Inequalities in Education Outputs: Case for Kenya

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Abstract

Education is an important sector for sustainable growth and development and hence the sector receives one of the highest public expenditure allocations (6.4 percent of GDP) in Kenya. However performance indicators are either unsatisfactory and or regional disparities are apparent. The analysis indicate that given the skills deficit among most youth who exit the education system, in most cases before the completion of basic education schooling, there is need for targeted interventions; equitable resource allocation; linking the expansion of schools to population density and recurrent resource availability; and addressing internal inefficiencies in the education system. Spending more does not necessarily mean better outcomes but rather how the resources are efficiently utilized and managed; while eliminating inequalities.

Keywords: Inequalities, Education, Kenya

1.1 Introduction

Investment in human capital development through education and training is important for sustainable development[1]. The human capital developed includes skills, knowledge, attitudes, behavior, competencies, values, and abilities in individuals that stimulate socioeconomic wellbeing, need to protect the environment (Youndt et al., 2004 and Garavan et al, 2001) and need to reduce inequalities (Rodriguez and Loomis, 2007). Education empowers the population to alleviate poverty, promote responsible citizenship, democracy, good governance; and improved access to economic opportunities (UNESCO, 2006). Further, education and training contribute to greater economic productivity, better earnings, and economic growth (Psacharopoulos, 1984; Romer, 1986; Schultz, 1961a; Romer, 1990; and Rosen, 1999).

The potential benefits of education resulted into various international and national commitments such as education for all (EFA) and Millennium Development Goals (MDGs) (UNDP, 2000). The common goal is to increase access to education, enhance equity, improve quality; and ensure efficient resource allocation in the education sector. The Kenya government on her part has since independence focused on eradicating ignorance, illiteracy and poverty among the population (GOK, 1965). The government has also implemented policies and initiatives, notably free primary education (FPE) and free day secondary education (FDSE) to increase access to quality education (GOK, 2003a and GOK, 2008a). For instance, during the period between 2002/03 and 2009/10 fiscal years, 6.4 percent of GDP and 26 percent of total government outlays went to education and training. Households pay for boarding, user charges and private schooling costs.

High public education spending has yielded improved education sector access levels. Primary and secondary net enrolment rates were estimated at 91.4 percent and 32 percent respectively in 2011 (compared to 76 percent and 18 percent in 2002 (GOK, Various (c)). However, the rates in 2011 imply that close to 8.6 percent and 68 percent of primary and secondary school age children, respectively, were not in school. Enrolment rates at post-secondary education are low. Only 2 percent of the pupils enrolled at primary grade one survived to first year in University; while about 6.5 percent and 13 percent of secondary education graduates enrolled in university and middle level (technical and teacher training) colleges, respectively.

[1] Sustainable development entails improvements in livelihoods that meets the human capital needs of the present and improves the quality of life without compromising the ability of future generations to meet their needs (WCED, 1987).

In 2010, tertiary education enrollment rate of 4.1 percent (UNDP, 2011) was lower than for some middle income countries such as Malaysia (32 percent), South Africa (15 percent), Mauritius (17 percent) and sub-Sahara Africa average of 5 percent (GOK, 2010a). The UNDP reports an education index (EI) which combines primary, secondary and tertiary gross enrolment rates. The maximum value of the index is one. Kenya's index was 0.403 compared to South Africa (0.558), Mauritius (0.570) and Korea (0.696) (UNDP 2011). Similarly, Kenya's average adult literacy rate for the period 2005-2010 (87 percent) was lower than that of Korea (98 percent), South Africa (88.7 percent) and Malaysia (92.5 percent).

With a growing population demand for education and hence pressure to increase public spending are likely to rise. Estimates of Kenya's population indicate a gradual increase from 33 million in 2004 to 38.6 million in 2009 (GOK, 2002) and about 41 million by 2010. The pre-primary (4-5 years), primary (6-13 years) and secondary (14-17 years) school age population was 2.9 million, 7.2 million and 3.3 million in 2010, respectively. By 2015, the respective school age population is projected to rise to 3.12 million, 10.7 million and 3.6 million respectively (GOK, 2010a).

Performance on national examination as indicated by KCPE and KCSE scores also varies widely across regions. In addition, there seems to be weak linkage between education and labour market as many (about 24 percent) educated Kenyans are unemployed. Public education subsidies rest on two policy objectives: improving education outcomes and efficiency; and eliminating poverty and inequalities (GOK, 2005a). The observed poor education sector indicators and sharp differences in the outputs across regions are not in line with government objectives for the sector. This raises questions about the efficiency and equity of public education spending in Kenya. The questions arise in the context of limited fiscal space to increase public education spending given competing budgetary demands and budgetary constraints (GOK, 2010).

Whether or not public education spending is pro-poor depends on how education spending outcomes are distributed across income groups. Similarly, whether there is scope to improve performance without increased resource flow to the education sector depends on the degree of resource utilization. However, there is limited empirical evidence on these issues in Kenya. This study therefore attempts to provide analysis of inequalities in education outputs in Kenya. The broad objective is to examine inequalities in access to schooling and the associated education outcomes.

An overview of recent reforms

A wide range of education policy reforms have been implemented in Kenya since 1985, notably the introduction of the 8-4-4 system in 1985; introduction of free primary education in 2003 and free day secondary education in 2008. These reforms were intended to increase access to affordable, relevant and high quality education and skills development. The reforms came in the context of observed education inequalities as discussed in the earlier sections of this chapter.

The Constitution of Kenya (GOK, 2010b), Sessional Paper No. 14 of 2012 (GOK, 2012) and Vision 2030 provide the current policy directions guiding the provision of education and training in the country. The Constitution of Kenya provides guidance for education policy in several ways.

First, it emphasizes the right to education. The provisions of the Constitution grant citizens the right to goods and services; education included, of reasonable quality and to information necessary for them to gain full benefit from goods and services. The Vision 2030 identifies quality and equitable education services delivery as key enablers for sustainable development. Every child has a right to free and compulsory basic education regardless of social, cultural, religious and physical differences and parents are required to ensure that every school-age going child attends school (GOK, 2010b).

Second, it recognizes international laws that Kenya is a signatory as part of laws of Kenya. In effect, the International Covenant on Economic Social and Cultural Rights (ICESCR, 1966) which emphasizes the right to the highest standard of education is applicable to Kenya. The ICESCR stipulates that education at all levels should exhibit four interrelated features: availability, accessibility, acceptability and adaptability.

Third, the Constitution introduced devolution of governance structures and transformation of key education institutions/organizations to ensure that all public services including education are accessed in all parts of Kenya. Under the devolved system of government, the national government is responsible for education policy, standards, curricula, examinations.

It is also responsible for granting of university charters; administration of other institutions of research and higher learning; primary schools, secondary schools, and special education institutions. The county government on the other hand is responsible for pre-primary education, village polytechnics, home craft centers and childcare facilities. However most of the national government functions such as teacher management and quality assurance will need to be decentralized for equitable and efficient service delivery.

A successful decentralization process will however require among others: development and monitoring of quality standards, especially for the devolved functions; building clear accountability and transparency lines or requirements; development of transfer agreements between different tiers of government that take into consideration regional differences; design and implementation of an equalization scheme; adequate capacity development plans to prepare for such processes as the need to change long established behaviors or attitudes (GOK, 2012).

Most of the analysis in this study focuses on the county, which under the 2010 Constitution will be the focus of public service delivery. The findings from this study are intended at informing policy reforms, especially decentralization and efficient resource mobilization for sustainable financing of education and training in Kenya. The next section provides an analysis of inequalities in education in Kenya.

Inequalities in Education Sector Performance

In this section, an analysis of the performance of Kenya's education sector over the period 2002/3 to 2009/10 is presented. The analysis focuses on indicators of access, equity, internal efficiency, education outputs and outcomes at primary, secondary, technical and university education levels.

Access and equity

Kenya has made considerable progress in improving overall education enrolment levels. Nevertheless, marked disparities remain across levels of education and across regions. Primary school gross enrolment rate (GER)[2] increased from 88.2 percent in 2002 to 109.8 percent in 2010. Over the same period, the net enrolment rate (NER) increased from 76.4 percent to 91.4 percent. Secondary GER increased from 25.7 percent to 47.8 percent in 2010 and NER increased from 17.8 percent in 2002 to 35.8 percent in 2009. It dipped to 32 percent in 2010, implying about 68 percent of the secondary education school age population were not in school at the time. Although transition from secondary education to university education increased from 4.5 percent in 2002 to 6.5 percent in 2008, the university education GER remained low at 4.1 percent compared to the national target of over 10 percent (GOK, 2007).

The increase in primary school enrolment can partly be attributed to the sector reforms implemented during the review period. The reforms include: emphasis on universal primary schooling within the Economic Recovery Strategy for Wealth and Employment Creation (2003-2007) (GOK, 2003a) and Free Primary Education programme introduced in 2003. The FPE programme supports the expansion of public primary schools physical infrastructure and provides per capita grants for teaching and learning materials; operations and maintenance and teaching staff emoluments (GOK, 2005).

[2] GER is defined as total school enrolment in a respective level regardless of age divided by school age population. NER is defined as school enrolment of the specific school age at a given level divided by school age population for the education level under consideration. Primary school age population is 6-13 years; secondary school age population is 14-17 years while tertiary school age is estimated at 18-25 years. Gross enrolment can be more that 100 percent since both overage and underage students are included.

Table 1: Enrollment rates (%) (2002-2010)

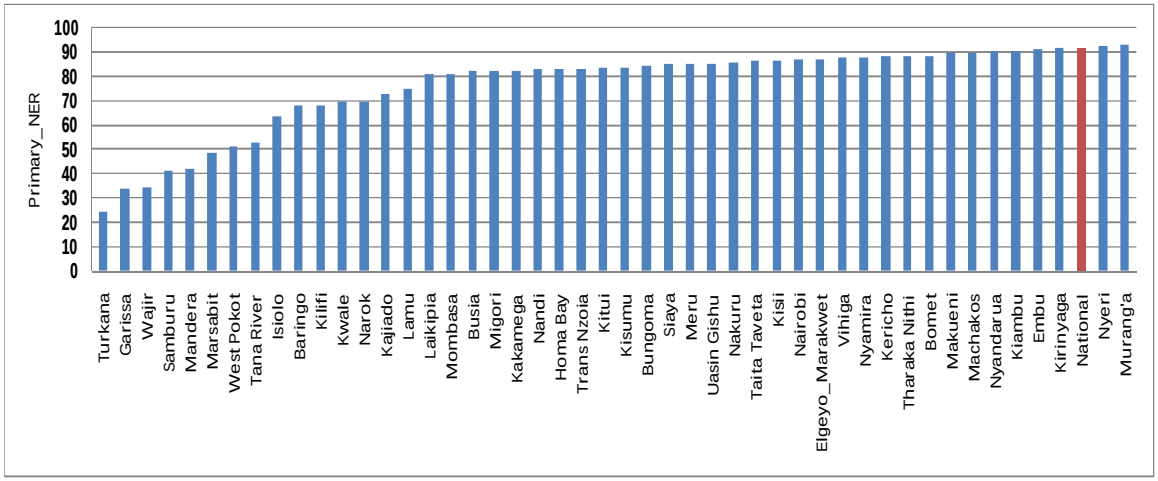
Primary	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
GER	88.2	102.8	104.8	107.2	107.4	107.6	108.9	110.0	109.8
NER	76.4	80.4	82.1	83.2	86.5	91.6	92.5	92.9	91.4
Secondary									
GER	25.7	28.6	29.8	30.2	32.4	36.8	42.5	45.3	47.8
NER	17.8	18.6	19.4	19.8	23.2	24.2	28.9	35.8	32.0
Tertiary									
Transition from Secondary to public Universities	6.3	5.4	4.9	4.9	6.6	6.3	6	6.7	6.4
Transition from Secondary to public and private Universities	7.1	6.1	5.7	5.7	8.1	7.7	7.3	7.8	7.7
University GER*	..	..	..	..	..	3.5	..	..	4.1

Source: GOK, Various; MOE EMIS Section; * UNESCO 2008; .. Tertiary and University education NER data and GER data for most years was not readily available.

Despite these improvements, Kenya's enrolment rates are relatively lower compared to selected comparator countries in Asia and Africa as the following statistics from UNDP (2011) show. In 2010, Kenya's tertiary gross enrolment rate (4.1 percent) was lower than for Korea (96.1 percent), Egypt (31.2 percent), Ghana (6.2 percent) and sub-Sahara Africa (5.5 percent). At secondary education level, Kenya's NER (32 percent) was slightly higher than the sub-Sahara Africa (29.5 percent) but lower than for Egypt (71.2 percent), Ghana (46.4 percent) and South Africa (71.9 percent). Primary school NER for Kenya (91.4 percent) was higher than that of South Africa (87.5 percent) and close to that of Egypt (93.6 percent) and Korea (98.6 percent).

Further, within Kenya, regional disparities in access to education are evident. In 2009, Turkana County recorded the lowest primary NER of 25 percent while Muranga County recorded the highest primary NER of 93 percent.

Figure 1: Primary education enrollment rates (%), 2009

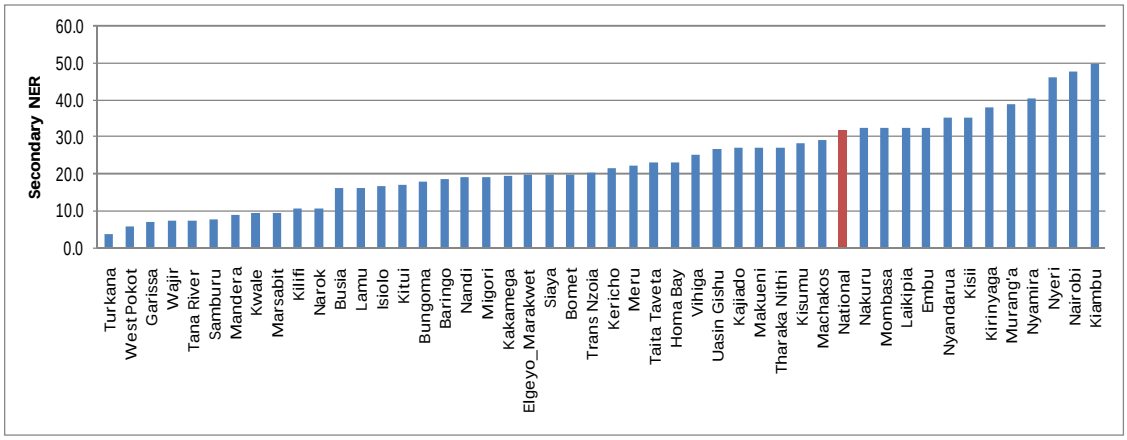


Data Source: Ministry of Education, EMIS section

Figure 1 shows that the 15 counties with relatively low primary NER (below 80 percent) are in arid and semi-arid parts of Kenya. Majority (32 counties) of counties have NER of between 80 percent and 90 percent. Thus although the national NER of 91.4 percent suggests that Kenya is on track to achieve the 100 percent MDG target, most counties will not meet the target unless targeted interventions are put in place. Secondary education NER is very low and there are regional disparities. Also see Figure2. In 2009, the lowest secondary NER (3.5 percent) was recorded in Turkana County while Kiambu County recorded the highest NER (50 percent). All counties recorded an NER of less than 50 percent with a national average of 32 percent.

In almost one-quarter of the counties secondary education NER was very low (10 percent or less); slightly over half of the counties had NER of between 10 and 30 percent. The upper tail of the distribution comprises eight counties with NER of between 30 percent and 40 percent and four counties with NER of between 40 percent and 50 percent.

Figure 2: Secondary education enrollment rates (%), 2009

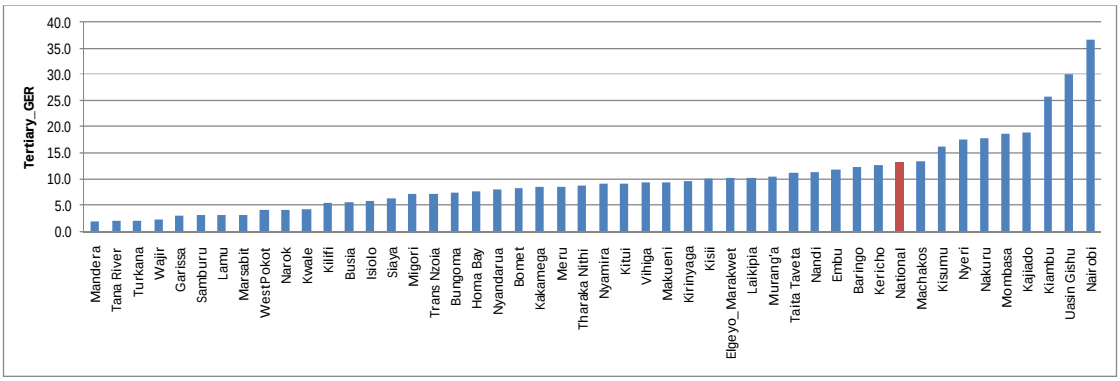


Data Source: Ministry of Education, EMIS section

School enrolment in Kenya has been boosted by private schools. However, enrolment in private schools as a percentage of total enrolment is relatively low. For instance, in 2010 about 5 percent and 8 percent of primary school pupils and secondary school students were enrolled in private schools, respectively (GOK 2010a).

Tertiary (technical and university) education GER ranged between 1.9 percent and 37 percent for the least (Mandera) and best (Nairobi) performing counties, respectively. Aggregate tertiary education GER (university and technical education) was estimated at 13.2 percent in 2009.

Figure 3: Tertiary education enrollment rates (%), 2009

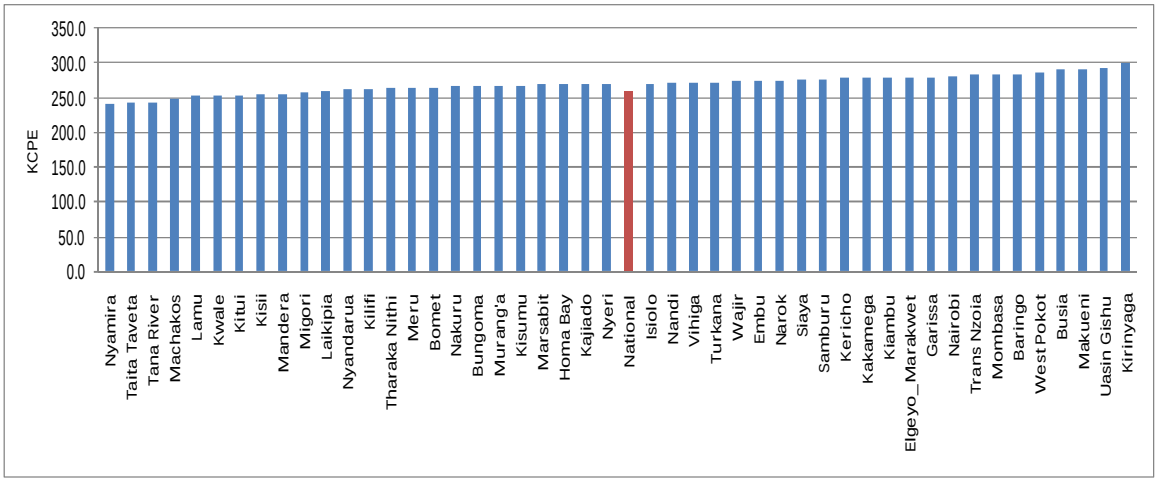


Data Source: Ministry of Education, EMIS section

Most counties (29) had GER of less than 10 percent while 10 counties had a GER of between 10 percent and 15 percent. Only 1 county had GER above 35 percent while 7 counties recorded GER of between 15 percent and 30 percent. Regional disparities in the primary, secondary and tertiary enrolment levels may be explained by various factors, including long distances that children have to cover in order to get to school especially in Arid and Semi-Arid Lands (ASALs), inadequate school infrastructure in informal settlements in urban areas, direct and indirect costs of schooling and retrogressive socio-cultural practices (Ngware et al 2006). Despite the establishment of boarding primary schools in ASALs, enrolment rates are low.

In terms of output, the number of Standard 8 completers and average examination scores has increased. The number of KCPE candidates increased by 24 percent from 587,961 pupils in 2003 to 727,045 pupils in 2009. Further, the national KCPE mean score also increased from 247.5 marks in 2003 to 271 marks in 2009, out of the possible maximum of 500 marks. This is perhaps due to provision of teaching and learning materials to schools under the FPE programme, implemented from 2003.

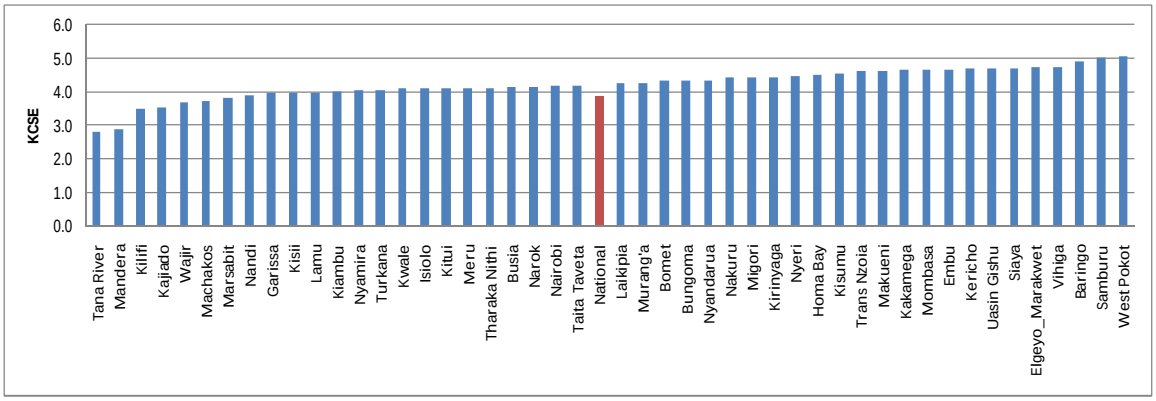
Figure 4: KCPE mean scores by County, 2009/10



Data Source: Ministry of Education, EMIS section

There were no substantial regional disparities in KCPE mean scores. In 2009/10, KCPE mean score varied between a low of 241 marks (Nyamira County) and a high of 299 marks (Kirinyaga County) out of a maximum of 500 marks. No County had a mean score of more than 60% of the maximum marks. Expansion in enrolment also occurred at secondary education level. The number of Kenya Certificate of Secondary Education (KCSE) candidates increased from 207,730 students in 2003 to 356,015 in 2010. The share of students with grade A and A- increased from 1.5 percent to 1.8 percent during the period. Candidates who attained grade C+ and above increased from 24 percent in 2003 to 27 percent in 2010 (GOK, Various (c)).

Figure 5: KCSE mean scores by County, 2009/10



Data Source: Ministry of Education, EMIS section

The lowest KCSE examination average score of 2.81 out of a maximum of 12 points was recorded in Tana River and the highest score of 5.05 in West Pokot. Majority (39) of the counties recorded a mean examination score of between 4 and 5 points while 8 counties reported a KCSE mean score of less than 4 points. An interesting observation from Figure 1 through Figure is that counties with high NER are not the same counties with high KCPE and KCSE examination performance. As an example Murang'a and Kiambu recorded the highest primary and secondary education NER, respectively while Kirinyaga and West Pokot reported the highest KCPE and KCSE points. Identifying factors that explain variations in performance indicators is an empirical issue. Some of these issues are explored in the remaining parts of this thesis. The next section reviews the state of internal efficiency of the education in Kenya.

Internal efficiency

Internal efficiency is best measured in terms of indicators of progression through the education system among a given cohort over time. These indicators include cohort survival within the levels, and transition rates between

levels. TABLE 2 shows that about 56 percent of pupils enrolled in Standard 1 in 1997 progressed to Standard 8 in 2010 while 48 percent made it to Form 1 compared to 43.9 percent in 2000. This indicates that although it is possible to increase enrolment rates at primary level of education, the sector's ability to sustain them through the system and at an increasing rate is weak. Despite the increase in survival and transition rates during the review period, progression within the education system is still low. The number of pupils enrolled in Form 1 as percentage of respective cohort enrolled in Standard 1 was estimated at 27 percent in 2010 having increased from 20 percent for 2000 cohort. Survival within secondary education level is however relatively high (95 percent) implying high internal efficiency within secondary education level. However, only 25 percent of those enrolling in standard 1 progressed to form 4 and 2.2 percent progressed to university level. Transition from last grade of secondary education to first year university increased from 7 percent in 2000 to 8.8 percent in 2010.

Table 2: Survival rates (%), 2000-2010

Survival rates (%)	1987-2000 Cohort			1989-2002 Cohort			1994-2007 Cohort			1997-2010 Cohort		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Survival (Completion) rate from Std 1 to Std 8	44.6	43.0	43.9	45.1	43.5	44.3	53.3	53.2	53.3	56.1	56.6	56.3
Survival rate from std 8 to Form 1	45.4	43.9	44.7	45.3	44.5	44.9	43.2	41.6	42.4	49.4	46.2	47.8
Survival rate from Std 1 to Form 1	20.3	18.9	19.6	20.4	19.4	19.9	23.0	22.1	22.6	27.7	26.2	26.9
Survival (Completion) rate from Form 1 to Form 4	85.7	83.1	84.5	100.8	96.9	99.0	98.2	96.0	97.1	98.4	91.6	95.2
Survival rate from Std 1 to Form 4	17.4	15.7	16.6	20.6	18.8	19.7	22.6	21.2	21.9	27.3	24.0	25.7
Survival rate from Std 1 to University level	1.6	0.7	1.2	1.5	0.8	1.2	1.7	0.9	1.3	2.8	1.7	2.2
Transition rate from Form 4 to University level	9.0	4.6	7.0	7.5	4.2	6.0	7.5	4.0	5.9	10.2	7.0	8.8

Source: (GOK, Various (d)) and Author's Computations

Transition rate increased across all regions during the review period but at different magnitudes. National transition rate between Standard 8 and Form 1 increased from 41.7 percent in 2002 to 66.9 percent in 2010 (table 2).

Table 1: Primary to secondary education transition rate (%), 2002-2010

	2002	2003	2004	2005	2006	2007	2008	2009	2010	*% change*
Coast	30.4	31.0	52.1	34.0	39.0	40.0	45.1	52.1	48.2	*59%*
Central	57.3	58.5	59.6	63.7	64.7	57.4	64.2	67.3	79.8	*39%*
Eastern	47.5	48.9	51.2	49.4	53.5	46.8	51.2	70.1	73.1	*54%*
Nairobi	32.5	33.5	34.5	50.9	58.3	38.0	45.9	45.0	52.8	*62%*
Rift Valley	21.1	21.6	41.7	48.5	54.3	42.5	46.7	57.1	56.4	*167%*
Western	52.6	53.7	55.8	52.0	59.8	49.5	60.1	74.7	67.7	*29%*
Nyanza	35.4	36.1	47.3	57.1	63.6	50.2	56.8	81.5	83.2	*135%*
North Eastern	42.9	44.9	45.1	44.2	40.5	45.7	40.5	56.3	47.0	*10%*
National	41.7	42.6	42.7	56.0	57.3	59.6	59.9	64.1	66.9	*60%*

Source: (GOK, Various (d))

The highest increase in transition rates between 2002 and 2010 were recorded in Rift Valley province (167 percent) and Nyanza province (135 percent). North Eastern province recorded the lowest from 42.9 percent to 47 percent, a 10 percent increase. To some extent, transition rates are affected by lack of capacity in some regions, low educational attainments among some Standard 8 completers, affordability and socio-cultural factors (Ngware et al., 2006).

Levels of resource utilization

At both primary and secondary levels of education in Kenya, there is unequal distribution of schools. Using 2009/10 county level data, the average primary school size was 458 pupils. The smallest school had 245 pupils and the largest had 1,023 pupils. The average primary school density, defined as total primary school age population divided by the number of schools was 634 pupils with a maximum of 3,176 children per school and a minimum of 194 pupils per school. (see Table 3, Figure 5 and Figure 7).The gap between the largest and smallest school is large indicating that there is scope to increase enrolment without necessarily building more schools. In 2009/10, the average public secondary school size was 313 students with a minimum of 115 students, a maximum of 581 students and standard deviation of 75 pupils. The average secondary school population density was 1,422 with a maximum of 6,840 secondary school age children per school and a minimum of 306 children per school (Table 3, Figure 9 and Figure 5). The large gap between 1,422 and 6,840 in secondary school age population density indicated the problem of uneven provision of secondary schools in Kenya; which has partly contributed to the low enrolment levels.

Table 2: School density, school sizes and pupil teacher ratio, 2007 and 2009/10

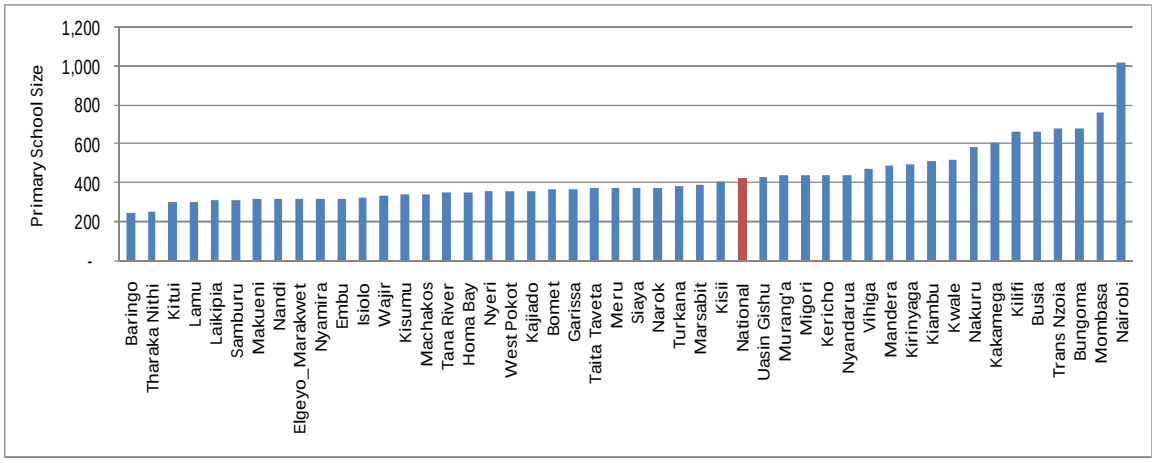
		2007			2009/10			
	Average	Std dev.	Minimum	Maximum	Average	Std dev.	Minimum	Maximum
Primary school density	574	608	90	3,510	634	580	194	3,176
Primary school size	458	242	215	1,414	428	151	245	1023
Primary class size	35	10	24	56	na	na	Na	na
Primary PTR	34	9	26	56	39	10	23	65
Secondary school density	1,433	1,817	296	9,232	1,422	1,520	306	6,840
Secondary school size	263	142	107	901	313	75	155	581
Secondary PTR	16	2	12	22	24	7	12	45

Source: School mapping data, 2007 and 2009/10 MOE data base at County level; na- data not available

During the study period, majority of the counties were operating in a sub-optimal level. Assuming all primary schools had optimal enrolment of 50 pupils per class for 8 classes, enrolment could be 400 pupils per school. However, 29 counties recorded a school size of less than 400 pupils while 18 counties recorded a school size greater that the national mean of 400 pupils per school.

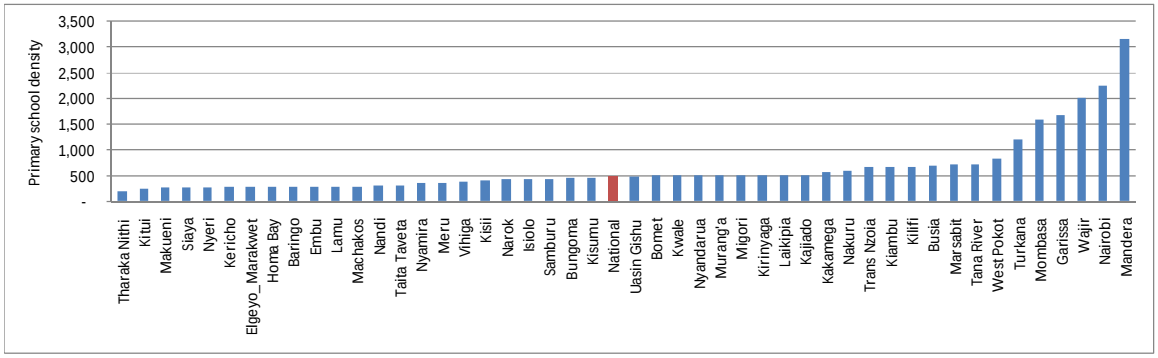
A substantial number of primary school going age children was still not in school despite some of the affected counties operating at a suboptimal level. As an example, Marsabit, Tana River, Turkana, Wajir, Nairobi and Mandela had large pupil school age population density but it is only Nairobi County which recorded a large school size implying shortage of schools relative to number of primary school age children in the county. The other counties (Marsabit, Tana River, Turkana, Wajir and Mandela) have extra capacity in the existing primary schools.

Figure 5: Primary school size by County (2009/10)



Data Source: Ministry of Education, EMIS section

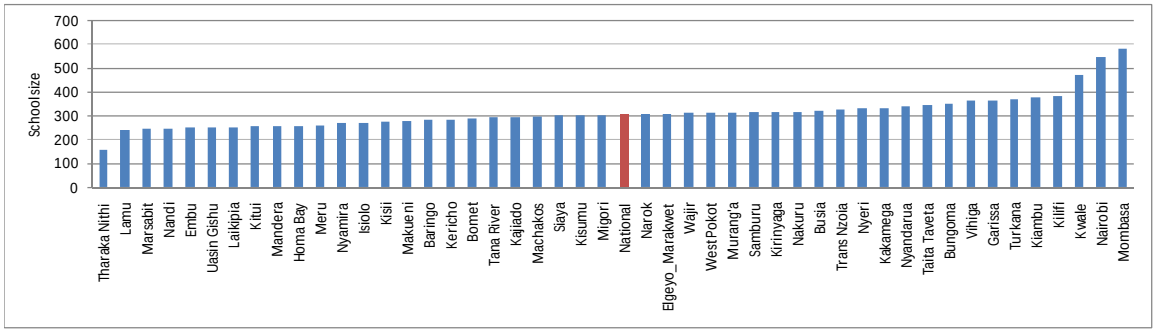
Figure 6: Primary school population density by County (2009/10)



Data Source: Ministry of Education, EMIS section

The coexistence of a high secondary school age population density and small school size indicates underutilization of available school infrastructure. The recommended school size for a secondary school is 540 students assuming each secondary school has least 3 streams per class of 45 pupils (GOK, 2005a and b). This means that a large number of secondary schools are operating at a sub-optimal level yet a large number of school age youth are not in school. On the other hand, large school size and high secondary school density indicate shortage of schools in some regions of Kenya (Figure 9 and Figure 11) although a large number of school age youth are not in school.

Figure 7: Secondary school size by County (2009/10)

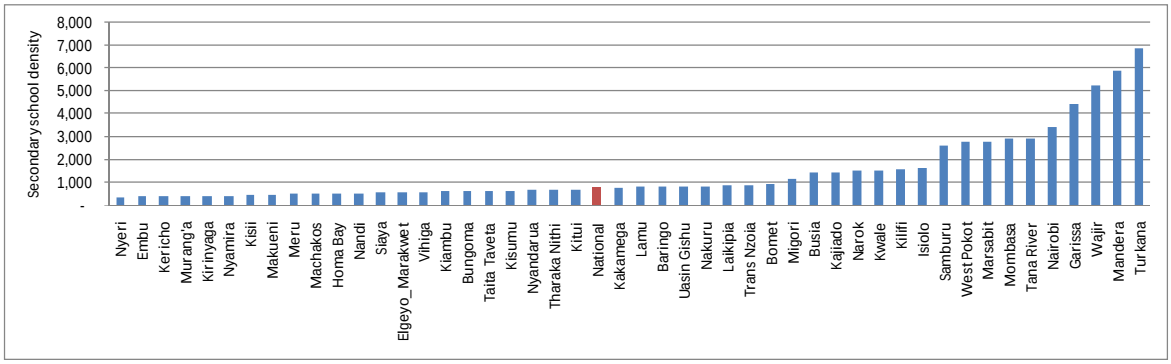


Data Source: Ministry of Education, EMIS section (2012)

Figure 7 shows that 23 counties had secondary school size above the national average of 300 students per school and only two counties (Nairobi and Mombasa) were operating at an optimal level. Mombasa and Turkana counties had large school size and large school density indicating shortage of school infrastructure in these counties. 39 counties had secondary school density of less than 1000 (figure 8).

These counties also have small secondary school size that is below the optimal size of 540 students per school. These counties have potential of increasing secondary school enrolment using available school facilities without any expansion of school infrastructure.

Figure 8: Secondary school population density by County (2009/10)



Data Source: Ministry of Education, EMIS section (2012)

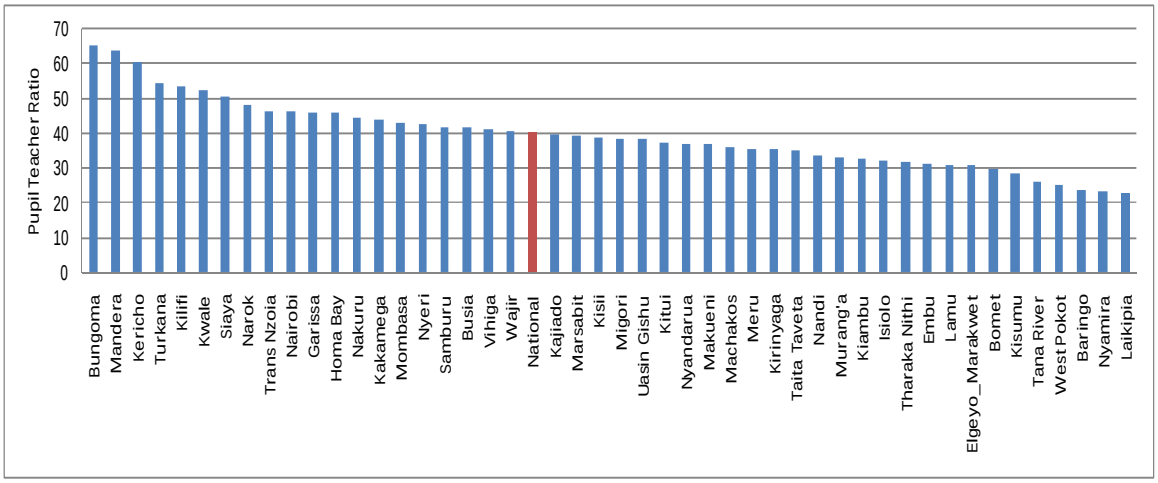
Based on other measures of education sector resource utilization such as pupil-teacher ratio (PTR), pupil classroom ratio (class size) Kenya's education sector is inefficient. The policy targets for primary school PTR and class size are 40:1 and 50:1 pupils, respectively, while for secondary level, the target for PTR and PCR are 35:1 and 45:1 students, respectively (GOK, 2003a). Table 4 shows that class size at primary level in 2007 was 35:1 for primary; clearly lower than the national target. Further, the maximum of 56:1 and minimum of 24:1 indicate a wide range. The existence of large classes alongside small classes at primary education level in Kenya suggests inefficient utilisation of education sector resources.

Table 4 also shows that in 2009, the average class size was 36 pupils almost the same as in 2007. The Eastern region had the lowest average class size (25 pupils) while Nairobi had the largest class size (60 pupils). Average PTR at primary education level increased from 34:1 in 2007 to 39:1 in 2009 due to increase in school enrolment. At secondary school level, the PTR was 24: 1 in 2010 up from 21:1 in 2005. This increase can be attributed to the implementation of the FDSE programme.

Availability of teachers as indicated by PTR varies widely across counties. In 2010 at primary school level, the largest PTR (65:1) was in Bungoma and the lowest (23:1) in Laikipia (see Figure 11). In addition, 20 counties had a PTR greater than the national target 40:1 while more than half (27 counties) had PTR below that national target.

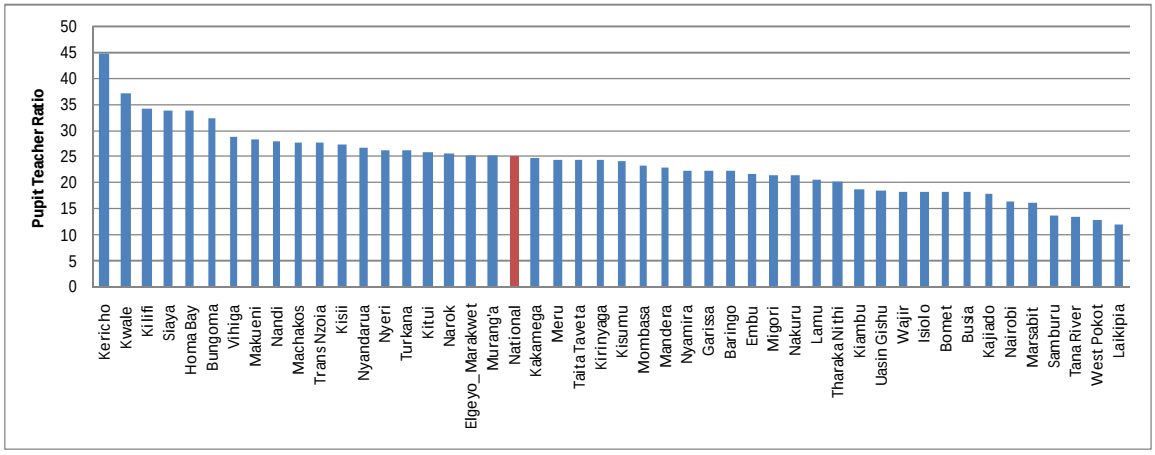
Similarly, at secondary school level disparities in PTR are observed. The highest PTR was 45:1 and the lowest was 12:1. See figure 12. However, there appears to be scope to increase enrollment with existing teachers at secondary level in most counties. All counties excepting Kwale county and Kericho County recorded a PTR lower than the national target of 35:1.

Figure 9: Primary education pupil teacher ratio by County (2009/10)



Data Source: Ministry of Education, EMIS section (2012)

Figure 10: Secondary education pupil teacher ratio by County (2009/10)



Data Source: Ministry of Education, EMIS section (2012)

The low PTR in most counties at secondary education level, suggest under-utilization of physical and human resources, leading to inefficiency and high unit costs. Clearly, there is scope for improving utilization of teachers at this level. On the other hand, PTR above the target of 40:1 was observed in several counties at primary school level. This implies overcrowding and or over utilization of available resources, which is likely to negatively affect the quality of education service delivery.

Transition from secondary to tertiary education

Transition to universities from secondary school level is relatively low. In the 2002/03 academic year, 7.1 percent of Kenya Certificate of Secondary Education (KCSE) students were admitted to public and private universities locally, perhaps due to supply constraints. This represented 26 percent of the students who qualified (attained grade C plus and above) (table 5).

The situation has not changed markedly. In 2010/11, 27.3 percent of KCSE candidates qualified to join university but only 23.3 percent of those who qualified were admitted to local universities. This represented 7.7 percent (6.4 percent public and 1.3 percent private) of the total KCSE candidates during the previous academic year. Although, students who are not admitted to universities are expected to join other middle level colleges for certificate and diploma courses; only 7.8 percent got admission to these middle level colleges.Total enrolment in technical institutions increased from 63,823 students (46 percent female) in 2003 to 68,379 students in 2010 (GOK, Various (c)).

Table 3: Admission trends to public universities (%), 2002/03-2009/10

Academic Year	Form4 enrolment	% Qualified (C+ and above)	University admission (% of qualified students)	Public University admission (%of Form 4enrolment)	Private university admission (% of Form 4enrolment*)	Proportion of Students admitted to technical training institutions	Proportion of Students admitted to teacher training colleges	Potential Non Placement
2002/03	176,018	24.0	26.2	6.3	0.8	12.4	5.1	56.3
2003/04	198,356	21.5	25.3	5.4	0.7	11.2	4.7	58.9
2004/05	207,730	24.0	20.5	4.9	0.8	10.9	4.5	64.1
2005/06	222,676	26.2	18.9	4.9	0.8	10.6	4.4	66.1
2006/07	241,643	26.2	25.3	6.6	1.5	9.8	4.1	60.8
2007/08	271,691	25.9	24.2	6.3	1.4	9.4	3.8	62.6
2008/09	301,400	24.1	24.8	6.0	1.3	9.4	3.1	62.7
2009/10	333,816	23.1	28.9	6.7	1.1	8.9	2.7	59.5
2010/11	356,015	27.3	23.3	6.4	1.3	7.8	2.8	66.1

Source: Joint Admissions Board; GOK, Various; and Author's computations. Note:* Due to data limitation, proportion of private universities admission as percentage of Form 4 enrolment is assumed at the same distribution level as aggregate private university enrolment as a proportion of total university enrolment over time.

Education and labour market outcomes in Kenya

The gains from educational investments may accrue to the individual worker; to the household he/she comes from and to the society. High external efficiency of education would entail high probability of access to employment and high earnings. It may be expected that unemployment should decrease with increase in education attainment ceteris paribus. However, this may not be the case because other factors apart from educational attainment might be influencing unemployment. The 1998/99 labour force survey data and 2005/6 Kenya Integrated Budget Household Survey provide evidence of these labour market dynamics in Kenya. In 2005/6 university education graduates' unemployment rate was 7.5 percent compared to 11.2 percent in 1998/99.

Table 4: Unemployment rates in Kenya, by education level (%)

	1998/9			**2005/6**		
Educational Attainment	**Males**	**Females**	**Total**	**Males**	**Females**	**Total**
Total	**8.4**	**11.9**	**10.1**	**11.2**	**14.3**	**12.7**
None	19.4	26.3	23.4	6.7	0	2.9
Primary	27.6	24.2	27.6	11.2	13.3	12.3
Secondary	15.3	29.1	19.8	10.6	18.3	13.9
University	7.7	18.9	11.2	5.6	12.2	7.5
Vocational institutions						
Total	**..**	**..**	**..**	**10.8**	**15**	**12.7**
Government college	..	..	..	5.1	10.8	7.1
Commercial college	..	..	..	7.7	19.9	13.2
Vocational/Village	..	..	..	7.5	12.3	9.4
None	..	..	..	12.3	14.7	13.5

Source: GOK (2003b and 2008); ..data was not available during the study.

Unemployment rate among vocational training graduates was 12.7 percent (7.1 percent for government college graduates, 13.2 percent for commercial college graduates and 9.4 percent for village polytechnic graduates) in 2005/6. Unemployment among graduates may be because they are not equipped with necessary knowledge/skills or that technological advances have rendered them unemployable (GOK, 2002). It may also be that relatively well educated individuals queue for better jobs (Serneels, 2007).

Table 5: Labour force participation rates in Kenya, by education level (%)

Education level	Male	Female	Total
None	0.05	0.08	0.07
Primary	51.57	53.49	52.50
Secondary	35.17	26.60	31.04
University	2.34	0.90	1.65
Other	0.62	0.08	0.36
Not stated	10.25	18.85	14.39
Population (Number)	6,576,865	6,108,281	12,685,146

Source: GOK (2008)

Labour force participation is higher among primary school graduates than among secondary school graduates. In 2005/6, the labour force participation rate was 52 percent among persons with primary education, 31 percent for secondary graduates and 1.6 percent for university graduates. See table 7. The lower participation among the educated might be an indicator of unsatisfactory external inefficiency of education in Kenya.

Discussions and Conclusions

Between 2002/03 and 2009/10 fiscal years, the government spent an average of 6.4 percent of GDP and 26 percent of total government outlays on education and training. Despite increases in both NER and GER at primary and secondary levels of education between 2002 and 2010, close to 8.6 percent and 68 percent of primary and secondary school age children, respectively, were not in school in 2010. In addition, there are large disparities across counties; and survival to tertiary level is relatively low. Further, differences in education performance tend to be mapped into differences in the labour market outcomes.

Low education sector performance thus remains a pertinent policy concern because it can have negative impact on the country's national development goals. It is therefore important for the national and county governments to target policies on reducing inequalities; ensuring effective public finance management though efficient resource use for improved education outputs; and poverty reduction.

National and county governments will need to allocate resources more equitably while taking into account other socio-economic factors that constrain demand of schooling, notably poverty and over-age enrolment. Policies should be designed towards improving internal, technical and external efficiency of schooling across all counties in the country. Effectiveness of education outcomes as captured by the labour market outcomes will continue to be limited by the inefficiencies in an education process that leaves those from poor households with skill deficits.

Interventions to ensure education expenditures are allocated more efficiently could include linking the expansion of schools to population density and recurrent resource availability. Counties will need to plan the allocation and deployment of human resources in order to address the problem of uneven distribution of resources while taking into account other socio-economic factors that affect demand of schooling. Inequalities in education spending and access to education services need to be reduced. Education transfers between the central and sub-national government should be based on more equity-oriented system targeting areas with low education outcomes. Concerted efforts should be made to improve efficiency and eliminate wastage in education spending.

An equitable resource allocation framework should be developed under which counties with lower education outcomes receive higher portion of shared revenue than the better performing and non-poor counties. The increase in allocation to poorer counties can help improve efficiency and equity in education service delivery. Sub-national government education mandate that require additional spending should be explicitly accounted for in the budget estimates and where possible, the spending tracked up to facility level.

The education sector needs to strengthen the education information system and design an education financial information system to enable updated and quality data availability for regular analysis of performance indicators and monitoring the quality of education across all levels of schooling. Policies should be designed towards improving internal and external efficiency of schooling across all counties in the country.

Given the skills deficit among most youth who exit the education system, in most cases before the completion of basic education schooling, there is scope for targeted training opportunities including technical and vocational training; adult education and other informal post school opportunities.

It is important to address factors that constrain access to and delivery of quality education across all education levels and counties; and especially in disadvantaged areas and among the poor.

Another aspect that can improve education outcomes is to improve the school environment and the ability of the population especially youth to engage in the labour market. The government may consider linking education inputs and financing to outcomes such as learning achievements and skills development and a qualifications framework that provides a signal to all levels of schooling right from basic education to higher education. There should also be feedback mechanism between students and teachers while encouraging parents' direct involvement in their children's education. This could include home schooling and regular discussion with teachers of their children's progress in learning.

Finally, it is imperative to address internal inefficiencies in the education system. Spending more does not necessarily mean better outputs and outcomes; but rather how the resources are efficiently utilized and managed. It will be important to provide opportunities to skills-deficit youth who are no longer enrolled in any education level. The study findings would inform decentralization and financing reforms in the education sector.

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