordinate education services (i.e., in-service teacher training, inspection of primary and secondary schools, provision of textbooks and stationery, and supervision of financial management in secondary schools); and
- Schools and institutions, which deliver and coordinate teaching and learning services, provide school meals, and is responsible for the short-term maintenance of buildings, etc.

#### Primary education is the responsibility of MOBE and the MLGRD:

- MOBE is in charge of teaching services, curriculum development and delivery (teaching and learning), learner assessments, teacher education, and recruitment and management; and
- The MLGRD is responsible for infrastructure development, learning resources (except textbooks),

and school feeding programs.

#### Secondary education is the responsibility of MOBE and the Ministry of Infrastructure, Science and Technology (MIST):

- MOBE is financially accountable for junior and senior secondary education infrastructure development and maintenance, and it is in charge of curriculum development and delivery (teaching and learning), learner assessments, teacher education, and recruitment and management; and
- MIST is responsible for managing the maintenance of senior secondary schools, building classrooms and schools with funding provided by MOBE; contracting; and inspections.

#### Post-secondary education is the responsibility of the MELPSD and MTRST:

- The MELPSD is responsible for all areas concerning TVET; and
- The MTERST is in charge of tertiary education.

13. Botswana's public education spending suffers from a lack of prioritization due to the fragmentation of management, service provision, and decision-making in the country's education system. As a result, there is an ineffective implementation and management of education services and an inefficient utilization of public funds. For example, while there are favorable student-teacher (ST) ratios, there is a shortage of classrooms and textbooks despite the large education budget.

14. Most decisions regarding education policy continue to be taken at headquarters, and central financial decisions regarding funding for regions and schools are not transparent. Efforts to decentralize education services and personnel to ten regional offices provided them with little real decision-making autonomy about the magnitude, structure, or application of their budgets. They are also dependent on special plea when requesting virement. Regional and non-teaching/support staff in schools absorbs almost 10 percent of the recurrent education budget.

### Education Provision

15. Botswana's ST ratios in primary and secondary schools are low compared to those of regional peers. The ST ratio is less than 26:1 and 12:1 in primary and secondary schools, respectively (Executive Summary Table 1). These ratios do not differ greatly among regions, with Kgalagadi, the most remote region, having slightly more favorable ratios. While Botswana's primary school ST ratio is much lower than the average of Sub-Saharan Africa (38:1), it is higher than the average of upper-middle-income countries (19:1), including Brazil (20:1) and Malaysia (12:1). Botswana's ST ratio for secondary schools is below the average of upper-middle-income countries (14:1), similar to that of Malaysia (12:1), and much lower than that of Brazil (17:1)—a somewhat richer country. The country's low ST ratios are due to: (i) a relatively favorable fiscal situation; and (ii) a large number of electives and subject specialization of teachers at the secondary level. The average secondary school teacher teaches only about two hours per school day.

**EXECUTIVE SUMMARY TABLE 1 PRIMARY AND SECONDARY ENROLMENT, TEACHERS, AND ST RATIOS BY REGION, 2017**

	Primary			Secondary		
	Enrolment	Teachers	ST-ratio	Enrolment	Teachers	ST-ratio
1 Southeast	43,187	1,826	23.7	28,489	2,416	11.8
2 North	25,266	1,053	24.0	15,042	1,308	11.5
3 South	41,699	1,702	24.5	21,322	1,865	11.4
4 Kweneng	48,249	1,759	27.4	19,840	1,582	12.5
5 Kgatleng	15,267	633	24.1	7,206	654	11.0
6 North West	33,409	1,230	27.2	12,937	1,070	12.1
7 Chobe	3,929	166	23.7	1,301	96	13.6
8 Ghanzi	8,310	311	26.7	3,035	283	10.7
9 Kgalagadi	9,304	436	21.3	4,545	425	10.7
10 Central	117,925	4,382	26.9	61,668	5,050	12.2
<b>TOTAL</b>	<b>346,545</b>	<b>13,498</b>	<b>25.7</b>	<b>175,385</b>	<b>14,749</b>	<b>11.9</b>

Source: Authors' calculations based on the data from the Department of Planning, Research, Evaluation, and Statistics.

16. There are, however, significant shortages of textbooks, classrooms, and specialist rooms for teaching (e.g., for science subjects). In primary schools, there is a 15 percent shortage of classrooms.

At secondary schools, the proliferation of electives results in too little time spent on each subject, especially core subjects. More specialist subjects also require more staff at secondary schools.



## Teachers

**17. The 8,553 unemployed teachers in MOBE's human resources system represent 30 percent of all teachers currently employed.** In addition, more than 3,000 students with education qualifications graduate annually. Only around 260 teachers per year will reach retirement age in the next five year, out of which more than 80 percent are primary school teachers (since the rapid secondary expansion happened more recently). Only 4,479 teachers were appointed in the last four calendar years, an annual intake of only 1,120 teachers, or 4.0 percent of current employment.

**18. There is a massive oversupply of teachers in subjects such as English, Setswana, history, and geography.** These subject areas have waiting lists for teachers that are close to ten years. Almost all primary and pre-primary teachers have found jobs, while more than 2,200 ECCE teacher aids remain unemployed, despite a shortage of teachers in community-based early childhood development centers.

**19. There is insufficient in-service teacher training in most areas and subjects.** Teacher training is the responsibility of regional education offices, which are constrained by a lack of funds and the need for subject-matter experts in many subjects.

**20. There are no clear teacher recruitment policies or professional standards, and deployment practices are inconsistent.** Many teachers are forced to remain in remote areas longer than they had anticipated, causing many to be disillusioned with their jobs, which affects their motivation and work effort.

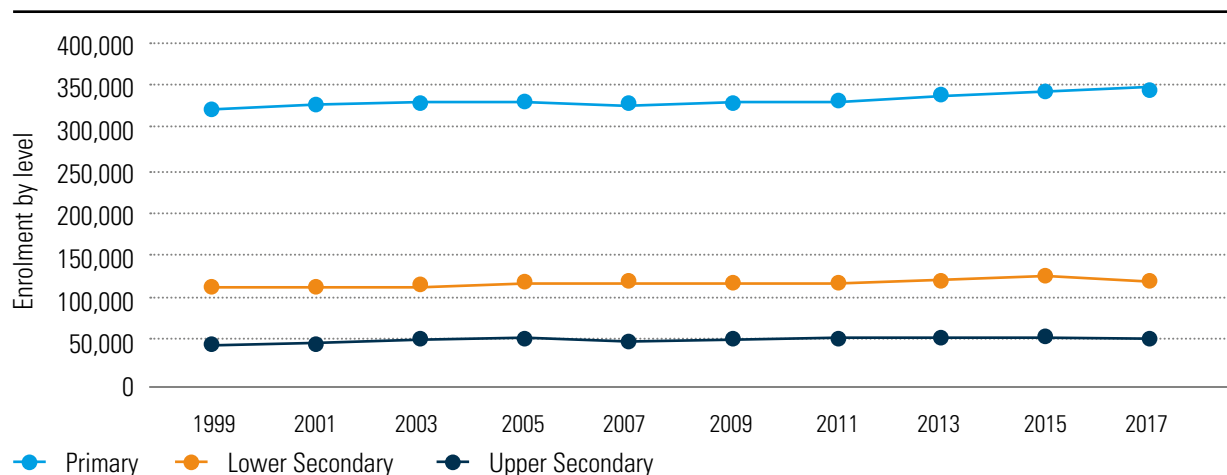
## Boarding Schools

**21. Botswana's large land mass and sparse population make it difficult to bring education**

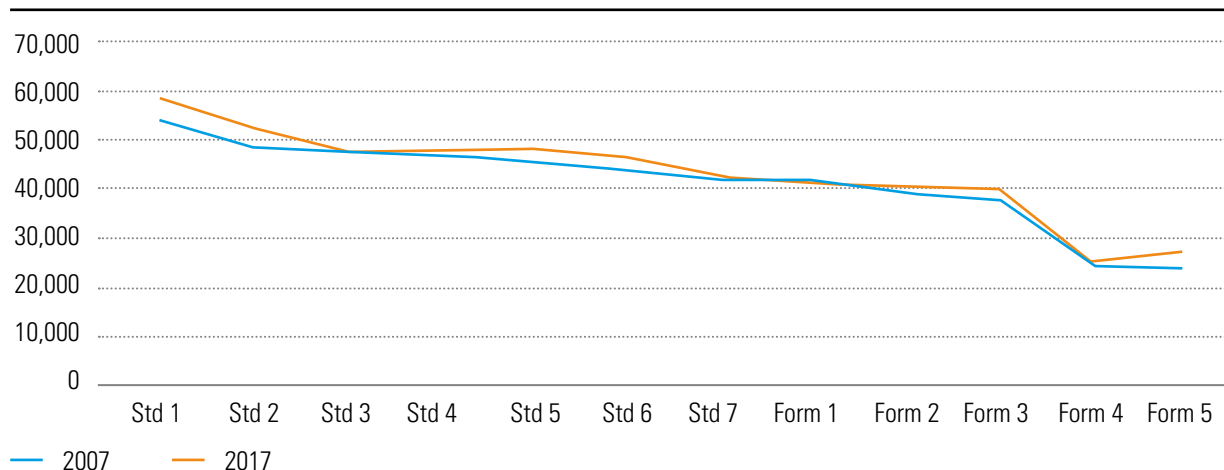
**closer to the population.**<sup>1</sup> Students from 755 Public Primary schools have to continue their education in 210 junior secondary schools and 34 Senior Secondary schools. Boarding schools accommodated 1.3 percent (almost 4,400 students) of primary students in 2017, 17 percent of junior secondary school students (21,000), and 35 percent of senior secondary students (18,700). Conditions in boarding schools are often unattractive and can discourage students from continuing to higher education levels.

## Enrolment, Progression, and Learning Outcomes

**22. Overall enrolment in basic education has changed little in the past two decades.** Between 1999 and 2017, primary enrolment grew slightly from 320,000 to 350,000 students, lower secondary enrolment grew from 112,000 to 125,000 students, and senior secondary remained unchanged at about 50,000 students (Executive Summary Figure 6). This stability in overall enrolment was a result of slowing population growth and high age-specific enrolment rates, especially in basic education, where most children complete primary education and move on to junior secondary. Lack of growth in the enrollment of students in senior secondary education highlights a policy challenge going forward, as completion of senior secondary is still far from universal. A comparison of enrolment rates in every grade between 2007 and 2017 reveals that enrolment across grades has remained remarkably stable, and the overall enrollment rate has been relatively stagnant (Executive Summary Figure 7). The downward slope of total enrolment is not very pronounced, which means that repetition and dropout rates in basic education are not serious challenges, yet there is a sharp drop in enrolment after Form 3.

**EXECUTIVE SUMMARY FIGURE 6 TOTAL ENROLMENT BY EDUCATION LEVEL, 1999-2017**

Source: EMIS, various years; UNESCO Institute for Statistics (UIS), various years.

**EXECUTIVE SUMMARY FIGURE 7 ENROLMENT BY GRADE, 2007 AND 2017**

Source: Calculated from EMIS data, 2007 and 2017.

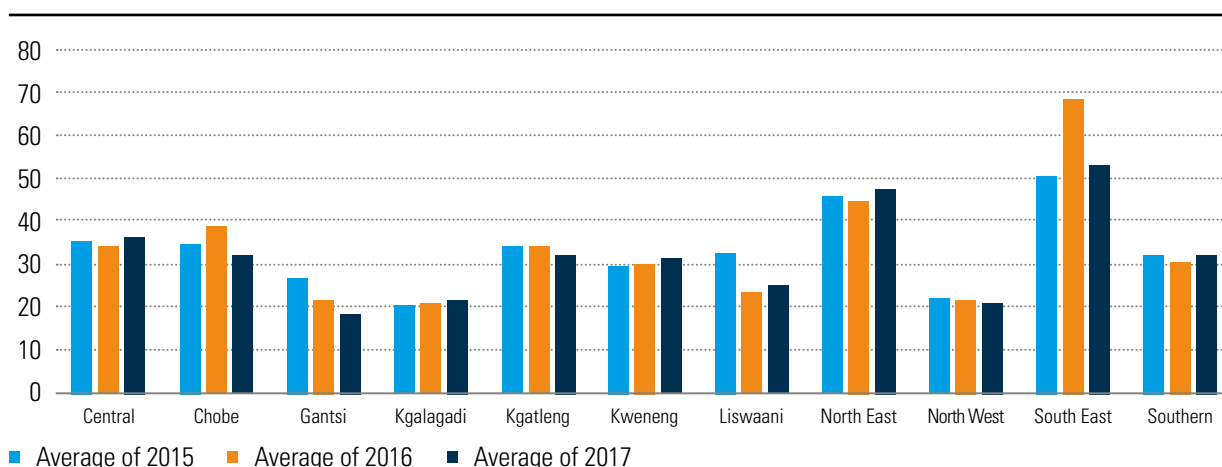
**23. Despite an initial rapid expansion, less than half of the target age group is enrolled in pre-primary education.** The share of five-year-olds enrolled in pre-primary education increased from 20 percent in 2013 to 39 percent in 2018.

**24. Most children complete both primary and junior secondary school.** The Primary School Leaving Examination (PSLE) at the end of Standard 7 (Grade 7) no longer acts as a high-stake examination, as all students are admitted to secondary school (Grade 8, or Form 1) after completing Standard 7. While primary education is provided in 826 primary schools, secondary education is offered in 211 junior secondary schools, 33 senior secondary schools, and

2 unified schools offering both junior and senior secondary education.

**25. By contrast, senior secondary education is far from universal.** Many students in Form 3 fail the Junior Certificate Examination (JCE) and are prevented from continuing to Form 4 (Grade 11). In 2017, only 36 percent of candidates for the JCE achieved a C or better grade, with only two regions performing above 40 percent: South East with 53 percent and North East with 47 percent (Executive Summary Figure 8). Poorer students are more likely to drop out compared to their wealthier counterparts, which restricts their access to senior secondary and university education and limits their future earnings potential.

### EXECUTIVE SUMMARY FIGURE 8 UNWEIGHTED AVERAGE OF CANDIDATES ACHIEVING A C GRADE OR BETTER IN THE JUNIOR CERTIFICATE EXAMINATION, 2015-17



Source: Authors' calculations from Botswana Examinations Council (Botswana Examinations Council, 2017b).

**26. The low success rate for the JCE, combined with repetition and drop outs at lower education levels, results in a small number of students in senior secondary schools.** For senior secondary education,

the gross enrolment ratio (GER) was only 62 percent in 2014, while the net enrolment rate (NER) was a mere 29 percent in the same year (Executive Summary Table 2).

### EXECUTIVE SUMMARY TABLE 2 GROSS AND NET ENROLMENT RATIOS, 2014

School level (age-group)	Population	Gross enrolment	Net enrolment	Gross enrolment ratio (GER)	Net enrolment ratio (NER)
Primary (ages 6-12)	316 546	339 447	293 974	107	93
Junior secondary (ages 13-15)	131 639	126 490	75 488	96	57
Senior secondary (ages 16-17)	88 068	54 748	25 300	62	29
All secondary (ages 13-17)	219 707	181 238	168 064	158	86
Total primary plus secondary (ages 6-17)	536 253	520 685	394 762	97	74

Note: Net enrolment refers to the enrolment of students of the right age for the school level considered, while gross enrolment refers to the total enrolment of students in the relevant grade level. Calculations were done assuming the correct age in Grade 1 is six years. However, many students in Grade 1 would be seven years at the time the annual school census is collected, with a small effect on NERs.

Source: Calculated from 2014 EMIS data and 2014 United Nations Population Division population estimates.

**27. Only 8.6 percent of primary schools and 18 percent of secondary schools are private in Botswana.** There are seventy-one private primary schools in the country that serve 26,000 children, representing 7 percent of total primary enrolment. Although fifty-two private schools offer secondary education, they serve only 4 percent of secondary students.

**28. Botswana's considerable achievement in**

**increasing access to education and preventing dropouts is undermined by the low quality of education.** The country's students are among the worst performers on the three rounds of the international assessment program carried out by SACMEQ. Despite being one of the richest and most developed economies in the region, Botswana's performance is near the regional average. Moreover, children from low-income households perform

particularly poorly in Botswana. The difference between the average score and the score for the poorest quarter of students was only 17 points in Swaziland, 19 points in Lesotho, and 39 points in Namibia, yet it was a high 68 points in Botswana, not far behind the 72 points in South Africa.

**29. Botswana's performance on other international assessments, including Pre-PIRLS,<sup>2</sup> PIRLS,<sup>3</sup> and TIMSS,<sup>4</sup> is far below the average of middle-income countries.** Weak performance on Pre-PIRLS is an indication that learning deficits start early, which strengthens the case for improving ECCE and pre-primary education, as well as focusing on teaching basic reading, writing, and arithmetic during the early school years. In 2011, Botswana was the only African country that participated in the PIRLS/TIMSS joint survey of reading, mathematics, and science. While more than 90 percent of Grade 4 children in many countries perform above the low international benchmark, only 37 percent of Botswana's children in Grade 6 scored above the benchmark. Moreover, more than 20 percent of Grade 4 children in leading countries perform above the high international benchmark in all three subjects, while only 3 percent of Botswana's children in Grade 6 do the same.

**30. The country's performance on internal examinations has been unchanged in recent years.** Student performance on the three national examinations—the PSLE, the JCE, and the Botswana General Certificate of Secondary Education (BGCSE)—varies across schools and regions, indicating that there are greater differentials in learning outcomes than in the availability of educational resources. Also, Botswana's regional performance on internal examinations, along with performance differentials, has remained relatively unchanged.

## Equity

**31. A number of features of Botswana's education system increases participation rates and makes the system fairer.** Access to education is almost universal, and teachers, school meals, and other resources are distributed relatively evenly across schools, although there is a severe shortage of classrooms. Additionally, cost is not a major deterrent to participation since education is largely free. Boarding facilities, although often not the first choice, are also free and widely available, so continuing to junior and senior secondary education is not financially costly to children from low-income households.

**32. The allocation of teachers (the major cost of education) across schools shows that the country has a highly egalitarian education system.** However, exact data on the allocation of resources to schools and regions are not available due to the fragmentation of spending across different institutions. There is a very close relationship between enrolment and teachers employed in secondary schools: 93 percent of variation in the number of teachers can be explained by enrolment. ST ratios between regions vary little in both primary and secondary schools: in primary schools, the range is between 21.3:1 in Kgalagadi, the most remote region, and 27.4:1 in Kweneng, while the range in secondary schools is between 10.7:1 in Kgalagadi and Ghanzi (another remote region) and 13.6:1 in Chobe, a region with no senior secondary schools. Data from TIMSS point to some differentials with regard to availability of textbooks and school furniture. The country's extremely low secondary ST-ratios increase by only 0.4 when excluding the 8.3 percent of non-teaching staff in secondary schools who are principals, deputy principals, or heads of department.

**33. The country's low ST-ratios in secondary schools do not necessarily imply small class sizes.** Botswana's education system suffers from large average class sizes because there is (i) a shortage of classrooms, which limits the physical capacity of schools, and (ii) a large number of elective subjects, which means that each class has to be taught by multiple teachers, and classes are sometimes split by electives. Ninety percent of students in secondary school attend classes with more than thirty-two students, at least for their core subjects. Moreover, 33 percent of students were in classes of more than forty students. For Grade 4 in Botswana, the national average class size was roughly 30 students, with a standard deviation of 8, according to teacher responses in the TIMSS Grade 4 (2011) assessment.

**34. A comparison of enrolment, grade attainment, and repetition rates shows small differences across regions.** This is likely related to the government's policy priorities to make the education system more equal. While the Ghanzi region has by far the highest proportion of overage students in Standard 1, probably as a result of late school entry, in higher primary grades this difference is reduced by repetition in other regions. Patterns at secondary school are more difficult to interpret, as the increased prevalence of boarding facilities means that more children cross regional boundaries.

**35. Female students are less prone to repeating grades than their male counterparts.** In 2015, 68 percent of primary repeaters and 65 percent of secondary repeaters were boys. Overage is more common at higher grades and appears more common than expected given the low repetition rates reported in the EMIS. Among girls, 27 percent of Form 3 students were at least seventeen years or older in 2014, while the equivalent rate was as high as 44 percent among boys. The low repetition rates among female students is reflected in the Gender Parity Index (GPI), the ratio of females per 100 males. The GPI is just over 100 in junior secondary schools and 128 in senior secondary grades.

**36. Although basic education is largely free, there are still direct costs that impose a heavy burden on low-income families.** These include the cost of uniforms and sometimes transportation. There are also indirect costs such as long commutes that influence the time to get to school, travel costs, or the need to attend a boarding school, something that many parents wish to avoid.

**37. TIMSS, PIRLS, and SACMEQ data show that learning gaps between urban and remote rural areas are smaller than those between individual students by socioeconomic status (SES) quintile.** This is especially true for the average SES of children in a school. On average, a poor child in a school with mainly children from wealthier households is likely to perform better than a child of rich parents in a school serving mainly poor children.

**38. There are teacher and classroom characteristics that are significant in a multivariate analysis of assessment data.** Class averages for bullying (negative), teacher engagement (positive), and homework time (positive) can be significant predictors of a student's performance. Student achievement is also higher when teachers focus on mathematics and lower when schools lack learning materials. Class size is also negatively associated with student achievement in mathematics. A more detailed decomposition, however, does not clearly show that student achievement is significantly associated with access to classrooms or certain teacher features.

**39. The combination of high participation and low quality in the country's education system presents a challenge to policymakers.** Large differences in student achievement between social classes are not explained by observable differences in resources or teacher characteristics. Therefore, support should be targeted

to underperforming students and schools, which will require improving teachers' skills and capacity.

### Data for Monitoring and Planning

**40. Education data are often not readily available, suffer from bad quality, and are stored in a format not suitable for planning.** Budgetary data are often not disaggregated at the regional level or available only in a form that makes it impossible to distinguish between different spending categories. The United Nations Children's Fund's (UNICEF) budget brief notes that:

*"The current structure of the budget does not allow for analysis of spending by education level or items. ... Improving planning and budgeting of the education sector is one of the ETSSP's strategic priorities. The development of an effective budgeting system which supports education policies requires a detailed breakdown of allocations by sub-sector, programme and where relevant sub-programme. However, within education spending, a breakdown of allocations by sub-sector is not readily available."* (UNICEF, 2018, p. 7)

**41. The fragmentation of spending across different public institutions prevents authorities from effectively planning and strategically allocating education resources to schools and regions.** For instance, the MLGRD's spending on schools is not separately available from reported expenditure. It is, therefore, unclear how much of its spending is related to schools, including on personnel, vehicles, or maintenance of grounds. A report prepared for the government by DFC, a private consulting firm, in 2013 noted that *"for both primary health-care and education, wages and salaries are not part of the resources distributed to primary service delivery units."* (DFC Consortium, 2013, p. 101). Spending on schools, therefore, cannot be allocated to individual schools or regions, as urban and regional councils cannot be clearly matched to a specific region. Moreover, it is difficult to obtain full budgetary data for spending on secondary schools and regions. Finally, the cost of boarding schools is not clearly distinguishable from other school spending. As a result, differentials in spending levels between schools or regions may simply reflect differences in needs related to the number of boarders that have to be accommodated.

**42. Enrolment information in the EMIS is more than two years old.** Regarding assessment data at

the school level, there appears to be no ownership and proper utilization of Grade 4 assessments. These assessments, therefore, are not contributing to improving teaching and learning in the classroom or overall educational outcomes.

## SUMMARY: FAVORABLE CONDITIONS

43. Botswana has a number of advantages compared with most developing countries, which in turn make it easier to address new challenges. These include:

- **A relatively favourable fiscal situation**, with a government spending level that is moderate by international standards, government revenues that are well-above average, and projected sustainability in the short-to-medium term.
- **Favorable population projections in terms of developing human capital**, with dependency ratios (i.e., the number of young people as a percentage of the adult population) that are significantly better than those of most countries in the region.
- **Near universal education**. Participation in education has reached almost 100 percent for the portion of the population in the core school-going age. The NER in primary education is above 90 percent, and almost all children participate in secondary schooling for at least a few years.
- **An education system designed to increase participation rates and contribute to an equitable distribution of resources and inputs**. Access to schooling is almost universal, and teachers, school meals, and other resources are distributed relatively evenly across communities and regions. From an international perspective, Botswana's ST-ratios are also low for primary and secondary schools.

## SUMMARY: CORE CHALLENGES

44. This review has also identified a number of core challenges facing Botswana's education sector, including:

- **Low student achievement scores**. Botswana is among the worst performers on TIMSS and PIRLS, and it ranks close to the average on the assessment performed by SACMEQ. There has also been no improvement in the country's performance on internal examinations in recent years.
- **Fragmented decision-making**. Responsibilities in the education sector are divided among various ministries, resulting in a lack of financial prioritization and strategic planning.
- **A significant shortage of textbooks, classrooms, and specialist rooms for teaching** (e.g., for science subjects), despite the favourable fiscal situation. In primary schools, the classroom backlog is 15 percent of current availability.
- **Insufficient teacher training**, which is a key factor in understanding the country's low performance on student assessments. Teacher preparation is currently the responsibility of regional education offices, which are constrained by a lack of funds and subject specialists. There is also a large oversupply of teachers in subjects such as English, Setswana, history, and geography.
- **Insufficient data on education spending and the absence of an efficient monitoring and evaluation system**. Budgetary data are often not disaggregated at the regional level, and it is not possible to separate school spending from other categories. Also, data on enrollment (from the EMIS) and student assessments (Grade 4) are not available in a timely manner and not properly utilized.



## **POLICY RECOMMENDATIONS**

**45. Discussions with MOBE and other government officials produced a set of policy recommendations that are similar to many of those in the ETSSP, which were based on a thorough examination of the many challenges facing Botswana's education system.** While most of the recommendations made in the ETSSP have not been implemented due to lack of funding, the government should prioritize their implementation, as they can have a positive impact the country's education system.

**46. This PER presents two sets of policy recommendations.** The first constitutes high-priority recommendations aimed in the short-to-medium term (Table of Priority Recommendations), while the second set consists of additional short-, medium-, and long-term recommendations to improve the quality, effectiveness, and efficiency of education (Table of Additional Recommendations).

## **PRIORITY RECOMMENDATIONS**

**47. Improve data collection, management, and analysis for evidence-based planning and decision-making.** This should include strengthening the EMIS and ensuring that the annual school census is properly implemented and analyzed. There is also a need for better data for human resource planning, particularly to ensure that teachers are not at a disadvantage if they have to remain in remote regions longer than initially intended. However, optimal financial planning in the education sector will remain difficult without access to reliable data and a clear institutional framework for education spending. Therefore, MOBE and the MFED should implement the BOOST initiative, which would facilitate effective financial planning by making it possible to present budgets and expenditure data in a consistent format and in a highly disaggregated form.

**48. Prioritize basic education spending to improve the efficiency and quality of basic education.** Shift the emphasis from hiring more teachers to improving the quality of school infrastructure and ensuring the availability of teaching and learning materials in classrooms. At a minimum, there should be adequate classrooms of good quality to accommodate all children in Botswana, both for core subjects and electives.

**49. Create a budget process that makes it possible to**

**prioritize among different categories of education spending** which includes costs of personnel, construction of schools and classrooms, teacher training, and other quality inputs (e.g., textbooks, teaching and learning materials, stationaries, and school feeding programs). Most of the recurrent education budget is located within MOBE (of which a majority is for personnel costs of teachers and staff at the ministry and regional education offices), while a smaller part falls under the MLGRD (for primary school stationery, feeding programs, etc.). The development budget is also split between the MLGRD, which is responsible for the construction of primary classrooms and schools, and MOBE, which is responsible for the financing of secondary schools and classrooms (construction is managed by the Ministry of Infrastructure and Housing Development). This fragmentation of the budgetary process makes it almost impossible to determine the allocation of education spending for each category and prioritize accordingly.

**50. Re-design the budget process for secondary schools and regional offices.** It is important to strengthen the budgetary autonomy of regional offices and schools in order to increase accountability, which will require making the budgetary process more transparent and encouraging regions and schools to submit realistic budget requests. This can be done by setting realistic indicative ceilings for budget requests and requiring special motivation for expenditures above the ceiling (as it is done in the national budget). Regional offices and schools should be able to decide their own priorities in their initial budget allocation, and the scope for transferring funds (virement) between spending categories should be increased while ensuring adequate funding for food and maintenance. The warranted budget allocated to each regional office or secondary school should also be transparent and based on a clear set of criteria on how funds are allocated among regions and schools.

**51. Simplify the complex institutional arrangement for building classrooms and schools.** The budget split between recurrent and development expenditure is further complicated by the divide in responsibilities between MOBE, which budgets for the construction of secondary schools and classrooms, and the MLGRD, which budgets for the same activities at primary schools. This makes it difficult to ensure that the classroom shortage receives sufficient attention. In addition, the actual building of secondary schools

and classrooms is split between two ministries. The MOBE builds and maintains Junior Secondary Schools and classrooms, while Senior Secondary Schools are built and maintained by the Ministry of Infrastructure and Housing Development with a budget from MOBE. Therefore, it is vital to strengthen the cooperation between MOBE, the MLGRD, and the Ministry of Infrastructure and Housing Development to increase funding for and improve the planning and budgeting of school and classroom construction.

**52. Finally, improve the recruitment, deployment, and management of teachers.** To address the oversupply of teachers, an analysis of the demand and supply of teachers should be undertaken and reduce the number of scholarships to student teachers in non-core subjects. Moreover, the criteria should be higher for tertiary bursaries for teaching. There is also a need to develop a teacher recruitment policy, adopt professional standards in the teaching profession, and redesign the deployment process for teachers to ensure that they only serve in remote areas for a limited period of time.

TABLE OF PRIORITY RECOMMENDATIONS: SHORT AND MEDIUM TERM

Areas	Short term	Medium term
<b>1. Improve data collection, management, and analysis for evidence-based planning and decision making</b>	<p>(a) Strengthen the EMIS and ensure the timely collection and analysis of the annual school census through training and technical support.</p> <p>(b) Improve data collection, analysis, and management of human resources data.</p> <p>The MFED works closely with relevant ministries and agencies to implement the BOOST initiative, which would facilitate evidence-based financial planning and decision-making by making it possible to present budgets and expenditure data in a consistent format and in a highly disaggregated form.</p>	<p>(a) Continuous capacity building, analysis of data, and dissemination of EMIS and the annual school census.</p> <p>(b) Continue to collect and use data to improve the deployment of teachers.</p> <p>Use the BOOST initiative to improve financial planning and decision-making processes and increase transparency and accountability.</p>
<b>2. Prioritize basic education spending to improve the efficiency and quality of basic education</b>	<p><b>Textbooks</b></p> <p>(a) Assess the shortage of textbooks in schools and set up a mechanism for the effective development, printing, procurement, and distribution of textbooks.</p> <p>(b) Ensure the sufficient allocation of funds and implement appropriate procedures to provide quality textbooks for all children.</p> <p><b>School Infrastructure</b></p> <p>(c) Review the planning, management, and implementation of current school infrastructure programs, assess school infrastructure needs, and develop a school</p>	<p><b>Textbooks</b></p> <p>(a) Implement and monitor the improved textbooks development, procurement, and distribution to ensure that every student receives their textbooks on time.</p> <p><b>School Infrastructure</b></p> <p>(b) Implement and monitor the school infrastructure development plan.</p>



TABLE OF PRIORITY RECOMMENDATIONS: SHORT AND MEDIUM TERM

Areas	Short term	Medium term
	infrastructure development plan. (d) Ensure that sufficient funds are provided to implement construction projects and improve school infrastructure.	
<b>3. Create a budget process that makes it possible to prioritize among different categories of education spending</b>	Undertake an institutional assessment to: (a) map out all education-related functions and budgeting processes that are fragmented among different ministries; and (b) make recommendations for streamlining and consolidating roles and responsibilities to optimize the budgeting process, resource utilization, and education service provision.	Start a discussion with the MFED and other concerned ministries to design a budget process that would make it possible to prioritize between different categories of education spending, preferably by placing the budget for both recurrent and capital spending within MOBE.
<b>4. Re-design the budget process for secondary schools and regional offices</b>	Assess the decentralization of education financing and service provision, including consultations with all agencies involved in budgeting and spending at regional offices, secondary schools, and headquarters, and recommend ways to improve the budgeting and spending process.	Re-design the budget process for secondary schools and regional offices. This could include: (a) setting realistic ceilings for budget requests; (b) clarifying the criteria for allocating budgets in response to budget requests; and (c) increase the scope for transferring funds (virement) between spending items (by clarifying the rules and conditions for transfers) while protecting essential spending (e.g., on food and maintenance). Ideally, the whole system for allocating funds should become formula-driven over time.
<b>5. Simplify the complex institutional arrangement for building classrooms and schools to overcome extreme large shortage of school infrastructure</b>	Review and propose (based on consultations) the most appropriate structure for planning, budgeting, and financing the construction and maintenance of school infrastructure. This should involve consolidating and streamlining functions and putting one ministry in charge of coordinating the work of all agencies involved.	Implement the recommendations based on the review, including reallocating functions between and within ministries to replace the current complex institutional process with a leaner and simplified structure.
<b>6. Improve teacher recruitment, deployment, and management</b>	(a) Analyze the current supply and demand for teachers. (b) Develop a human resources and teacher management database, through	(a) Reduce bursary offerings and implement more stringent selection criteria, which would increase competition for teacher bursaries and

TABLE OF PRIORITY RECOMMENDATIONS: SHORT AND MEDIUM TERM

Areas	Short term	Medium term
	<p>consultations with relevant ministries, to assess how many student teachers to support annually with bursaries and in what subjects. The teacher management database should contain information on: (i) subject specialization of currently unemployed trained teachers; and (ii) teacher attrition.</p> <p>(c) Set higher criteria for tertiary teaching bursaries.</p> <p>(d) Review the deployment of teachers to assess how long each teacher has served in remote areas.</p> <p>(e) Develop a teacher recruitment policy, adopt professional standards in the teaching profession, and redesign the deployment policy with appropriate incentives and processes in consultations with teachers and unions.</p>	<p>raise the standards of teacher trainees and candidates.</p> <p>(b) Implement the new teacher recruitment policy, professional standards, and redesigned deployment process for teachers.</p>

## ADDITIONAL CRITICAL RECOMMENDATIONS

53. The additional recommendations fall into three groups: (i) improve teacher development, (ii) use assessments as a tool to improve learning, and (iii) increase access to education, particularly for the poor.

### Teacher Development

**54. Increase teacher training, particularly in-service training.** This should include the creation of a formal national orientation program for new teachers as well as in-service training for current teachers. Additionally, the teacher training system should be redesigned, as the decentralization of in-service training functions to regions has not been successful. A recent review by the World Bank provides a useful overview of effective in-service training practices (Popova, et al. 2018).

### Learning Assessments

**55. Implement a national assessment program and use it to target interventions.** Interventions should include providing a detailed scripted curriculum for teaching early grade reading and mathematics to improve the quality of teaching. In addition, they should include training in the pedagogy of early reading. This is in line with the ETSSP, which proposed a revamping of both pre-service and in-service teacher training and professional development.

**56. Undertake a service delivery survey in the education sector.** The purpose would be to gain a better understanding of the reasons behind the country's poor educational outcomes. Testing teachers' knowledge and performance in literacy and numeracy as well as assessing teacher absence from the classroom would assist in understanding to what extent educational efficiency is influenced by the role teachers play.

**57. Use the results of international assessments to identify deficiencies and improve planning.** Botswana should continue to participate in international assessments, as it would allow authorities to keep track of how well students are learning compared to those of other countries. The results of assessments can also help authorities set priorities for improving educational outcomes.

### Access to Education

**58. Accelerate the implementation of pre-primary education and improve ECCE** to ensure that children receive the educational foundation needed to succeed.

**59. Make basic education compulsory.** This should be done in combination with a study to determine why boys tend to drop out early and perform worse than girls in school. There is evidence that some boys drop

out of school to assist in home responsibilities, e.g. cattle herding. Making basic education compulsory could reduce the extent of this.

**60. Explore the feasibility of expanding the availability of secondary schools and of secondary schools serving senior secondary students.** This could be done by creating more unified schools (e.g., primary plus junior secondary schools, or junior secondary plus senior secondary schools) to reduce the use of boarding schools, which are costly and socially undesirable.

**61. Track and support well-performing students in poor regions or from poor households.** Evidence shows that children from poorer backgrounds and more remote areas tend not to achieve similar learning outcomes as others. This appears to be associated with such children leaving the education system earlier.

TABLE OF PRIORITY RECOMMENDATIONS SHORT, MEDIUM AND LONG TERM

Areas	Short term	Medium term	Long term
<b>Teacher Development</b>			
<b>7. Increase teacher training, particularly in-service training</b>	(a) Assess current teaching practices in the classroom to identify the needs for teacher training and develop in-service training, particularly focusing on teacher pedagogy. (b) Develop a formal national orientation program for new teachers.	(a) Continue the implementation and monitoring of in-service teacher training programs to improve student performance on national assessments. (b) Implement the national orientation program for new teachers and assess its impact.	(a) Continue the implementation of in-service training and orientation training for new teachers. (b) Assess the impact of the programs and adjust them accordingly.
<b>Learning Assessments</b>			
<b>8. Implement a national assessment program and use it to target interventions</b>	(a) Plan and develop a national assessment program that provides information on school performance and student learning, which could be used to: (i) assist teachers in their teaching; (ii) inform the areas of in-service teacher training; and (iii) decide on targeted interventions. (b) Request the World Bank to	Implement the national assessment program and use it, along with the service delivery survey, to develop targeted interventions in schools and teacher training.	Continue to implement the national assessment program and use it to develop targeted interventions in schools and teacher training.

TABLE OF PRIORITY RECOMMENDATIONS SHORT, MEDIUM AND LONG TERM

Areas	Short term	Medium term	Long term
	undertake a service delivery survey in the education sector to understand the causes of poor learning in schools.		
<b>9. Use the results of international assessments to identify deficiencies and improve planning</b>	Continue to participate in international assessments and develop a plan to improve the utilization of data, either by creating the capacity internally or obtaining a service provider to analyze the results of the assessments thoroughly.	(a) Use large-scale educational assessments to understand the overall performance of the education system and the factors driving performance. (b) Use detailed results from international assessments to develop policy measures aimed at improving Botswana's education system, possibly in the areas of curriculum, teacher training, and teaching and learning materials.	Continue to implement the proposed policy measures derived from the results of international assessments.
<b>Access to Education</b>			
<b>10. Accelerate the implementation of pre-primary and early child-hood education</b>	Continue to expand pre-primary education, which will require additional classrooms and teachers.	(a) Aim to achieve universal enrolment in pre-primary education and monitor the quality of education services. (b) Strengthen the quality of ECCE in community-based facilities by, <i>inter alia</i> , training teachers and recruiting unemployed primary teacher aids.	
<b>11. Make basic education compulsory</b>	(a) Make basic education (primary and junior secondary education) compulsory. (b) Study why boys tend to drop out early and perform worse than girls in school.	(a) Implement and enforce compulsory basic education. (b) Consider solutions to reduce dropout rates among boys.	Implement and enforce compulsory basic education.
<b>12. Explore the feasibility of expanding the secondary school</b>	(a) Determine how often distance deters children from continuing to junior or senior secondary education.	(a) Develop a plan for the gradual expansion of secondary grades or secondary schools to bring	Continue expanding the school network until most of the population lives within reach of primary, junior secondary,

TABLE OF PRIORITY RECOMMENDATIONS SHORT, MEDIUM AND LONG TERM			
Areas	Short term	Medium term	Long term
<b>network</b>	(b) Determine, where a primary school is not close to a secondary school, whether there are enough children that could continue to secondary school to warrant building a junior secondary school (or a senior secondary school) or create a unified school by adding grades to the primary school (or the junior secondary school).	schools closer to students, which would reduce the need for boarding schools. (b) Implement the plan through opening more secondary schools or improving/ expanding the physical infrastructure of primary/ junior secondary schools and appointing teachers of relevant level to primary or junior secondary schools.	and senior secondary schools, or unified schools, where appropriate.
<b>13. Track and support well-performing students in poor regions or from poor households</b>	Perform an assessment of students in good academic standing that decide to drop out at the end of primary or junior secondary education to identify what factors play a role.	Develop and implement a mechanism to provide financial (bursaries), psychological, and emotional support to students aimed at encouraging them to continue with their studies.	





# 01 INTRODUCTION

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## COUNTRY CONTEXT AND MOTIVATION

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**62. Botswana is an upper-middle-income country that has experienced substantial and sustained economic growth over more than half a century since independence in 1966.** Its record growth was achieved on the back of mineral discoveries (particularly diamonds) combined with prudent economic policies. Botswana was also one of only few African countries that sustained multi-party democracy over this period. The country has a large landmass, but the size of its population is relatively small at 2.3 million inhabitants.

**63. In addition to its strong economic performance, Botswana has significantly increased access to education.** Primary education is free, and while parents (except low-income households) are charged a co-payment for secondary education, this is seldom paid. All students also receive free school meals. These factors have contributed to Botswana achieving almost universal access to primary and even secondary education, and the country has a highly egalitarian education system, with resource flows to remote rural areas not significantly lower than those to urban schools. This education system provides the foundation to potentially harness the country's human resources for inclusive and sustained economic growth, as foreseen in Vision 2016. This would, however, require a focus on improving the quality of education.

**64. Nevertheless, Botswana continues to face significant challenges such as high unemployment and income inequality, poverty in rural and southern areas, a relatively undiversified economy, and low quality of education.** Continued broad-based economic development will require expanding high value-

added activities in the agricultural, manufacturing, and services sectors. This can only be achieved by raising productivity through skills development and educational improvement. Although the country's education expenditure, as a share of gross domestic product (GDP), is among the highest in the world, the basic education budget is largely spent on salaries and other recurrent costs. This leaves little scope for complementary education resources required to increase the quality of education and assist disadvantaged students.

**65. The Government of Botswana (GoB) is committed to improving the quality of education.** While there is nearly universal access to education through junior secondary school, participation and performance vary across regions, raising concerns about the equality of access to quality education. The GoB recognizes that the high levels of education spending have not had a sufficient effect on learning outcomes in basic education. Authorities have, therefore, requested the World Bank to carry out a Public Expenditure Review (PER) to review the equity, efficiency, and effectiveness of public expenditures in basic education.

## OBJECTIVES OF THE PUBLIC EXPENDITURE REVIEW

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**66. The objective of the PER is to review public education spending and evaluate its contribution to providing quality education that meets the needs of the society and labor market.** This PER in basic education is a response to a request from the Ministry of Finance and the Ministry of Basic Education (MOBE) to review public expenditure within the education sector. It will assess the adequacy and sustainability of public spending in education, the

efficiency and effectiveness of public resources, and the equity of education expenditures and whether or not they support disadvantaged and vulnerable groups. Finally, the PER will assess key management and governance issues facing the education sector and provide policy recommendations.

**67. The PER will focus on four policy areas.** First, it will evaluate public education resources, particularly the efficiency of budget allocation across education levels and regions. Second, the PER will look at educational outcomes, including student progression and dropout rates, and cognitive outcomes, as measured by national examinations and assessments. Third, it will evaluate the equality of access, resources, and outcomes between regions, genders, and income groups. Lastly, the PER will analyze the institutional context, including the impact of the division of functions across ministries on governance and management of the education system and on the efficiency of resource flows and use.

**68. The PER has benefited from data obtained from a number of sources:**

a. Enrolment and related data were obtained from the Education Management Information System (EMIS);<sup>5</sup>

b. Budget and other financial and sectoral data and reports were obtained from the Ministry of Finance and Economic Development (MFED);

c. The Ministry of Local Government and Rural Development (MLGRD) provided some data on school and classroom construction expenditure, as well as limited data on spending in primary schools;<sup>6</sup>

d. Reports from development partners;

e. Data from international educational evaluations, including the Trends in International Mathematics and Science Study (TIMSS) for 2011 and 2015, Progress in International Reading Literacy Study (PIRLS) for 2011, and assessments from the Southern and Eastern African Consortium for Monitoring Educational Quality (SACMEQ) for 2011;

f. The 2011 population census provided data on educational attainment levels across cohorts and regions;

g. Data from the Botswana Multi-Topic Household Survey (BMTHS) for 2015/16.

h. Interviews with officials at head office and in the Chobe region, which included meetings with officials from South, Southeast, Kgalega and North West regions;

i. Interviews with principals and teachers in schools in Chobe, South East, and South; and

j. The Botswana Examinations Council provided information on results from the Primary School Leaving Examination (PSLE), the Junior Certificate Examination (JCE), and the Botswana General Certificate of Secondary Education (BGCSE).

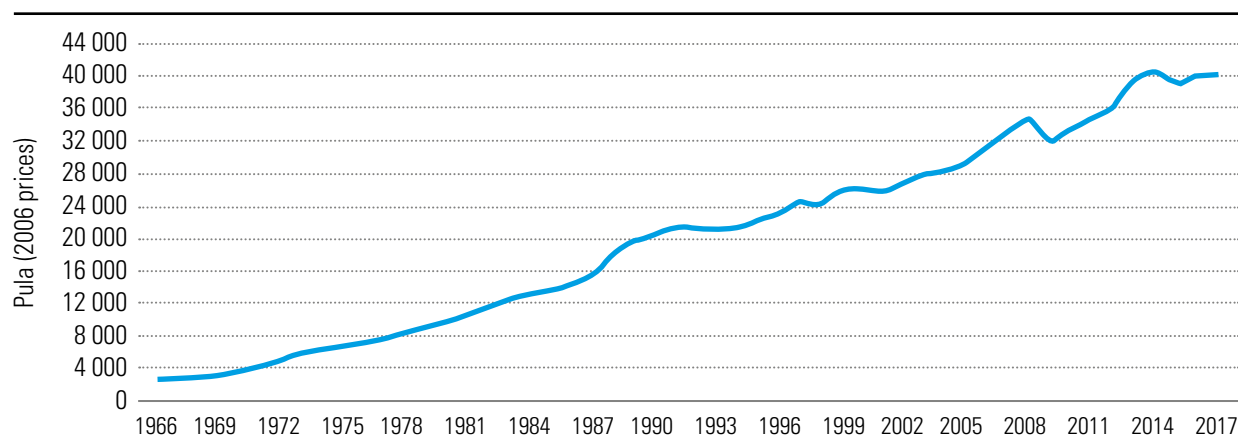
**69. Data, however, are not available in a form suitable for planning.** There is very limited disaggregated data, and existing fiscal, enrolment, and personnel data—which are crucial for planning—often needed to be reorganized to make them usable.

## MACRO-FISCAL DEVELOPMENTS

### Economic Growth

**70. Botswana's long-run economic growth performance has been impressive.** From 1966 to 2017, the country's local-currency GDP at constant 2006 prices grew at an average rate of 8.3 percent per annum. The corresponding rate of growth in GDP per capita was 5.5 percent per annum, with per capita GDP at constant 2006 prices increasing from P2,569 (US\$241) in 1966 to P40,109 (US\$3,756) in 2017 (Figure 1). These are exceptional outcomes by international standards. For example, only 2 of 112 countries for which data are available from 1970 to 2015 (China and the Republic of Korea) had higher GDP per capita growth rates than Botswana.



**FIGURE 1 GDP PER CAPITA AT CONSTANT 2006 PRICES, 1966-2017**

Source: Authors' calculations based on data from the Ministry of Finance and Economic Development (MFED).

**71. Diamond mining has been the major driver of economic growth in Botswana since the first discoveries soon after the country obtained independence.** While its contributions to value added, government revenue, and exports have been immense, it has created relatively few employment opportunities and spillovers effects on infrastructure spending and the supply side of the economy more generally (World Bank, 2015a, p. 15). Moreover, diamonds are exhaustible natural resources. The GoB has recognized the shortcomings of relying on diamond mining for its development and made diversification of economic activity a key policy objective. Attempts to develop other economic sectors have centered around the investment of mineral revenues in economic and social infrastructure, including the education system. Infrastructure spending and other investments by the public sector have contributed markedly to high levels of gross fixed capital formation (GFCF). (World Bank, 2015a, p. 16). From 2005 to 2013, GFCF averaged 32 percent of GDP. In this period, general government

and public sector GFCF averaged 11.5 percent and 13.8 percent of GDP, respectively.

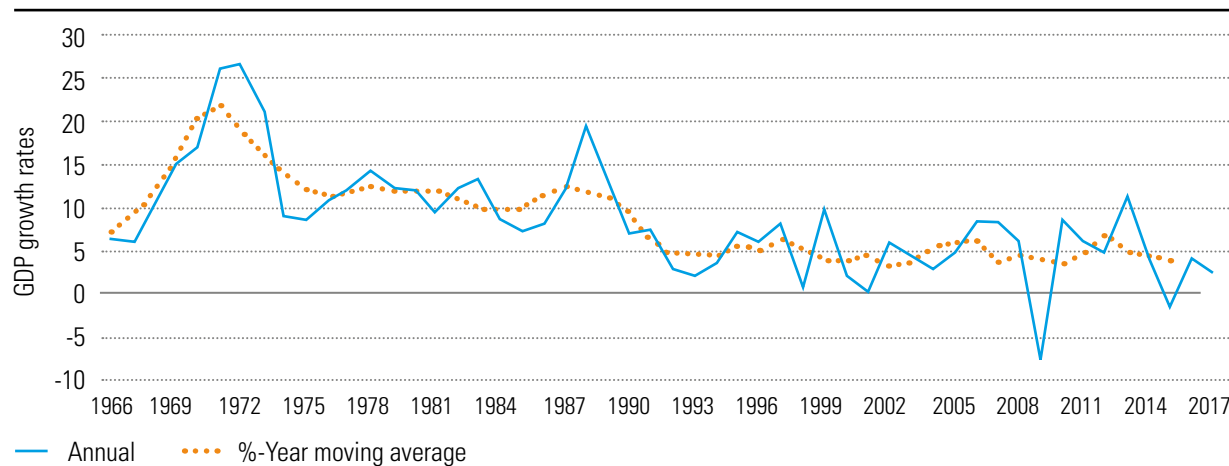
**72. Botswana's economy has diversified markedly since the mid-1980s, when mining generated more than 45 percent of GDP** (Hillbom, 2008: 197) (Hillbom, 2008, p. 197). The share of the mining sector in GDP decreased from 31.7 percent in 2005 to 22.2 percent in 2014, albeit in an uneven manner (Table 1). Over the same period, the GDP share of trade, hotels, and restaurants increased from 10.8 percent to 17.9 percent. The GDP shares of construction, transport, banks, insurance, and business services also increased, although less sharply.

**73. The GoB's efforts to diversify the economy, however, have been inadequate to maintain the growth momentum.** This has been especially evident in the turbulent international environment marked by various shocks, including the international financial crisis in 2008-09. As a result, there has been a marked slowdown in real GDP growth from the mid-1980s onwards (Figure 2).

**TABLE 1 COMPOSITION OF GDP AT CURRENT PRICES, 2005-2014 (PERCENTAGES), 2005-2014**

Sector	Percent of GDP		
	2005	2010	2014
Agriculture	1.8	2.5	2.1
Mining	31.7	19.2	22.2
Manufacturing	4.9	6.4	5.3
Water and Electricity	1.4	0.5	-0.4
Construction	4.8	5.8	6.0
Trade, Hotels and Restaurants	10.8	15.1	17.9
Transport	3.6	5.1	5.3
Banks, Insurance and Business Services	11.7	13.4	13.2
General Government	14.2	15.4	13.7
Social and Personal Services	5.0	6.0	5.6
Total Value Added (Gross)	90.0	89.4	90.9
Adjustment Items	10.0	10.6	9.3
GDP at current prices	100.0	100.0	100.0

Source: (Statistics Botswana, 2018a, p. 24).

**FIGURE 2 REAL GDP GROWTH RATES (1966-2017)**

Source: Compiled from data from the MFED.

**74. The National Development Plan 11 envisages average annual GDP growth of 4.4 percent from 2017/18 to 2022/23.** (Botswana, Ministry of Finance and Development Planning, 2017, p. 71). If this growth rate materializes, it would represent a continuation of the trend since the early 1990s. The Plan emphasizes strategies for accelerating economic growth by diversifying economic activity, as well as initiatives to improve education and training (Botswana, Ministry

of Finance and Development Planning, 2017, pp. 57-61, 68-69, 118-120). This underscores the symbiotic relationship between economic growth and education spending in Botswana. While heavy investment in education and training will remain essential for achieving the structural changes that would enable Botswana to maintain high economic growth rates, substantial government expenditure on education and training requires strong growth momentum.

## Demography, the labor market and the economy

75. Population projections are favorable for Botswana in terms of developing human capital. Dependency ratios, which measure the number of young people as a percentage of the adult population, show that Botswana's average is in line with lower- rather than upper-middle-income countries globally, although it compares favorably

with most regional peers (Table 2). The trend toward a lower dependency ratio has potentially far-reaching implications for human capital formation, with the attendant “window of opportunity”, where a younger workforce can generate more revenue for social spending and a smaller need for such spending. However, the ultimate impact of lower dependency ratios depends heavily on the effectiveness and efficiency—and not just the total amount—of spending in social sectors.

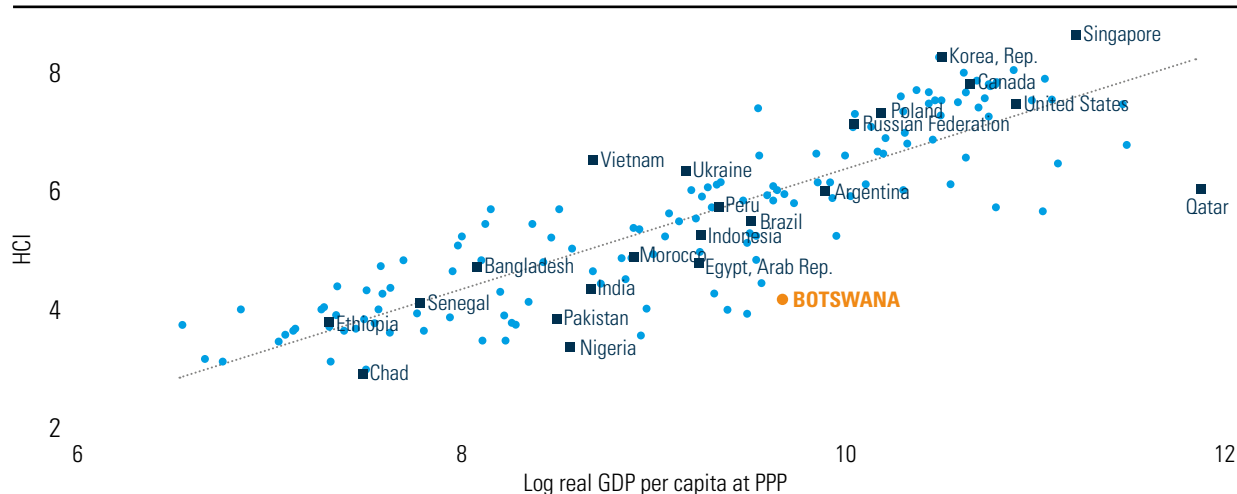
**TABLE 2 DEPENDENCY RATIO: CHILDREN 0-19 AS A PERCENTAGE OF POPULATION AGED 20-64, 1990-2030**

Country	1990	1995	2000	2005	2010	2015	2020	2025	2030
Angola	151.6	151.2	147.6	146.1	145.0	143.1	140.4	134.3	126.2
<b>BOTSWANA</b>	<b>131.7</b>	<b>118.7</b>	<b>105.8</b>	<b>92.9</b>	<b>82.6</b>	<b>75.8</b>	<b>70.7</b>	<b>66.5</b>	<b>61.7</b>
Congo	130.2	124.0	118.1	115.4	113.2	117.8	116.6	111.8	104.8
Ethiopia	140.0	141.7	145.0	141.8	135.7	123.9	109.5	97.5	88.3
Kenya	161.4	149.1	141.7	132.6	123.5	115.8	106.5	97.2	88.4
Lesotho	135.9	127.3	124.9	116.5	105.2	97.4	90.7	86.6	82.0
Mozambique	152.4	132.9	134.4	136.3	138.4	137.1	131.7	124.2	116.5
Namibia	131.8	122.0	112.1	111.3	108.0	99.0	92.0	87.5	82.9
South Africa	106.7	95.1	86.3	79.1	73.4	68.6	65.1	62.1	58.9
Zambia	147.3	147.3	145.3	147.5	145.8	138.7	130.2	121.9	115.2
Zimbabwe	145.3	140.8	134.3	127.8	121.9	116.0	109.7	102.4	92.4
High-income country avg.	48.2	45.5	43.2	40.7	38.7	37.3	36.9	37.4	37.6
Lower-middle-income avg.	105.9	100.9	94.4	87.4	80.5	74.8	70.4	66.4	62.6
Upper-middle-income avg.	77.1	68.4	61.7	54.4	46.1	43.0	42.5	41.8	40.6

Source: United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision, custom data acquired via website.

76. Although Botswana is an upper-middle-income country, its Human Capital Index (HCI) score is considerably below the average of income peers (Figure 3). The World Bank's HCI measures “the amount of human capital that a child born today can expect to attain by age 18, given the risks of poor health and poor education that prevail in the country where she lives.” It is derived from three components: (i) the survival rate, (ii) quality-adjusted years of schooling, and (iii) health indicators (World Bank, 2018b, p. 14). Botswana's HCI of 0.42 is considerably lower than that of other countries at a

similar level of economic development. Since the HCI is designed as an indicator of productivity, it provides an indication of the level of economic growth that a country should be able to sustain based on its human capital. According to the HCI, Botswana's growth performance is almost 60 percent lower than would have been possible without its deficits in human capital. While children in Botswana can expect to complete 8.4 years of education by the age of eighteen, this is equivalent to only 5.3 years once an adjustment is made for education quality. (World Bank, 2018c).

**FIGURE 3 HUMAN CAPITAL INDEX AND GDP PER CAPITA FOR A SELECTION OF COUNTRIES**

Source: (World Bank, 2018c).

77. Based on the most recent household survey data, the unemployment rate among economically active persons aged fifteen or higher is 17.5 percent. (BMTHS, 2015-16). Cities have the lowest unemployment rate (13.3 percent), followed by rural areas (16.0 percent) and urban villages (21.2 percent). These unemployment rates are nearly identical to those reported for the 2009-10 period (World Bank, 2018d, p. 76). Overall, men are marginally less likely to be unemployed than women (16.3 percent versus 18.9 percent), and the unemployment rate is above 30 percent for young persons aged 15-24, before

declining to below 15 percent for most working-age cohorts (Figure B1 in Appendix B).

78. Only 19 percent of employed individuals have completed tertiary education and another 45 percent secondary education (Table 3).<sup>7</sup> Highly educated workers are common in financial, utilities and community, and social and personal services industries, the latter which includes government employees such as teachers and health workers. The market is increasingly demanding skilled labor, as all three of these industries are rapidly expanding.

**TABLE 3 EMPLOYMENT BY INDUSTRY SHOWING THE HIGHEST LEVEL OF EDUCATION ATTAINED, 2009/10 (%)**

Industry	Highest Level of Educational Attainment					Total
	None to Preschool	Primary	Secondary	Tertiary	Other	
<b>Agriculture</b>	33	31	33	3	1	100
<b>Mining</b>	8	17	46	28	2	100
<b>Manufacturing</b>	11	16	56	17	1	100
<b>Utilities</b>	8	10	42	40	1	100
<b>Construction</b>	12	23	54	10	1	100
<b>Wholesale and retail</b>	8	18	62	12	1	100
<b>Transport</b>	5	20	57	17	1	100
<b>Finance</b>	2	5	43	49	1	100
<b>Community/social/ personal services</b>	8	16	42	33	1	100
<b>Other/unspecified</b>	13	26	54	7	1	100
<b>Total all industries</b>	<b>14</b>	<b>21</b>	<b>45</b>	<b>19</b>	<b>1</b>	<b>100</b>

Source: (World Bank, 2018d, p. 81).

**79. There is limited data on the returns to education.** There are concerns about the quality and relevance of the education system in terms of skills. A survey of private firms found a clear mismatch between the educational requirements of employers and the educational attainment of the labor force (Fasih, et al., 2014). Employers pointed to the poor quality of education as a major reason for the skills shortage, and 13 percent of firms reported the skills shortage as the major problem for doing business in Botswana. The most detailed analysis of the country's labor market dynamics to date raised questions about education and its role in the labor market (Fasih et al., 2014). For example, it found that the BGCSE appeared to have no significant effect on wage earnings, while the attainment of tertiary education increased a worker's wages by 67 percent (Fasih, et al., 2014, pp. 2, 4, 7, 211).<sup>8</sup> The study also showed that each year of education is associated with a sizeable increase in income. However, the rate of return analysis is complicated by the large number of adults who are employed but do not report wage income, are unemployed but looking for work, or are discouraged non-workers.

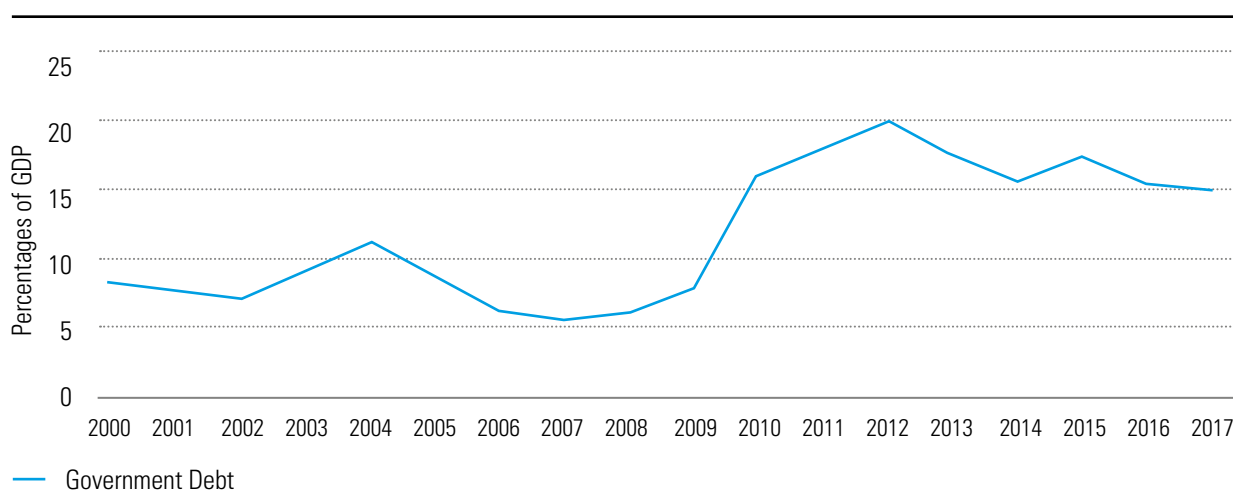
**80. Among recent school leavers, a high proportion were not in employment, education, or training at the time of the 2015-16 survey.** More than half of all school leavers aged eighteen to nineteen (56

percent) and twenty to twenty-four (51 percent) were in employment, education, or training (Appendix Table B1). These rates are much higher for women than for men, although women are, on average, more educated than men.

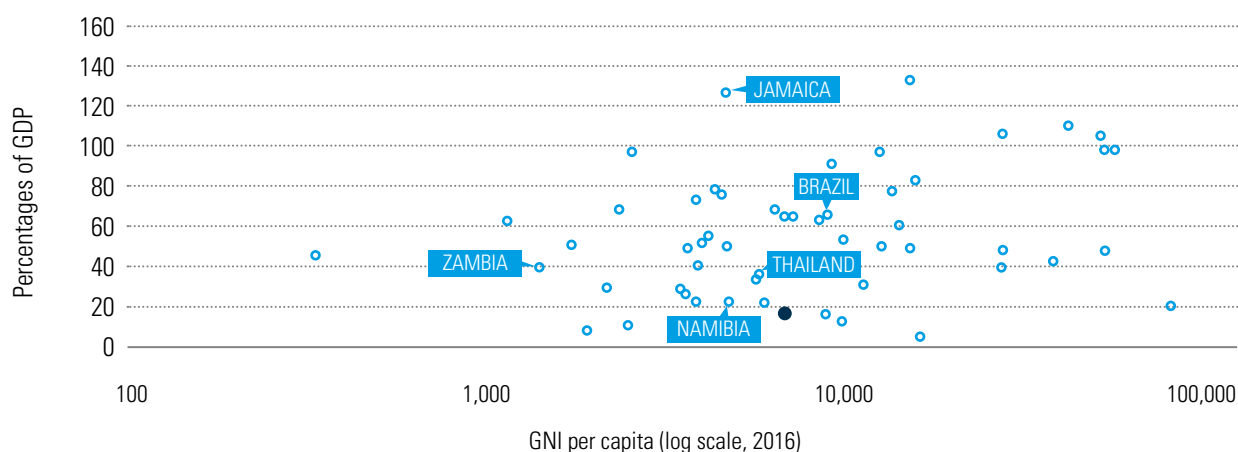
### General fiscal situation

**81. Historically, Botswana's fiscal authorities have been prudent in managing the public finances.** (International Monetary Fund, 2016, p. 40). Trends in the public debt as a share of GDP suggest that fiscal outcomes have remained sound since the turn of the century. From 2000 to 2017, the public debt-to-GDP ratio ranged from 5.6 percent of GDP in 2007 to 19.8 percent in 2012 (Figure 1). The contractionary effects of the international financial crisis and the subsequent Great Recession on economic activity and government revenue in Botswana caused a marked increase in the public debt burden in 2009-12. Public finances have partially recovered since then, and the country's public debt burden is currently very low by international standards (Figure 5). Only five of the fifty-four countries for which data were available had lower central government debt burdens than Botswana in 2011-16. Therefore, neither the level nor recent trends in Botswana's public debt burden point to fiscal sustainability problems that may put downward pressure on government expenditure in the short-to-medium term.

**FIGURE 4 GOVERNMENT DEBT, 2000-2017**



Source: Bank of Botswana (various issues).

**FIGURE 5 CENTRAL GOVERNMENT DEBT RATIOS (MOST RECENT 3-YEAR AVERAGES), 2011-16**

Note: Botswana's ratio is given by the larger, colored dot. The figure contains three-year averages of central government debt-to-GDP ratios for all countries for which data are available for three consecutive years from 2011 to 2016. The countries are arranged from poorest to richest based on gross national income per capita, which makes it possible to compare the public debt burden of each country with those of other countries with similar levels of economic development.

Source: Compiled from information in (World Bank, 2018a).

**82. Short-to-medium-term fiscal sustainability does not guarantee sustainability in the long run.** Short-to-medium-term studies, such as those undertaken by International Monetary Fund (IMF) staff for Article IV consultations with policymakers in Botswana (International Monetary Fund, 2018, pp. 40-2), have consistently found that the country's fiscal position will remain sustainable in the short-to-medium term. A longer-term analysis (Kojo, 2010), however, reached the conclusion that policy adjustments would be needed to prevent debt servicing problems. The single most important issue is uncertainty about the long-term sustainability of government revenue.

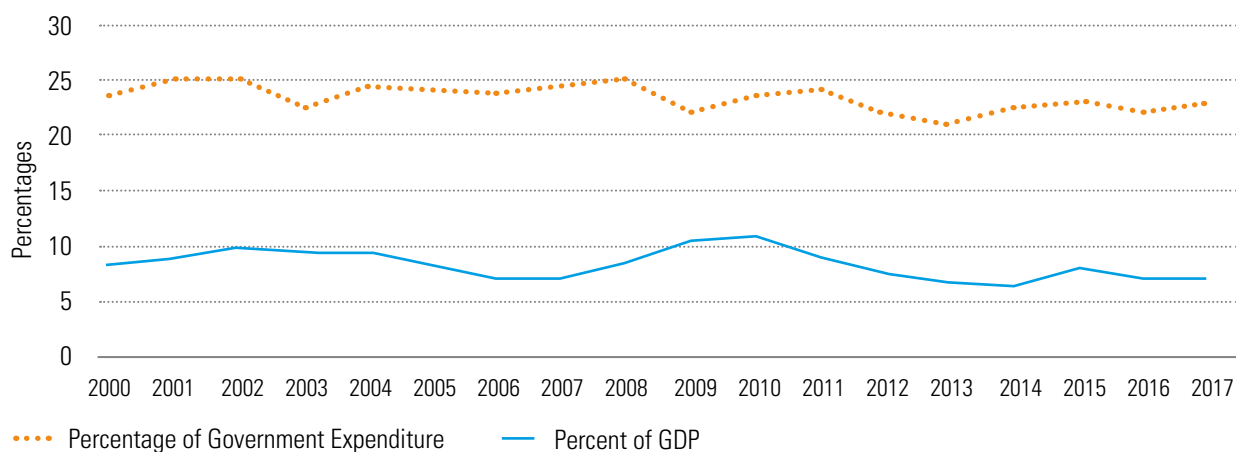
**83. By international standards, the GoB's level of spending is moderate, while its level of revenue is well-above average.** This partly explains Botswana's low public debt burden, and it also suggests that the country's revenue collection effort would have to remain robust to maintain the current fiscal position. The country remains heavily dependent on revenue from the mining sector. In 2016/17, for example, income taxes, royalties, and dividends from activities related to the minerals sector comprised 39 percent of total central government revenues and grants (International Monetary Fund, 2018, p. 26), while

receipts from the Southern African Customs Union (SACU) pool constituted an additional 20 percent (International Monetary Fund, 2018, p. 26). The current level of government spending may be difficult to sustain if the expected depletion of the country's diamond resources occurs or if trade liberalization and other factors reduce SACU receipts. While Botswana's national budget prioritizes education spending, large revenue shocks could prevent future increases in public spending on the school system.

## FISCAL MAGNITUDE AND EDUCATION

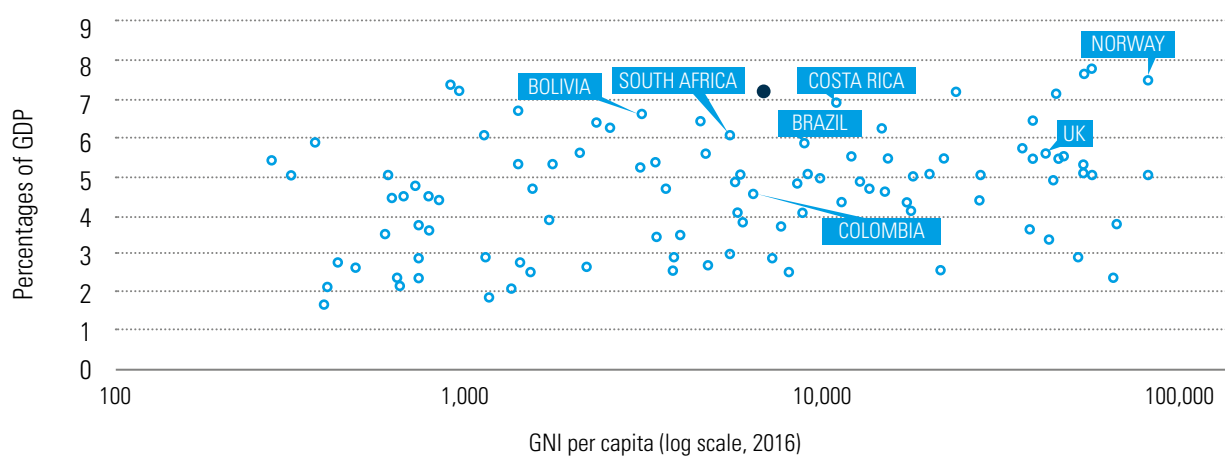
**84. Botswana's government education expenditure as a share of GDP and public expenditure were 7.1 percent and 22.2 percent, respectively, in 2017.** Public education spending has been high since the early 1990s, with the exception of some fluctuations and a moderating trend in recent years (Figure 6). The country's education expenditure is also high by international standards, especially compared to countries at a similar level of development (Figure 7). Botswana spends much more on education than the average of upper-middle-income countries (Table 4).

**FIGURE 6 GOVERNMENT EXPENDITURE ON ALL EDUCATION AS % OF GDP AND AS % OF GOVERNMENT EXPENDITURE**



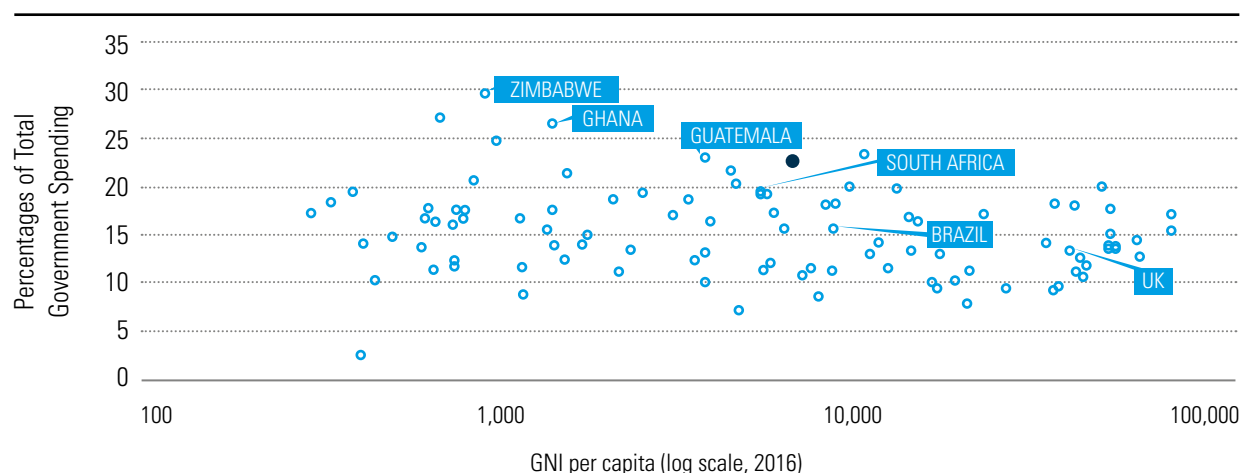
Source: Compiled from information in (World Bank, 2018a).

**FIGURE 7 GOVERNMENT EDUCATION SPENDING RATIOS AS % OF GDP (MOST RECENT 3-YEAR AVERAGES), 2011-2016**



Note: Botswana's ratio is represented by the larger, colored dot.

Source: Compiled from information in (World Bank, 2018a).

**FIGURE 8 GOVERNMENT EDUCATION SPENDING RATIOS AS % OF GOVERNMENT EXPENDITURE (MOST RECENT 3-YEAR AVERAGES), 2011-2016**

Note: Botswana's ratio is represented by the larger, colored dot.

Source: Compiled from information in (World Bank, 2018a).

**TABLE 4 BOTSWANA EDUCATION SPENDING AND RESOURCES IN COMPARATIVE PERSPECTIVE, 2017 (OR CLOSEST YEAR)**

	Primary pupil- teacher ratio	Secondary pupil- teacher ratio	Primary repetition rate (%)	Govt expenditure per student, primary (% of GDP per capita)	Govt expenditure per student, secondary (% of GDP per capita)	Govt expenditure per student, tertiary (% of FGP per capita)	Govt education expenditure (% of govt expenditure)	Govt education expenditure (% of GDP)
<b>Angola</b>	50	27	13	..	..	..	..	..
<b>BOTSWANA</b>	<b>26<sup>a</sup></b>	<b>12</b>	<b>4<sup>a</sup></b>	<b>12<sup>a</sup></b>	<b>22<sup>b</sup></b>	<b>123</b>	<b>22.8<sup>a</sup></b>	<b>7.1<sup>a</sup></b>
<b>Brazil</b>	20	17	..	20	22	33	16.2	6.2
<b>Eswatini</b>	27	16	12	19	33	150	24.9	7.1
<b>Lesotho</b>	33	25	8	22	31	..	..	6.4
<b>Malaysia</b>	12	12	..	16	22	26	20.7	5.0
<b>Namibia</b>	..	..	16	..	..	79	7.6	3.1
<b>South Africa</b>	30	27	7	18	20	47	18.7	6.1
<b>Zambia</b>	48	..	5	..	..	..	..	..
<b>Zimbabwe</b>	36	22	2	20	31	225	30.0	7.5
<b>Sub-Saharan Africa</b>	38	21	8	10	..	..	17.5	4.6
<b>Upper-middle-income countries</b>	19	14	2	..	16	19	15.1	4.3

Note: Members of South African Customs Union: Eswatini, formerly known as Swaziland, Lesotho, Namibia and South Africa; neighbors or near-neighbors: Angola, Zimbabwe, and Zambia; upper-middle-income countries: Brazil and Malaysia; along with averages for Sub-Saharan Africa and upper-middle-income countries.

Source: Data from World Bank 2018a: World Development Indicators (most-recent figure), except for:

<sup>a</sup> - Own estimates

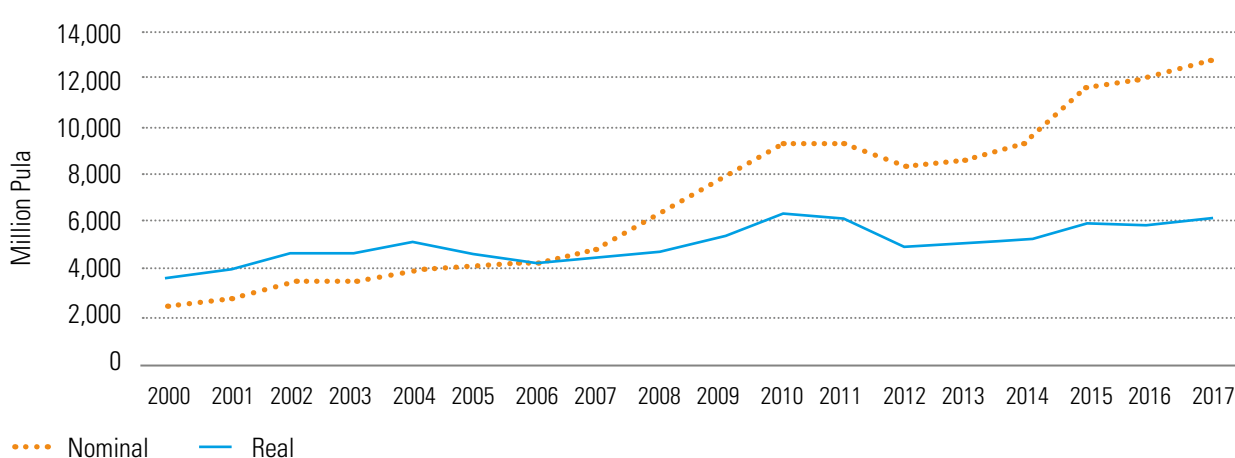
<sup>b</sup> - ETSSP estimate for 2014.



85. While the country's real public expenditure on education grew by an impressive 70% percent in 2006-17 (Figure 9), made possible by the strong performance of Botswana's economy, there have been periods of significant contraction (Figure 10). Public expenditure on education totaled P12,840 million (US\$1,202 million) for about 600,000

students in 2017. Historically, capital expenditure as a share of total education expenditure has been low in Botswana (Figure 11). This is common across countries, as recurrent spending, particularly on teacher salaries and subsidies for post-school education, always constitutes the dominant share in a country's education budget.

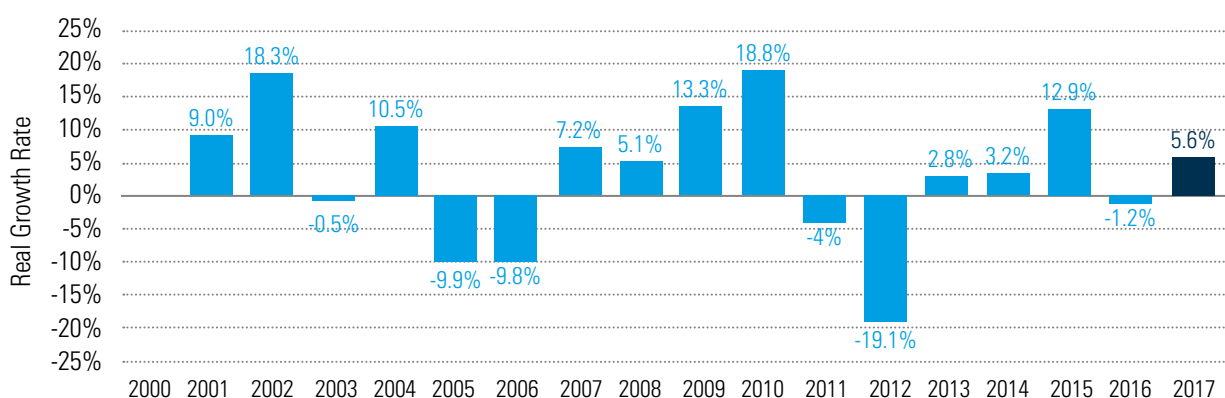
**FIGURE 9 GOVERNMENT EXPENDITURE ON EDUCATION, NOMINAL AND REAL (REAL VALUES IN 2006 MILLION PULA)**



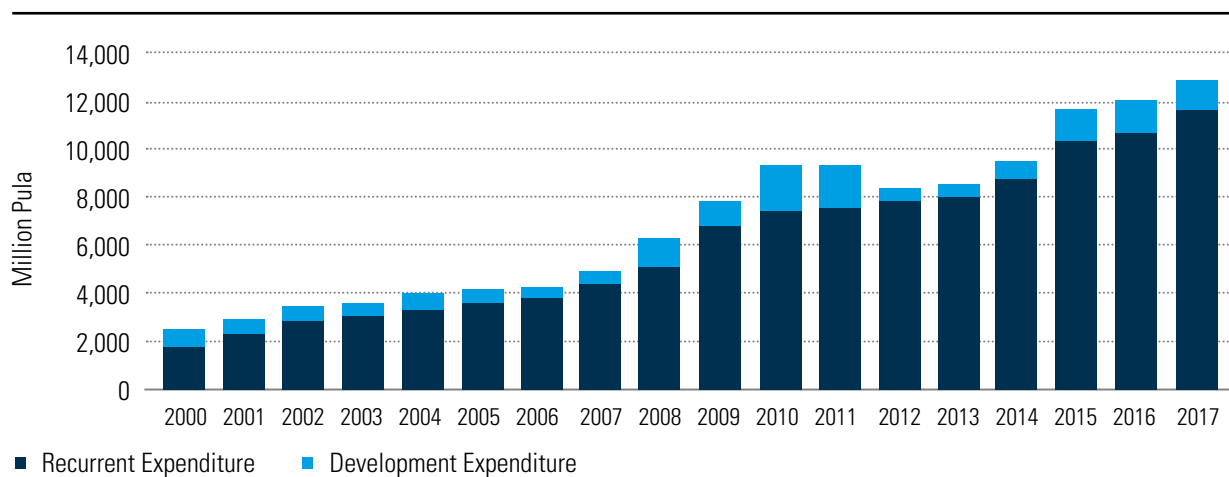
Note: Real values in 2006 million pula.

Source: Compiled from data from the MFED.

**FIGURE 10 REAL GROWTH RATE OF GOVERNMENT EXPENDITURE ON ALL EDUCATION, 2000-17**



Source: Compiled from data from the MFED.

**FIGURE 11** GOVERNMENT RECURRENT AND DEVELOPMENT EXPENDITURE ON EDUCATION, 2000-17

Source: Compiled from data from the MFED.



## 02 OVERVIEW OF THE EDUCATION SYSTEM

### SECTORAL GOALS AND PRIORITIES

**86. The 1994-2020 Revised National Policy on Education (RNPE) is the main policy framework for the provision of education in Botswana.** (Botswana, Ministry of Education and Skills Development, 2015d, p. 10). The RNPE is in line with Vision 2016, which aims to transform Botswana into a country that could achieve both sustained economic development and a high standard of living for the population. Vision 2016, national development plans, the RNPE, and the Education and Training Sector Strategic Plan (ETSSP) all emphasize the importance of improving the capacity of Botswana's population to achieve high and sustained economic growth.

**87. The ETSSP 2015-2020 is an ambitious plan for improving the country's education sector.** It is informed by a number of studies and sets out proposals for addressing key challenges facing the provision of education in Botswana. It emphasizes creating a strong foundation at the pre-primary level, supporting teacher education, encouraging the participation of parents, and expanding TVET. The ETSSP also focuses on the availability of quality data for strategic planning, as well as the transformation of the education management system, promising improved management and implementation of education policies.

**88. The ETSSP identified a number of critical issues at different education levels, some of which are relevant to this PER.** For example, it stresses the need to increase access to and funding of early childhood care and education (ECCE) in community-based centers and accelerate the roll-out of pre-primary education in schools.

**89. With regard to primary education, the ETSSP lists the following recommendations:**

1. *“Reducing disparities between rural and urban schools in terms of quality education and learner performance*
  2. *Reduce drop out in primary grades*
  3. *Reduce shortage of classrooms*
  4. *Improve maintenance of school facilities, including hostels*
  5. *Reduce need for children to walk to school*
  6. *Provide electricity*
  7. *Improve teaching and curriculum delivery in remote areas*
  8. *Make hostels more conducive for young pupils, who adjust poorly and drop out*
  9. *Inadequate facilities and equipment for learners with special educational needs;*
  10. *Lack of ICT facilities”*
- (Botswana, Ministry of Education and Skills Development, 2015, p. 57).

**90. With regard to secondary education, the ETSSP lists the following challenges:**

1. *“Overcrowding in secondary schools/classrooms*
2. *Limited effectiveness and efficiency of the government budgeting and expenditure system*
3. *Poor efficiency and completion rates*
4. *Inadequate use of ICT*
5. *Poor alignment between curriculum and assessment*
6. *Overloaded curriculum*
7. *No functional quality assurance system*
8. *No teacher professional standards to manage teacher professionalism*
9. *Lack of empowerment of school managers to monitor standards and quality in their schools*
10. *Change from normalised to standard-based*

*results reporting for yearly examinations is misunderstood and mismanaged*

11. *Science being compulsory and its use to categorize all students in Senior Secondary Schools requires review.*
12. *Theoretical (chalk and talk) teaching, emphasizing recall and thus failing to develop practical skills and understanding*
13. *Falling standards*
14. *Under-utilisation of teaching hours and teaching staff (workloads/staffing norms)."*

(Botswana, Ministry of Education and Skills Development, 2015, p. 68).

91. Despite the GoB's commitment in annual budget strategy papers to implement the ETSSP, the Plan did not receive the required funds or policy attention. The ETSSP has not received near its budget requirements, which would have required real education spending to rise by more than 40 percent within three years. Moreover, authorities have not carried out the

restructuring of the education sector envisaged in the Plan.

## EDUCATION SYSTEM

### Educational Offer

92. Botswana's education system consists of six levels: pre-primary, primary, junior secondary (JC), senior secondary (O Level), vocational training, and tertiary offer for bachelor's, master's, and doctorate degrees (Figure 12). Pre-primary education is limited to one-year programs for five-year-olds. Basic education spans twelve complete years and is divided into seven standards for primary, three forms for junior secondary, and two forms for senior secondary. Primary and junior secondary education are classified as universal education and cover the ages of six to fifteen.

**FIGURE 12 EDUCATIONAL OFFER BY LEVEL, STANDARD/GRADE AND AGE RANGE**

Education Level		Standard/Grade	Age	Years
Doctorate (PhD)		Tertiary		3 - 4
Masters Degree		Tertiary		1 - 2
Bachelors Degree		Tertiary	18 - 22	4 - 5
Vocational Training in • Nursing & Teaching • Artisan & Technician		Vocational	18 - 21	2 - 4
BASIC EDUCATION 13 YEARS	Senior Secondary ('O' Level)	Form 5	17	2
		Form 4	16	
	Junior Secondary (JC)	Form 3	15	3
		Form 2	14	
		Form 1	13	
	Primary	Standard 7	12	7
		Standard 6	11	
		Standard 5	10	
		Standard 4	9	
		Standard 3	8	
		Standard 2	6-7	
		Standard 1		
	Pre-Primary (limited opportunities)		5	1

Note: MOBE is responsible for basic education ie from pre-school to form 5 or O Level.



## Education administration

93. Botswana's education system is the responsibility of many ministries, and its management is fragmented. MOBE is responsible for primary and secondary education, including one year of ECCE preceding Grade 1 (pre-primary); the Ministry of Tertiary Education, Research, Science and Technology (MTERST) for tertiary education; the Ministry of Employment, Labour Productivity

and Skills Development (MELPSD) for technical and vocational education and training (TVET); and the Ministry of Local Government and Rural Development (MLGRD) is responsible for providing infrastructure, furniture, stationery and equipment, as well as school feeding programs for children in primary schools. Responsibilities of ECCE are delegated to three Ministries - MoBE, the Ministry of Health and Wellness (MoHW), and MLGRD (Box 1).

### BOX 1 THE ADMINISTRATIVE STRUCTURE OF BOTSWANA'S EDUCATION SYSTEM

#### There is a three-tier administrative system:

- Headquarters, which is responsible for policy making and the overall strategic coordination of the education sector;
- Regional offices, which implement policies and coordinate education services (i.e., in-service teacher training, inspection of primary and secondary schools, provision of textbooks and stationery, and supervision of financial management in secondary schools);
- Schools and institutions, which deliver and coordinate teaching and learning services, provide school meals, and is responsible for the short-term maintenance of buildings.

#### Primary education is the responsibility of MOBE and MLGRD:

- MOBE is in charge of teaching services, curriculum development and delivery (teaching and learning), learner assessments, teacher education, and recruitment and management; and
- The MLGRD is responsible for infrastructure development, learning resources (except textbooks),

and school feeding programs.

#### Secondary education is the responsibility of MOBE and the Ministry of Infrastructure, Science and Technology (MIST):

- MOBE is responsible for teaching services; financially accountable for junior and senior secondary education infrastructure development and maintenance; and is in charge of curriculum development and delivery (teaching and learning), learner assessments, teacher education, and recruitment and management; and
- MIST is responsible for managing the maintenance of senior secondary schools; building classrooms and schools with funding provided by MOBE; contracting; and inspections.

#### Post-secondary education is the responsibility of the MELPSD and MTERST:

- The MELPSD is responsible for all areas concerning TVET; and
- The MTERST is in charge of tertiary education.

## Early childhood care and education

94. Most early childhood development, preceding pre-primary education (which starts at age five), occurs through community-based early childhood development centers. While these centers must be registered with the government, they do not receive any direct public support. There is a general perception that these centers lack the capacity to teach children quality cognitive and socio-

emotional development skills. For example, the ETSSP (Botswana, Ministry of Education and Skills Development, 2015, p. 27) states that the quality of care and education in the pre-primary sector was constrained by the low number of qualified ECCD teachers, which remains a problem to this day. However, there are more than 2,200 unemployed early childhood teacher aids, and it may be possible to recruit some of them, with the right incentives, to fill the shortage of pre-primary teachers.



**95. Botswana has significantly increased enrollment in pre-primary education and is committed to expanding access to all children.** EMIS data show that 43 percent of five-year-olds were enrolled in pre-primary schools in 2018, up from about 20 percent in 2013. In 2018, the pre-primary enrolment rate was about 41 percent of the enrollment rate for Standard 1 (Table 5). The expansion was made difficult by a lack of infrastructure for children of pre-primary age. Expressing pre-primary enrolment as a percentage of the Standard 1

enrolment allows regional comparisons, in the absence of a detailed regional breakdown of the current population by age. While the pre-primary enrolment rate in the remote region of Kgalagadi was 76 percent of Standard 1 enrolment in 2018, the corresponding rate in South and Southeast—two economically more developed and urbanized regions—were 29 percent and 30 percent, respectively. Additionally, there does not appear to be any significant gender differences in enrolment in pre-primary education.

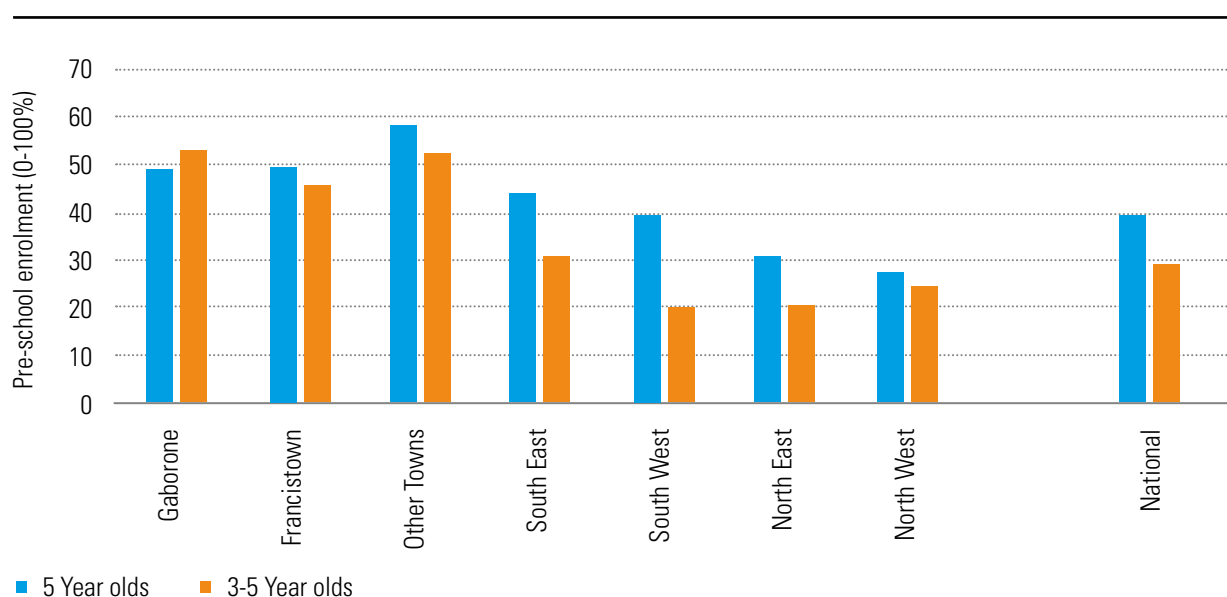
**TABLE 5 PRE-PRIMARY ENROLMENT COMPARED TO ENROLMENT IN STANDARD 1, 2018**

Region	Pre-primary Girls	Pre-primary Boys	Std 1 Girls	Std 1 Boys	Pre-primary as % of std 1
Chobe	120	122	371	293	36%
Kgalagadi	560	575	838	722	73%
Central	4,670	4,537	10,501	9,397	46%
Ghanzi	305	312	717	772	41%
Kgatleng	812	722	1,310	1,159	62%
Kweneng	1,746	1,797	4 106	3,712	45%
North East	632	593	2,054	1,953	31%
North West	859	898	2,910	2,622	32%
South	982	1,027	3,668	3,231	29%
South East	676	743	2,390	2,315	30%
<b>Total</b>	<b>11,362</b>	<b>11,326</b>	<b>28,865</b>	<b>26,176</b>	<b>41%</b>

Source: (EMIS, Unpublished information, 2018).

**96. There are also young children enrolled in pre-school education.** Recent household survey data (BMTHS, 2015-16) show that nearly 30 percent of children between the ages of three and five were enrolled community-based pre-school centers run by

private providers in 2015-16 (Figure 13). Similar to other education levels, there is considerable spatial variation in access to these pre-school centers, with higher rates in urban areas.<sup>9</sup>

**FIGURE 13 PRESCHOOL ENROLMENT RATES BY AGE FOR SELECTED DISRICTS, 2015-16**

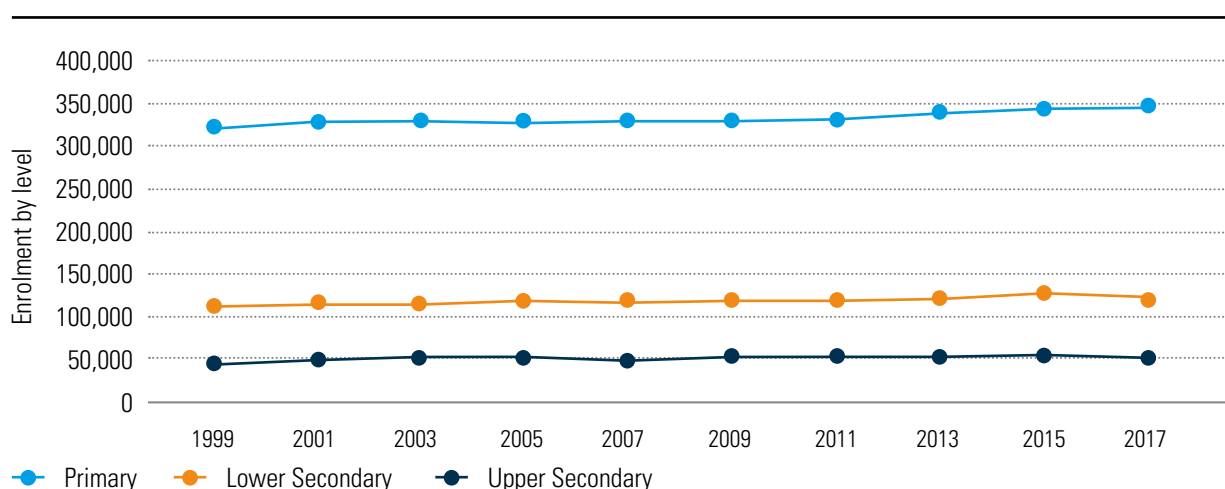
Source: Botswana Multiple Topic Household Survey for 2015-16.

### Primary and secondary education

97. Basic Education in Botswana consists of Pre-Primary (one year), Primary (seven years, Standards 1-7), Junior Secondary (3 years, Forms 1-3), Senior Secondary (2 years, Forms 4-5) and Out of School Education and Training (OSET). While the official age for starting school is six years, almost all children in Botswana start when they are seven-years-old. Parents are charged a ‘co-payment’ for education, although it is waived for children from low-income families. Free school meals are also provided to all students. Children progress automatically from primary to junior secondary, unless the parents and teacher agree that the student should repeat the grade (i.e., retained). Students sit for three nationwide examinations: the PSLE at the end of primary school; the JCE at the end of junior secondary school; and the BGCSE at the end of senior secondary school, important especially

to those who wish to go to university. for students who successfully completed the JCE and want to progress to senior secondary education.

98. The overall enrolment rate in basic education has remained relatively unchanged in the past two decades (Figure 14). Primary enrolment increased from roughly 320,000 students in 1999 to nearly 350,000 in 2017—an average annual increase of less than 1 percent. In the same period, lower secondary enrolment increased from 112,000 students to roughly 125,000, while upper secondary participation has been steady at about 50,000 students. The relatively stable overall enrolment rate was the result of slowing population growth and high enrolment rates, especially in basic education, where most children enroll in junior secondary school after completing primary school. However, authorities are faced with the challenge of high dropout rates and low enrollment rates in senior secondary education.

**FIGURE 14 TOTAL ENROLMENT BY LEVEL, 1999-2017**

Source: EMIS and UNESCO Institute for Statistics (UIS).

99. There are 826 public and private primary schools in Botswana, and primary enrolment constitutes around two-thirds of total primary and secondary enrolment<sup>10</sup> (Table 6). Despite its name, the PSLE, written at the end of Standard 7 by all students, no longer acts as a high-stakes examination to determine who may enter secondary school, as all students, irrespective of performance, are admitted to Form 1 after completion of Standard 7.

100. Around one-third of the country's student population, or just below 175,000<sup>11</sup> students in 2017, are in secondary schools. Secondary education, which normally refers to Forms 1 through 5, is offered in 211 junior secondary schools, 33 senior secondary schools, and 2 unified schools offering both junior and senior secondary education. At the end of Form

3, students must sit for the JCE, which determines admission to Form 4.

101. The number of primary, junior secondary and senior Secondary education is not large. A total of seventy-one Private Primary schools (8.6 percent) are private schools, serving around 26,000 children—just over 7 percent of total primary enrolment. In Southeast, where Gaborone is located, one-third of schools are private, representing almost 28 percent of this region's total primary enrolment. While the fifty-two private schools offering secondary education in Botswana constitute almost 18 percent of all secondary schools, they accommodate only around 4 percent of secondary students—about half the proportion of students in private primary schools.

**TABLE 6 ENROLMENT BY GRADE AND YEAR**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Annual growth rate 2007 - 2017
Std 1	54,220	50,754	51,630	51,968	55,931	56,382	55,931	53,376	55,358	58,871	0.83%
Std 2	48,933	48,397	47,659	48,066	52,753	49,386	52,753	52,709	50,263	52,493	0.70%
Std 3	47,717	48,601	48,116	47,303	48,575	46,955	48,575	51,203	51,582	48,097	0.08%
Std 4	47,463	48,440	50,018	48,886	47,344	47,209	47,344	49,064	51,068	47,670	0.04%
Std 5	45,420	44,749	46,017	47,294	45,505	45,639	45,505	45,569	47,629	48,404	0.64%
Std 6	44,113	44,445	43,887	44,845	45,027	45,374	45,027	44,578	44,547	46,719	0.58%
Std 7	41,552	41,847	42,365	41,609	43,772	43,372	43,772	42,948	42,850	42,751	0.28%
<b>Total: Primary</b>	329,418	327,233	329,692	329,971	338,907	334,317	338,907	339,447	343,297	347,022	0.52%
Form 1	41,900	40,982	40,519	40,600	42,460	41,514	42,460	43,199	42,872	41,353	-0.13%
Form 2	39,357	41,027	39,561	39,700	40,141	39,639	40,141	42,738	42,924	40,505	0.29%
Form 3	37,832	38,886	39,853	39,800	38,561	39,254	38,561	40,553	42,421	40,261	0.62%
Form 4	24,811	26,582	24,024	26,700	27,586	26,431	27,586	27,444	27,408	25,341	0.21%
Form 5	24,029	24,969	27,303	23,800	26,292	25,340	26,292	27,304	27,634	27,327	1.29%
<b>Total: Secondary</b>	167,929	172,446	171,260	170,600	175,040	172,178	175,040	181,238	183,259	174,787	0.40%
<b>Total</b>	497,347	499,679	500,952	500,571	513,947	506,495	513,947	520,685	526,556	521,809	0.48%

Note: Pre-primary and special education and Form 6 are not included in totals.

Source: Calculated from various EMIS reports and unpublished data.

### Special Needs education

102. Botswana's education system accommodated 1,321 primary students with special education needs (out of 5,097) in 2015 and 8,027 secondary students with special needs (out of 8,747) in 2017. These children were taught in special classes for students with disabilities, although only thirty-nine primary and five secondary schools offer such special education. Given that it is common to have long commutes to school in Botswana, many students in secondary education are enrolled in boarding schools. This may limit access to education for some students with special needs since many boarding schools may not be able to accommodate them.

### Tertiary education

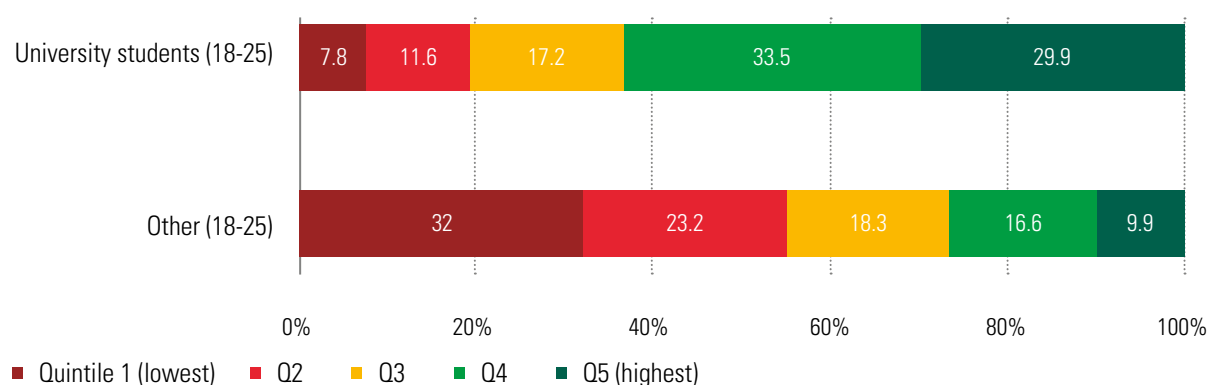
103. Botswana's gross enrolment ratio (GER) in tertiary education<sup>12</sup> rose from a mere 5.4 percent in 1996 to 10.0 percent in 2006 and 23.4 percent in 2016.<sup>13</sup> (Botswana, Human Resource Development Council, 2017). In 2015, the country's tertiary education institutions admitted just over 14,900 students, which amounted to 40 percent of the number of students who had sat for the BGCSE at the end of 2014 (Botswana, Human Resource Development Council, 2017, p. 96). About half of these students entered public or private universities. Since the number

of students admitted to tertiary education is around 30 percent of the cohort size, most people in Botswana do not have access to tertiary education.

104. An earlier PER that focused on the education sector considered the country's high level of public spending on tertiary education suboptimal. The ETSSP estimated that Botswana spent about 4.5 percent of GDP on tertiary education in 2014, out of which 1.4 percent was on living allowances and tuition fees for students. (Botswana, Ministry of Education and Skills Development, 2015, p. 35). Government support for tuition and living allowances totaled P1.674 billion in 2012/13, or 1.4 percent of GDP, representing 45 percent of total assistance spending in Botswana. Moreover, the estimated unit cost of tertiary education in Botswana is 123 percent of GDP per capita, much higher than the average of 19 percent for upper-middle-income countries. Among comparator countries, only Zimbabwe and Eswatini have higher unit costs.

105. Public spending on grants for tertiary students is potentially regressive, given the breakdown of socioeconomic status (SES) in enrolment (Figure 15). Not all students can benefit from grants to pursue tertiary education, as most children do not progress to form 5 and pass the BCGSE that is a prerequisite for attending university.

**FIGURE 15 SES QUINTILE BREAKDOWN OF 18-25 YEAR OLDS BY UNIVERSITY ATTENDANCE, 2015-16**



Source: Botswana Multiple Topic Household Survey, 2015-16.

**106. In 2016, the country's twenty-eight public and twenty private tertiary education and training institutions had a total enrolment of 56,447 students.** (Botswana, Human Resource Development Council, 2017, p. 2). Most students attended public universities (just over 16,000), followed by private universities (more than 11,500), other colleges (11,100), technical colleges (4,400), and colleges of education (1,817). (Botswana, Human Resource Development Council, 2017, p. 20).

**107. Apart from the relatively small portion of students enrolled in colleges of education, a fairly large number of students also studies education at universities.** According to the Human Resource Development Council, a total of 5,729 students were studying education at universities and colleges in 2016, of which almost 70 percent (4,005) were women (Botswana, Human Resource Development Council, 2017, pp. 26, 30). More than half of these students were pursuing undergraduate or even postgraduate degrees. In 2015, 3,155 students successfully completed tertiary education, and a majority of them obtained bachelor's degrees (1,104) or teacher diplomas (1,063), followed by certificates (444). A small portion of students (500) went on to pursue other graduate studies. (Botswana, Human Resource Development Council, 2017, p. 105). Considering that there is already a large number of unemployed teachers on the waiting list for teaching positions at schools, the GoB should consider reducing the number of bursaries it provides for studying teaching.

### Boarding schools

**108. Botswana's large size and sparse population make it difficult to provide easy access to education across the country.** While Botswana's land area is a little bigger than that of Kenya, Kenya's population of almost 50 million is much larger than Botswana's 2.25 million. Botswana has managed to create a network of primary schools across the country, making it relatively easy for children to obtain a primary education. However, there is limited access to secondary schools in many parts of the country, resulting in children from 826 primary schools having to continue their junior secondary education in 261 junior secondary schools. Moreover, if these children

want to continue their education, they have to attend one of the 83 schools that offer senior secondary education. As a result, 17 percent of junior secondary school students (almost 21,000 students) and 35 percent of senior secondary students (almost 18,700) attended boarding schools in 2017. By contrast, only 1.3 percent (less than 4,400) of primary children were in boarding schools in the same year.

**109. Conditions in boarding schools are often not conducive to learning.** For example, there are "incidents of a huge number of learners who have been pushed out of the systems by conditions of boarding." (Marumo, 2016, p. 376). The ETSSP emphasizes the need to improve and strengthen the management of boarding schools to make them more child-friendly and conducive to learning. (Botswana, Ministry of Education and Skills Development, 2015, p. 49). In addition, boarding schools are quite expensive to operate, although the conflation of spending on public and boarding schools in Botswana makes it difficult to evaluate the cost between the two sets of schools separately.





## 03 KEY EDUCATION PERFORMANCE INDICATORS

110. This section analyzes the performance of Botswana's education system by focusing on access to schools, progression, repetition and dropout rates, and performance on national tests and examinations and international assessments. It covers both the overall performance and distribution of educational outcomes. More in-depth information and data are presented in Appendix B.

### HISTORICAL CONTEXT

111. Educational attainment in Botswana has been rising sharply over time. The portion of the population that left school without completing Standard 5 has declined for younger cohorts, while for people aged seventy or above the proportion was almost one-quarter (Table 7). Based on the census in 2011, the proportion of the population that achieved higher grades has been rising, with around 40 percent of people born in 1990 having completed Form 5. The most recent household survey data (BMTHS, 2015-16) confirm the massive reduction in the proportion of individuals with no schooling or incomplete primary education. Recent cohorts have also increasingly completed junior secondary and growing proportions also senior secondary. While women are more educated than men in the current cohort, women do not appear to have an advantage among older cohorts (Figure B2 in Appendix B).

**TABLE 7 PERCENTAGE OF DIFFERENT AGE GROUPS THAT HAVE LEFT SCHOOLS WITHOUT COMPLETING STANDARD 5, 2014**

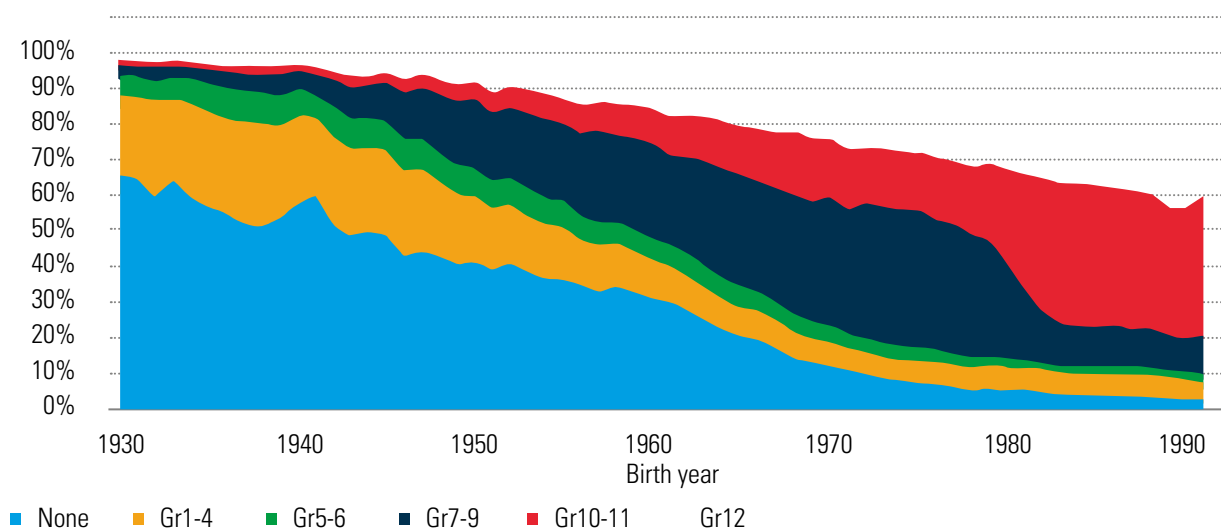
	Left school before completing Standard 5
10-11	0.0%
12-14	0.4%
15-19	0.7%
20-24	1.1%
25-29	1.8%
30-34	3.2%
35-39	2.0%
40-44	2.3%
45-49	4.4%
50-54	9.9%
55-59	13.1%
60-64	19.8%
65-69	20.1%
70+	23.8%
<b>TOTAL</b>	<b>4.8%</b>

Source: (Statistics Botswana, 2016a, pp. p.81, Table 7.0.21).





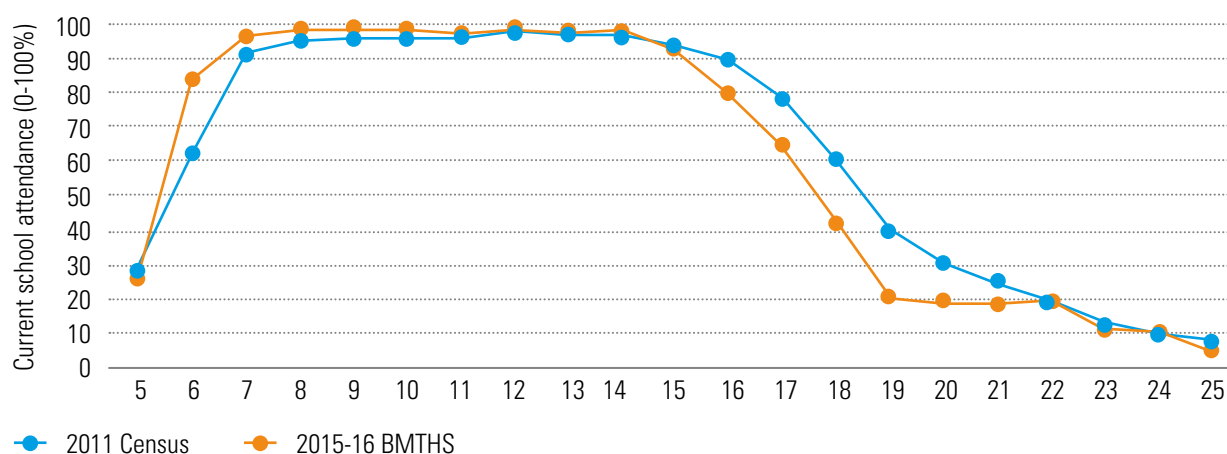


**FIGURE 16 SCHOOL ATTAINMENT BY BIRTH COHORT, 2011**

Source: Calculated from census in 2011.

**112. Almost all people of core school-going age participate in the education system.** Census (2011) and household survey (2015-16) data show that participation rates approach 100 percent for most children aged eight to fourteen, although there is some evidence of late enrolment and early dropout (Figure 17). This is confirmed when comparing EMIS enrolment data by age, using either Statistics Botswana's population estimates or data provided by the United

Nations Population Division. It appears that there are more children aged eight to nine at school than 2014 population estimates would indicate, which could be the result of an underestimate of the population for these age groups or an overestimate of enrolment data in the EMIS. An overestimation of enrollment is known to occur in some education systems where schools or principals have incentives to overreport enrolment, though this is not the case in Botswana.

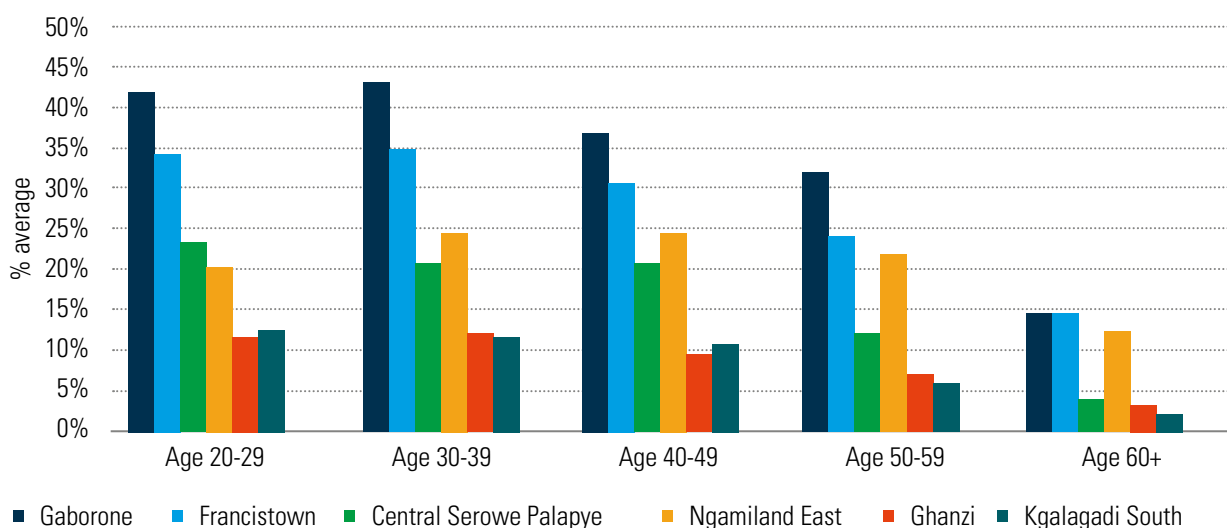
**FIGURE 17 PARTICIPATION IN EDUCATION BY AGE, 2011-2015/16**

Source: Analysis of 2011 census data and 2015-16 BMTHS.

113. There has been an improvement in access to tertiary education, and the tertiary participation rate is particularly high in large urban centers. The

concentration of people with a tertiary education in urban areas is the result of both migration and greater access to tertiary education in urban areas (Figure 18).

**FIGURE 18 PERCENTAGE OF THE POPULATION WITH POST-SCHOOL EDUCATION BY AGE GROUP FOR A SELECTION OF DISTRICTS, 2011**



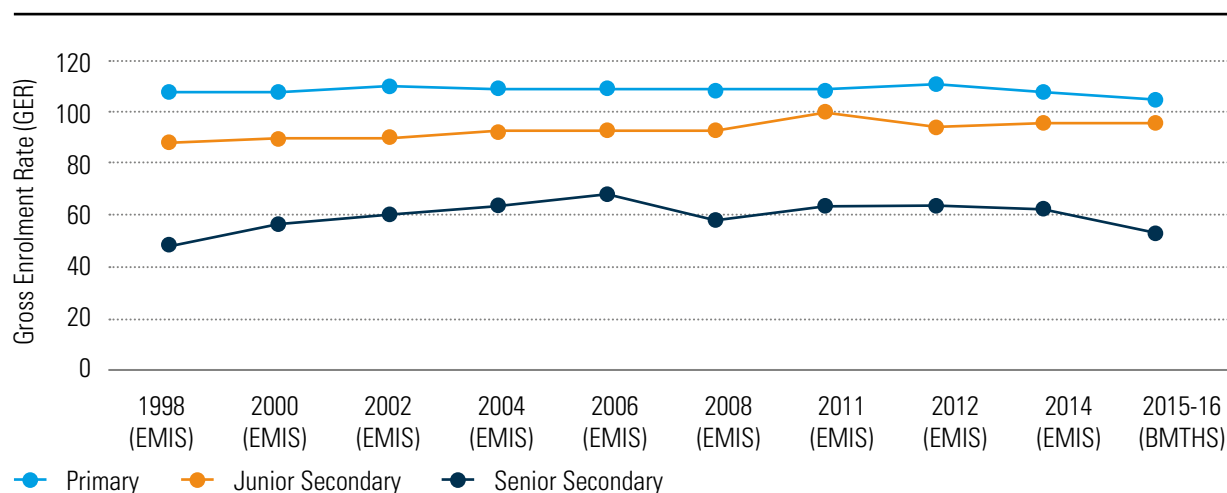
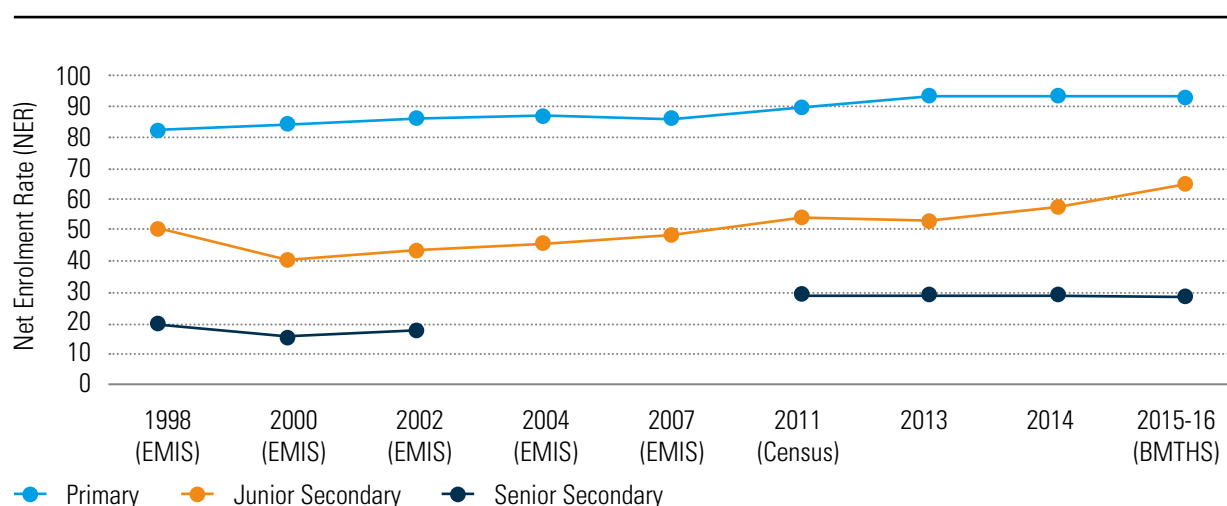
Source: Calculated from 2011 census.

## PARTICIPATION INDICATORS: ENROLLMENT AND GRADE ATTAINMENT

### Gross and Net Enrolment Rates

114. Participation in primary and secondary education has been consistently high in Botswana (Table 8). The country's GER and net enrolment rate (NER) show consistency in enrolment patterns, according to data from the UNESCO Institute for Statistics (UIS), the 2011 census, and the 2015-16 BMTHS household survey. The primary GER is consistently in the 105-110 percent range, which

indicates that there are more children in primary school than would be expected if only children between the ages of six and twelve were enrolled (Figure 19). The primary NER has been steadily increasing and reached 93 percent in 2015-16, indicating that almost all children of the appropriate age group are enrolled in primary schools (Figure 20). Progress has also been made in secondary education, but the difference between the GER and NER in junior and senior secondary schools is mainly due to efficiency challenges, including the cumulative effect of grade repetition. Also, the sharp fall in both the GER and NER in senior secondary education reflects the fact that many children drop out of school after writing the JCE.

**FIGURE 19 GROSS ENROLMENT RATE (GER) BY SCHOOL LEVEL, 1998-2014****FIGURE 20 NET ENROLMENT RATE (NER) BY SCHOOL LEVEL, 1998-2014**

Source: UIS (various years); 2011 census; BMTHS, 2015-16.

**TABLE 8 GROSS AND NET ENROLMENT RATIOS, 2014**

School level (age-group)	Population	Gross enrolment	Net enrolment	Gross enrolment ratio (GER)	Net enrolment ratio (NER)
<b>Primary (ages 6-12)</b>	339 521	339 447	293 974	100	87
<b>Junior secondary (ages 13-15)</b>	131 639	126 490	75 488	96	57
<b>Senior secondary (ages 16-17)</b>	88 068	54 748	25 300	62	29
<b>All secondary (ages 13-17)</b>	219 707	181 238	168 064	158	86
<b>Total primary plus secondary (ages 6-17)</b>	536 253	520 685	394 762	97	74

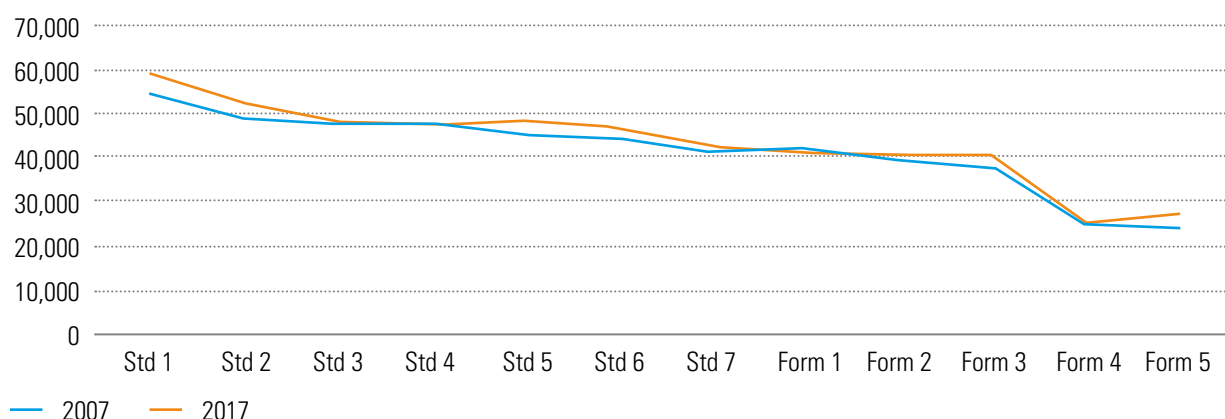
Note: Net enrolment refers to the enrolment of students of the right age for the school level considered, while gross enrolment refers to the total enrolment in the school level considered. Calculations were done assuming the correct age in Grade 1 is six years. However, many Grade 1 students would be seven years at the time the annual school census (EMIS) is collected, which has small effect on NERs.

Source: Calculated from 2014 EMIS data and 2014 UN Population Division population estimates.

**115. The incidence of repetition and dropout in basic education is not a serious issue, as the downward slope of enrolment totals is not very pronounced.** The current rates of repetition and dropout means that the number of children in successive grades declines (Figure 21). With the exception of Forms 3-4, there was little change in

total enrollment in each grade between 2007 and 2017. Without successfully completing the JCE at the end of Form 3, students cannot progress to Form 4. Many students, therefore, drop out of school after Form 3. There is also some repetition in Form 3 since some technical training programs require students to complete that grade.

**FIGURE 21 ENROLMENT BY GRADE, 2007 AND 2017**



Source: Calculated from EMIS data for 2007 and 2017.

**116. There is still room to improve enrollment in pre-primary education and encourage students to complete secondary and tertiary education.** The declining participation rate among students aged sixteen or above highlights the challenge of incentivizing students to complete senior secondary and tertiary education. The gap between NERs and GERs, especially in secondary education, is likely a result of late entry and grade repetition. Nevertheless, children being out of school does not appear to be a major issue in Botswana.

### Grade Attainment and Efficiency

**117. While a large portion school-aged children participate in basic education, attendance starts to decline around the age of sixteen, and there is a large gap between GERs and NERs in secondary education.** Four trends in enrollment stand out. First, most children have completed junior secondary schooling by the age of eighteen, and by the age of twenty-one only about 10 percent have not graduated from junior secondary school. Second, despite the high rates of junior secondary attainment, a very large proportion of people aged fifteen to seventeen, and even some aged eighteen

to twenty, have not completed junior secondary education by the age of sixteen. Third, students who begin their junior and senior secondary education are very likely to complete it, as the portion of older cohorts with incomplete junior or senior secondary education is very small. Finally, women are more likely than men to have completed senior secondary school by the age of twenty-three, and they are also more likely to pursue tertiary education (Figure B4 in Appendix B).

**118. The portion of overage students in Botswana's education system points to the importance of improving the efficiency of school attendance and grade completion.** For example, one option is to reduce grade repetition, while another is to encourage parents not to delay entry of their children into school, as children who begin the primary cycle overage are at a higher risk of not completing secondary (or higher) schooling.

**119. In 2015-16, nearly 60 percent of the most recent cohorts entered Standard 1 at the age of six or younger.** This leaves significant room for future improvement in terms of on-time enrolment at age six. Data from the 2015-16 BMTHS show a trend



of younger children entering Standard 1 and a significant reduction in the proportion of children entering at the age of eight or older among recent cohorts (Appendix Figure B5).

### Statistical Analysis

**120. Appendix D summarizes the results from a multivariate analysis of grade attainment and school attendance outcomes for young persons in Botswana at the time of the 2015-16 BMTHS survey.** Given the very high rates of enrolment and grade completion in Botswana, the statistical analysis focuses on attainment efficiency (i.e., how many grades have been completed so far) and enrolment at higher grade levels.<sup>14</sup>

**121. The results from the analysis revealed that girls performed significantly better than boys.** As expected, the results show that family background characteristics parental education levels (especially the mother's education), family SES quintiles based on spending (consumption), the number of children in the household, and the child's relationship to the head of household are associated with faster grade attainment and enrolment in secondary schooling. A handful of significant predictors that are potentially more amenable to policy were also significant, including:

- Children who attended preschool had significantly higher attainment levels and were more likely to be enrolled in secondary education;
- Children who lived closer to secondary schools (as reported by the head of household) had significantly better attendance and were more likely to attend school; and
- Children who began Standard 1 at an early age had better attainment outcomes and were more likely to attend secondary school on time.

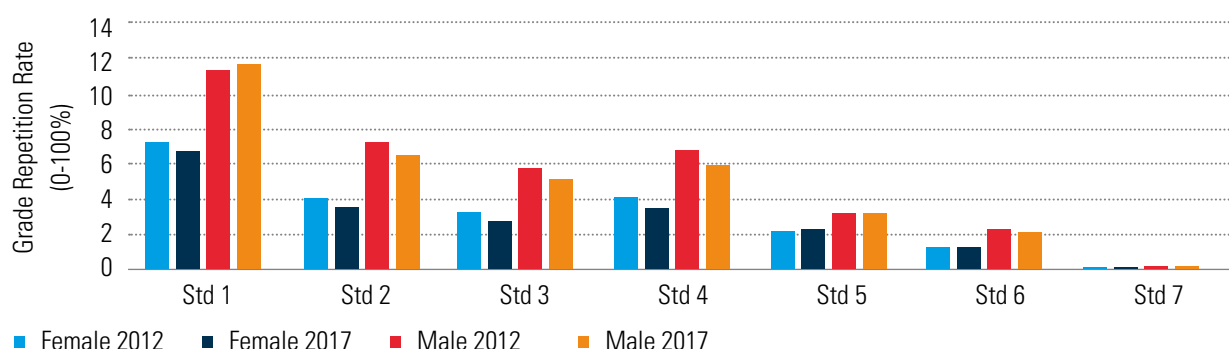
**122. The statistical results from BMTHS are associational and cannot be interpreted as strictly causal.** They indicate that almost all children are entering and completing primary school, and a high percentage are also completing lower secondary schooling. However, the results start to diverge

somewhat as young people enter adolescence, with some children continuing on to higher levels of schooling (including tertiary education) while others drop out before completing senior secondary school. The underlying factors that explain who gets further in terms of attainment include family background characteristics such as parental education, SES, etc. But the significant effects of preschool attendance and age at entry into primary school are a reminder that policy can potentially impact these outcomes. Grade repetition helps explain why some children are not completing as many grades and not as quickly as other children.

### GRADE REPETITION

**123. There is limited grade repetition in Botswana's school system, and it is concentrated in the earliest grades of primary school.** Children can only repeat if parents make the request. In 2017, there were just over 14,000 primary students repeating, or 4.2 percent of primary enrolment, and 719 repeaters in secondary school, or a mere 0.4 percent of secondary enrolment. However, the repetition rate in secondary education has fluctuated over time, as there were almost 1,800 repeaters in 2015. While there is variation in the repetition rate across schools, it is not concentrated in a small subsector of schools. The rate of grade repetition in primary schools fell slightly between 2012 and 2017 (Appendix Figure B6). Male students were more likely to repeat a grade in Standard 1 through Standard 4 than their female counterparts (Figure 22).

**124. The male repetition rate is nearly twice as high as that of female students in primary education, and it reaches nearly 12 percent in Standard 1.** The high repetition rate among young boys in the first grades of primary school helps explain why female students attain higher levels of education. Statistical analysis using 2017 EMIS data found limited evidence that school or teacher characteristics are associated with repetition rates.

**FIGURE 22 GRADE REPETITION RATE IN PRIMARY GRADES BY GENDER, 2012-17**

Source: EMIS, 2017 and UIS, 2012.

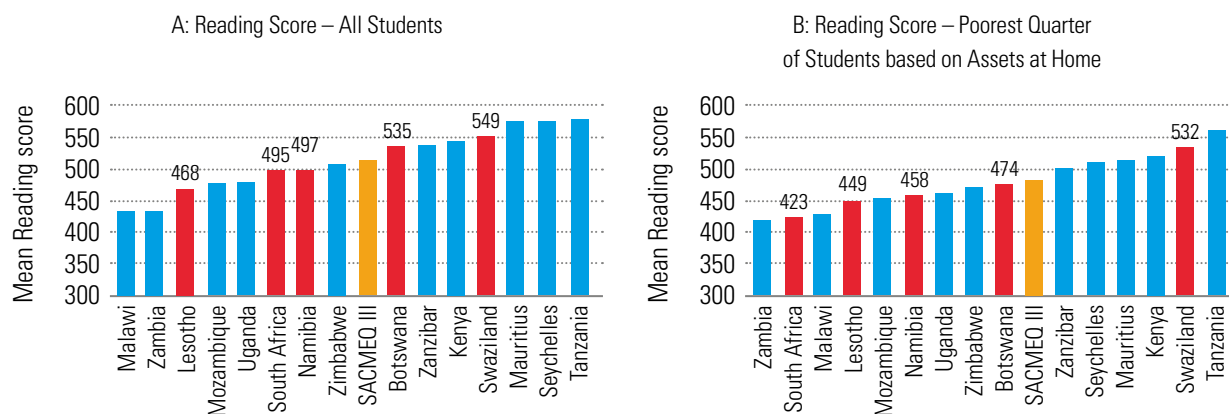
## SCHOOL QUALITY AND ACHIEVEMENT

### Performance on International Assessments

#### SACMEQ

**125. Botswana has participated in three rounds of SACMEQ's international assessment program.** Despite being one of the richest and most developed economies in SACMEQ, Botswana's performance is near the regional average. In SACMEQ III, the country's average score in reading and mathematics were 535 and 521 points, respectively in 2011, compared to the survey mean across all countries of 500 points. While these results show that the average sixth-grade student performed better in 2011 compared to 2007, the country should perform better considering its level of economic development.

**126. Countries in SACU<sup>15</sup> performed close to the average on the SACMEQ assessment in 2007.** Swaziland performed almost one-half a standard deviation above the average and Lesotho about one-third of a standard deviation—approximately one year of learning—below the average. While the average reading score across all countries on the SACMEQ assessment was 512 points (Panel A in Figure 23), the average score for the poorest quarter of students (as reflected in their SES based on assets at home) was only 481 points (Panel B in Figure 23). This difference of 31 points (0.31 of a SACMEQ standard deviation) is equivalent to almost one year of learning. The difference between the average overall score and the score for the poorest quarter of students was only 17 points in Swaziland and 19 points in Lesotho, but 39 points in Namibia, 68 points in Botswana, and a high 72 points in South Africa.

**FIGURE 23 READING SCORES OF SOUTHERN AND EASTERN AFRICAN COUNTRIES IN GRADE 6 IN SACMEQ III, 2007**

Source: (Spaull, 2011).

### PIRLS and TIMSS

127. Botswana is among the worst performers on the Pre-PIRLS,<sup>16</sup> PIRLS,<sup>17</sup> and TIMSS<sup>18</sup> assessments, although not many African or developing countries participate. The country's weak performance on Pre-PIRLS is an indication that learning deficits start early in the education system (Figure B8 in Appendix). This strengthens the case for improving ECCE and pre-primary education and providing resources to teach basic reading, writing, and arithmetic in the early school years.

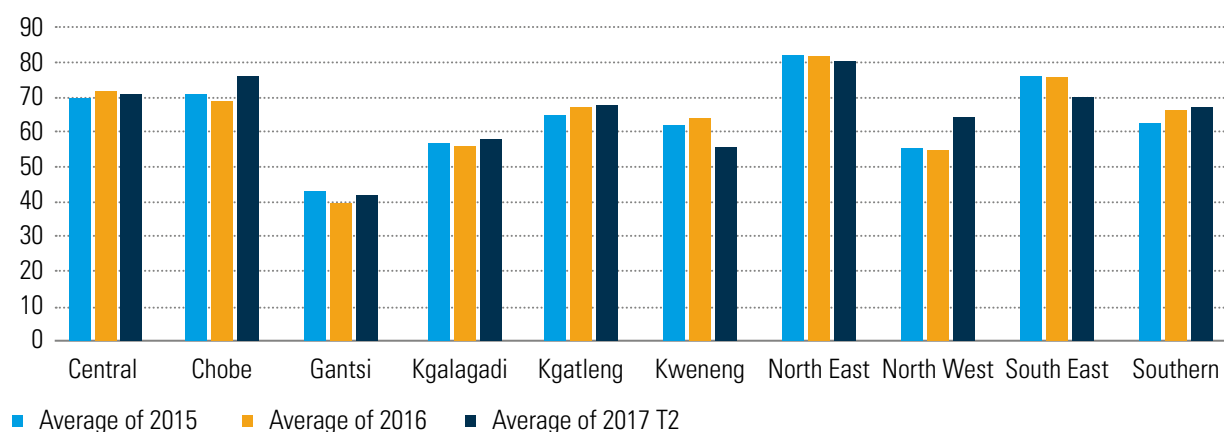
128. In 2011, Botswana was the only African country that participated in the PIRLS/TIMSS joint survey<sup>19</sup> of reading, mathematics, and science. These tests are usually carried out in Grade 4, but students in Botswana wrote them in Grade 6 because of their previous weak performance on other tests. Botswana's performance is far below the average of developed and

even middle-income countries. While it is common in many countries that more than 90 percent of children in Grade 4 perform above the low international benchmark, only 37 percent of children in Grade 6 achieved this in Botswana. Moreover, more than 20 percent of Grade 4 children in the leading countries performed above the high international benchmark in all three subjects, while only 3 percent of Botswana's Grade 6 children did the same.

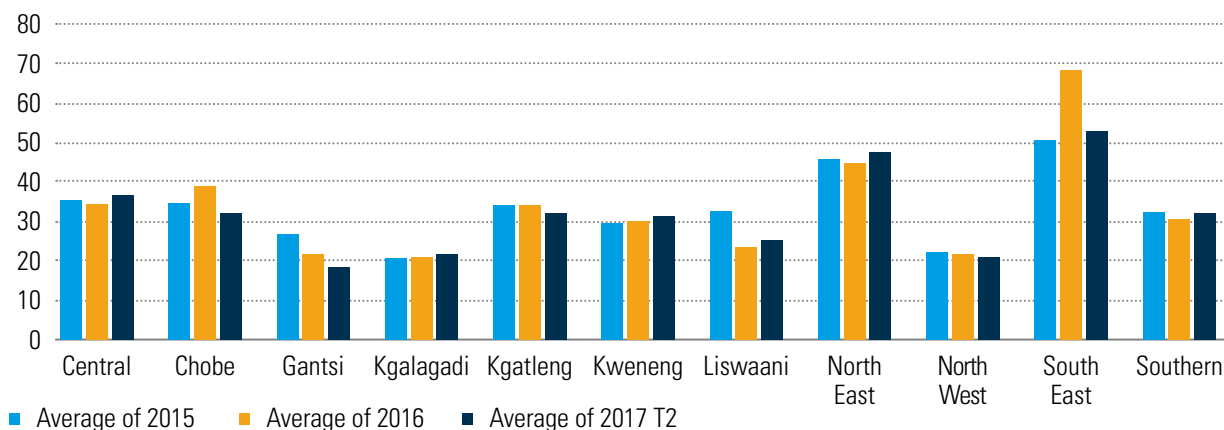
### Performance on national examinations

129. Student performance on the PSLE, JCE, and BGCSE varies across schools and regions, indicating that there are greater differentials in learning outcomes than educational resources. The performance on these examinations by region also reveals that results changed little between 2015 and 2017 (Figure 24, Figure 25, and Figure 26).

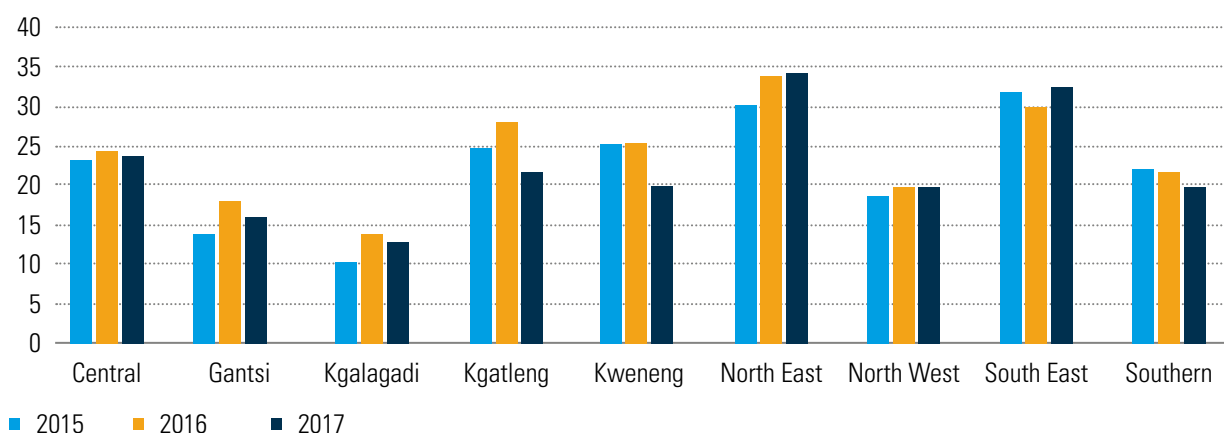
**FIGURE 24 AVERAGE (UNWEIGHTED) PERCENTAGE OF CANDIDATES ACROSS SCHOOLS IN A REGION ACHIEVING A, B OR C IN PSLE, 2015-17**



Source: Authors' calculations from (Botswana Examinations Council, 2017a).

**FIGURE 25 AVERAGE (UNWEIGHTED) PERCENTAGE OF CANDIDATES IN A REGION ACROSS SCHOOLS ACHIEVING A, B OR C IN JUNIOR CERTIFICATE EXAMINATION, 2015-17**

Source: Authors' calculations from Botswana Examinations Council (Botswana Examinations Council, 2017b).

**FIGURE 26 AVERAGE (UNWEIGHTED) PERCENTAGE OF CANDIDATES IN A REGION ACHIEVING AT LEAST C SCORES IN FIVE OR MORE SUBJECTS IN BGCSE, 2015-17**

Source: Authors' calculations from (Botswana Examinations Council, 2017c).

## School inputs

### Class Size

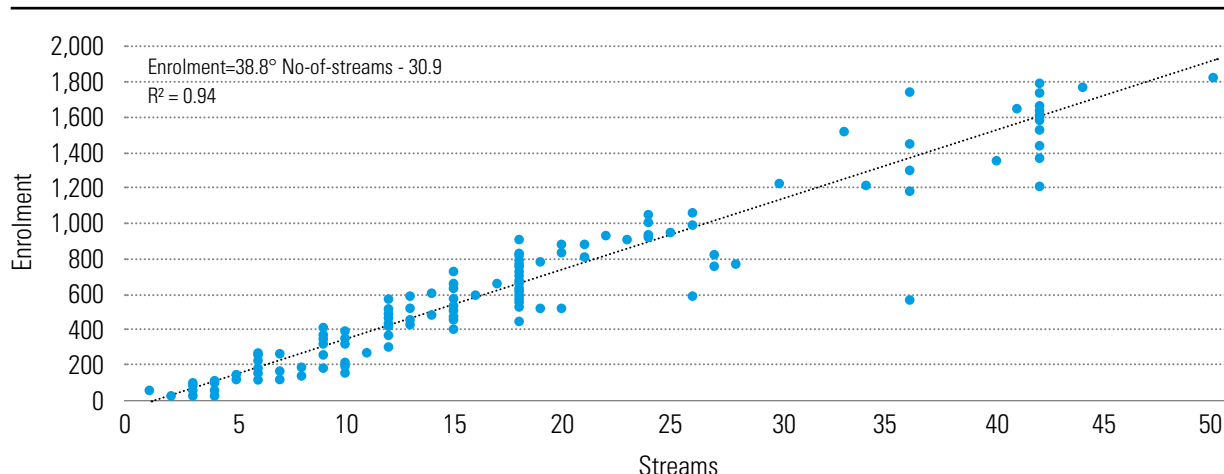
**130. Botswana's student-teacher (ST) ratio is low in primary schools but higher in secondary education.** For example, the national average was roughly thirty students per teacher in Grade 4 in 2011, with a standard deviation of 8.<sup>20</sup> In Grade 9, the average ST-ratio was 37.6:1 in 2015, with a standard deviation of 8.4.<sup>21</sup>

**131. A shortage of classrooms and the large number of subjects have led to large average class sizes in secondary schools.** The classroom shortage makes it difficult to have more classes in each school, even if there are enough teachers to accommodate more students. Moreover, the large number of elective subjects mean that each class has to be taught by several teachers, sometimes with classes split by elective. The number of classes in secondary schools is closely matched with their student enrolment, as the a school's enrolment rate needs to rise by an average of almost thirty-nine students before a class

is added (Figure 27). Only 23 percent of schools have an average class size of thirty-two students or smaller, and their students represent a mere 10 percent of total enrolment. As a result, 90 percent of secondary

school students are, at least for their core subjects, in classes of more than thirty-two students, and 33 percent of all students are in class sizes of more than forty students.

**FIGURE 27 SECONDARY SCHOOLS BY ENROLMENT AND THE NUMBER OF STREAMS, 2017**



Note: Streams=classes.

Source: Authors' calculations based on 2017 EMIS data.

### Student-Teacher Ratio

**132. Relative to peers, Botswana enjoys a relatively low ST-ratio in both primary and secondary education.**

In 2017, the average primary ST-ratio was 25.7:1, ranging between a low of 21.3:1 in Kgalagadi, where small schools may have contributed to a somewhat lower ratio, and 27.4:1 in Kweneng (Table 9). In secondary schools, the average ST-ratio was much lower at 11.9:1 in the same year, and the range between regions was even smaller, from 10.7:1 to 13.6:1. These low secondary ST-ratios increased by only 0.4:1 when excluding the 8.3 percent of secondary teachers who are principals, deputy principals, or heads of department. Botswana's primary ST-ratio (26:1) is much lower than the average of Sub-Saharan Africa (38:1). However, it is higher than the average of upper-middle-income countries (19:1), including Brazil (20:1) and Malaysia (12:1). By contrast, Botswana's

secondary ST-ratio (12:1) is below the average of upper-middle income countries (14:1), including Brazil (17:1), and similar to that of Malaysia (12:1).

**133. The country's ST-ratio remains below 13:1 even when excluding teachers who are temporary or on study leave.** Historical data show that ST-ratios have been quite low in primary schools since at least 2005. Since 2005, when the ST-ratio in primary education was 26:1, the number of primary teachers grew by 7 percent in twelve years, from 12,647 to 13,498 teachers. Over the same period, enrolment (excluding pre-primary) only expanded by about 17,000 students, from below 330,000 students in 2005 to almost 347,000 in 2017 (EMIS, Unpublished information, 2018). While there was a slight decline in the share of female primary teachers in this period (from 77 to 74 percent), they remain by far the majority of primary teachers.

**TABLE 9 PRIMARY AND SECONDARY ENROLMENT, TEACHERS, AND PUPIL-TEACHER RATIO BY REGION, 2017**

	Primary			Secondary		
	Enrolment	Teachers	ST-ratio	Enrolment	Teachers	ST-ratio
1 Southeast	43,187	1,826	23.7	28,489	2,416	11.8
2 North	25,266	1,053	24.0	15,042	1,308	11.5
3 South	41,699	1,702	24.5	21,322	1,865	11.4
4 Kweneng	48,249	1,759	27.4	19,840	1,582	12.5
5 Kgatleng	15,267	633	24.1	7,206	654	11.0
6 North West	33,409	1,230	27.2	12,937	1,070	12.1
7 Chobe	3,929	166	23.7	1,301	96	13.6
8 Ghanzi	8,310	311	26.7	3,035	283	10.7
9 Kgalagadi	9,304	436	21.3	4,545	425	10.7
10 Central	117,925	4,382	26.9	61,668	5,050	12.2
<b>TOTAL</b>	<b>346,545</b>	<b>13,498</b>	<b>25.7</b>	<b>175,385</b>	<b>14,749</b>	<b>11.9</b>

Source: Authors' calculations from EMIS data.

### Teacher Content Knowledge

**134. The SACMEQ III assessment also tested primary teachers on reading, mathematics, and health/HIV knowledge.** Botswana's primary teachers is in the middle of the distribution across SACMEQ countries, similar to the performance of the country's students (Appendix Figure B8). Since the teachers' tests are on the same scale as the students' tests, the average score of above 750 means that teachers scored much higher on reading, mathematics, and health/HIV than their students. However, more tests are needed to fully evaluate the skills of teachers in Botswana, given the low level of tested content in the SACMEQ III assessment.

system until about the age of sixteen, an analysis of overaged children by grade can provide insight into gender differentials (Figure 28). In 2015, 68 percent of primary children who repeated were boys, as were 65 percent of secondary repeaters. Overage is much more common at higher grades, as successive repetition has an effect. In Botswana, overage students are more common than would be expected given the country's relatively low repetition rates, which could mean that repetition is not fully reported in EMIS data. As many children who are overage dropout at the end of junior secondary (Form 3), the share of overage students declines in senior secondary school, although it remains high.

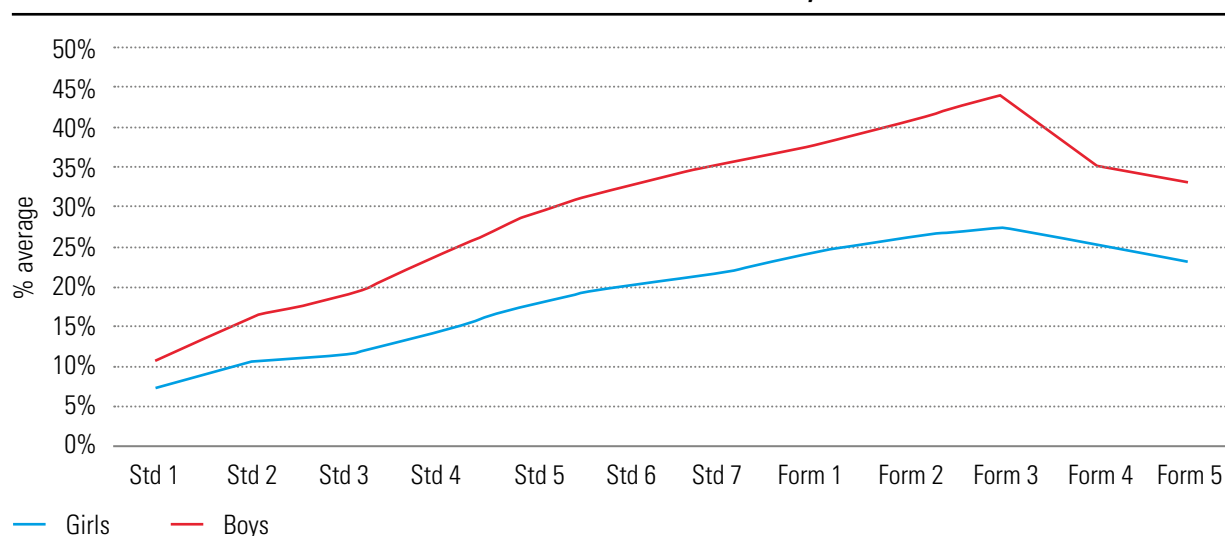
## EQUITY

### Differentials in enrolment, repetition, and grade attainment

**135. Female students are more likely to pursue higher levels of education and are less likely to repeat grades than their male counterparts.** Boys are more likely than girls to be overage students, an indication that male students tend to repeat grades more often than female students, although late entry also plays a role. Because the majority of children remain in the school





**FIGURE 28 PERCENTAGE OVER-AGE BY GRADE AND GENDER, 2014**

Source: Authors' calculations based on 2014 EMIS data.

136. The country's Gender Parity Index (GPI) increases sharply between junior secondary and senior secondary education, partly due to better performance by female students in the JCE (Table 10). The GPI,

which is the ratio of females per 100 males, jumped in 2017 from just over 100 in junior secondary grades to 128 in senior secondary grades. This is similar to the trend in previous years.

**TABLE 10 GENDER PARITY INDEX (GPI) IN SECONDARY SCHOOL BY GRADE FOR SELECTED YEARS**

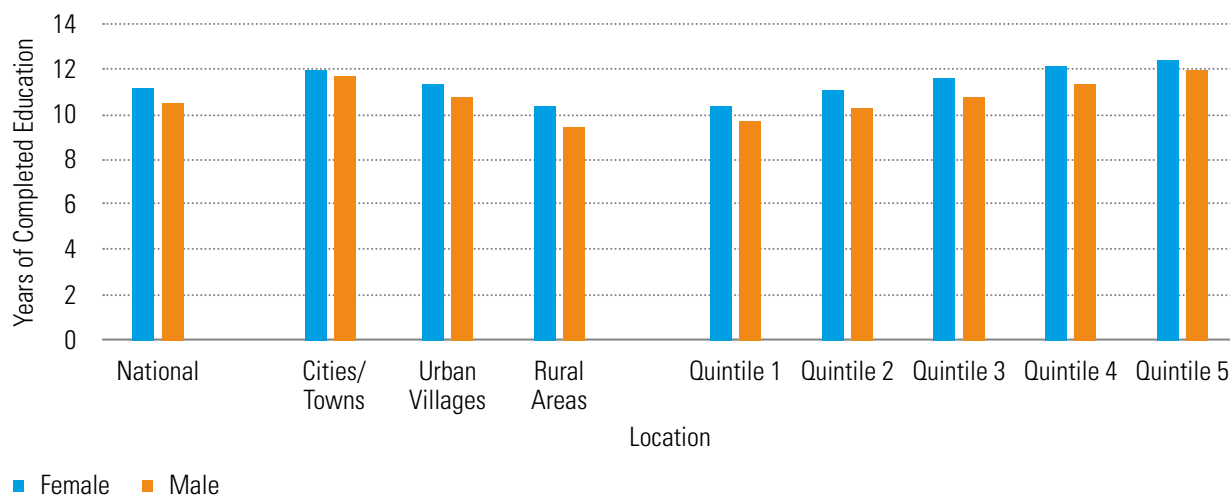
	Form 1	Form 2	Form 3	Form 4	Form 5
<b>2007</b>	104	109	104	115	113
<b>2008</b>	104	105	107	120	115
<b>2009</b>	103	103	105	121	116
<b>2013</b>	102	101	101	121	123
<b>2014</b>	102	102	100	122	119
<b>2015</b>	103	101	102	120	122
<b>2017</b>	101	100	100	128	128

Source: Calculated from (Statistics Botswana, 2018c, p. 10).

137. Botswana's female advantage in education is somewhat unusual for a developing country, although it is common in southern Africa. The country's education system compares favorably with that of many other developing countries in terms of equity across location and SES quintiles. An analysis of grade attainment among eighteen-to-

twenty-two-year-olds by gender, location, and SES quintile reveals significant differences between rural and urban locations as well as between young people from the poorest (Q1) and richest (Q5) SES quintile (Figure 29). Nevertheless, the largest gap represents two complete years, which is smaller than the gap commonly observed in developing countries.

**FIGURE 29 GRADE ATTAINMENT BY GENDER, LOCATION, AND SES QUINTILE AMONG PERSONS AGED 18-22, 2015-16**



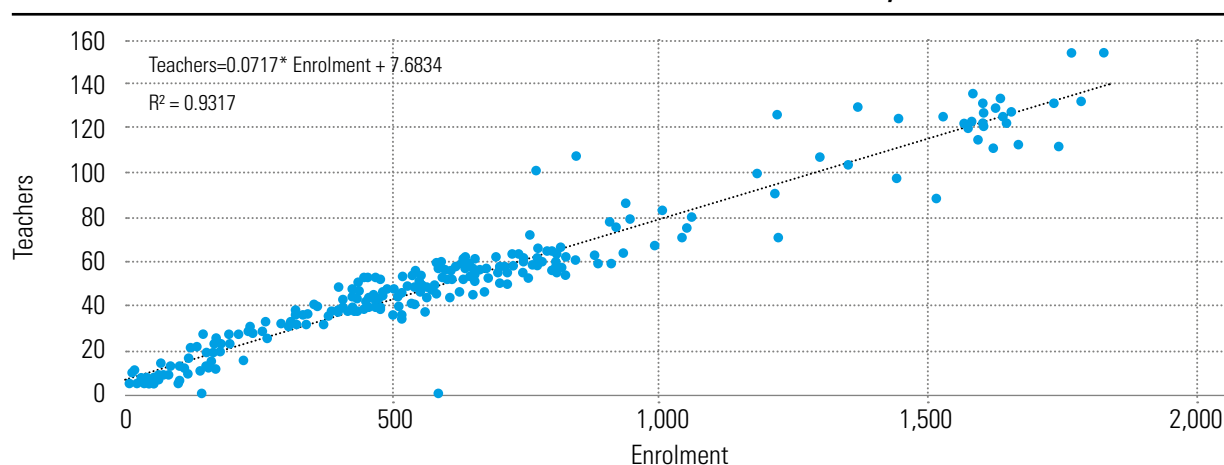
Source: BMTHS (2015-16).

## Equity in resource allocation

**138. Detailed data on the allocation of education resources to schools and regions are not available due to the fragmentation of spending across different public agencies.** For instance, public spending on schools by the MLGRD is not separately available from reported expenditure. It is unclear how a large part of the MLGRD's expenditure, such as on personnel, vehicles, or the maintenance of grounds, contributes to school-related activities.<sup>22</sup> Moreover, is not possible to distinguish the school or region receiving the funding, even when it is clearly related to schools, as urban and regional councils cannot be clearly matched to regions. It is also difficult to obtain full budgetary information for spending on secondary schools and regions. Finally, the cost of boarding schools is not clearly distinguishable from

other education expenditure. This information is important since differences in spending levels between schools or regions may simply reflect different needs because of differences in the number of students attending boarding schools.

**139. It is, nevertheless, possible to evaluate the allocation of teachers across schools, and Botswana appears to have a highly egalitarian system.** There was a close relationship between enrolment and the number of teachers employed in secondary schools in 2017 (Figure 30).<sup>23</sup> While small schools do receive some initial resources to allow them to undertake essential functions, almost eight teachers are added for every increase in enrolment by one hundred students. Moreover, the ST-ratio varies very little between regions in both primary and secondary schools.

**FIGURE 30 ENROLMENT AND TEACHERS IN SECONDARY SCHOOLS, 2018**

Source: Authors' calculations based on 2018 EMIS data.

140. Data from TIMSS also provide an indication of resource differential in education (Table 11). It is evident here that there are some resource differentials between rich and poor areas, or villages and urban communities. For average-sized classes, there are no major differences between urban and rural areas in terms of the proportion of teachers

with a degree. However, there are differences in the availability and stocking of school libraries: urban areas are more likely to have more than 250 books in the library than rural areas. By contrast, children in rural areas are more likely than their urban counterparts to have reading homework more than once a week.

**TABLE 11 RESOURCE DIFFERENTIALS ACROSS VARIOUS DIMENSIONS, TIMSS 2015**

	Parent has primary education or less	Parent has university education	Poorest quintile of children	Richest quintile of children	Poorest quintile of schools	Richest quintile of schools	Village or small town school	Urban school
<b>School has library</b>	39%	67%	42%	60%	34%	59%	47%	55%
<b>More than 250 books in school library</b>	37%	86%	39%	75%	24%	87%	52%	64%
<b>More than 25 books in classroom library</b>	73%	86%	39%	75%	24%	87%	52%	64%
<b>Reading homework less than once a week</b>	22%	19%	23%	22%	22%	25%	21%	32%
<b>Teacher has a degree</b>	15%	29%	13%	21%	13%	21%	19%	23%
<b>Class size</b>	31	28	29	30	29	30	31	30
<b>Reading homework less than once a week</b>	22%	19%	23%	22%	22%	25%	21%	32%

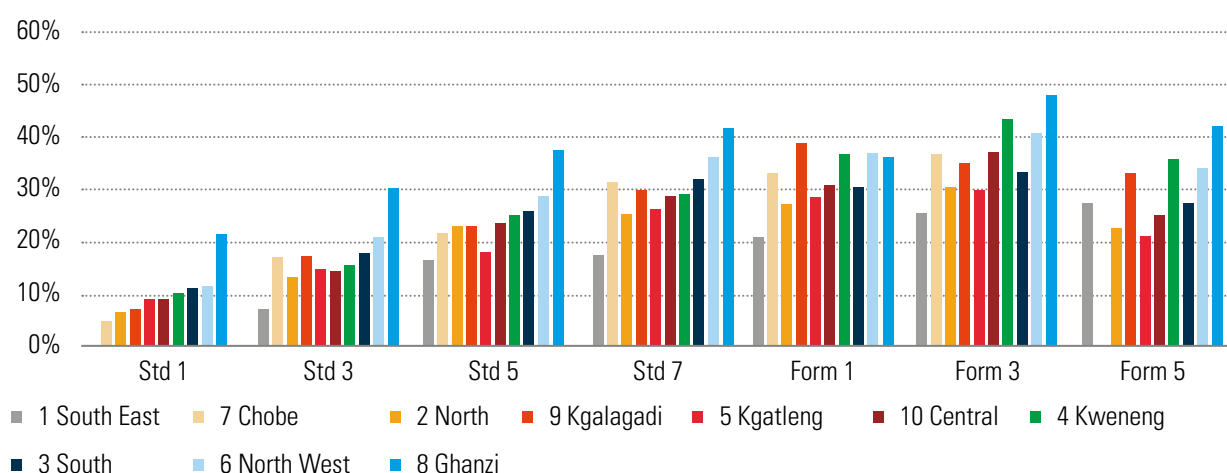
Source: Authors' calculations from TIMSS data.

## Spatial differentials in enrolment repetition, and dropout rates

**141. Patterns of overage students across selected grades and regions can reveal important spatial differentials in enrolment.** The Ghanzi region has by far the highest proportion of overage students in Standard 1, probably due to late entry (Figure 31).

Other regions, especially North West and South, see their portion of overage students increase in higher primary grades, likely because of higher repetition in these grades. Patterns of overage students in secondary education are more difficult to interpret, as the increased prevalence of boarding schools means that more children cross regions to access education.

**FIGURE 31 PERCENTAGE OVER-AGE FOR SELECTED GRADES BY REGION, 2014**



Source: Authors' own calculations from EMIS 2014 data.

**142. There was limited variation in the average repetition rates across regions in 2015.**

## Student achievement differences

**143. Comparisons of enrolment, grade attainment, and repetition show a high degree of equity in Botswana's education system relative to peers.** There are large differences between these indicators across family- and community-level categories in many African countries and other parts of the developing world. Botswana's highly egalitarian education system appears to be related to its public policy priority to ensure that all children, regardless of location or economic background, have access to education.

**144. Yet, the country's education system suffers from unequal educational outcomes.** The results from the 2015 TIMSS mathematics assessment in Grade 9 show that female students in Botswana significantly outperform their male counterparts (Table 12). Moreover, there are large differences in performance between urban and remote rural areas. Parental education, SES quintile, and average SES of the school children attend are also significant indicators of a student's success. The largest difference by SES quintile equals nearly one standard deviation between the highest and lowest scorers. Similar differences are found between students that took the TIMSS assessment in science.

**TABLE 12 PERFORMANCE IN TIMSS GRADE 9 MATHEMATICS ASSESSMENT BY GENDER, PARENTAL EDUCATION, SES QUINTILE, SCHOOL QUINTILE AND SCHOOL LOCATION**

Overall score		391
Gender	Boy	104
	Girl	107
Parents' education	University or Higher	105
	Post-secondary but not University	101
	Upper Secondary	100
	Lower Secondary	102
	Some Primary, Lower Secondary or No Schooling	100
SES quintile	1	
	2	
	3	
	4	
	5	
School SES quintile	1	
	2	
	3	
	4	
	5	
School location	Urban, densely populated	
	Suburban, on fringe of urban area	
	Medium size city or large town	
	Small town or village	
	Remote rural	

Source: Calculated from TIMSS 2015 dataset.

**145. The large differences in educational outcomes highlight the need to understand the underlying causes of inequality.** Specifically, authorities need to understand how differences in resources across schools—and between classrooms—contribute to differences in student learning. While inputs related to teacher education and class size do not appear to vary much across schools in Botswana, there are other factors that can drive the unequal distribution of educational outcomes.

**146. A regression analysis is the most commonly used tool to identify significant covariates of outcomes like student achievement.** Appendix D summarizes the results from various analyses that explored in detail the underlying causes of observable differences in achievement levels. One result that is unusual by international standards, while not compared to other

countries in southern Africa, is that girls in Botswana perform much better on almost all international assessments. One of the driving factors appears to be overage, which is much more prevalent among boys. After controlling for age, the female advantage in mathematics and science (TIMSS Grade 4 and TIMSS Grade 8) disappears, although it remains in the Pre-PIRLS and PIRLS literacy tests in Grades 4 and 5, ranging between 16 percent and 34 percent of a standard deviation (Table E1).

**147. While girls perform better than boys, and students in urban areas do much better than their counterparts in remote rural areas, small towns, and medium-sized cities, the SES of schools is a large indicator of student performance.** Although the SES of students remains a good predictor of performance, the SES of schools tend to be more important.<sup>24</sup> The

stronger role of the SES of the school rather than the individual can also be seen in the lowest regression<sup>25</sup> in Appendix E (Figure E1), where the convexity of school SES is very apparent. On average, a poor child in a school that has mainly children from wealthy backgrounds is more likely to perform better than a child of rich parents in a school that serves mainly poor children. This is in line with studies that found that the average SES in a classroom was associated with large reading score differentials in the SACMEQ II assessment, while the school's own resources played an insignificant role in reading. (Hungu & Thuku, 2010, pp. 85-6). Therefore, it is evident that the individual SES play a role in educational achievement, but it less an advantage than attending a school with a high SES—and rich parents can often seek out the best schools.

**148. The results from a statistical analysis of differences in achievement on the 2015 TIMSS assessment in Grade 8 mathematics and science are consistent with earlier results.** (Appendix D and Table E3 in Appendix E). Family background and the SES of the school remain a significant predictor of student achievement. Older students perform worse than their younger counterparts, female students continue to outperform male students, and students that are frequently absent have lower scores. Additionally, a handful of teacher and classroom characteristics are other predictors of student achievement: class averages for bullying (negative), teacher engagement (positive), and homework time (positive) were significant in some specifications. Student achievement is also higher when it is reported that the teacher covers more of the mathematics curriculum, and it is lower in schools that report a shortage of learning materials. Finally, class size is negatively associated with student math achievement.

**149. Results from a more detailed decomposition analysis of differences in student achievement do not show a clear pattern of unequal access to classroom and teacher features (Table E3) that are significantly associated with student achievement.** While variables like class size, bullying, and teacher engagement explain some of the achievement gaps between students, they do not vary much between students by SES category, or between schools by SES or location. This is consistent with the summary in Table 12 that found few large differences in TIMSS indicators across Botswana's schools. This does not mean that there are no meaningful gaps in achievement in Botswana, or that students of different SES perform

the same: the summary in Table 12 and Appendix D clearly show otherwise. There are limited data to pinpoint what explains these large differences across school and student categories, although it is closely associated with socioeconomic factors related to schools, classrooms, teachers, and communities.

## SUMMARY

**150. Botswana allocates significant public resources to the education sector, reflected in high participation rates throughout the school system.** Most children complete junior secondary school, and a large share of students continue to senior secondary school and beyond. There are a number of features in the country's education system that increase participation and access to education. Physical access to education is almost universal, and resources tend to be distributed evenly across schools in relation to ST-ratios, school meals, and other resources. Moreover, education is largely free, at least in primary education and de facto also in secondary education (even though more affluent parents are supposed to pay), which means that cost is not a major deterrent to participate in school. Boarding facilities are also free and widely available (and utilized), so continuing onto junior and senior secondary education is not financially costly to children from poor households. All of these factors help explain the country's high participation rates and why older female students in Botswana have not fallen behind their male counterparts, as is often the case in many developing countries.

**151. Despite the widespread participation in basic education, there are large differences in learning outcomes.** For example, a large numbers of Form 3 students fail the JCE, which is more common among poor students than their wealthier counterparts. This in turn restricts their access to senior secondary and (especially) university education, resulting in less future earning potential in the labor market. This also explains the large difference in SES between university and non-university students.

**152 . Moreover, Botswana's laudable achievements in education are substantially undermined by the poor quality of education.** Botswana is among the lowest performers on the TIMSS and PIRLS international assessments. It also scores around the average on SACMEQ assessments, which is far below what is expected of an upper-middle-income country.



**153. The GoB needs to target underperforming schools and students to improve the quality of education.** This was recommended in a recent World Bank report, which stated that:

*“The experience of other countries lends credence to the notion that targeting underperforming subpopulations benefits educational quality and equity. In general, targeting these groups has been crucial to the progress of countries that have shown large increases in TIMSS scores...if improvement in educational quality is to occur in Botswana, it must*

*target interventions to poorly performing students.”* (World Bank, 2014, p. 14).

**154. Designing solutions to effectively help underperforming schools and students will require a better understanding of Botswana’s education system.** Authorities need to first understand what makes effective schools (and teachers) effective, both in Botswana and worldwide. Moreover, policymakers and development partners need to better understand how the education system currently functions and how resources are being allocated, which is the focus of the institutional and financing analysis in the next two sections.



## 04 INSTITUTIONAL ANALYSIS

### INSTITUTIONAL FRAMEWORK

155. Until 2017/18, all education in Botswana fell under the MOESD. In 2017/18, however, the MOESD's functions were rearranged, with two new ministries—MOBE and the Ministry of Tertiary Education, Research and Technology (MTERT)—assuming most of the functions of the former ministry, except for skills development, which were shifted to the MELPSD. The management of educational resources was fragmented in Botswana even before the reorganization. For example, many of the MOESD's functions at the secondary level were also fulfilled by the MLGRD at the primary level. Moreover, it continues to be unclear what parts of the MLGRD's budget are related to schools, including for building and maintaining primary schools and classrooms as well as providing primary schools with furniture, stationery, school meals, and, until recently, textbooks. The institutional reorganization, therefore, could potentially lead to further fragmentation in the management of education resources.

156. Even prior to the recent reorganization, some education funds flow from MOBE to regional offices and then mainly to secondary schools, while at primary level some spending in schools is undertaken by the MLGRD on behalf of district councils (Figure 32). Additional support for secondary education infrastructure is provided through the Ministry of Infrastructure and Housing Development, though funded by MOBE. This flow of funds confirms the fragmented nature of the country's education spending, even within primary and secondary education.

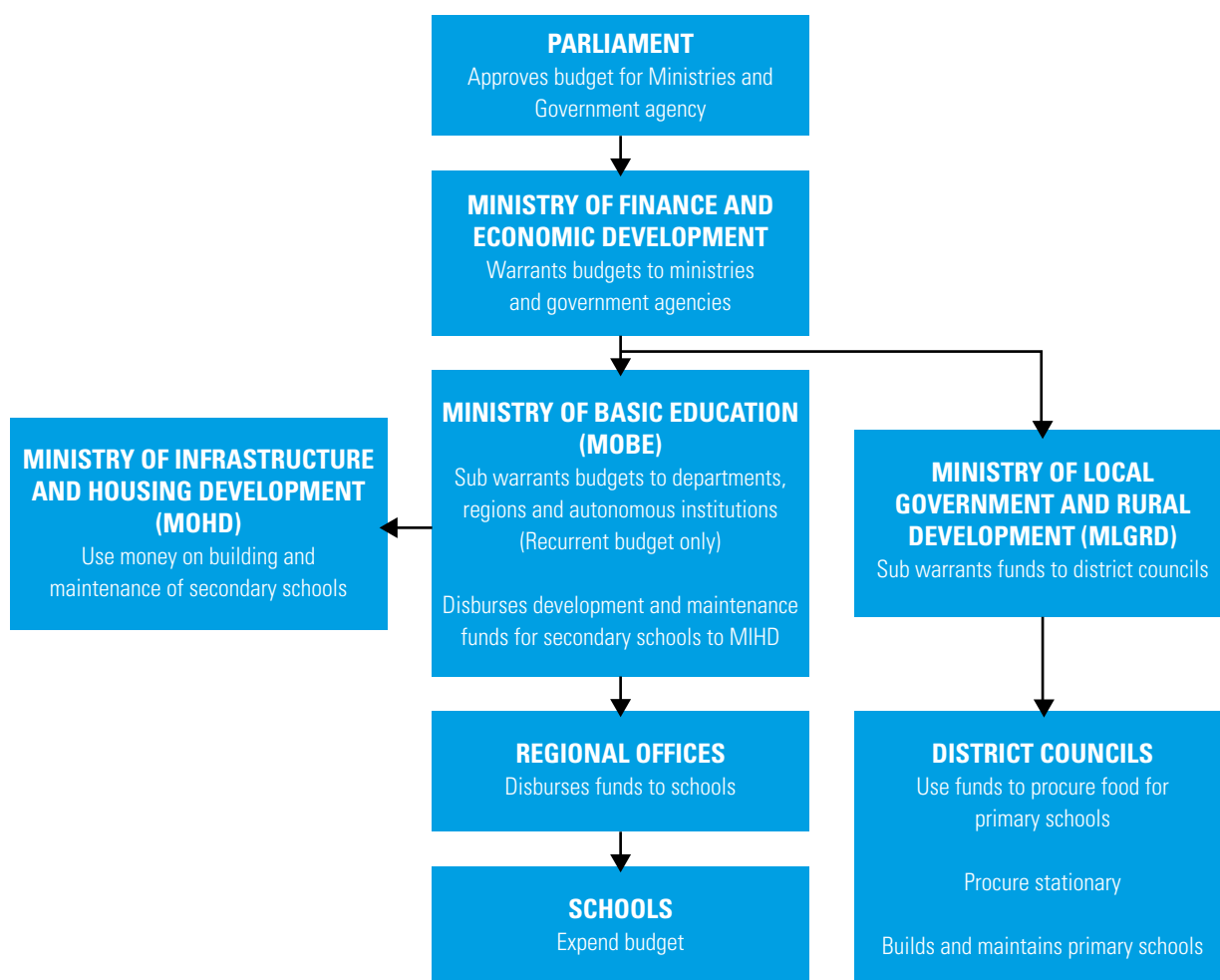
157. There are three main mechanisms in place for monitoring the use of education funds. First, schools and regions are audited by an internal

audit unit based in the MFED. Second, MOBE is held accountable to a parliamentary committee—the Public Accounts Committee—on an annual basis. Lastly, all government funding is transmitted through a government accounting and budgeting system, which makes it possible for different levels of authority to see all public allocations and expenditures.

### MANAGEMENT AND INSTITUTIONAL CHALLENGES

158. The ETSSP pointed to a number of weaknesses in managing and budgeting education spending in Botswana, including:

- “High cost of education both as a share of public spending and as a percentage of gross domestic product;
- Disparities in allocations between ministry departments and across levels of education such as primary, secondary and tertiary sub-sectors;
- Under-spending of education budget in some rural districts which are also under-performing;
- Capacity underutilization in colleges of education and some tertiary level institutions;
- Lack of timely enrolment data to guide planning and budgeting;
- Poor planning, budgeting and financial management;
- Inadequate use of ICT in education management and delivery;
- Low capacity for internal audit;
- Poor alignment between the budget and sector priorities and lack of linkages between budget allocation and performance indicators to enhance accountability;
- Poor procurement planning.” (Botswana, Ministry of Education and Skills Development, 2015, p. 156).

**FIGURE 32 EDUCATION FUNDING FLOW**

159. While the ETSSP proposed a number of changes to improve the education sector, many of these have not yet been implemented. The institutional separation of MOBE and the MTERT would also require a different structure than what was proposed in the ETSSP in 2015.

## FRAGMENTED DECISION-MAKING

160. Having both MOBE and the MLGRD be responsible for primary education results in fragmented decision-making. MOBE “is responsible for recruitment, employment, deployment, and payment of teachers in primary schools, and for their curriculum and other professional matters” (Botswana, Ministry of Education and Skills Development, 2015, p. 29). It is also responsible for the provision of textbooks. Within MOBE, the

Department of Teacher Service Management (DTSM) “is responsible for the hiring and posting of teachers, and the relevant financial management paperwork is decentralized from HQ to the regional offices.” Meanwhile, the MLGRD:

*“funds the physical school buildings, maintenance, non-teaching staff, feeding programs, hostels in remote areas, teacher housing, and services, furniture and equipment, and materials for the schools,”<sup>26</sup> through the local councils, which run all those things through their own budget and finance processes... Coordination between council education committees and officers, and the regional offices, is somewhat unclear.”* (Botswana, Ministry of Education and Skills Development, 2015, p. 29).

161. This policy has had detrimental effects on coordinating decisions and determining priorities within the education sector. Specifically:



*“Councils build schools, and are still trying to eliminate the backlog and the backlog in teacher housing. Quite how location decisions are made is unclear. There does not seem to be a single facilities plan for development of the school system. ...all other decisions about primary schools are made by the education sections and education committees of local councils; normally regional directors or their representatives attend these committee meetings, but how much sway their views have is unclear.”* (Botswana, Ministry of Education and Skills Development, 2015, p. 29).

**162. The combination of favorable ST-ratios with a shortage of classrooms is in part a result of the fragmentation in decision-making.** This is discussed in more detail in the section on allocative efficiency.

**163. At the secondary level, responsibilities are not split in the same way they are at the primary level.** Salaries are the responsibility of MOBE. Likewise, the provision of funds for textbooks, school meals, stationery, and the maintenance of grounds is also the responsibility of MOBE, although funds are allocated to regional offices and secondary schools that manage most of the distribution. While MOBE is financially responsible for the building of secondary schools and classrooms, MIST is responsible for the actual construction process. This effectively means that there are three ministries tasked with building schools and classrooms, which makes it difficult to determine how much is being spent on construction in the education sector, as this is not clearly separated in the MLGRD's accounts. In 2017, budget data from the MOESD indicated that only P872 million (US\$82 million) was spent on the construction of secondary schools, with no development spending and little recurrent spending in primary education recorded, as this was largely the responsibility of the MLGRD (Table A1 in Appendix A).

**164. The fragmentation in decision-making makes it extremely difficult to plan fiscal expenditures in the education sector and impossible to compare capital spending in primary and secondary education.** It also creates inefficiencies. For instance, there is no one list of approved maintenance or construction firms, protocols for building inspections, or building standards. Therefore, authorities should consider streamlining the whole process of school and classroom construction, from the planning and budgeting process to the organization and oversight

## BUDGET ORGANISATION

**165. Botswana's budgeting process in the education sector can be described as follows:**

*“Although cost centres are required to produce budget requests by detailed votes, the actual discussion between MoFDP and MOESD, and in the Estimates Committee, takes place at the level of the three broad categories of heads of expenditure, (Public Expenditure), other charges, and add-backs. After agreement on the final ceiling for each of the categories, the cost centres and the Ministry prepare and submits requests by detailed vote, which is how the estimated votes are then warranted. The actual locus of control is still not entirely clear.”* (Botswana, Ministry of Education and Skills Development, 2015, p. 20).

**166. To a large extent, budget planning in MOBE is constrained.** First, the allocation of teachers, including non-teaching personnel, and their salaries are determined during budget planning. The rest of the planning process is largely concerned with the allocation of the remaining funds between other recurrent spending and the development budget. Part of the recurrent budget is also used to fund grants to schools and operating expenses to regional offices.

### Budget Requests and Allocation to Secondary Schools and Regional Offices

**167. “Schools feel disempowered as far as finances are concerned.”** (Botswana, Ministry of Education and Skills Development, 2014, p. 57). Schools and regional offices receive funding every year after submitting a motivated request, referred to as a budget estimate. However, the budget estimate often does correspond to the level of funding received, leading to the impression that the process of developing estimates is irrelevant. The amount schools receive appear to be simply based on the previous year's allocation and dependent on the general fiscal situation:

*“Schools are required to submit budget requests following receipt of instructions. These are typically incremental based on the previous year, with any departures justified by narrative. Regional offices simply consolidate and summarize them, and send them on to DSE. Regional offices are not expected*

*or required to comment on the submissions from schools. DSE collates and consolidates, and then juggles the numbers to make them fit the ceiling received from above. They are then forwarded on. In essence, unless there is an overall reduction of DSE's budget after its submission of a request within the ceiling, the final decision as to what each school gets is made by DSE, apparently mostly by the Finance Officer with concurrence of the Director.*" (Botswana, Ministry of Education and Skills Development, 2015, pp. 29-30).

The report prepared for the MOESD on declining student performance states that the system of school financing at the secondary level is often seen by principals and teachers as "inefficient, irrelevant and ill considered."

**168. Primary schools have relatively little control over their budgets or the inputs required for running their schools:**

*"Primary schools have no budgets, no entitlement to any particular inputs beyond textbooks and stationery and cleaning materials etc, and do not in general have explicit allocations in local council budgeting processes. ... Education committees and the staff in the education sections make the decisions about which schools get what on the basis of requests from the schools, their own information from staff visits and parent complaints, and perhaps input from the regional office."* (Botswana, Ministry of Education and Skills Development, 2015, p. 29).

**169. Similarly, secondary schools and regional offices have little real decision-making authority in the budget process.** Secondary schools submit budget estimates based on their perceived needs for the financial year. However, it appears there are no ceilings for their budgets, resulting in inflated estimates that do not prioritize between different spending items. For instance, the budget submitted by North West (including secondary school budgets that were consolidated into the regional budget) was P160 million in 2017/18, yet it received only P40 million. In 2018/19, the region budgeted for P145 million, yet received only P67 million.

**170. Regional offices consolidate secondary school budgets with their own budgets.** Budget estimates (which are really requests) have to be supported by a narrative account setting out the reasons for the requests, with regional offices simply collating and

consolidating estimates:

*"Regional offices were supposed to take responsibility for secondary school and TVET unit finances, but in practice have not, acting purely as aggregating and forwarding offices to MOESD HQ (the DSE) for secondary school budget requests, financial reports, and virement requests (the latter in practice often going direct to the DSE)." (Botswana, Ministry of Education and Skills Development, 2015, p. 19).*

**171. The final decision regarding secondary school budgets is made by the Department of Secondary Education (DSE).** Budget allocations appear to take into account neither local priorities nor the distance officials need to travel to Gaborone or their schools. Regions and schools complain that they have no idea why they receive the amounts they receive or how allocations across spending lines are done: "the final decision as to what each school gets is made by DSE, apparently mostly by the Finance Officer with concurrence of the Director." (Botswana, Ministry of Education and Skills Development, 2015, pp. 29-30). Also, officials in remote regions complain that too little provision is made for their specific distance-related outlays (either for meetings in Gaborone or to visit remote schools).

## Votes/Items within the School Budget

**172. Items within school or regional budgets are referred to as 'votes.'** In budget estimates, funds have to be allocated to votes, with motivations for major shifts, although the DSE and the Department of Finance and Development Planning do not appear to take these into account when determining the budget. While there is some scope for virement or reallocation between votes, the procedure is cumbersome and provides limited autonomy to schools. A report undertaken for the ETSSP stated that:

*"Schools have very little incentive to economize, and little power sometimes to do the obvious things. ... school heads must be given more financial responsibilities, better incentives, and more resources they control themselves."* (Botswana, Ministry of Education and Skills Development, 2015, p. 30).

**173. School grants appear to be allocated on a one-size-fits-all principle.** (Botswana, Ministry of Education and Skills Development, 2014, p. 56). Schools and regions, regardless of their different circumstances and needs, receive the same budget



allocation. For example, many officials report that initial allocations for food, a major expenditure vote, are often insufficient, requiring regions or schools to request more funds. Moreover, schools report that resources for specific votes are sometimes left unspent, as the budget allocation was too small for meaningful spending. As a result, schools' final budget allocations often do not meet their actual needs. Regions or schools can request to shift spending between votes or receive additional funds. The DSE also purposefully holds back some education funding to ensure that schools do not overspend early in the year. (Botswana, Ministry of Education and Skills Development, 2015, p. 30).

## HUMAN RESOURCES

**174. This section focuses on the recruitment, deployment, and salaries of teachers, as well as how human resources are managed within MOBE.**

**175. There is no separate act governing the recruitment and conditions of employment of teachers.** Instead, the Public Service Act sets the standards for all public servants, which means that the Directorate of Public Service Management monitors, appraises, and audits the manner in which public service procedures and standards are applied in MOBE. Human resources functions for teachers falls under MOBE's Department for Teaching Services Management (TSM), and the ministry's Human Resources Department is responsible for non-teaching personnel. (Botswana, Ministry of Education and Skills Development, 2013b). These functions have been partly decentralized to ten regional offices, which have their own human resources sections. Current human resources practice in terms of teacher appointment, deployment, and promotion is not clearly documented, particularly relating to teacher deployment in remote areas.

Most human resources staff members are not trained specialists but predominantly trained teachers. While there is currently no formally set of professional standards, the draft Teaching Council Act, which includes professional standards for teachers, was announced in March 2019 and will be introduced in the next parliamentary session.

**176. Admission to teacher training programs is based on school results.** The country's generous scholarships for tertiary education are attractive for students who study teaching at colleges of education or universities. However, students that accept scholarships for studying teaching tend to have weaker BGCSE results, as students who perform very well on the assessment are usually offered scholarships for more lucrative professions. (Botswana, Ministry of Education and Skills Development, 2013).

**177. Teacher recruitment consists of students who have studied education at colleges of education or universities submitting their names to the list of potential teachers.** This list is recorded in the Infirium Human Resources database at the TSM, which is used to fill job openings. When there is an opening, priority is given to teachers who have been on the list the longest. (Botswana, Ministry of Education and Skills Development, 2013a, p. 11). Schools play no role in the selection process. Prospective teachers with qualifications in scarce subjects, such as mathematics or science, receive jobs almost immediately, while others have to wait in line for vacancies. Currently, there appears to be around 3,000 unemployed teachers in the database, equivalent to 11 percent of the current number of teachers employed in public schools. New teachers often have to serve in remote regions, as there is higher demand for urban, less remote schools. While they are offered no introduction or further training, there are sometimes in-service training opportunities, although these have become less common in recent years, according to officials and teachers.

**TABLE 13 DEMAND AND SUPPLY OF TEACHERS: NUMBERS REMAINING UNEMPLOYED AND NUMBER APPOINTED BETWEEN 15 AUGUST 2015 AND 31 MAY 2019**

Subject	Number with certificate	Number with diploma	Number with degree or post-graduate	Total number remaining unemployed	Appointed since August 2015	% of supply remaining unemployed at 31 May 2019	Year currently appointing for
Agriculture	0	155	220	375	115	77%	2010
Art	0	46	0	46	65	41%	2015
Biology	0	0	172	172	29	86%	2013
Business Studies	0	63	66	129	169	43%	2016
Chemistry	0	0	51	51	30	63%	2016
Computer studies	0	0	202	202	12	94%	2012
Design & technology	0	55	11	66	44	60%	2015
Development studies	0	0	51	51	35	59%	2010
English	0	356	881	1237	186	87%	2010
French	0	0	54	54	14	79%	2011
Guidance & counselling	0	0	220	220	17	93%	2010
Geography	0	0	640	640	52	92%	2010
History	0	0	110	110	63	64%	2010
Home economics	0	40	131	171	83	67%	2013
Mathematics	0	70	11	81	189	30%	2016
Moral education	0	126	370	496	138	78%	2010
Music	0	51	0	51	11	82%	2012
Physical education	0	0	337	337	60	85%	2012
Physics	0	0	0	0	47	0%	2018
Religious education	0	296	152	448	77	85%	2009
Social studies	0	110	211	321	115	74%	2010
Special education	0	0	219	219	43	84%	2010
Science	0	163	0	163	96	63%	2014
Setswana	0	296	155	451	124	78%	2010
Early Childhood reception class teacher	0	36	5	41	642	6%	2018
Early Childhood teacher aid	2,331	0	0	2,331	601	80%	2014
Primary teachers	0	90	0	90	1,422	6%	2018
Totals	<b>2,331</b>	<b>1,953</b>	<b>4,269</b>	<b>8,553</b>	<b>4,479</b>	<b>33%</b>	-

Source: Data obtained from MOBE.

178. Despite the oversupply of teachers in non-specialist subjects, there is no indication that the number of student teachers or scholarships is being reduced. The country's 8,553 unemployed teachers

represent 30 percent of current teacher employment. In addition, more than 3,000 students with education qualifications graduate annually. Only around 260 teachers per year will reach retirement age in the

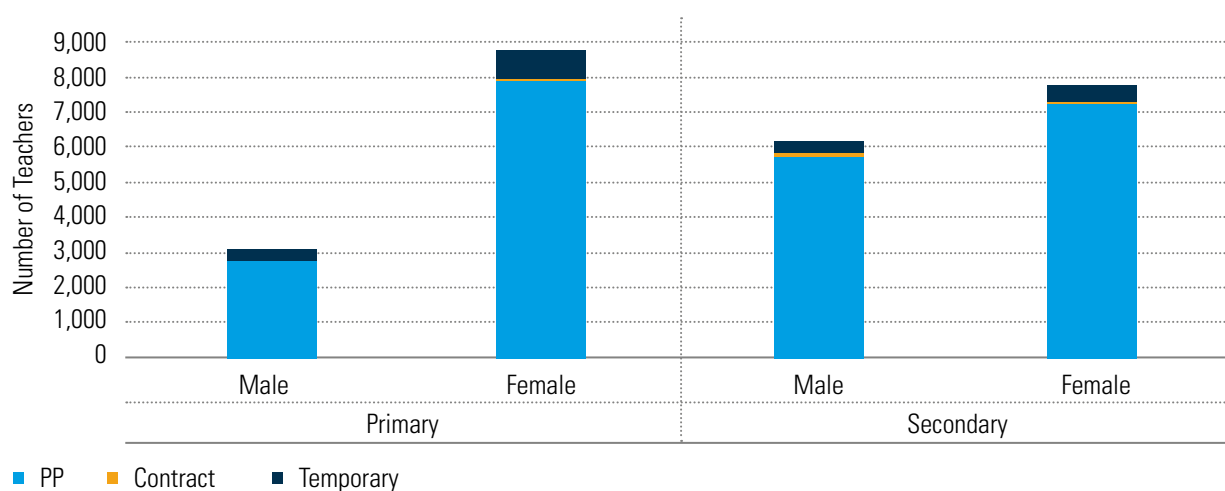
next five years, and more than 80 percent them are in primary schools. Only 4,479 teachers were appointed between August 15, 2015 and May 31, 2019 (Table 13). The number of teachers on the waiting list for jobs is twice as large as the number of teachers that found employment in the same period. Botswana's school system only hired 1,120 new teachers per year in 2015-19, or 4.0 percent of current employment, which is considerably more than the annual retirement rate among teachers. There is a huge oversupply of teachers in subject areas such as English, Setswana, history, and geography. Some prospective teachers have been on the waiting list since 2010 are now first in line for new jobs in these subjects. Even in mathematics, recruitment is now only open for the 2016 cohort. While no physics teachers are unemployed, there is vast unemployment among chemistry, science, and biology teachers. Almost all primary and pre-primary teachers are employed, while more than 2,200 early childhood teacher aids remain unemployed, despite a shortage of teachers in community-based early childhood development centers.

**179. A common complaint among teachers in rural regions concerns 'overstaying.'** Historically, all teachers were expected to spend a part of their career in rural areas before they could move to a more attractive, usually urban location, or closer

to the capital. Teachers who wish to transfer to other schools or regions usually have to make this request to their principal and regional office. However, this system is not systematic, and there appears to be a reluctance to hire teachers who have been deployed in remote areas for a long period of time. There are two main ways a teacher can move to a more attractive location. First, teachers with medical conditions that require them to be close to a medical facility often manage to obtain transfers to Gaborone or nearby regions. As a result, some teachers are said to use whatever medical grounds they can find to be transferred near the capital, according to ministry and regional officials. Alternatively, the regional director can negotiate with the director of a more favored location to appoint one of his or her teachers. This lack of mobility demotivates teachers who have to continue working in rural areas against their will.

**180. About 75 percent of public primarily school teachers are female, while female teachers make up around 55 percent of all secondary teachers (Figure 33).** Over 90 percent of public teachers are classified as permanent personnel, and 7.5 percent are classified as temporary. There are very few contract teachers in Botswana's public schools (less than 1 percent). However, roughly 80 percent of teachers in private schools are classified as contractors (EMIS, 2017).

**FIGURE 33 PUBLIC SCHOOL TEACHERS BY GENDER AND CONTRACT STATUS, 2017**

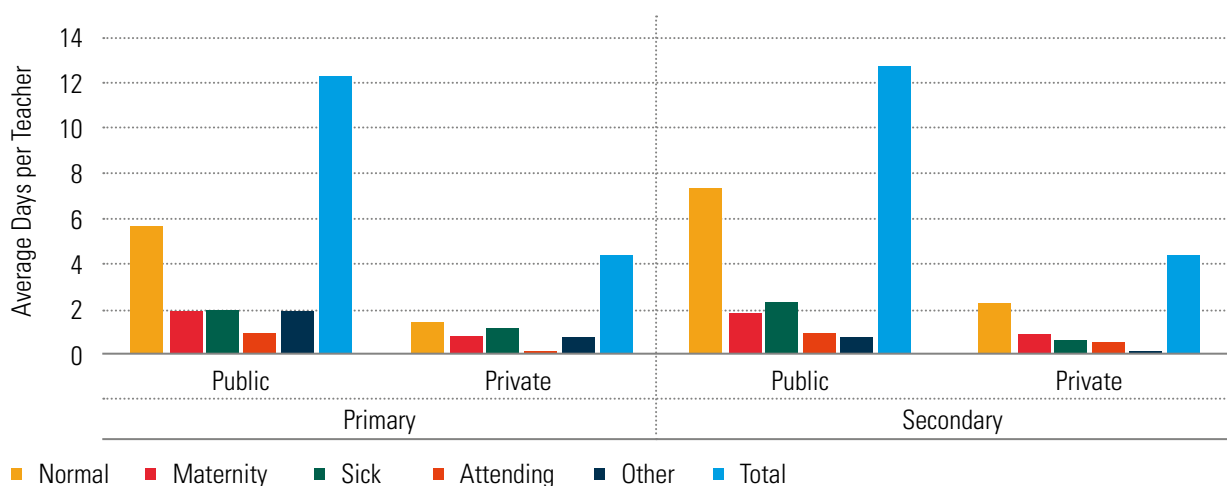


Source: EMIS, 2017.

181. Based on administrative data from the EMIS, public school teachers report an average of twelve days of annual leave per year (Figure 34). The

most common reason is normal leave, followed by maternity and sick leave. Teachers in private schools are allowed significantly fewer days of leave.

**FIGURE 34 AVERAGE ANNUAL LEAVE DAYS PER TEACHER BY SECTOR AND SCHOOL LEVEL, 2017**

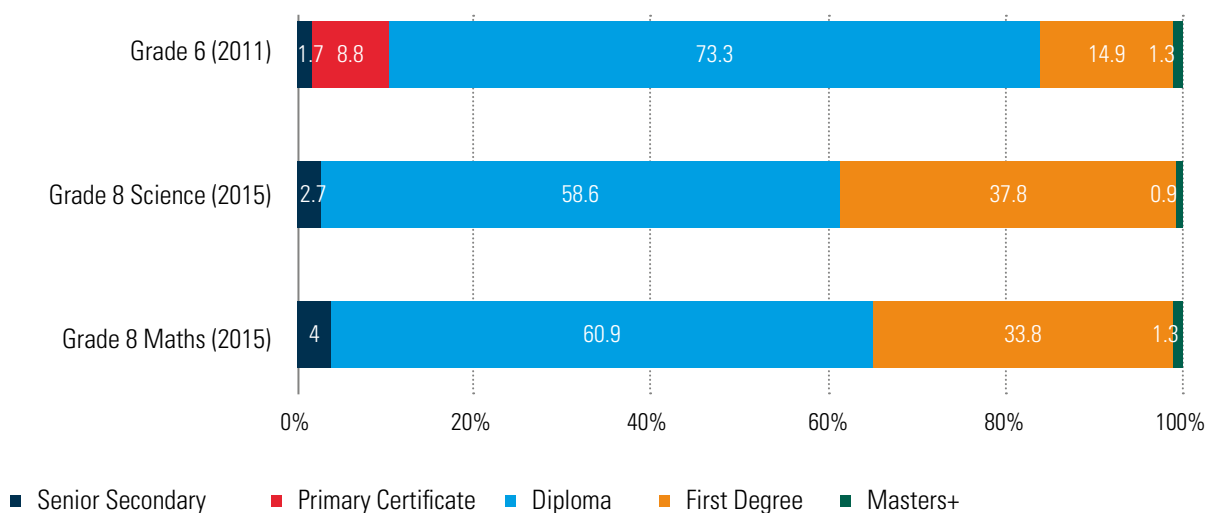


Source: EMIS, 2017.

182. The diploma is the most common teacher education qualification, especially among primary teachers (Figure 35). Grade 8 subject specialists in mathematics and science are more likely to have an undergraduate degree than primary teachers, although less than 40 percent of all teachers have successfully undertaken undergraduate

studies. In terms of subject specialization, TIMSS data show that about 20 percent of Grade 8 mathematics teachers majored in both mathematics and mathematics for education. However, 41.3 percent of mathematics teachers only studied mathematics and did not major in mathematics for education.

**FIGURE 35 TEACHER EDUCATION LEVELS BY GRADE LEVEL, TIMSS 2011-2015**

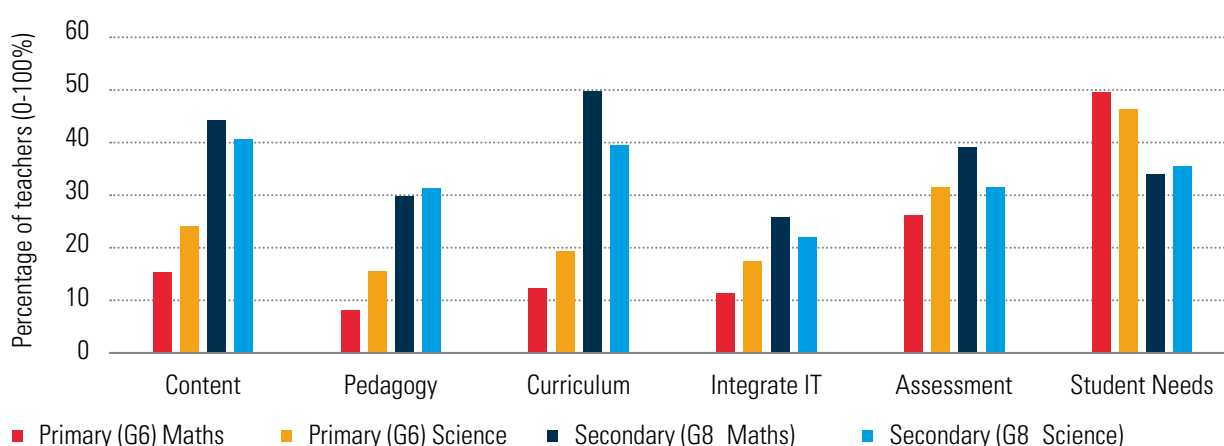


Source: TIMSS (2011, 2015).

183. There is limited professional development opportunities in Botswana, and they may have even declined in recent years. Most teachers report being exposed to some form of professional development, based on TIMSS data from 2011 (Grade 6 teachers) and 2015 (Grade 8) (Figure 36). For primary teachers that reported some type of professional development in the previous two years, it was low in the areas of content knowledge, pedagogy, and curriculum, but more common for student assessment and student needs topics. In lower secondary education, teachers report more exposure to professional development, especially in content and methods, compared to

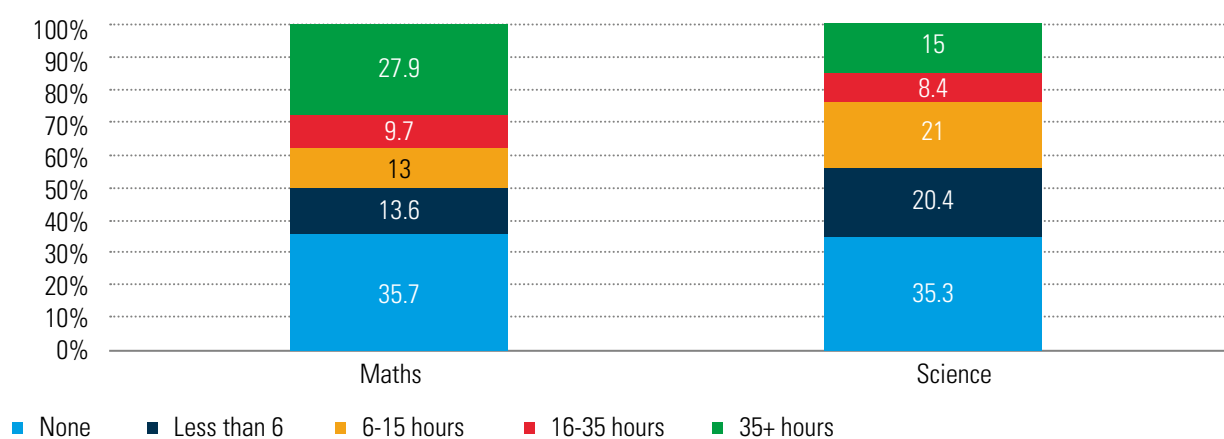
their counterparts in primary schools. However roughly half of Grade 6 teachers in 2011 reported no participation in professional development in the previous two years, compared with about 35 percent of Grade 8 teachers (Figure 37). Also, only 15 percent and 28 percent of Grade 8 science and mathematics teachers, respectively, reported partaking in professional development training of more than 35 hours in the previous two years. There are limited data on the quality of professional development activities and the degree to which they incorporate best practices and lead to real improvements in teaching or teacher capacity (Popova & Evans, 2018).

**FIGURE 36 PERCENTAGE OF TEACHERS WHO REPORT PROFESSIONAL DEVELOPMENT IN THE PREVIOUS TWO YEARS BY TOPIC, GRADE, AND SUBJECT, TIMSS 2011-2015**



Source: TIMSS, 2011, 2015.

**FIGURE 37 TOTAL HOURS OF PROFESSIONAL DEVELOPMENT DURING THE PREVIOUS TWO YEARS BY SUBJECT, GRADE 8 TEACHERS, TIMSS 2015**



Source: TIMSS, 2015.

**184. Quality teaching is crucial for effective education.** High productivity in education requires that teachers use their time and resources well. For example, a recent analysis for the World Development report show that there are serious challenges facing the education sector in many African countries that need to be addressed in terms of time-on-task (how teachers use classroom time) and subject and pedagogical knowledge (Bold, et al., 2017).

**185. Several studies point to the importance of monitoring teachers' activities and holding them and principals accountable for the performance of their students while ensuring that they have the right skills and support.** (Carnoy & Arends, Explaining mathematics achievement gains in Botswana and South Africa, 2012; Carnoy, Ngware, & Oketch, The role of classroom resources and national educational context in student learning gains: Comparing Botswana, Kenya, and South Africa., 2015; Carnoy, Introduction - Comparing learner performance in southern Africa: A natural experiment, 2012; Zuze, 2010). This requires a focus on teacher training, both for prospective teachers at university and colleges of education and current teachers through in-service training. Evidence show that Botswana's teacher are often not well equipped to provide quality education (Carnoy & Arends, 2012, p. 467). Many teachers are inadequately trained, yet they are likely to remain in the system for many years. While there have been numerous attempts to improve existing teacher quality through in-service training, these efforts appear to have had almost no effect on the quality of learning outcomes in schools.

## MONITORING OF EDUCATION QUALITY

**186. Before the ETSSP, a report for the MOESD found that the system for monitoring and supporting schools is no longer functional.** It pointed to the decentralization of school monitoring and support services as ineffective, as all subjects are not fully represented in all regions. There is also a lack of clarity in regional monitoring and support services. (Botswana, Ministry of Education and Skills Development, 2014). A country's ability to monitor and support education services is crucial to improve the quality of education:

*"Education often is a country's largest expenditure: the national education system often gets most of the national budget). There is a high need, therefore, to ensure that it delivers. To ensure this, most countries embark on producing an assessment system that enables the government to monitor at a national level what the quality of the national education outcomes are."* (Botswana, Ministry of Education and Skills Development, 2014, p. 40).

**187. Despite Botswana's three national examinations, there are insufficient domestic data on school performance.** In particular, there is a lack of detailed data that can be used to assist teachers in their work and prioritize in-service training. Moreover, there is almost no information on performance in grades other than those that are examined externally, which disempowers teachers, especially those who may have had insufficient training.

**188. International assessments provide useful information on performance in the country's schools.** They allow for an evaluation of Botswana's education system compared to that of peers, and whether the country is making progress toward improving educational outcomes. A detailed analysis of these assessments can also be used to conduct formative evaluations by identifying underperforming students.





## 05 EDUCATIONAL SECTOR FINANCING

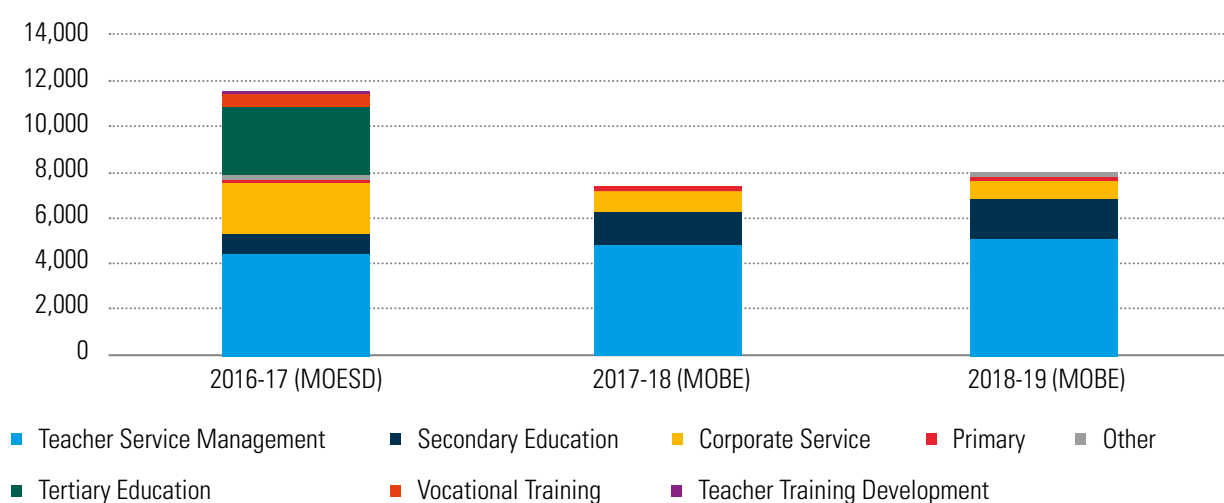
### EDUCATION BUDGET

189. Teaching service management, which covers teacher salaries, constituted the biggest share of the recurrent education budget in 2017/18 (38.2 percent) (Figure 38). This was followed by tertiary education financing (25.8 percent) and spending at the level of headquarters (20.1 percent). The DSE's budget (7.6 percent) was much larger than that of pre-primary or primary education. However, education-related spending by the MLGRD is not accounted for within the central education budget. Development expenditure makes up less than 10 percent of the education budget and is concentrated in secondary education.

190. The recent reorganization of the education

sector complicates comparisons of education spending, as the current institutional structure was only recently put in place. To facilitate a comparison between the past MOESD-led and the current MOBE-led organizational periods, a modified budget summary format was used, with detailed summaries of approved and actual expenditures for the three most recent school years: 2016-17 (MOESD), 2017-18 (MOBE), and 2018-19<sup>27</sup> (MOBE) (Table 14). The total education budget was larger in 2016-17 due to the inclusion of tertiary education and other departments that have since been removed from the central ministry structure (Figure 38). Excluding vocational training, tertiary education, and other educational expenses, the 2016-17 education budget is roughly equal to the approved MOBE budgets for 2017-18 and 2018-19.

**FIGURE 38 EXPENDITURES (IN 1000s OF PULA) FOR MOESD AND MOBE, 2016-2018**



Source: MFED, author's calculations.

**TABLE 14 BUDGET AND EXPENDITURE OF MOESD AND SUBSEQUENTLY OF MOBE**

Details	MOESD Approved 2016/17	MOESD Expenditure 2016/17	MOBE Approved 2017/18	MOBE Expenditure 2017/18	MOBE Approved 2018/19	% of approved 2018/19
0601-Corporate Service	2,177,639,490.00	2,313,779,304.00	864,003,860.00	889,386,354.00	821,259,240.00	10.3%
0602-Department of Vocational Training and Education	531,658,650.00	585,198,080.00	-	-110,998.00	-	-
0603-Department of Tertiary Education	2,190,505,750.00	2,970,561,724.00	-	-	-	-
0604-Department of Out of School	116,620,010.00	114,255,685.00	86,680,650.00	53,476,285.00	68,531,210.00	0.9%
0605 Curriculum	25,000,900.00	20,573,182.00	25,128,570.00	20,364,184.00	23,081,110.00	0.3%
0606 Teaching Service Management	4,350,216,730.00	4,404,831,880.00	4,636,828,220.00	4,842,877,330.00	5,107,258,400.00	64.1%
0607 Primary	135,110,820.00	65,162,865.00	116,857,650.00	62,516,156.00	114,673,530.00	1.4%
0608 Secondary	845,139,600.00	878,016,684.00	997,565,940.00	1,398,179,247.00	1,758,365,000.00	22.1%
0609 Teacher Training and Development	191,166,280.00	104,246,518.00	-	-3,234.00	-	-
0610 Department of Technical Services	25,015,490.00	24,354,193.00	25,485,290.00	25,157,715.00	25,875,630.00	0.3%
0611 Information Education & Skills Development	16,163,650.00	15,305,381.00	16,373,590.00	17,433,252.00	16,998,200.00	0.2%
0612 Special Support Services	21,978,080.00	19,697,312.00	22,385,410.00	21,310,424.00	22,532,920.00	0.3%
0613 Education Planning & Research	10,113,070.00	9,316,323.00	10,237,010.00	10,022,055.00	11,472,600.00	0.1%
<b>Total</b>	<b>10,636,328,520.00</b>	<b>11,525,299,131.00</b>	<b>6,801,546,190.00</b>	<b>7,340,608,770.00</b>	<b>7,970,047,840.00</b>	<b>100.0%</b>

Source: MFED.

**191. In 2018/19, 64 percent of the approved education budget was allocated to teacher management services (i.e., teacher salaries), followed by the secondary education department at 22 percent and corporate services at 10.3 percent.** The budget for secondary education increased considerably in the three-year period, while the opposite is true for corporate services. Only a small part of the education budget was allocated to primary education (a mere 1.4 percent) in 2018-19 (and in previous years), as the primary responsibility for non-teacher salaries in primary education falls under the MLGRD. Since education-related spending in the MLGRD's budget is not clearly identifiable, it is difficult for authorities to compare spending data across spending categories.

**192. Actual spending exceeded the approved budget at MOBE by more than P0.5 billion in 2017/18.** The bulk of the discrepancy was in the Secondary Education Department.

## **FINANCING SOURCES**

**193. Botswana's public finances are sound due its generally healthy fiscal situation and limited tax resistance.** However, the mining sector constitutes a large share of public tax revenue. As a result, the expansion of education in Botswana has likely been more supply- than demand-driven relative to most other developing countries.

**194. The current level of education spending (not only school education) is high as share of the country's GDP and education budget.** Botswana's previous PER noted that *"a strikingly soft budget constraint, the result of continuous budget surpluses, has also been damaging to the quality of public investment"* (PER 2010: Par.30). (World Bank, 2010, p. par.30). However, the experience of Botswana holds a valuable lesson for its neighbors: *"The Botswana government's spending of its diamond windfall has been deliberately constrained within the limits set by the availability of skilled manpower and the ability to finance future recurrent costs."* (Siphambe, 2004, p. 361).

**195. An evaluation of public expenditure and accountability undertaken for the European Union pointed out that some fiscal rules that Botswana, as a resource-rich country, has implemented has acted as fiscal stabilizers.** This includes a rule to reserve

mineral revenue for development spending, which is defined to include recurrent spending on education (DFC Consortium, 2013, p. 121). Tax revenue from the mining sector has supported the country's high spending on education.

**196. As an upper-middle-income country, Botswana does not attract much donor funding.** Donor support to Botswana's recurrent budget was only P209 million, 0.4 percent of the total recurrent budget, in 2017/18. Most donor support comes from the European Union. Moreover, international grants contributed only 3 percent to the development budget in the same period. (UNICEF, 2017, p. 14).

**197. Private financing of education occurs largely through the private provision of education.** Students at private schools represent around 7 percent of primary and 4 percent of secondary enrolment. There is greater private-sector involvement in ECCE activities, as these are largely provided by private community-based providers without public financing. Additionally, households' out-of-pocket expenditure is quite large in senior secondary education, particularly for the poorest households.

## **BUDGET PLANNING AND EXECUTION**

**198. Budgetary processes at the national level are relatively well-established in terms of budget planning and execution.** (DFC Consortium, 2013). Budgets within the MOESD function well, and a situational analysis for the ETSSP of financial management and the budget found that: (i) the standard of probity and internal control in the MOESD is relatively high, (ii) the level of education funding is high by international standards, and (iii) some competent, resourceful, and motivated officials find pragmatic solutions to overcome obstacles. On the negative side, however, the same report pointed to the *"almost total lack of systematic information relevant to making good management decisions."* (Botswana, Ministry of Education and Skills Development, 2015, p. 38). The United Nations Children's Fund notes in its education budget brief that recurrent budgets in Botswana's education sector as a whole:

*"perform quite well in the aggregate. When looking at budget credibility, the most recent three years of available data indicate that the education sector*

*spent slightly beyond its original intent, by an annual average of 7 per cent. Turning to budget execution, which measures the difference between funds received and funds actually spent, the rates are nearly identical to budget credibility. These trends suggest that spending variances are mainly due to poor planning at the start of the fiscal year and that there is strong absorption capacity to spend funds once they are received.”* (UNICEF, 2018, p. 8).

**199. While the recent reorganization culminating in two new education ministries did require some changes in personnel, it did not undermine the integrity of the budget process.** There are some issues, however, around budgetary organization that can improve. The analysis of the financial management and the in the ETSSP budget pointed out that:

*“MOESD has made considerable structural changes with respect to internal operations, creating new subsidiary cost centres, but without reflecting most of them in the vote structure, so that the allocation of funds within HQ is only known to the relevant finance officers and cost centre administrative heads.”* (Botswana, Ministry of Education and Skills Development, 2015, p. 20).

**200. An important weakness in budgeting and implementation comes from the fragmentation of decision-making related to school education.** While the overwhelming part of the budget, including teacher salaries, falls directly under the budgetary control of MOBE, there are other expenditure items in primary and secondary education that are not its primary responsibility. Most expenditure items in primary education, other than teacher salaries and textbooks, are the responsibility of the MLGRD through ten district councils and six urban councils. The MLGRD pays for non-teaching staff attached to schools (e.g., cleaners and cooks) and is responsible for the construction of primary classrooms and schools; the maintenance of buildings; and the provision of school furniture, equipment, and stationery. It also pays utility bills (i.e., electricity, water, and phone) and manages food programs and school meals. Finally, it also manages the small number of boarding schools in primary schools.

**201. MOBE is responsible for service provision at secondary schools, usually through regional offices, although it also allocates funds directly to**

**secondary schools to be executed locally.** The non-teaching establishment of 6,678 staff members at schools and regional offices earn an average salary of P59,000 per year at a total cost of P395 million. The staff includes 466 administration officers and assistants, 594 procurement personnel, and 269 bursars and accountants, as well as 356 drivers, 250 gatekeepers, 930 night watchmen, and 1,717 cooks and kitchenhands.

**202. Secondary school budgets serve a similar purpose as that of the MLGRD for primary schools.** For example, they include spending on food, stationery, school furniture, hostels, etc. An analysis of warranted expenditure for 2018/19 for eight of the ten regions,<sup>28</sup> including the secondary schools they serve, shows that the average spending per secondary student (based on 2018 provisional enrolment numbers) amounted to P4,424. There are only two regions that are outliers: North East, which spends only P2,600 per student, and Kweneng, which spends P5,250 per student. The two largest spending items are food, which accounts for 41 percent of all spending at regional offices and secondary schools, and service charges (utility bills for water, electricity, and phones), which constitute almost one-third of spending. On average, only 11 percent of spending is on books for students, stationery, and materials for practical subjects. With the exception of the two regional outliers, average warranted spending levels and patterns differ very little by region.

**203. Although decentralization efforts have shifted some responsibilities to the regions, most decision-making is still highly centralized.** In contrast to the large number of staff at schools and regional offices, staff members at the national headquarters total only 1,177, distributed as follows:

Corporate services	233
Non-formal	319
Curriculum	75
Primary education	138
Secondary education	100
Technical services	116
Media services	73
Special support	88
Planning	35
<b>Total</b>	<b>1,177</b>

204. The fragmentation of decision-making between MOBE and the MLGRP contributes to an inefficient allocation of resources and low capital spending in the education sector. There are instances where a school have been constructed by the MLGRD without the knowledge of MOBE, which is then asked to appoint teachers for the school. Moreover, there is a fragmentation of decision-making within MOBE, especially involving the provision of infrastructure and hiring teachers. As a result, there is a large infrastructure shortage in the education sector despite sufficient staffing at schools.

## EFFICIENCY OF SPENDING

205. The efficiency of spending relates to how well resources are converted into desired outcomes. There are three major types of efficiency related to spending in education:

a. **Allocative efficiency**, which is how well resources are allocated to ensure maximum output. For instance, learning outcomes could suffer if too much money is spent on teachers and too little on classrooms and learning materials;

b. **X-efficiency**, which evaluates the efficiency of the process used to achieve the desired output, given the allocation of resources. This is what is often referred to as productivity; and

c. **External efficiency of education**, which evaluates if students are more productive in the economy.

## Allocative efficiency of spending

206. Botswana's education system suffers from various allocative inefficiencies. First, spending on post-school education, particularly university education, is likely too high relative to spending on school education. Post-school education is only accessible to a relatively small part of the population, as only a limited number of students transition from Form 5 and perform well on the BCGSE. Moreover, the unit cost of tertiary education is very high. Second, within the school system, there are also inefficiencies in the allocation of resources.

## Spending by Level of Education

207. The MOESD's estimates of public spending per student in primary education are too low, while in secondary education they are in line with the estimates of the World Bank provided in Table 16. Spending per students is high in tertiary education relative to secondary education (Table 15). The extremely high spending per student in teaching colleges is the result of a lack of economies of scale due to a declining number of students, which has led authorities to close teaching colleges and have most teacher training take place at universities. The cost of university studies is also high, again partly attributable to lack of economies of scale in some parts of the university system. High university costs are also due to the high cost of providing scholarships to all university students, which makes attending university largely free for students.

**TABLE 15 ETSSP ESTIMATES OF UNIT COST AT DIFFERENT LEVELS OF EDUCATION, 2012/13**

Level	Level	Number of institutions	Total enrolment	Average enrolment per institution	Average unit cost (Pula per student)	As % of GDP per capita	
						Botswana	Middle income country average
Primary		754	337,206	447	3,970	10%	15.1%
Junior Secondary		207	125,261	605	17,342	33%	16%
Senior Secondary		32	48,900	1,528	17,278	33%	16%
Teacher Training		5	1,327	265	244,478	n/a	n/a
Colleges & Vocational							
Technical & Vocational Colleges		45	10,274	228	45,478	n/a	n/a
Tertiary		44	65,702	1,493	100,000	250%	25%

Source: (Botswana, Ministry of Education and Skills Development, 2015, pp. 163, Table 7.1).

208. New estimates indicate that Botswana spent P6.6 billion on school education in 2018, which was roughly evenly split between primary and secondary students (Table 16). The ETSSP's estimate of the cost per primary student is too low, as the cost of teacher salaries per student amounted to P5,784 in 2018 (Table 18). The cost of non-teaching personnel at secondary schools and in regional offices amounted to P746 per student in the same year, while the

available budget for regional offices and schools in eight regions amounted to around P4,424 per secondary student in 2018/19. The unit cost per secondary student is estimated to be roughly twice that of primary students but not more than four times the estimate in the ETSSP. Thus the new estimate for secondary education spending is closely in line with that in the ETSSP, but the primary estimate is more than double the estimate in the ETSSP.

**TABLE 16 ESTIMATED UNIT COST OF PRIMARY AND SECONDARY EDUCATION, 2018 (PULA PER PUPIL)**

	Teacher salaries <sup>a</sup>	Non-teaching personnel: MOBE <sup>b</sup>	Non-teaching personnel: MLGRD <sup>c</sup>	Other expenditures <sup>d</sup>	Total	% of GDP per capita <sup>e</sup>	Total cost (million pula)
<b>Primary</b>	5,784	250	500	3,000	9,534	11.7%	3,286
<b>Secondary</b>	11,980	1,675	0	4,424	18,079	22.2%	3,327
<b>Total (primary plus secondary)</b>	7,941	746	326	3,496	12,509	15.4%	6,613

Note:

<sup>a</sup> Derived from Table 18.

<sup>b</sup> Total from Table 18. It was assumed that primary schools benefited from a small component of non-teaching personnel by MOBE, mainly for inspection and regional support services.

<sup>c</sup> Own assumption.

<sup>d</sup> Secondary spending from Table 18; primary school level own assumption.

<sup>e</sup> GDP per capita estimated at P81,361 in 2018.

Source: Own estimates based on data contained in other tables, as explained in notes.

## Spending Allocation within School Education

209. Botswana's schools suffer from a shortage of classrooms and textbooks, and there is underinvestment in specialized classrooms (e.g., laboratories) and materials required for specialized courses (e.g., home economics or chemistry). While there is a tendency to overspend on teachers in developing countries, more spending on complementary resources, particularly textbooks and teacher support material, often has a significant impact (Pritchett, 1999; Glewwe, Hanushek, Humpage, & Ravina, 2014). However, the complex budget process in Botswana makes a reprioritization of resources difficult, as the trade-off between spending on teachers and on other needs are not always clear.

## Spending on Teachers

210. Teacher salaries in Botswana do not appear excessive considering the country's level of development. A large number of both primary and junior secondary teachers are in pay grades C1 through C4, with salaries ranging from P83,448 to P159,972 (Table 17). Since there are no senior secondary teachers in the C4 paygrade, their salaries start at P103,476, and school principals and deputy principals are in the D1 through D4 pay grades. Teacher salaries are around twice the level of GDP per capita in Botswana, which is relatively low compared to that of many other developing countries (Sandefur, 2018).



**TABLE 17 OFFICIAL TEACHER SALARY SCALES BY SALARY GRADE IN PULA AND US\$, 2018**

Grade	Annual Salary (Pula)	Annual Salary (US\$)
<b>E2</b>	365,988	34,269
<b>D1</b>	311,988	29,212
<b>D2</b>	271,320	25,404
<b>D3</b>	265,944	24,901
<b>D4</b>	205,176	19,211
<b>C1</b>	159,072	14,894
<b>C2</b>	128,280	12,011
<b>C3</b>	103,476	9,689
<b>C4</b>	83,448	7,813
<b>B1</b>	67,332	6,304
<b>B2</b>	56,052	5,248
<b>B3</b>	46,764	4,379
<b>B4</b>	38,964	3,648
<b>B5</b>	32,424	3,036
<b>A1</b>	27,192	2,546
<b>A2</b>	22,608	2,117
<b>A3</b>	18,888	1,769

Source: GoB, Public Service Management Directive 1 of 2018. Exchange rate of 10.68 The bulk of Thpula per US\$ used.

**211. Yet, schools' large teaching and non-teaching staff raises the cost per student.** The teacher salary bill per primary student was almost P6,000 in 2018, while it was almost double that in secondary schools (Table 18). This was due to extremely low ST-ratios: below 26:1 for primary schools and below 12:1 for secondary. In addition, 6 percent of teachers were on study leave and 10 percent were temporary. In 1967, the primary ST-ratio was 42:1. (Malao, n.d.). In almost half a century, the number of primary

teachers grew at a sustained rate of 4.6 percent per year, from 1,713 teachers in 1967 to 14,533 in 2015. The inter-regional variation in teacher salary cost per student at both the primary and secondary level is relatively small, although differences in the cost of regional and non-teaching staff per student is greater. Regions with the lowest total enrolment rates also had the highest cost of teachers per student, suggesting that the low economies of scale in these regions contributed to the high costs.

**TABLE 18 PERSONNEL COSTS BY REGION AND PER PUPIL IN SECONDARY SCHOOLS, 2018**

	Salaries (million pula)				Enrolment 2018			Enrolment 2018			
	Regional office and non-teaching	Primary teachers	Secondary teachers	Total salary cost	Primary	Secondary	Total	Teacher cost per primary pupil	Teacher cost per secondary pupil	Govt education expenditure (% of GDP)	Total personnel cost per pupil (teaching & non-teaching)
<b>Central</b>	131.2	695	780	1,607	119,289	64,371	183,660	715	5,829	12,121	8,749
<b>Chobe</b>	10.6	24	15	49	3,669	1,267	4,936	2,145	6,503	11,595	9,955
<b>Ganzhi</b>	17.4	51	47	116	7,866	3,572	11,438	1,523	6,526	13,220	10,139
<b>Kgalagadi</b>	19.4	82	67	169	9,285	4,562	13,847	1,399	8,872	14,731	12,202
<b>Kgatleng</b>	20.1	96	97	213	14,680	7,556	22,236	904	6,567	12,822	9,597
<b>Kweneng</b>	41.4	266	251	558	49,533	20,431	69,964	591	5,361	12,290	7,976
<b>North East</b>	33.2	161	197	392	26,142	16,476	42,618	780	6,173	11,974	9,196
<b>North West</b>	28.3	181	160	369	31,034	14,396	45,430	623	5,829	11,082	8,117
<b>South</b>	52.2	274	295	621	42,640	22,885	65,525	797	6,429	12,874	9,477
<b>South East</b>	40.8	162	296	499	40,480	28,525	69,005	591	4,007	10,379	7,232
<b>Total</b>	<b>394.6</b>	<b>1,993</b>	<b>2,205</b>	<b>4,593</b>	<b>344,618</b>	<b>184,041</b>	<b>528,659</b>	<b>746</b>	<b>5,784</b>	<b>11,980</b>	<b>8,688</b>

Note: Costs were calculated by applying salary costs by job grade to establishment costs for each region. 2018 enrolment figures are provisional.

Source: Data from MOBE.

**213. Despite teachers' small workload and low ST-ratios, the average class size in Botswana is quite large.** The country's class sizes range from about 37 to 45 students, mainly due to a shortage of classrooms both in primary and secondary schools. (Botswana, Ministry of Education and Skills Development, 2014, p. 48).

#### Spending on Classrooms

**214.** There has been a shortage of classrooms and schools in Botswana since the beginning of the 1990s. In 1994, the RNPE argued that *"a special provision should be made over and above the normal budgetary allocation to clear the backlog of classrooms and teachers' quarters that presently exists"* (Botswana, Government, 1994, p. 15). The ETSSP's proposed budget provides for a significant increase in development spending to deal with the backlog of classrooms and schools. While there were

4,674 streams (class groups) accommodated in the country's secondary schools in 2008, there were only 3,663 classrooms. (EMIS, 2018 Basic Education Enrolments National - Excel file, 2018; Statistics Botswana, 2012).

**215.** In primary schools, 2015 EMIS data point to a shortage of 1,935 classrooms, 15 percent of the total number of primary classrooms (12,621) in 2015.<sup>29</sup> The MLGRD indicated in 2018 that it was prioritizing the construction of new classrooms in schools that faced a shortage of at least five classrooms. The ministry spent P247.2 million on building school facilities in 2017/18, while another P58 million remained unspent due to delays in procurement and tender processes.

**216.** There is also a large classroom deficit in secondary schools, exacerbated by the proliferation of elective

courses. Some subjects offered at secondary schools require specialized classrooms, which are also severely lacking in Botswana. Although the government indicated in the Budget Strategy Paper for 2017/18 that it will continue to prioritize the construction and maintenance of schools, this has not occurred in practice. Difficulties with procurement, in particular tender processes, have contributed to the inadequate funding of construction and maintenance. (Botswana, Ministry of Finance and Development Planning, 2016, p. 10).

### Spending on Textbooks

217. Despite the high levels of public spending in basic education, there are not enough core primary textbooks for all children. In 2015, the average availability of core textbooks ranged from 64 percent in Setswana and 72 percent in English (Table 19). Regional disparities are not particularly large, though North West appears worse off than any other region in terms of access to textbooks.

**TABLE 19 AVERAGE AVAILABILITY OF CORE PRIMARY TEXTBOOKS BY REGION, 2015**

	English	Setswana	Mathematics	Social/ Cultural studies	Science
<b>1 Southeast</b>	74%	69%	71%	67%	73%
<b>2 North</b>	79%	75%	73%	71%	70%
<b>3 South</b>	82%	72%	73%	70%	84%
<b>4 Kweneng</b>	77%	69%	78%	79%	67%
<b>5 Kgatleng</b>	79%	69%	69%	68%	77%
<b>6 North West</b>	54%	55%	52%	50%	46%
<b>7 Chobe</b>	77%	65%	82%	90%	79%
<b>8 Ghanzi</b>	70%	61%	55%	57%	65%
<b>9 Kgalagadi</b>	72%	66%	61%	71%	63%
<b>10 Central</b>	67%	56%	64%	57%	57%
<b>Average</b>	<b>72%</b>	<b>64%</b>	<b>68%</b>	<b>65%</b>	<b>65%</b>
<b>Minimum</b>	54%	55%	52%	50%	46%
<b>Minimum other than North West</b>	67%	56%	55%	57%	57%
<b>Maximum</b>	82%	75%	82%	90%	84%

Source: Authors' calculations from 2015 Emis data.

218. The process for obtaining textbooks is cumbersome and appears to be difficult for schools to manage. Textbooks are often procured quite late in the school year. School principals and teachers complain that they often receive textbooks too late in the year. Specifically, "it is not easy to get textbooks in time and the procurement process appears to be long-winded, at times somewhat wasteful, and in general rather inefficient." (Botswana, Ministry of Education and Skills Development, 2014, pp. 55-6).

### Spending on School Meals

219. School meals are provided to all children in public schools. A full meal and a tea-time snack are

served to children in primary schools, two meals are provided to students in secondary schools, and all meals are included in boarding schools in both primary and secondary education. Botswana is one of few developing countries that offer free meals to secondary students, as most countries only have meal programs in primary schools. There are concerns, however, that the provision of food in schools takes too much time, therefore impacting on teaching time. Therefore, it is essential that mealtimes do not consume too much of a student's time. Based on 2018/19 budget estimates, the cost of providing food for secondary students (including boarders) is an average of slightly more than P2,000 per year.

## X-efficiency of spending: Conversion of spending into educational outcomes

**220. Considering the high level of spending on school education, Botswana's students underperform.** While there is little repetition and most children remain in school until about the age of sixteen, the country's students perform poorly compared to peers on international assessments, such as TIMSS, PIRLS, and SACMEQ. They also demonstrate weak performance, and there are few signs of improvement, on national examinations such as the PSLE, the JCE, and the BCGSE.

## External efficiency of spending on education

**221. The external efficiency of education spending relates to labor market returns to education.** Two studies that incorporate estimates of the returns to education in Botswana around the beginning of the century show that returns are highest for tertiary education. They also reveal that returns to secondary education have declined due to a massive expansion of secondary education, which has increased the supply of potential workers with a secondary education but not necessarily the demand for such workers. (Fasih, Hoftijzer, Siphambé, & Okurut, 2014) and (Siphambé, 2000). Estimates of returns in 2004 were 9 percent for primary, 15 percent for junior secondary, 8 percent for senior secondary, and an extremely high 24 percent for tertiary education—double the rate a decade earlier (Fasih, Hoftijzer, Siphambé, & Okurut, 2014, p. 8). The high rate of return to tertiary education relative to primary and secondary education may indicate that primary and secondary schools are not providing students with the skills needed by employers. Moreover, there is likely an imbalance in the demand and supply of workers with a secondary education. A study for the 2013 World Development report showed that returns to schooling are high at all levels in resource-rich countries (including Botswana), “suggesting that human capital skills are a complement to resources” (Montenegro & Patrinos, 2014, p. 12).

**222. To increase the value of education in the labor market, authorities need to focus on improving the quality of learning outcomes.** Specifically:

*“Botswana needs to improve the quality and relevance, as well as the skills outcomes, of primary and secondary education. The country boasts high investments in education, yet faces significant challenges of educational quality compared to countries with similar levels of GDP per capita.”* (Fasih, Hoftijzer, Siphambé, & Okurut, 2014, p. 13).

**223. The Budget Strategy Paper of 2016 acknowledged the mismatch between skills and job market requirements, and it committed the government to implementing the ETSSP.** (Botswana, Ministry of Finance and Development Planning, 2016, p. 11). The ETSSP includes recommendations for improved vocational education and training programs as well as measures to increase education quality in schools.

## DECENTRALIZED FINANCING

**224. Decision-making in the education system remains highly centralized, despite the creation and growth of regional offices as part of the decentralization process.** The size of regional staff is determined by headquarters, and salaries are also paid from the national budget. Some activities are decentralized, including administrative procedures for the appointment of teachers. While regions create their own budget estimates, final budget allocations can deviate dramatically from those estimates. Moreover, regions are not involved in determining funding for teachers—the largest part of the education budget.

**225. In 2018, MOBE spent P394 million on non-teaching personnel, including staff in regional offices and support staff in schools.** In addition, it also transferred P814 million to regions and schools to spend on food, books, stationery, maintenance, etc. Similar spending was also undertaken by the MLGRD on primary schools, although MOBE's spending includes spending

on primary textbooks, a responsibility that had earlier fallen under the MLGRD.

## PRIVATE EDUCATION SPENDING AND AFFORDABILITY

226. Schooling in Botswana is free in primary and both junior and senior secondary education, and students are offered substantial scholarships at the tertiary level. For over a decade, researchers have pointed out that the combination of free primary and secondary education and a bursary/loan scheme for university studies creates a very generous and costly education policy (Siphambe, 2004, p. 359). Fees for secondary schools generate little income, as funds are funneled into the government's Consolidated Fund and have no effect on either the school or MOBE's resources, resulting in little incentive for schools to collect such funds. Moreover, rules about who is exempt from paying secondary school fees are

not consistently enforced. (Botswana, Ministry of Education and Skills Development, 2015, p. 29)

227. According to household expenditure surveys, households' monthly average education expenditure fell in nominal terms from P65 in 2002/3 to P46 in 2009/10, although the reduction was greater in real terms. As a share of household spending, education expenditure fell from 3.4 percent to 1.3 percent of the average household budget in the same period. (Statistics Botswana, 2011, pp. 16, Table 18). Free textbooks and stationery, along with free housing for children in boarding schools, contributed to this decline. Free boarding schools in secondary education also improved access for children in remote rural areas. Nevertheless, the Botswana Multi-Topic Sample Survey found surprisingly high levels of spending on school fees (Table 20). While children attending private schools may affect the reported spending on fees, school fees represented almost two-thirds of spending on children in education (an average of P1,051 per year), which seems excessive.

**TABLE 20 AMOUNT SPENT BY ALL HOUSEHOLDS CONTAINING PERSONS IN EDUCATION ON EDUCATION, 2015-16 (IN PULA PER YEAR)**

Level	School fees and tuition	Text books	Uniforms	Other educational material	School projects	Transport to school	Other expenses	Total education
<b>Pre-school</b>	161,180,650	503,866	12,770,316	3,062,736	2,288,692	26,798,611	3,156,089	209,760,960
<b>Primary</b>	370,479,233	3,235,026	100,889,498	14,732,968	7,111,529	64,728,899	16,698,577	577,875,730
<b>Junior secondary</b>	107,035,720	1,320,853	46,948,384	6,634,369	2,625,272	24,603,539	7,322,578	196,490,715
<b>Senior secondary</b>	64,378,219	1,074,898	21,239,945	3,988,219	1,845,530	22,608,935	2,983,825	118,119,571
<b>Post sec education</b>	4,530,075	17,795	95,202	134,811	76,210	475,109	-	5,329,202
<b>Non formal</b>	6,599	-	22,842	-	-	-	-	29,441
<b>Vocational</b>	6,804,060	190,210	272,388	233,696	98,546	2,104,122	327,515	10,030,537
<b>University/ college</b>	55,990,387	3,735,600	978,842	3,319,031	1,586,278	27,812,370	2,888,230	96,310,738
<b>Graduate</b>	-	7,808	-	20,681	-	22,496	-	50,985
<b>Not stated</b>	-	-	-	18,955	-	341,190	18,955	379,100
<b>Total</b>	<b>770,404,943</b>	<b>10,086,057</b>	<b>183,217,417</b>	<b>32,145,466</b>	<b>15,632,057</b>	<b>169,495,271</b>	<b>33,395,768</b>	<b>1,214,376,979</b>

**% of all spending at each education level:**

Level	School fees and tuition	Text books	Uniforms	Other educational material	School projects	Transport to school	Other expenses	Total education
<b>Pre-school</b>	76.8%	0.2%	6.1%	1.5%	1.1%	12.8%	1.5%	100%
<b>Primary</b>	64.1%	0.6%	17.5%	2.5%	1.2%	11.2%	2.9%	100%
<b>Junior secondary</b>	54.5%	0.7%	23.9%	3.4%	1.3%	12.5%	3.7%	100%
<b>Senior secondary</b>	54.5%	0.9%	18.0%	3.4%	1.6%	19.1%	2.5%	100%
<b>Post sec education</b>	85.0%	0.3%	1.8%	2.5%	1.4%	8.9%	0%	100%
<b>Non formal</b>	22.4%		77.6%	0%	0%	0%	0%	100%
<b>Vocational</b>	67.8%	1.9%	2.7%	2.3%	1.0%	21.0%	3.3%	100%
<b>University/ college</b>	58.1%	3.9%	1.0%	3.4%	1.6%	28.9%	3.0%	100%
<b>Graduate</b>	0%	15.3%	0%	40.6%	0%	44.1%	0%	100%
<b>Not stated</b>	0%	0%	0%	5.0%	0%	90.0%	5.0%	100%
<b>Total</b>	<b>63.4%</b>	<b>0.8%</b>	<b>15.1%</b>	<b>2.6%</b>	<b>1.3%</b>	<b>14.0%</b>	<b>2.8%</b>	<b>100%</b>

Source: (Statistics Botswana, 2018, pp. 115, Table E16).

228. Private schools are massively more expensive than public schools, especially in primary and junior secondary education, according to families who were asked to summarize their annual education spending for each enrolled household member (Table 21). Unsurprisingly, households in cities

report much higher per-student spending than households in urban villages or rural areas. A comparison of income quintiles shows enormous differences by strata, which is likely due to wealthier families enrolling their children in private schools more often than their less-wealthy counterparts.

**TABLE 21 AVERAGE TOTAL EDUCATION SPENDING PER STUDENT BY LEVEL OF SCHOOLING AND HOUSEHOLD CHARACTERISTIC, 2015-16 (IN PULA PER YEAR)**

	Level of Schooling:			
Category	Pre-Primary	Primary	Junior Secondary	Senior Secondary
<b>Type of school:</b>				
<b>Public</b>	1,261	490	1,053	2,402
<b>Private</b>	5,466	15,337	24,451	23,184
<b>Location:</b>				
<b>Cities</b>	6,579	6,020	4,990	6,266
<b>Urban villages</b>	4,883	1,004	1,254	2,116
<b>Rural</b>	1,937	459	1,091	4,724
<b>SES Quintile:</b>				
<b>Q1</b>	545	236	560	1,012
<b>Q2</b>	1,786	500	876	1,656
<b>Q3</b>	3,429	1,250	1,555	2,449
<b>Q4</b>	6,032	3,724	2,322	2,696
<b>Q5</b>	8,218	12,239	11,606	14,864

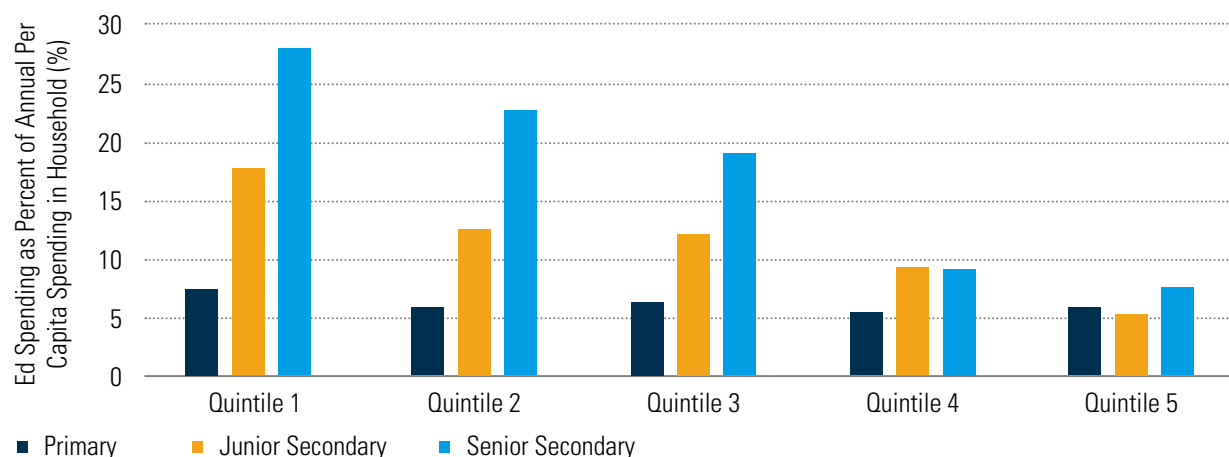
Source: BMTHS, 2015-16.



**229. The burden of education spending on households in Botswana varies greatly outside of primary education.** The burden of spending on public primary school is fairly uniform across the five income quintiles, which means that wealthier families with students in public private schools spend more on education but the same as a share of total spending (Figure 39). However, the cost of education at higher education levels is much higher for poorer households than for their wealthier counterparts, as low-income households need to

devote more resources as a share of their total spending. For example, attending senior secondary public school requires families in the first quintile to spend nearly 30 percent of what they spend, on average, on everyone in the household during a single year. Moreover, the cost of education is also affected by the distance students need to travel to reach their schools. Some families cannot afford to have their children continue in school due to travel costs, or they are forced to turn to boarding schools, which, for many, is not a desirable option.

**FIGURE 39 ANNUAL HOUSEHOLD SPENDING PER STUDENT AS PERCENTAGE OF ANNUAL PER CAPITA SPENDING IN HOUSEHOLD BY LEVEL, 2016-16**



Note: Comparisons across income quintiles are restricted to public schools due in part to small sample sizes in individual quintiles for private school attendance at higher levels.

Source: BMTHS, 2015-16.

**230. The public provision of school meals and scholarships to tertiary students has the potential to reduce the unequal access to education and support vulnerable groups.** In 2015/16, the value of public school meals was estimated at P94.38 (US\$8.84) per household per month, or 1.7 percent of households' monthly income, amounting to about US\$106 per household per year.<sup>30</sup> However, this estimate is unlikely since the estimated cost of school meals was P128.68 per month, or 2.1 percent of household income, in 2009/10, and since it is likely that there had been at least a nominal rise in the average value of school meals consumed over the period. Households with members in university or college reported the value of

scholarships at more than P122 million in 2015/16, or almost P4,600 per person (Statistics Botswana, 2018, pp. 116, Table E17). There is, however, evidence to suggest that scholarships are not benefiting those in most need of such financial support. BMTHS data show that about 14 percent of university students report some scholarship support.<sup>31</sup> But less than one-quarter of scholarships were awarded to students from the two lowest income quintiles, while students in the fifth quintile received almost half of all scholarships. Part of the reason for the discrepancy is that there are many more students from the highest income quintile enrolled in tertiary education than students from the two lowest.

## EDUCATION SPENDING AND POLICY PRIORITIES

**231. The ETSSP was created to guide all budgeting, planning, and implementation in Botswana's education sector.** While the ETSSP is still referred to in policy discussions, it was never fully implemented. The plan was likely too ambitious, which may have limited the prospects for its full and successful implementation even under favorable conditions. The breakup of the former MOESD into MOBE and the MTERST also complicated implementation efforts.

**232. High public spending on school education demonstrates that the GoB regards education as a national priority.** However, the institutional fragmentation of the school education system limits the optimal utilization of public resources to meet the country's education needs. Moreover, the lack of proper monitoring through regular assessments and accountability based on an analysis of assessment data undermines efforts to focus on measurable educational outputs.

## COST DRIVERS, EDUCATIONAL PERFORMANCE, AND INVESTMENT NEEDS

**233. Teacher salaries constitute the largest part of the budget for school education.** The wage bill represents the largest cost in Botswana's education system because of the large number of teachers and relatively attractive salaries. Yet, only 63 percent of recurrent spending is on teacher salaries, which is lower than expected. Another 9 percent, approximately, is spent on salaries of regional officials and support staff in schools by MOBE and the MLGRD combined. This leaves 28 percent spent on goods and services, of which close to half is likely on food. Without food expenditure, the share of teacher salaries rises to about 70 percent of total education spending, and overall personnel costs would constitute around 80 percent of recurrent costs.

**234. Secondary education is likely to expand as education quality improves.** Better educational outcomes will lead to more students scoring higher on the JCE, which will increase enrollment in senior secondary schools. In addition, efforts to improve access to higher education by increasing the number of

senior secondary schools will also improve retention and further raise costs. This expansion in enrolment will be combined with a rise in the average cost of education per student due to a larger (and more expensive) share of secondary students in enrolment.

**235. The large number of subjects and the proliferation of electives in secondary schools increase the cost of education.** There are concerns that too many subjects can be detrimental to performance because students only get exposed to core subjects for a limited period of time. While a large number of subjects contributes to the country's low ST-rates, it also raises costs. In 2017, 3,904 out of 4,777 teachers in secondary schools only taught one subject, 477 teachers taught two subjects, and 63 teachers three subjects, while the final 332 teachers did not teach at all. There are thirty subjects covered in the BGCSE.

**236. The slow expansion of Botswana's school-age population will not significantly affect public finances.** There will likely be a 2-percentage-point increase in enrolment over the next ten-year period, which could raise costs by P132 million. More importantly, an improvement in the quality of education could lead to a greater flow of students to Form 4 and 5. Currently, total enrolment in these two grades is only 65 percent of enrolment in Form 3, as students continue to underperform on the JCE. An increase in education quality could lead to more students passing the JCE and advancing to higher education levels. For example, an increase in the enrollment rate in Forms 1-2 of only 1 percentage point per annum would lead to around 8,000 more students in these grades over a ten-year period at a cost of P144 million.

**237. However, eliminating the classroom shortage will require significant public resources.** It would cost around P950 million to build the required 1,900 classrooms in primary schools (based on the ETSSP's average cost per classroom of P0.5 million), and the Department of Technical Services within MOBE estimates construction and maintenance needs to P2,083 million in secondary education. Assuming a ten-year period to eliminate the backlog of classrooms and purchasing additional textbooks, annual recurrent costs would likely increase by around P300 million, and the annual development budget would increase by an estimated P600 million. In the context of Botswana's public finances, the challenge faced by policymakers is not related to reducing spending but rather on increasing efficiency.

## ADEQUACY AND SUSTAINABILITY OF PUBLIC EXPENDITURES

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238. Botswana's expenditure on education is extremely high for an upper-middle-income country (Section 1.4). The country's total public education spending, along with its public education expenditure as a share of GDP, is much higher compared to that of regional peers and countries at the same level of development. Therefore, its *fiscal allocations to education can be seen as adequate*.

239. Botswana should be able to sustain its high levels of spending on education in the foreseeable future, given the country's relatively healthy economic and fiscal prospects. However, there will be pressure to shift resources to currently underfunded areas, such as the construction of more classrooms and schools, better provision of textbooks and learning materials required for specialist electives at the senior secondary level, improved school maintenance, and an improvement in the quality of boarding schools. This will ensure that authorities are able to *address the current underutilization of teaching staff in secondary schools*.





## 06 SUMMARY OF FINDINGS

### Favorable Conditions

Botswana has a number of advantages compared with most developing countries, which in turn make it easier to address new challenges. These include:

- **A relatively favourable fiscal situation**, with a government spending level that is moderate by international standards, government revenues that are well-above average, and projected sustainability in the short-to-medium term;
- **Favorable population projections in terms of developing human capital**, with dependency ratios (i.e., the number of young people as a share of the adult population) that are significantly better than those of most countries in the region;
- **Near universal education**. Participation in education has reached almost 100 percent for the portion of the population in the core school-going age. The net enrollment rate in primary education is above 90 percent, and almost all children participate in secondary schooling for at least a few years; and
- **An education system designed to increase participation rates and contribute to an equitable distribution of resources and inputs**. Access to schooling is almost universal, and teachers, school meals, and other resources are distributed relatively evenly across communities and regions. From an international perspective, Botswana's ST-ratios are also low in primary and secondary schools.

### Core Challenges

This review has also identified a number of core challenges facing Botswana's education sector, including:

- **Low student achievement scores**. Botswana is among the lowest performers on TIMSS and PIRLS, and its ranks close the average on SACMEQ assessments. There has also been no improvement in the country's performance on internal examinations in recent years.
- **Fragmented decision-making**. Responsibilities in the education sector are divided among various ministries, resulting in a lack of financial prioritization and strategic planning.
- **A significant shortage of textbooks, classrooms, and specialist rooms for teaching (e.g., for science subjects)**. In primary schools, the classroom backlog is 15 percent of the current availability.
- **Insufficient teacher training**, which is a key factor in understanding the country's low performance on student assessments. Teacher preparation is currently the responsibility of regional education offices, which are constrained by lack of funds and subject specialists. There is also a large oversupply of teachers in subjects such as English, Setswana, history, and geography; and
- **Insufficient data on education spending and the absence of an efficient monitoring and evaluation system**. Budgetary data are often not disaggregated at the regional level, and it is not possible to

separate school spending from other categories. Data on enrollment (from the EMIS) and student assessments (Grade 4) are not available in a timely manner and not properly utilized.

## Education Expenditure

- Botswana's spending on education is high compared to other countries at a similar level of development.
- Education spending is especially high for tertiary education, which is funded through both subsidies to universities and attractive bursary/loans to university students. The country's high spending on universities benefits only a minority of individuals, as the gross tertiary enrolment rate is estimated at 23.4 percent.
- Botswana's fiscal resources are regarded as adequate to sustain its relatively high level of education spending in the foreseeable future, considering the country's relatively healthy economic and fiscal prospects.
- There will be pressure to shift resources to currently underfunded areas, such as the construction of more classrooms and schools as well as the provision of improved textbooks, which will allow authorities to address the current underutilization of teaching staff in secondary schools.
- Despite high public spending on education and practically free schooling, school meals, and boarding, household education expenditure in senior secondary education is reported to be as high as 30 percent of total household expenditure for families in the poorest income quintile.

## Education Provision

- From an international perspective, Botswana's ST-ratios are low in primary (26:1) and secondary (12:1) schools. The country's low ST-ratios are explained by: (i) a relatively favorable fiscal situation over a long period, which has enabled MOBE (and previously MOESD) to recruit teachers at relatively attractive salaries; and (ii) a large number of electives and subject specialization in the teaching profession. The average secondary school teacher teach only about two hours per school day.

- There is a significant shortages of textbooks, classrooms, and specialist rooms for teaching (e.g., for science subjects). In primary schools, the classroom backlog is about 15 percent of current availability.
- The proliferation of electives results in too little time spent on each subject, especially core subjects. More specialist subjects also require a larger staff at secondary schools, especially in the highest grades, raising the cost of education.
- There is insufficient teacher training in most areas and subjects. While this is the responsibility of regional education offices, they are constrained by a lack of funds and subject-matter experts.
- The country lacks a teacher recruitment policy, professional standards in the education profession, and a consistent approach to teacher deployment. Many teachers remain in remote areas longer than they had anticipated and become disillusioned with their jobs, which likely affect their motivation and work effort.
- Botswana's has near universal access to education and allocates education resources relatively equally across the country.

## Learning Outcomes

- Learning outcomes in Botswana are low in primary and secondary education compared to peers.
- There are large differences in learning outcomes, progression beyond Form 3, and access to tertiary education. Performance in the education system depends less on an individual's SES than that of the school community. Inequalities in performance are evident between children of low and high-income households and between schools serving poor and rich communities.
- Girls perform, on average, better than boys on cognitive tests, and girls are more likely than boys to progress to higher grades.

## Education System

- The fragmentation of service provision and decision-making in Botswana's education system has led to an ineffective implementation



and management of education services and an inefficient utilization of resources.

- Schools' regional and non-teaching/support staff is large and absorbs almost 10 percent of the recurrent school education budget. The decentralization of education services and personnel to ten regional offices provided them with little autonomy. Most decisions continue to be taken at headquarters, including financial decisions regarding funds to regions and schools, which suffer from a lack of transparency.

### Data for Planning

- Data is often of bad quality, not readily available, or not kept in a format that is useful for planning. This applies to budgetary data, which is often not disaggregated at the regional level, and it is usually not possible to separate spending on schools from other spending categories. Moreover, enrolment data in the EMIS are more than two years old, and there are no school-level assessment data. As a result, it is difficult for authorities to use education data to improve the efficient utilization of funds and improve the quality of learning.

### Decision-Making

- Schools have little real decision-making authority over the scope, structure, or application of their budgets, and they have to go through a complicated process to receive more funds or change allocations between different spending categories.

### Future Needs

Aside from issues related to quality and systemic efficiency, future challenges that will likely affect education expenditures are mainly related to the expected growth of pre-primary and senior secondary schooling, as well as infrastructure needs in primary and secondary education:

- Despite an initial rapid expansion, pre-primary education reaches less than half of the target age group. The government is committed to expanding coverage to all children, but efforts have been constrained by a lack of infrastructure in schools to accommodate children of pre-primary age. To increase enrollment, authorities need to provide more physical space and teachers with adequate training. A large number of unemployed early childhood teacher aids could be leveraged to help meet future personnel needs.
- Expanding senior secondary education depends on JCE pass rates and other factors. Considering the current GER of around 60 percent and the NER of 30 percent in senior secondary schools, there is potential for future expansion. This will, however, require additional specialist teachers, and the low ST-ratio of 12:1 does facilitate expansion.
- The estimated shortage of 1,900 primary classrooms would cost around P950 million to eliminate (based on the ETSSP's average cost of P0.5 million per classroom), while the Department of Technical Services within MOBE estimates construction and maintenance needs of P2,083 million for secondary schools.



## 07 POLICY RECOMMENDATIONS

**240. Discussions with MOBE and other government officials produced a set of policy recommendations that are similar to many of those in the ETSSP, which were based on a thorough examination of the many challenges facing Botswana's education system.** While most of the recommendations made in the ETSSP have not been implemented due to lack of funding, the government should prioritize their implementation, as they can have a positive impact the country's education system.

**241. This PER presents two sets of policy recommendations.** The first constitutes high-priority recommendations aimed in the short-to-medium term (Table of Priority Recommendations), while the second set consists of additional short-, medium-, and long-term recommendations to improve the quality, effectiveness, and efficiency of education (Table of Additional Recommendations).

### PRIORITY RECOMMENDATIONS

**242. Improve data collection, management, and analysis for evidence-based planning and decision-making.** This should include strengthening the EMIS and ensuring that the annual school census is properly implemented and analyzed. There is also a need for better data for human resource planning, particularly to ensure that teachers are not at a disadvantage if they have to remain in remote regions longer than initially intended. However, optimal financial planning in the education sector will remain difficult without access to reliable data and a clear institutional framework for education spending. Therefore, MOBE and the MFED should implement the BOOST initiative, which would facilitate effective financial planning by making it possible to present budgets and expenditure data in a consistent format

and in a highly disaggregated form.

**243. Prioritize basic education spending to improve the efficiency and quality of basic education.** Shift the emphasis from hiring more teachers to improving the quality of school infrastructure and ensuring the availability of teaching and learning materials in classrooms. At a minimum, there should be adequate classrooms of good quality to accommodate all children in Botswana, both for core subjects and electives.

**244. Create a budget process that makes it possible to prioritize among different categories of education spending** which includes costs of personnel, construction of schools and classrooms, teacher training, and other quality inputs (e.g., textbooks, teaching and learning materials, stationaries, and school feeding programs). Most of the recurrent education budget is located within MOBE (of which a majority is for personnel costs of teachers and staff at the ministry and regional education offices), while a smaller part falls under the MLGRD (for primary school stationery, feeding programs, etc.). The development budget is also split between the MLGRD, which is responsible for the construction of primary classrooms and schools, and MOBE, which is responsible for the financing of secondary schools and classrooms (construction is managed by the Ministry of Infrastructure and Housing Development). This fragmentation of the budgetary process makes it almost impossible to determine the allocation of education spending for each category and prioritize accordingly.

**245. Re-design the budget process for secondary schools and regional offices.** It is important to strengthen the budgetary autonomy of regional offices and schools in order to increase accountability, which will require making the budgetary process

more transparent and encouraging regions and schools to submit realistic budget requests. This can be done by setting realistic indicative ceilings for budget requests and requiring special motivation for expenditures above the ceiling (as it is done in the national budget). Regional offices and schools should be able to decide their own priorities in their initial budget allocation, and the scope for transferring funds (virement) between spending categories should be increased while ensuring adequate funding for food and maintenance. The warranted budget allocated to each regional office or secondary school should also be transparent and based on a clear set of criteria on how funds are allocated among regions and schools.

**246. Simplify the complex institutional arrangement for building classrooms and schools.** The budget split between recurrent and development expenditure is further complicated by the divide in responsibilities between MOBE, which budgets for the construction of secondary schools and classrooms, and the MLGRD, which budgets for the same activities at primary schools.

This makes it difficult to ensure that the classroom shortage receives sufficient attention. In addition, the actual building of secondary schools and classrooms, though paid for by MOBE, is the responsibility of the Ministry of Infrastructure and Housing Development. Therefore, it is vital to strengthen the cooperation between MOBE, the MLGRD, and the Ministry of Infrastructure and Housing Development to increase funding for and improve the planning and budgeting of school and classroom construction.

**247. Finally, improve the recruitment, deployment, and management of teachers.** To address the oversupply of teachers, an analysis of the demand and supply of teachers should be undertaken and reduce the number of scholarships to student teachers in non-core subjects. Moreover, the criteria should be higher for tertiary bursaries for teaching. There is also a need to develop a teacher recruitment policy, adopt professional standards in the teaching profession, and redesign the deployment process for teachers to ensure that they only serve in remote areas for a limited period of time.

TABLE OF PRIORITY RECOMMENDATIONS: SHORT AND MEDIUM TERM

Areas	Short term	Medium term
<b>1. Improve data collection, management, and analysis for evidence-based planning and decision making</b>	<p>(c) Strengthen the EMIS and ensure the timely collection and analysis of the annual school census through training and technical support.</p> <p>(d) Improve data collection, analysis, and management of human resources data.</p> <p>The MFED works closely with relevant ministries and agencies to implement the BOOST initiative, which would facilitate evidence-based financial planning and decision-making by making it possible to present budgets and expenditure data in a consistent format and in a highly disaggregated form.</p>	<p>(c) Continuous capacity building, analysis of data, and dissemination of EMIS and the annual school census.</p> <p>(d) Continue to collect and use data to improve the deployment of teachers.</p> <p>Use the BOOST initiative to improve financial planning and decision-making processes and increase transparency and accountability.</p>
<b>2. Prioritize basic education spending to improve the efficiency and quality of basic education</b>	<p><b>Textbooks</b></p> <p>(a) Assess the shortage of textbooks in schools and set up a mechanism for the effective development, printing, procurement, and distribution of textbooks.</p> <p>(b) Ensure the sufficient allocation of funds and</p>	<p><b>Textbooks</b></p> <p>(a) Implement and monitor the improved textbooks development, procurement, and distribution to ensure that every student receives their textbooks on time.</p>

TABLE OF PRIORITY RECOMMENDATIONS: SHORT AND MEDIUM TERM

Areas	Short term	Medium term
	<p>implement appropriate procedures to provide quality textbooks for all children.</p> <p><b>School Infrastructure</b></p> <p>(c) Review the planning, management, and implementation of current school infrastructure programs, assess school infrastructure needs, and develop a school infrastructure development plan.</p> <p>(d) Ensure that sufficient funds are provided to implement construction projects and improve school infrastructure.</p>	<p><b>School Infrastructure</b></p> <p>(b) Implement and monitor the school infrastructure development plan.</p>
<b>3. Create a budget process that makes it possible to prioritize among different categories of education spending</b>	Undertake an institutional assessment to: (a) map out all education-related functions and budgeting processes that are fragmented among different ministries; and (b) make recommendations for streamlining and consolidating roles and responsibilities to optimize the budgeting process, resource utilization, and education service provision.	Start a discussion with the MFED and other concerned ministries to design a budget process that would make it possible to prioritize between different categories of education spending, preferably by placing the budget for both recurrent and capital spending within MOBE.
<b>4. Re-design the budget process for secondary schools and regional offices</b>	Assess the decentralization of education financing and service provision, including consultations with all agencies involved in budgeting and spending at regional offices, secondary schools, and headquarters, and recommend ways to improve the budgeting and spending process.	Re-design the budget process for secondary schools and regional offices. This could include: (a) setting realistic ceilings for budget requests; (b) clarifying the criteria for allocating budgets in response to budget requests; and (c) increase the scope for transferring funds (virement) between spending items (by clarifying the rules and conditions for transfers) while protecting essential spending (e.g., on food and maintenance). Ideally, the whole system for allocating funds should become formula-driven over time.
<b>5. Simplify the complex institutional arrangement for building classrooms and schools to overcome extreme large shortage of school infrastructure</b>	Review and propose (based on consultations) the most appropriate structure for planning, budgeting, and financing the construction and maintenance of school infrastructure. This should involve consolidating and streamlining functions and putting one ministry in charge of coordinating the work of all agencies involved.	Implement the recommendations based on the review, including reallocating functions between and within ministries to replace the current complex institutional process with a leaner and simplified structure.



TABLE OF PRIORITY RECOMMENDATIONS: SHORT AND MEDIUM TERM

Areas	Short term	Medium term
<b>6. Improve teacher recruitment, deployment, and management</b>	<p>(a) Analyze the current supply and demand for teachers.</p> <p>(b) Develop a human resources and teacher management database, through consultations with relevant ministries, to assess how many student teachers to support annually with bursaries and in what subjects. The teacher management database should contain information on: (i) subject specialization of currently unemployed trained teachers; and (ii) teacher attrition.</p> <p>(c) Set higher criteria for tertiary teaching bursaries.</p> <p>(d) Review the deployment of teachers to assess how long each teacher has served in remote areas.</p> <p>(e) Develop a teacher recruitment policy, adopt professional standards in the teaching profession, and redesign the deployment policy with appropriate incentives and processes in consultations with teachers and unions.</p>	<p>(a) Reduce bursary offerings and implement more stringent selection criteria, which would increase competition for teacher bursaries and raise the standards of teacher trainees and candidates.</p> <p>(b) Implement the new teacher recruitment policy, professional standards, and redesigned deployment process for teachers.</p>

## ADDITIONAL CRITICAL RECOMMENDATIONS

248. The additional recommendations fall into three groups: (i) improve teacher development, (ii) use assessments as a tool to improve learning, and (iii) increase access to education, particularly for the poor.

### Teacher Development

**249. Increase teacher training, particularly in-service training.** This should include the creation of a formal national orientation program for new teachers as well as in-service training for current teachers. Additionally, the teacher training system should be redesigned, as the decentralization of in-service training functions to regions has not been successful. A recent review by the World Bank provides a useful overview of effective in-service training practices (Popova, et al. 2018).

### Learning Assessments

**250. Implement a national assessment program and use it to target interventions.** Interventions should

include providing a detailed scripted curriculum for teaching early grade reading and mathematics to improve the quality of teaching. In addition, they should include training in the pedagogy of early reading. This is in line with the ETSSP, which proposed a revamping of both pre-service and in-service teacher training and professional development.

**251. Undertake a service delivery survey in the education sector.** The purpose would be to gain a better understanding of the reasons behind the country's poor educational outcomes. Testing teachers' knowledge and performance in literacy and numeracy as well as assessing teacher absence from the classroom would assist in understanding to what extent educational efficiency is influenced by the role teachers play.

**252. Use the results of international assessments to identify deficiencies and improve planning.** Botswana should continue to participate in international assessments, as it would allow authorities to keep track of how well students are learning compared to those of other countries. The results of assessments can also help authorities set priorities for improving educational outcomes



## Access to Education

**253. Accelerate the implementation of pre-primary education and improve ECCE** to ensure that children receive the educational foundation needed to succeed.

**254. Make basic education compulsory.** This should be done in combination with a study to determine why boys tend to drop out early and perform worse than girls in school. There is evidence that some boys drop out of school to assist in home responsibilities, e.g. cattle herding. Making basic education compulsory could reduce the extent of this.

**255. Explore the feasibility of expanding the**

**availability of secondary schools and of secondary schools serving senior secondary students.** This could be done by creating more unified schools (e.g., primary plus junior secondary schools, or junior secondary plus senior secondary schools) to reduce the use of boarding schools, which are costly and socially undesirable.

**256. Track and support well-performing students in poor regions or from poor households.** Evidence shows that children from poorer backgrounds and more remote areas tend not to achieve similar learning outcomes as others. This appears to be associated with such children leaving the education system earlier.

TABLE OF ADDITIONAL RECOMMENDATIONS: SHORT, MEDIUM AND LONG TERM

Areas	Short term	Medium term	Long term
<b>Teacher Development</b>			
<b>7. Increase teacher training, particularly in-service training</b>	(a) Assess current teaching practices in the classroom to identify the needs for teacher training and develop in-service training, particularly focusing on teacher pedagogy. (b) Develop a formal national orientation program for new teachers.	(a) Continue the implementation and monitoring of in-service teacher training programs to improve student performance on national assessments. (b) Implement the national orientation program for new teachers and assess its impact.	(a) Continue the implementation of in-service training and orientation training for new teachers. (b) Assess the impact of the programs and adjust them accordingly.
<b>Learning Assessments</b>			
<b>8. Implement a national assessment program and use it to target interventions</b>	(a) Plan and develop a national assessment program that provides information on school performance and student learning, which could be used to: (i) assist teachers in their teaching; (ii) inform the areas of in-service teacher training; and (iii) decide on targeted interventions. (b) Request the World Bank to undertake a service delivery survey in the education sector to understand the causes of poor learning in schools.	Implement the national assessment program and use it, along with the service delivery survey, to develop targeted interventions in schools and teacher training.	Continue to implement the national assessment program and use it to develop targeted interventions in schools and teacher training.
<b>9. Use the results of international assessments to identify deficiencies and improve planning</b>	Continue to participate in international assessments and develop a plan to improve the utilization of data, either by creating the capacity internally or obtaining a service provider to analyze the results of the assessments thoroughly.	(a) Use large-scale educational assessments to understand the overall performance of the education system and the factors driving performance. (b) Use detailed results from international assessments to develop policy measures aimed at improving Botswana's education	Continue to implement the proposed policy measures derived from the results of international assessments.

TABLE OF ADDITIONAL RECOMMENDATIONS: SHORT, MEDIUM AND LONG TERM

Areas	Short term	Medium term	Long term
		system, possibly in the areas of curriculum, teacher training, and teaching and learning materials.	
<b>Access to Education</b>			
<b>10. Accelerate the implementation of pre-primary and early child-hood education</b>	Continue to expand pre-primary education, which will require additional classrooms and teachers.	(a) Aim to achieve universal enrolment in pre-primary education and monitor the quality of education services. (b) Strengthen the quality of ECCE in community-based facilities by, <i>inter alia</i> , training teachers and recruiting unemployed primary teacher aids.	
<b>11. Make basic education compulsory</b>	(a) Make basic education (primary and junior secondary education) compulsory. (b) Study why boys tend to drop out early and perform worse than girls in school.	(a) Implement and enforce compulsory basic education. (b) Consider solutions to reduce dropout rates among boys.	Implement and enforce compulsory basic education.
<b>12. Explore the feasibility of expanding the secondary school network</b>	(a) Determine how often distance deters children from continuing to junior or senior secondary education. (b) Determine, where a primary school is not close to a secondary school, whether there are enough children that could continue to secondary school to warrant building a junior secondary school (or a senior secondary school) or create a unified school by adding grades to the primary school (or the junior secondary school).	(a) Develop a plan for the gradual expansion of secondary grades or secondary schools to bring schools closer to students, which would reduce the need for boarding schools. (b) Implement the plan through opening more secondary schools or improving/expanding the physical infrastructure of primary/junior secondary schools and appointing teachers of relevant level to primary or junior secondary schools.	Continue expanding the school network until most of the population lives within reach of primary, junior secondary, and senior secondary schools, or unified schools, where appropriate.
<b>13. Track and support well-performing students in poor regions or from poor households</b>	Perform an assessment of students in good academic standing that decide to drop out at the end of primary or junior secondary education to identify what factors play a role.	Develop and implement a mechanism to provide financial (bursaries), psychological, and emotional support to students aimed at encouraging them to continue with their studies.	

**BOX 2 HOW COUNTRIES USE THEIR INTERNATIONAL LARGE-SCALE ASSESSMENT RESULTS**

Large-scale assessments of educational achievement are key to understanding an education system's overall efficiency and the factors driving student performance. International large-scale assessments have the added benefit of providing a comparative perspective and show policymakers how different countries use the

results to improve their education systems. Table 22 lists several examples of how countries have used the results from TIMSS in three of the most common reform areas: (i) achievement goals and standards for educational improvement; (ii) curriculum; and (iii) teaching and learning.

**TABLE 22 EXAMPLES OF WAYS COUNTRIES USE TIMSS RESULTS**

1: Establishing Achievement Goals and Standards for Educational Improvement	
<b>France</b>	Results lead to the implementation of two new national assessment systems to monitor education more closely.
<b>Russian Federation</b>	The development of new education standards for primary schools draws on the 2011 assessment frameworks for TIMSS.
<b>South Africa</b>	Poor TIMSS results informed the decision to harmonize the number of school days per year and the number of lessons per day.
<b>Taiwan</b>	TIMSS results showed more students with lower achievement scores than in neighbouring countries. As a result, authorities initiated special programs to support low-performing students.
2: Reforming Curriculum	
<b>New Zealand</b>	As a response to poor TIMSS results in 1995, the responsible ministry developed a comprehensive numeracy policy, which included piloting its "Count Me In Too" initiative and initiating numeracy development projects.
<b>Hong Kong</b>	TIMSS research directly informed the implementation of a new mathematics curriculum.
<b>Romania</b>	Results informed changes in the math and science curriculum, including increasing the number of topics covered; developing new teacher guides, and introducing new science textbooks.
3: Improving Teaching and Learning	
<b>Czech Republic</b>	Authorities created a series of teacher manuals that contain activities and tasks based on analysis of the most common student misconceptions or errors in TIMSS.
<b>Palestine</b>	TIMSS results led to the introduction of teacher certification programs.
<b>Lithuania</b>	Results informed seminars for primary school teachers to improve teaching methods.

Source: Mullis, I.V.S., Martin, M.O., Goh, S., & Cotter, K. (Eds.). (2016a). *TIMSS 2015 encyclopedia: Education policy and curriculum in mathematics and science*. Retrieved from: <http://timssandpirls.bc.edu/timss2015/Encyclopedia/>; and UNESCO Institute for Statistics (2018). Review of the use of cross-national assessments data in educational policy and practice. Discussion Paper. UIS: Montreal.

### BOX 3 RECRUITMENT AND DEVELOPMENT OF TEACHERS

In many countries, entry into teacher preparation programs lacks selectivity, and teacher qualifications are often much lower than in other professions. This devalues the complexity of effective teaching, and results in good teacher performance not being recognized or rewarded.

Attracting top candidates into the teaching profession depends on a complex combination of cultural and policy factors. High-performing countries in East Asia Pacific stand out in how much they value teachers. They hire skilled teachers, pay them well, and continually invest in their professional development. Moreover, curriculum and textbooks provide clear guidelines. Teachers are also given considerable autonomy in how they apply their knowledge and skills in the classroom, and they are encouraged to experiment and innovate.

Below is a list of examples of methods in East Asia Pacific countries:

- In Japan, only 14 percent of applicants to education programs are accepted, and only about 30–40 percent of graduates are hired annually;
- In Singapore, the government recruits the top one-third of university graduates and top graduates of polytechnic schools to become teachers;
- In Korea, teacher education program entrants are among the top 10 percent of high school graduates, and only 1 in 20 students passes the exam to become a teacher; and
- In Taiwan, China, education programs are highly competitive. Typically, only the top third of applicants ranked by their academic performance in high school and university entrance exams are selected.

Source: Growing Smarter: Learning and Equitable Development in East Asia and Pacific, The World Bank.

## NOTES

1. The country's land area is the size of Kenya, yet Kenya's population is twenty times that of Botswana.
2. Grade 4 and tests basic literacy.
3. Grade 6 and tests overall literacy.
4. Grade 6 (tests numeracy) and Grade 9 (tests mathematics and science).
5. Complete data for only 2014 and 2017.
6. Disaggregated education spending data by region were not available.
7. Data from the 2009-10 employment survey, the most recent survey with education-level data.
8. The results from the study are based on data from the 1990s and early 2000s. An updated analysis on the rate of return to education using the BMTSH survey from 2015-16 is summarized in Appendix C.
9. The 2015-16 BMTSH incorporates 453 enumeration areas that are grouped into 26 districts that are then grouped into 7 regions. However, these regions are not the same as the regions used by EMIS in their reporting (e.g. Table 4).
10. Excluding pre-primary and special education
11. This excludes 483 students in Form 6 who were all in private schools in 2015. These are usually students who have elected to write the UK's A-level examinations. Only around one-quarter of private school students continue on to Form 6.
12. The enrolment in tertiary education in a given year as a percentage of the population aged 20-24.
13. Knoema <https://knoema.com/atlas/Botswana/topics/Education/Tertiary-Education/Gross-enrolment-ratio-in-tertiary-education>.
14. *The dependent variables include grade attainment and correct age (current) attendance in junior secondary and senior secondary (separately) education. Different specifications were incorporated, including standard survey regression as well as mixed models with random (HLM) and fixed (FE) effects at the enumeration area (EA) level. Additional spatial controls include region dummies and strata (urban, rural, etc.).*
15. Botswana, along with Lesotho, Namibia, and South Africa, is a member of SACU.
16. Grade 4: testing basic literacy.
17. Grade 6: literacy.
18. Grade 6: numeracy; and Grade 9: mathematics and science.
19. Appendix Table B2 shows the results for a sample of thirty-four countries that participated in the joint survey. It shows performance at two levels: the high international benchmark (550 points) and the low international benchmark (400 points, where 500 is the reference mean and 100 the standard deviation).
20. According to teachers in TIMSS Grade 4 in 2011 who were asked how many students are in the class they are teaching at the time of the interview.
21. According to teachers in TIMSS Grade 9 in 2015 who were asked how many students are in the class they are teaching at the time of the interview.
22. *"For both primary health-care and education, wages and salaries are not part of the resources distributed to primary*

*service delivery units. The resources distributed are food items, equipment, teaching materials and health care supplies."* (DFC Consortium, 2013, p. 101).

23. R<sup>2</sup> in Figure 30 indicates that 93 percent of the variation in teacher numbers can be explained purely by enrolment.
24. Significant coefficients on the school-SES-squared indicates that school SES has a convex shape.
25. A lowess regression is a locally weighted regression line drawn on a graph to show a common pattern. It gives greater weight to observations close to any particular point on the x-axis and serves a similar function as a moving average.
26. This no longer applies to primary school textbooks, where the responsibility has recently shifted to MOBE.
27. Only the approved budget was available.
28. Budgets for North West and Southeast could not be obtained.
29. While there has been little growth in primary school enrolment, the enormous deficit is in part the result of more teachers and smaller streams.
30. The exchange rate used throughout this PER is P10.68 per US\$1.
31. Please note that sample sizes for tertiary education enrolment in BMTSH data are relatively small.

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# APPENDICES

# APPENDIX A

**TABLE A1 ACTUAL RECURRENT AND DEVELOPMENT EXPENDITURE OF MINISTRY OF EDUCATION AND SKILLS DEVELOPMENT (MOESD)**

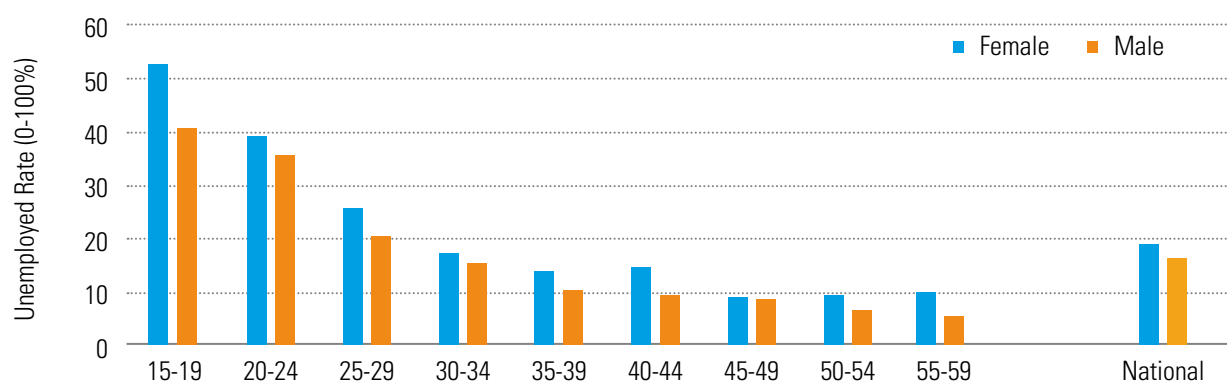
	Recurrent			% of all recurrent spending, 2017	Development			Total			
	2015	2016	2017		2015	2016	2017	2015	2016	2017	% of all recurrent + development spending, 2017
Areas											
Headquarters	1,865,396	2,225,506	2,313,779	20.1%	70,583	77,951	31,807	1,935,979	2,303,457	2,345,586	18.8%
Vocational Training and Education	450,453	500,669	585,198	5.1%	23,408	3,113	21,035	473,861	503,782	606,233	4.9%
Tertiary Education Financing	2,545,198	2,243,783	2,970,562	25.8%	0	0	0	2,545,198	2,243,783	2,970,562	23.9%
Out of School Education and Training	111,138	112,712	114,256	1.0%	0	0	0	111,138	112,712	114,256	0.9%
Curriculum Development and Evaluation	20,547	20,887	20,573	0.2%	0	0	0	20,547	20,887	20,573	0.2%
Teaching Service Management	4,128,482	4,357,968	4,404,832	38.2%	0	0	0	4,128,482	4,357,968	4,404,832	35.4%
Pre-Primary and Primary Education	33,193	47,030	65,163	0.6%	0	0	0	33,193	47,030	65,163	0.5%
Secondary Education	915,969	828,204	878,017	7.6%	976,149	1,004,296	872,615	1,892,118	1,832,500	1,750,631	14.1%
Teacher Training and Development	178,232	160,952	104,247	0.9%	0	0	0	178,232	160,952	104,247	0.8%
MOBE Mobile Service	22,541	23,301	24,354	0.2%	0	0	0	22,541	23,301	24,354	0.2%
Information, Communication and Media Services	12,215	13,114	15,305	0.1%	0	0	0	12,215	13,114	15,305	0.1%
Special Support Services	26,492	20,228	19,697	0.2%	0	0	0	26,492	20,228	19,697	0.2%
Educational Planning and Research	7,252	8,811	9,316	0.1%	0	0	0	7,252	8,811	9,316	0.1%
Total	10,317,107	10,563,163	11,525,299	100%	1,070,141	1,085,361	925,456	11,387,248	11,648,523	12,450,755	100%

Source: MFEDP.

# APPENDIX B

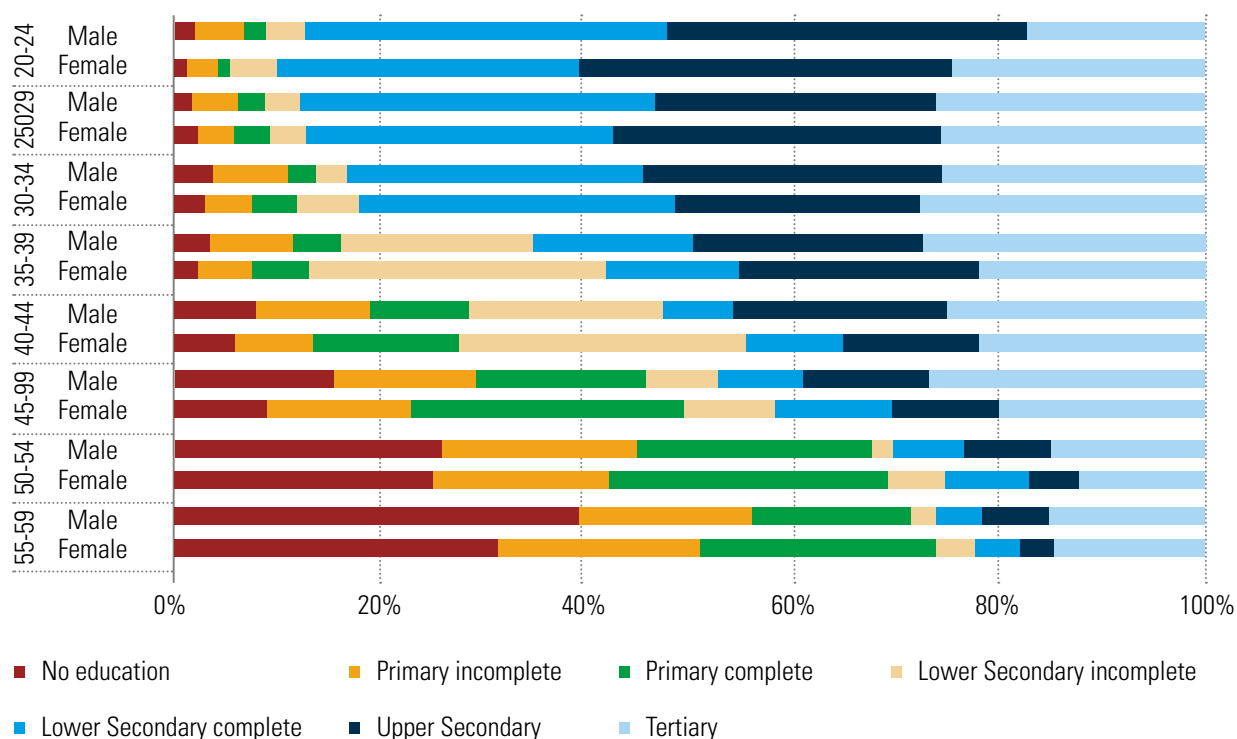
## SOME PERFORMANCE DATA

**FIGURE B1 UNEMPLOYMENT RATE BY AGE COHORT AND GENDER, 2015-16**



Source: BMTHS (2015-16).

**FIGURE B2 GRADE ATTAINMENT CATEGORIES BY GENDER AND AGE COHORT, 2015-16**

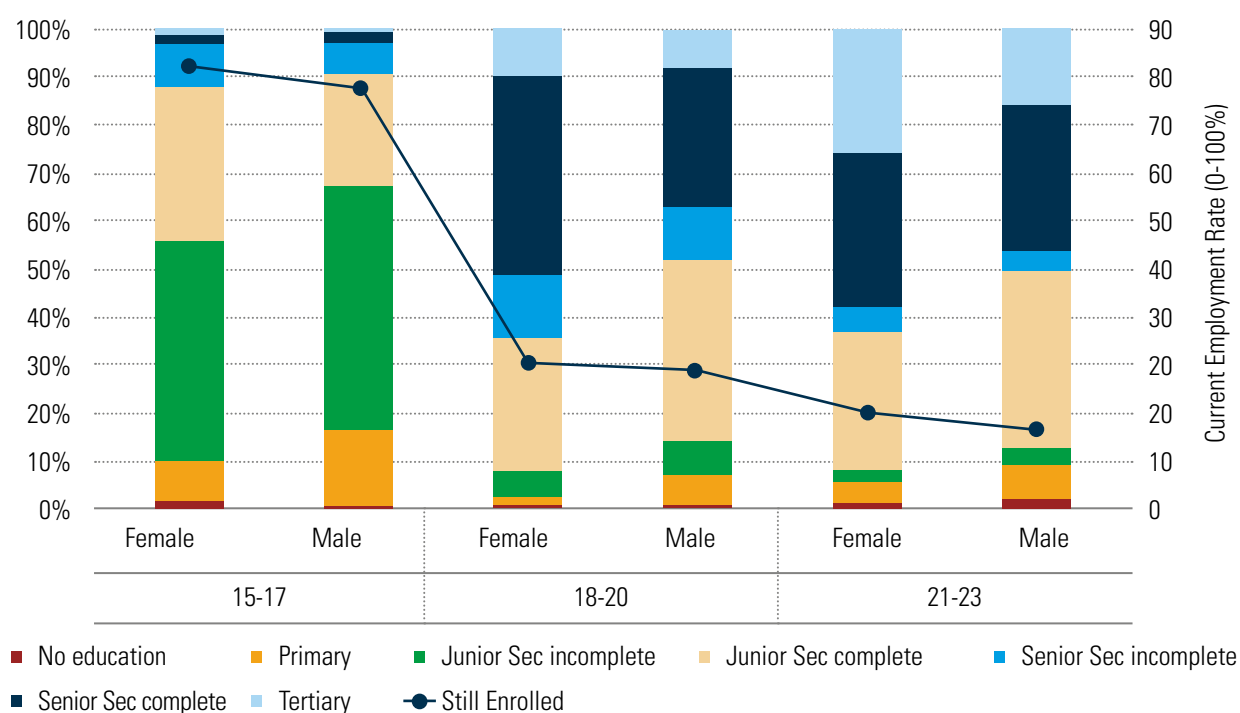


Source: BMTHS (2015-16).

**TABLE B1 NEET RATE BY AGE GROUP AND GENDER, 2015/16 (%)**

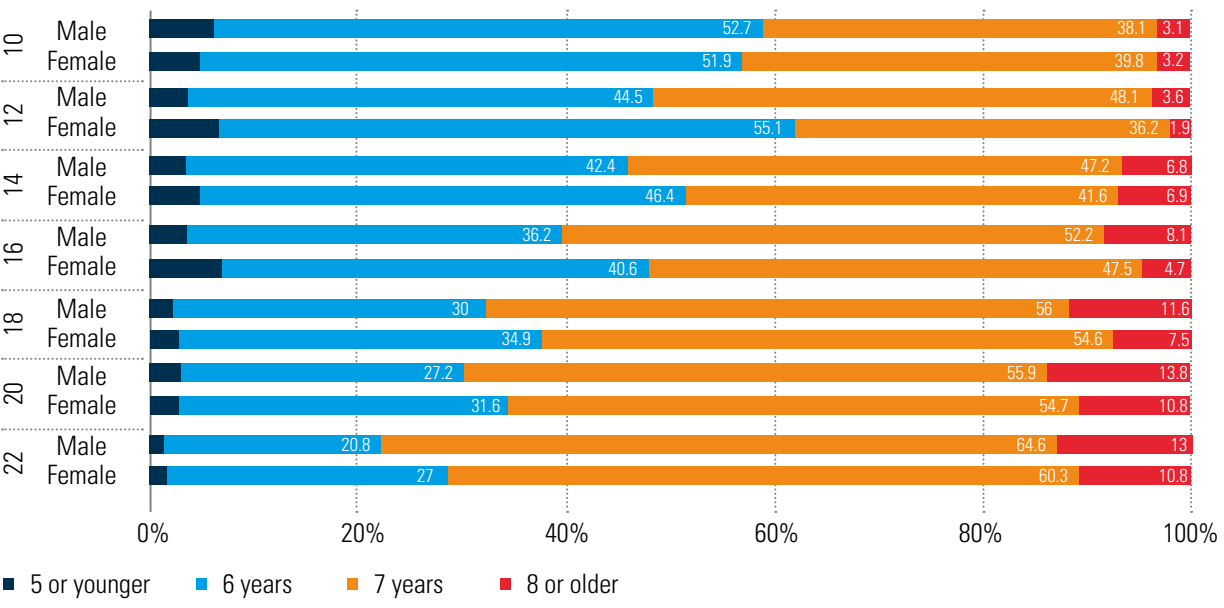
Age group	Male	Female	Total
15-17	17.8	17.6	17.7
18-19	51.0	60.4	55.7
20-24	46.5	55.5	51.3
25-29	35.3	49.0	42.8
30-34	27.3	38.9	33.6
35	20.2	38.8	30.6
<b>Total</b>	<b>34.5</b>	<b>44.6</b>	<b>39.9</b>

Source: (Statistics Botswana, 2018, p. 53).

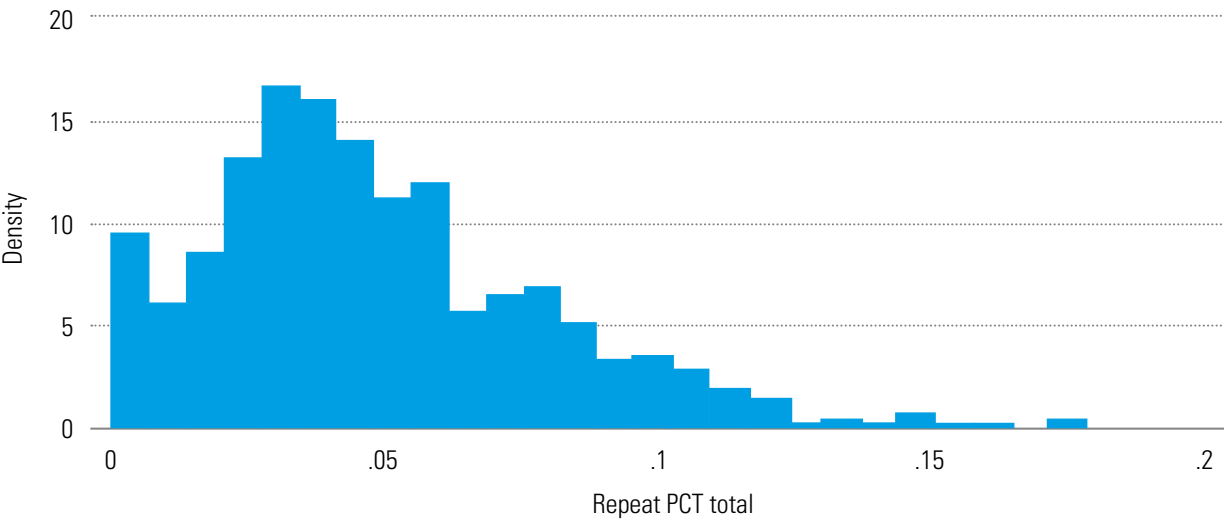
**FIGURE B3 GRADE ATTAINMENT PROFILES AND CURRENT ENROLMENT RATE BY GENDER AND AGE COHORT, 2015-16**

Source: BMTS (2015-16).

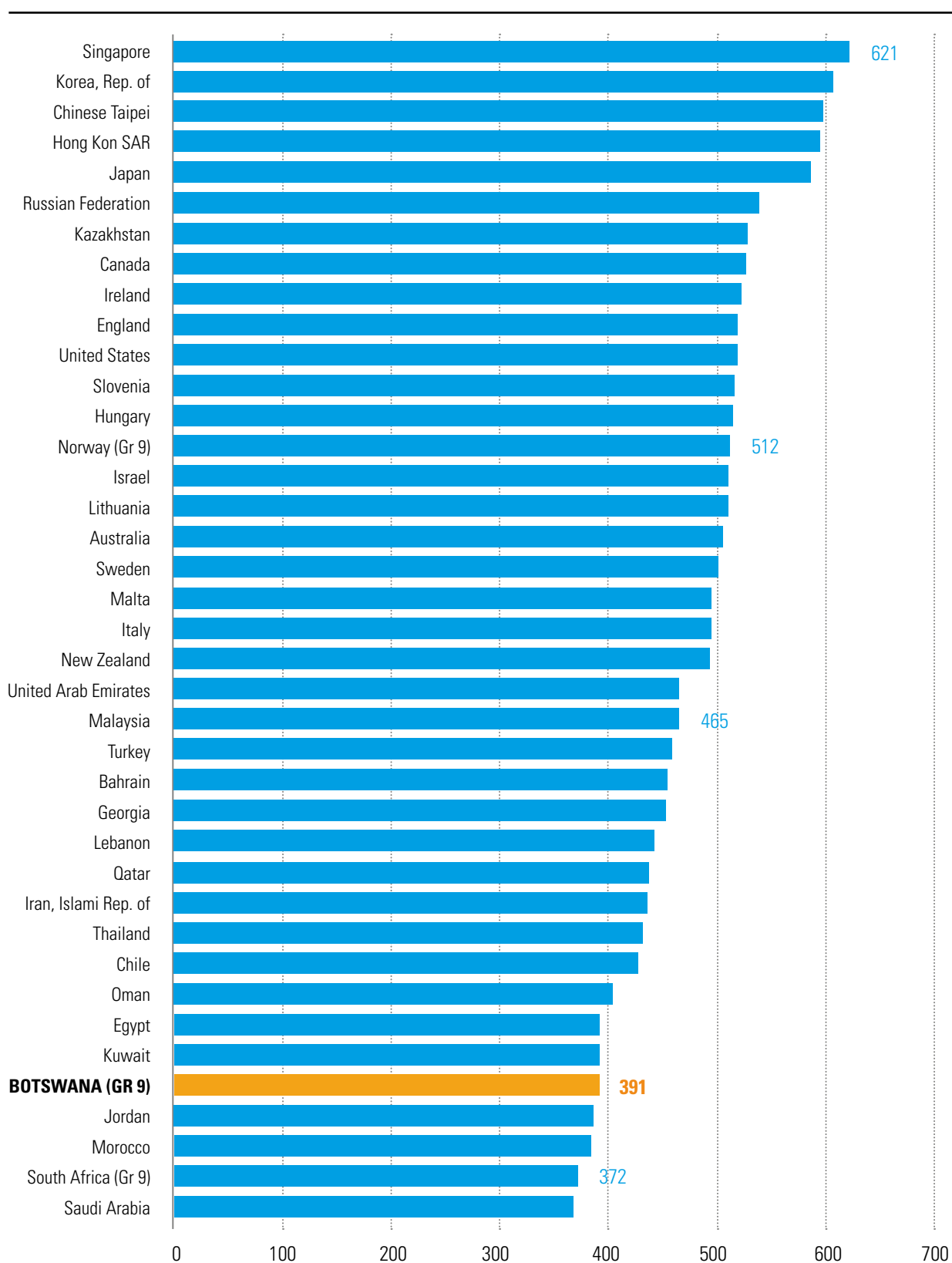
**FIGURE B4 AGE AT ENTRY INTO STANDARD 1 BY GENDER AND AGE COHORT, 2015-16**



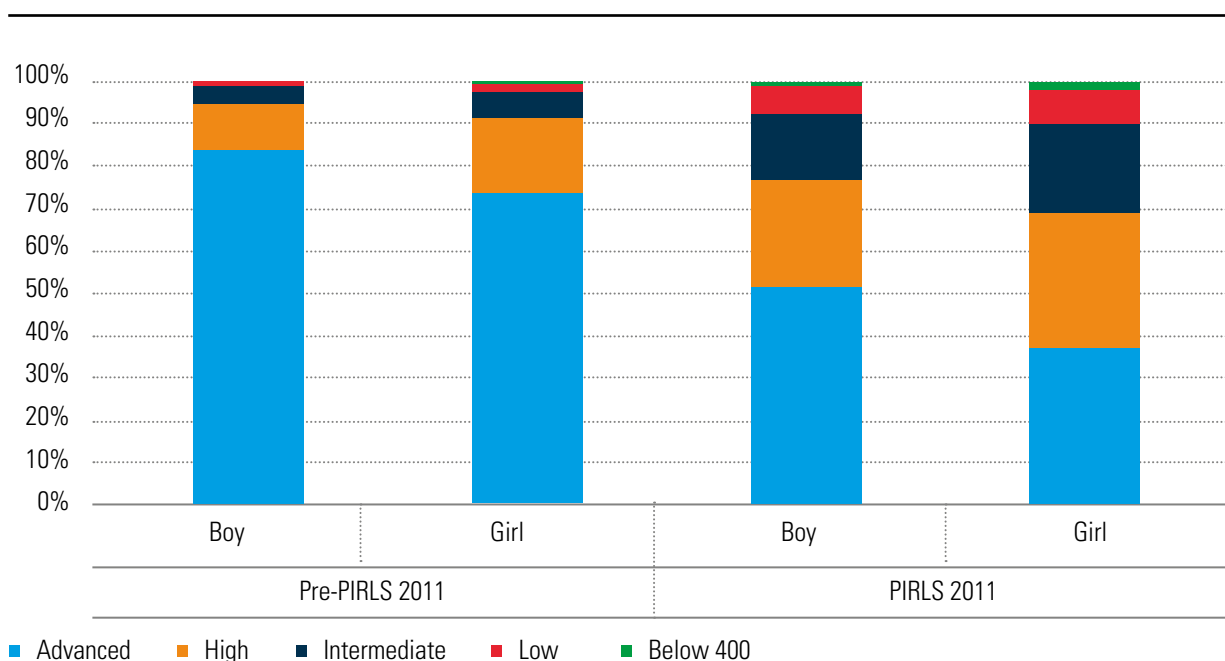
**FIGURE B5 FREQUENCY SUMMARY FOR PRIMARY SCHOOL AVERAGE GRADE REPETITION RATE, 2017**





**FIGURE B6 PERFORMANCE IN TIMSS GR8/9 MATHEMATICS IN CONTEXT, 2015**

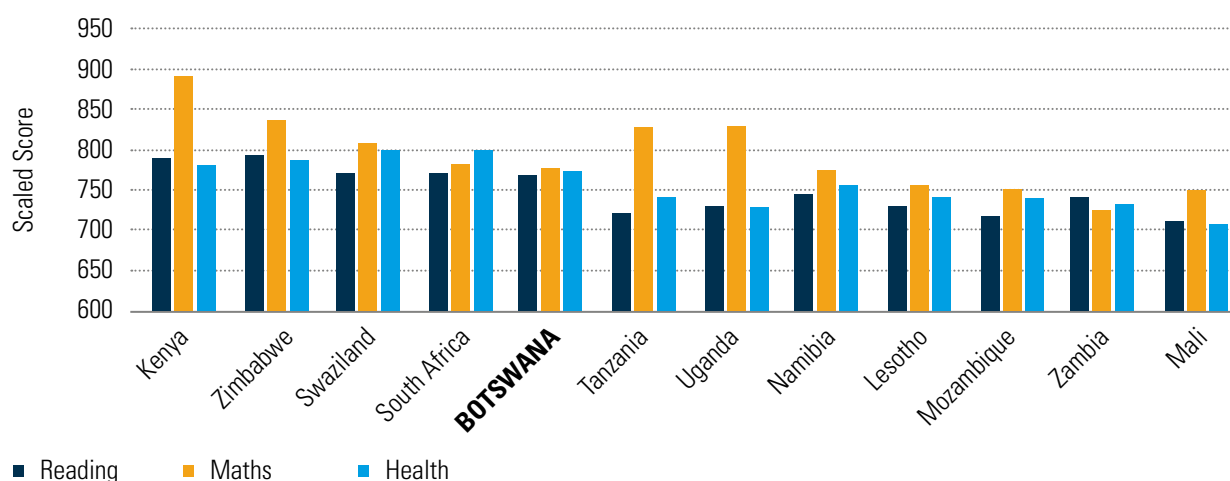
Source: Calculated from TIMSS 2015 dataset.

**FIGURE B7 ATTAINMENT OF READING BENCHMARKS BY GENDER, 2011 (PRE-PIRLS STANDARD 4 & PIRLS STANDARD 5)****TABLE B2 PERFORMANCE IN JOINT PIRLS/TIMSS TESTS, 2011**

	% who reach high international benchmark (550)				% who reach low international benchmark (400)			
	All 3 subjects	Reading	Maths	Science	All 3 subjects	Reading	Maths	Science
Australia	22	42	35	36	86	93	91	92
Czech Republic	21	50	30	45	92	98	93	96
Slovak Republic	21	44	30	44	89	96	91	94
Lithuania	21	39	43	31	92	97	96	95
Italy	18	46	28	37	90	98	93	95
Sweden	18	47	25	44	91	98	93	95
Romania	17	32	28	37	73	86	79	84
Poland	12	39	17	29	83	95	87	91
Spain	9	30	17	28	82	94	87	92
UAE	6	14	12	14	48	64	64	61
Iran	4	13	9	16	57	76	64	72
Azerbaijan	3	9	21	13	55	82	72	65
Saudi Arabia	2	8	7	12	43	65	55	63
<b>BOTSWANA (Gr.6)</b>	<b>3</b>	<b>9</b>	<b>7</b>	<b>7</b>	<b>37</b>	<b>56</b>	<b>60</b>	<b>43</b>
Honduras (Gr.6)	2	11	3	8	43	74	49	60
Morocco (Gr.6)	0	1	2	1	8	21	26	15

Note: Tests were taken in Grade 4 in all countries, except for the last three shown here, where testing was done in Grade 6.

Source: Martin and Mullis, 2013.

**FIGURE B8 GRADE 6 TEACHER TEST SCORES OF SOUTHERN AND EASTERN AFRICAN COUNTRIES SACMEQ III, 2007**

Source: SACMEQ III (2007).

**TABLE B3 SCHOOLS BY AVERAGE STREAM SIZE AND TOTAL ENROLMENT, 2017**

Pupil-teacher-ratio	Number of schools	Cumulative number of schools	Cumulative percentage of schools	Enrolment	Cumulative enrolment	Cumulative percentage of enrolment
0 to 12	6	6	2%	152	152	0%
12 to 14	1	7	2%	41	193	0%
14 to 16	5	12	4%	934	1,127	1%
16 to 18	7	19	7%	551	1,678	1%
18 to 20	5	24	9%	620	2,298	1%
20 to 22	4	28	10%	428	2,726	2%
22 to 24	6	34	12%	1,364	4,090	2%
24 to 26	7	41	15%	1,961	6,051	3%
26 to 28	4	45	16%	1,777	7,828	4%
28 to 30	9	54	19%	3,805	11,633	7%
30 to 32	12	66	23%	5,056	16,689	10%
32 to 34	29	95	34%	15,989	32,678	19%
34 to 36	26	121	43%	13,574	46,252	26%
36 to 38	41	162	57%	32,114	78,366	45%
38 to 40	46	208	74%	38,622	116,988	67%
40 to 42	24	232	82%	20,516	137,504	78%
42 to 44	27	259	92%	20,137	157,641	90%
44 to 46	16	275	98%	12,508	170,149	97%
46 to 48	4	279	99%	2,530	172,679	98%
48 to 50	1	280	99%	1,743	174,422	99%
50 to 52	1	281	100%	909	175,331	100%
52 +	1	282	100%	54	175,385	100%
<b>Total</b>	<b>282</b>			<b>175,385</b>		

Source: Authors' calculations from 2017 EMIS data.

**TABLE B4 PRIMARY REPETITION RATES BY REGION, 2015**

1 Southeast	3.3%
2 North	3.9%
3 South	4.3%
4 Kweneng	4.6%
5 Kgatleng	6.6%
6 North West	5.6%
7 Chobe	4.9%
8 Ghanzi	6.5%
9 Kgalagadi	6.7%
10 Central	5.0%
<b>Total</b>	<b>4.8%</b>

Source: Authors' own calculations from EMIS 2015 data.

# APPENDIX C

## 2015-16 MBTHS INCOME AND WAGE ANALYSIS

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The BMTHS survey from 2015-16 asked all persons aged 12 and higher about current work activities. Among persons aged 15 and higher who are working or seeking work (“Economically Active” population), about 83 percent are currently working, with nearly identical employment rates for males and females. However, roughly one quarter of working adults are classified as self employed, and do not report wage income. About 40 percent of these individuals work in farming, while the remainder are concentrated in non-farm self-employment.

The somewhat restricted sub-population of individuals earning wage (or salary) income does complicate the analysis of private returns to education. The standard (Mincerian) earnings equation regresses some measure of income (such as hourly wage) onto age, gender and a linear measure of educational attainment (e.g. years completed) to obtain the percentage increase in earnings that is associated with each year of education. Additional approaches incorporate levels of education to account for credential effects, using some measure of zero/limited education as the reference category.

The challenge in Botswana is that a sizeable proportion of working individuals is not reporting income, which will lead to upward biases in the estimates of returns to education if individuals who report income are more educated than working

persons who do not have income to report (or chose not to report income). The present analysis is not intended as an exhaustive review of earnings in Botswana, the purpose is instead to provide some reference points for returns to education in the country. This is of obvious importance in the context of a PER since the underlying rationale for public investments in education is to increase productivity, skills and economic returns to educated people.

The results in Table 1 provide an initial first cut summary of how education is related to work behaviour and income. The result that stands out is the very high returns to education in the country. One year of additional education is associated with about 20 percent higher reported wage/income level, *ceteris paribus*. This is very high, even in comparison with developing countries (Psacharopoulos and Patrinos, 2018). The selection corrected models (Heckman) use marital status and the number of children aged 0-5 in the household as instruments to control for labor force participation or, more accurately, having income to report in wage form. The selection extensions do very little to the average return per year of education. Working women get a higher return to each year of education than working men.

The main takeaway from Table 1 is that education is a very strong predictor of labor force participation, having wage income, and actual income (and wage) levels.

**TABLE C1 COVARIATES OF WORK BEHAVIOR, REPORTING INCOME AND HOURLY WAGES FOR PERSONAS AGED 15+ (BMTHS, 2015-16)**

Independent Variable	Log of hourly wage									
	Work=1	Any income=1	Total earnings (yearly)	Total weekly income	(5) (earnings)	(6)	(7)	(8) (female)	(9) (male)	(10)
Years of education	0.011** (8.58)	0.010** (5.87)	11334** (21.13)	279.6** (11.05)	0.234** (34.63)	0.183** (38.31)	0.187** (32.12)	0.219** (26.81)	0.159** (22.98)	---
Age	0.010** (21.13)	0.0001 (0.22)	2,691** (20.07)	68.5** (7.38)	0.051** (24.10)	0.04** (26.98)	0.037** (22.89)	0.04** (18.16)	0.034** (16.20)	0.024** (14.61)
Male	0.039** (4.40)	0.005 (0.49)	15929** (15.73)	421.4** (3.44)	0.381** (9.29)	0.363** (13.76)	0.348** (11.98)	---	---	0.315** (11.09)
Education level (excluded=none/ incomplete primary)										0.46** (8.11)
Primary complete	---	---	---	---	---	---	---	---	---	0.64** (10.60)
Junior sec incomplete	---	---	---	---	---	---	---	---	---	0.71** (12.67)
Junior sec complete	---	---	---	---	---	---	---	---	---	1.07** (12.32)
Senior sec incomplete	---	---	---	---	---	---	---	---	---	1.09** (18.67)
Senior sec complete	---	---	---	---	---	---	---	---	---	2.25** (36.47)
University	---	---	---	---	---	---	---	---	---	0.08 (0.73)
Constant	-0.88** (-7.52)	0.147 (1.42)	156440* (-15.95)	-2300** (-8.96)	-2.23** (-15.49)	-0.87** (-8.57)	-1.26** (-10.63)	-1.62** (-9.62)	-0.61** (-4.33)	
Explained variance (R <sup>2</sup> )	---	---	0.36	0.05	0.41	0.44	---	---	---	---
Heckman selection	---	---	No	No	No	No	Yes	Yes	Yes	Yes
Region controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample size	9,811	9,811	5,964	6,017	5,967	6,015	9,811	4,800	4,911	9,868

Source: BMTHS (2015-16).

Notes: See text for more detail. \*\* Significant at  $p \leq 0.01$ ; \* Significant at  $p \leq 0.05$ .



# APPENDIX D

**TABLE D1 COVARIATES OF GRADE ATTAINMENT AND CURRENT SCHOOL ATTENDANCE, BMTHS (2015-16)**

	Grade Attainment (ages 12-20)		Enrolled in Junior Sec. (ages 12-15)		Enrolled in Senior Sec. (ages 15-18)	
Independent Variable	OLS	HLM	Logit	Logit (HLM)	Logit	Logit (HLM)
Female	0.38** (8.16)	0.34** (7.70)	1.42** (3.82)	1.44** (3.79)	1.55** (4.74)	1.51** (4.45)
Age	0.77** (66.23)	0.77** (81.61)	4.86** (16.84)	5.65** (17.95)	2.30** (12.48)	2.32** (10.72)
SES Quintiles (spending), excluded=Q1:						
Quintile 2	0.13 (1.60)	0.13* (2.14)	1.70** (2.78)	1.72** (2.84)	1.55+ (1.85)	1.59* (2.08)
Quintile 3	0.26** (3.24)	0.21** (2.71)	2.10** (3.35)	2.14** (3.07)	1.53+ (1.65)	1.65+ (1.91)
Quintile 4	0.39** (3.64)	0.38** (4.30)	1.88* (2.25)	1.95* (2.30)	2.30** (2.66)	2.66** (3.35)
Quintile 5	0.57** (4.76)	0.54** (4.86)	3.99** (3.23)	3.54** (3.24)	2.72** (2.99)	2.90** (3.22)
Number persons 0-5 in household	-0.02 (-0.82)	-0.02 (-0.97)	0.99 (-0.13)	1.01 (0.16)	0.78** (-2.63)	0.82* (-2.14)
Number persons 6-12 in household	-0.06* (-2.18)	-0.05** (-2.68)	0.93 (-1.13)	0.91 (-1.40)	1.23** (2.77)	1.22** (2.59)
Number of persons 13-18 in household	0.09** (3.03)	0.11** (4.37)	1.23* (2.15)	1.31** (3.16)	0.91 (-0.95)	0.95 (-0.50)
Number of adults in household	-0.006 (-0.33)	0.005 (0.30)	1.03 (0.48)	0.99 (-0.21)	0.96 (-0.77)	0.92 (-1.42)
Education level of mother (excluded=junior secondary complete)						
No education	-0.43* (-1.98)	-0.33+ (-1.91)	0.77 (-0.40)	0.81 (-0.38)	0.27+ (-1.70)	0.45 (-1.10)
Non formal/primary incomplete	-0.44* (-2.35)	-0.44** (-2.74)	0.60 (-1.27)	0.52 (-1.44)	0.67 (-0.67)	0.82 (-0.30)
Primary complete	-0.04 (-0.34)	-0.06 (-0.39)	0.95 (-0.12)	0.74 (-0.71)	0.62 (-0.92)	0.60 (-0.99)
Some secondary	-0.22 (-1.30)	-0.20 (-1.35)	0.59 (-1.13)	0.52 (-1.55)	0.89 (-0.25)	1.00 (0.02)
Senior secondary	-0.11 (-0.76)	-0.06 (-0.42)	0.69 (-0.98)	0.86 (-0.36)	0.74 (-0.65)	0.93 (-0.17)
Vocational	-0.43 (-1.50)	-0.35 (-1.36)	0.46 (-0.93)	0.36 (-1.34)	4.12* (2.62)	4.23* (2.15)
University	0.03 (0.11)	0.12 (0.55)	0.84 (-0.63)	0.50 (-1.21)	2.6 (1.50)	4.00* (2.27)
Did not attend preschool	-0.30** (-4.99)	-0.28** (-4.92)	0.69* (-2.01)	0.70+ (-1.88)	0.50** (-3.34)	0.49** (-3.92)

Independent Variable	Grade Attainment (ages 12-20)		Enrolled in Junior Sec. (ages 12-15)		Enrolled in Senior Sec. (ages 15-18)	
	OLS	HLM	Logit	Logit (HLM)	Logit	Logit (HLM)
Age at first attendance	-0.48** (-10.97)	-0.46** (-15.18)	0.49** (-6.20)	0.45** (-7.18)	0.61** (-4.46)	0.61** (-4.12)
Time to junior secondary (std)	-0.20** (-3.96)	-0.21** (-5.50)	0.70* (-2.33)	0.70** (-2.91)	---- 0.62**	---- 0.62**
Time to senior secondary (std)	0.04 (0.89)	0.07* (2.26)	----	----	(-3.45)	(-3.08)
Sample Size	3,701	3,701	1,787	1,787	1,509	1,509
Explained Variance (R <sup>2</sup> )	0.71	----	----	----		
Sample size	3,701	5,203	4,967			4,967

Source: BMTHS (2015-16).

Notes: For grade attainment the coefficients represent linear effects in years completed. Logit refers to 0-1 dichotomous dependent variable for current attendance in junior secondary (or higher), or senior secondary (or higher). Logit coefficients are presented as odds ratios, where less than 1 refers to negative effect. HLM refers to mixed model with random effect at Enumeration Area level. T-statistics in parentheses. Estimations also include controls for person's relationship with household head and regions. \*\*significant at  $p \leq 0.01$ ; \*significant at  $p \leq 0.05$ ; +significant at  $p \leq 0.10$ .

# APPENDIX E

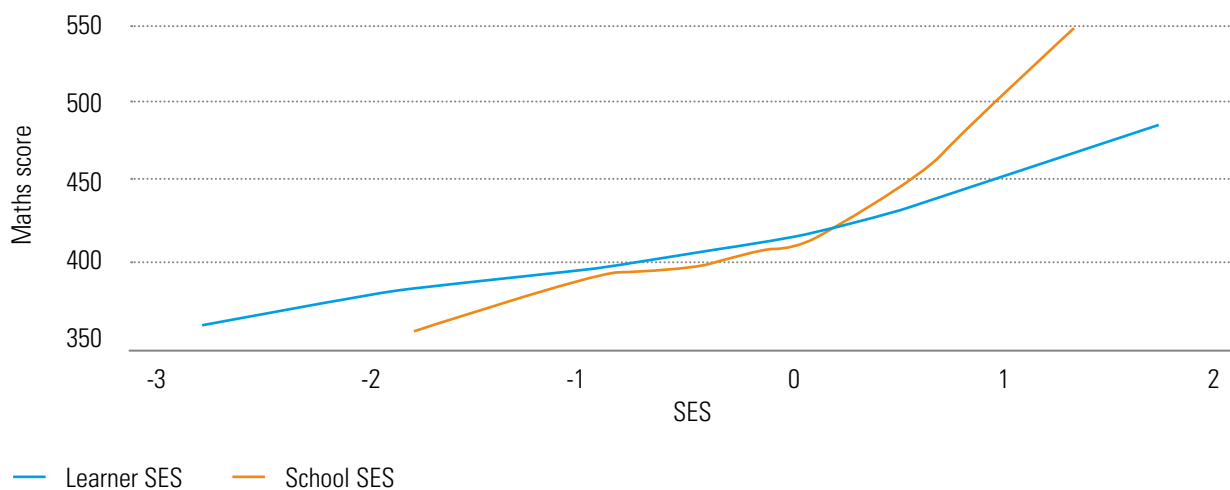
**TABLE E1 REGRESSIONS OF PERFORMANCE IN VARIOUS INTERNATIONAL ASSESSMENTS, SHOWING EFFECT OF AGE AND GENDER**

	PrePIRLS 2011		PIRLS 2011		TIMSS 2011 Gr 4 Maths		TIMSS 2011 Gr 4 Science		TIMSS 2015 Gr 8 Maths		TIMSS 2015 Gr 8 Science	
<b>Girl</b>	43.0	34.0	27.7	16.1	18.9	6.3	16.3	-2.00	19.1	4.5	21.8	3.2
<b>Age</b>		-29.5		-32.3		-33.7		-49.3		-36.4		-46.4
<b>Constant</b>	304.5	622.5	27.7	825.2	412.2	850.2	363.4	1003.3	382.0	956.9	381.7	1115.6
<b>N</b>	4,393	4,379	4,197	4,179	5,890	5,864	5,890	5,864	6,256	6,244	6,256	6,244
<b>R-squared</b>	<b>0.05</b>	<b>0.13</b>	<b>0.02</b>	<b>0.15</b>	<b>0.01</b>	<b>0.16</b>	<b>0.00</b>	<b>0.15</b>	<b>0.01</b>	<b>0.17</b>	<b>0.01</b>	<b>0.16</b>

**TABLE E2 REGRESSIONS OF PERFORMANCE IN VARIOUS INTERNATIONAL ASSESSMENTS**

	PrePIRLS 2011	PIRLS 2011	TIMSS 2011 Gr 4 Maths	TIMSS 2011 Gr 4 Science	TIMSS 2015 Gr 8 Maths	TIMSS 2015 Gr 8 Science
<b>SES</b>	13.4*	13.2**	13.3	13.6*	15.2	14.5***
<b>SES-squared</b>		-0.4		0.4		-1.1
<b>School-SES</b>	34.2***	50.9***	38.7***	43.8***	55.4***	55.1***
<b>School-SES-squared</b>		44.1***		28.6***		34.4***
<b>Girl</b>	45.1***	44.4***	20.0***	19.6***	19.4***	19.5***
<b>Urban, densely populated</b>	12.8***	12.6***	6.0***	4.5***	11.6***	14*
<b>Suburban, on fringes of urban</b>	32.7***	24.9***	12.8***	14.4***	5.8***	12.2*
<b>Medium size city or large town</b>	5.4***	3.1***	-2.1***	7.5***	4.9***	9.5
<b>Small town or village</b>	1.6***	14.4***	1.2***	7.7***	6.3***	10.6**
<b>Reference: Remote rural</b>						
<b>Constant</b>	301.4	279.2	409.4	393.5	386.3	377.1
<b>N</b>	4,261	4,261	5,817	5,817	5,903	5,903
<b>R-squared</b>	0.192	0.270	0.184	0.215	0.166	0.177

**FIGURE E1** LOWEST REGRESSIONS OF TIMSS 2011 STANDARD 4 MATHEMATICS SCORES ON THE SOCIO-ECONOMIC STATUS OF THE INDIVIDUAL PUPIL AND THE AVERAGE SOCIO-ECONOMIC STATUS OF CHILDREN IN A SCHOOL



**TABLE E3 COVARIATES OF GRADE 8 STUDENT ACHIEVEMENT IN MATHS AND SCIENCE (2015 TIMSS)**

Independent Variable	Gr 8 Maths		Gr 8 Science	
	OLS (PV)	HLM	OLS (PV)	HLM
Student is Female	4.7+ (1.81)	4.8** (2.83)	2.8 (0.90)	2.6 (1.13)
Student age (std)	-23.8** (-15.35)	-23.2** (-23.73)	-29.5** (-15.59)	-28.7** (-21.85)
Student SES quintiles (excluded=Q1)				
Quintile 2	12.2** (3.41)	14.3** (5.25)	14.5** (2.96)	16.5** (4.46)
Quintile 3	12.5** (3.06)	14.4** (5.12)	19.1** (3.71)	20.0** (5.27)
Quintile 4	22.5** (5.87)	22.4** (7.74)	29.7** (6.39)	30.2** (7.67)
Quintile 5	30.6** (7.53)	30.3** (10.08)	37.2** (7.54)	37.0** (9.08)
School average SES (std)	18.6** (7.08)	22.6** (9.36)	20.8** (6.53)	26.4** (8.88)
School location (excluded=Small Town/village)				
Urban (densely populated)	4.4 (1.00)	-5.3 (-0.76)	8.5 (1.29)	-4.3 (-0.53)
Suburban	4.3 (0.66)	4.2 (0.85)	2.0 (0.28)	1.1 (0.19)
Medium size city or town	7.4 (1.05)	6.2 (1.15)	9.9+ (1.64)	3.5 (0.55)
Remote rural	-5.0 (-1.13)	-3.9 (-0.94)	-11.7* (-2.09)	-11.5* (-2.23)
Student absences (excluded=Never or almost never):				
Once a week or more often	-48.8** (-16.40)	-46.7** (-17.33)	-75.4** (-16.16)	-71.9** (-19.69)
Once every two weeks	-86.4** (-15.00)	-84.8** (-21.23)	-126.8** (-14.86)	-121.3** (-22.14)
Once a month	-30.0** (-10.08)	-29.5** (-13.15)	-42.5** (-10.2)	-41.6** (-13.78)
Student-reported bullying (school average, std)	-3.0+ (-1.67)	-5.3** (-3.31)	-2.7 (-1.02)	-5.9** (-2.86)
Student-reported engaged teacher (school average, std)	2.3 (1.33)	1.4 (0.88)	4.1+ (1.86)	2.2 (1.14)
Student-reported homework time per week (school average, std)	2.7+ (1.66)	2.8+ (1.77)	-0.9 (-0.52)	-1.7 (-0.87)
Teacher is female	-2.9 (-0.84)	-3.6 (-1.15)	3.9 (0.96)	0.6 (0.14)
Teacher-reported curriculum coverage (%, std)	3.0+ (1.92)	4.1** (2.61)	1.2 (0.61)	2.3 (1.23)
Shortage of learning materials	-5.8** (-2.83)	-5.7** (-3.07)	-5.1+ (-1.91)	-4.3+ (-1.92)

Class size (std)	-4.0+	-5.0**	-1.7	-3.8+
	(-1.71)	(-2.78)	(-0.63)	(-1.80)
Sample size	5,203	5,203	4,967	4,967
Explained variance (R <sup>2</sup> )	0.30	----	0.34	---

Source: TIMSS (2015).

Notes: PV refers to Plausible Values regression based on the standard TIMSS statistical analysis approach with replicate weighting. HLM refers to mixed model with random school effect. T-statistics in parentheses. Estimations also include controls for number of books in household. \*\*significant at  $p \leq 0.01$ ; \*significant at  $p \leq 0.05$ ; +significant at  $p \leq 0.10$ .





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