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*The hidden crisis: Armed conflict and education*

## **Seeing the Reconstruction of Primary Education in Southern Sudan through EMIS 2006-2009**

Education Policy and Data Center and Systems Services Center

2010

*This paper was commissioned by the Education for All Global Monitoring Report as background information to assist in drafting the 2011 report. It has not been edited by the team. The views and opinions expressed in this paper are those of the author(s) and should not be attributed to the EFA Global Monitoring Report or to UNESCO. The papers can be cited with the following reference: "Paper commissioned for the EFA Global Monitoring Report 2011, The hidden crisis: Armed conflict and education" For further information, please contact [efareport@unesco.org](mailto:efareport@unesco.org)*

## Education for All Global Monitoring Report 2011

# Seeing the Reconstruction of Primary Education in Southern Sudan through EMIS 2006-2009

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### Executive Summary

After one of the longest lasting wars in the history of Africa, Southern Sudan experienced one of the fastest reconstructions of its education system and the most rapid expansion of school access since the signing of the Comprehensive Peace Agreement in 2005. The international donor community, the Southern Sudanese government, and the people of Southern Sudan came together with a common goal of providing education to children and starting to build roads and classrooms, deliver learning materials and textbooks, recruit teachers and ministry leaders, and enroll into schools as many children and uneducated adults as possible. After five years of successful construction in such a devastated and empty place, there are at least three major lessons we can learn from post-conflict Southern Sudan:

1. Countries entering a post conflict situation should anticipate and plan for the possibility of a rapid and large intake of new students immediately after the cessation of hostilities. In Southern Sudan, primary-level pupils increased from 700 thousand in 2006 to 1.6 million by 2009.
2. After prolonged conflict, such as experienced in Southern Sudan, an Alternative Education System (AES) is critical to allow those children and young adults previously deprived of education the opportunity to acquire the skills they will need to build a modern society. The AES established in Southern Sudan in 2005, compressing eight grades into four years, provided a venue for overage youth to gain an education, and enrolled over 217 thousand students by 2009. The integration of this alternative system into the regular government school system and the GoSS education strategy remains to be accomplished.
3. The role of donors in low income, post conflict situation is extremely important. However, as shown in Southern Sudan, for donors to be successful they must forgo their normal emphasis on extensive preplanning and comprehensive documentation before acting. The keys to donor effectiveness in this instance appear to be: considerable flexibility, both rapid response and perseverance in very difficult circumstances, and a multi-year commitment. Southern Sudan was fortunate to have this from several donors.

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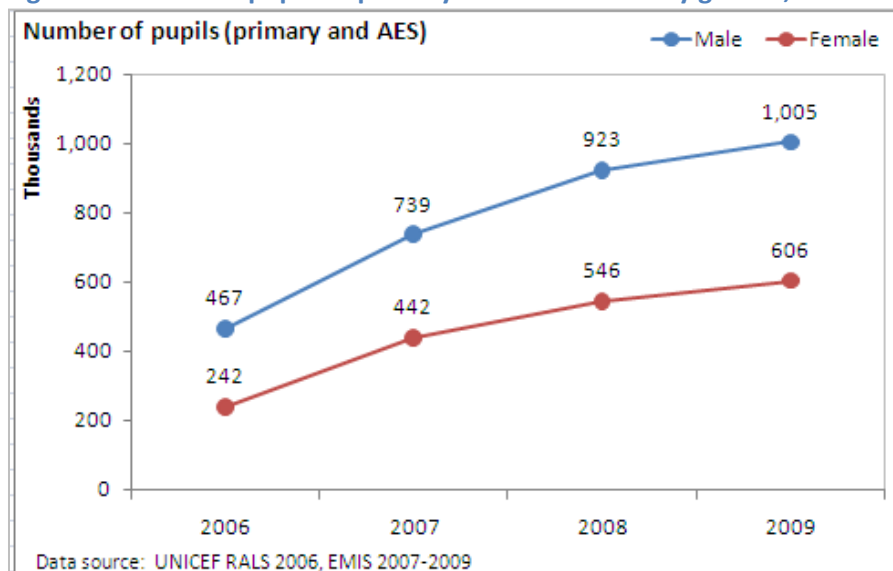
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## Introduction

Historically, violent conflict has a severe impact on education systems. Consequently, after the end of hostilities, local authorities as well as the international development community may face several specific problems related to the rapid reconstruction of a viable and sustainable education system. Some countries have managed to overcome that situation at quite a rapid pace. Southern Sudan, following the North-South Sudanese civil war ending in 2005, is one of the most recent examples.

After one of the longest lasting wars in history, post-conflict Southern Sudan was able to achieve an exceptional increase in the number of pupils—from 700 thousand in 2006 to 1.6 million primary-level<sup>2</sup> pupils in 2009 (more than doubling in 4 years) (Figure 1). This substantial growth in schooling places Southern Sudan in a small group of post conflict countries. For example, in Mozambique, after a 25-year civil conflict ending in 1997, enrollment expanded from 1.4 million in 1999 to 4.2 million in 2008 (tripling in 9 years). In Sierra Leone, where civil war ended in 2001, enrollment expanded from 554,000 in 2001 to 1.3 million in 2007 (more than doubling in 6 years). Post-conflict enrollment growth is not always rapid: in Liberia, the number of pupils has remained fairly constant since the end of its civil conflict. Also, immediate post-conflict reconstruction is not the only situation in which rapid enrollment expansion can occur. For example, in Uganda after the abolishment of school fees in 1996 and the declaration of UPE (Universal Primary Education), pupil enrollment doubled in 1997 from 2.3 million to 5.7 million.

**Figure 1 Number of pupils in primary and AES schools by gender, Southern Sudan 2006-2009**



This report documents some of the processes that facilitated this rapid growth and analyzes some of the challenges that emerged. The research methodology consisted of quantitative analysis of EMIS data and qualitative study via interviews with professionals who worked in education policy development efforts for Southern Sudan. The data used for this study are UNICEF's Rapid Assessment of Learning Spaces (RALS) and the subsequent UNICEF supported Education Management Information System (EMIS), which was put in place in 2006/2007 shortly after the signing of the Comprehensive Peace Agreement (CPA) in 2005. These data afford a rare opportunity to trace the path of education reconstruction in post-conflict settings and to identify challenges faced in Southern Sudan with the rapid reconstruction of

<sup>2</sup> 2009 data cited here include pupils in traditional primary and Alternative Education System (AES), which operates in parallel to primary education.

the education system. Based on interviews and analyses, the study highlights targeted policy interventions moving forward and the lessons learned from donor and development organizations in sustaining educational improvement.

### **Reconstruction of Education since the Comprehensive Peace Agreement in 2005<sup>3</sup>**

For many development professionals, Southern Sudan has been the “experience of a lifetime.” The emergence of a peace strategy after more than 50 years of civil wars, the special historical circumstances that prolonged the conflict until the Comprehensive Peace Agreement (CPA) in 2005, and the extent of damage to a country already low in infrastructure capacity was almost unprecedented.

This paper describes Southern Sudan in the Interim Period between the signing of the CPA and the Independence Referendum in February, 2011. Under the Interim Constitution of South Sudan 2005, education is a right for every citizen and the government is to ensure free and compulsory education at the primary level (GoSS 2005). The education reconstruction in the Interim Period is divided into two phases. Phase I (2005-2007) focuses on recovery—rehabilitation and establishment of the basic structure of the education system—with the objectives of achieving an enrollment of approximately 766,400 primary pupils and 6,000 secondary pupils by the end of the phase. Phase II (2008-2011) focuses on continued development of the educational infrastructure with the objectives of enrolling 1.5 million primary pupils and 36,120 secondary pupils by the end of the phase. Both of these goals were exceeded. Other education goals in this Interim Period include enrolling 15% of out-of-school children in Alternative Education System (AES), improving education quality, and making education contextually and culturally relevant (Yongo-Bure 2007).

In Southern Sudan, the rebirth of education, a sector deeply respected by the population, was influenced by a number of factors including: 1) the strong presence of international development partners, 2) the singular ambitions of the national<sup>4</sup> government, and 3) high demand for education by the local population.

In 2005, there was no formal education ministry in Southern Sudan (or any other ministry in the social sectors). A Secretariat of Education (SoE) office in Rumbek, as part of the Sudan Peoples Liberation Movement (SPLM), served as a “government in waiting” during the 2004-2005 period. Under the formation of the Juba-based central Government of Southern Sudan (GoSS) in March 2006, came the Ministry of Education, Science and Technology (MoEST). Although situated in temporary buildings with limited human and financial resources and funds, the government provided the “window of opportunity” with its political will to launch a comprehensive education reconstruction through various programs such as the “Go To School” campaign (sponsored by UNICEF) and Southern Sudan Interactive Radio Instruction (SSIRI) (funded by USAID and implemented by EDC).

UNICEF took the lead for education in 2006 and facilitated coordination with other organizations on the ground—much like the “Education Cluster approach” of today. UNICEF pledged the first large scale set of instructional materials, tents, and establishment of girl’s schools. UNICEF and others found it challenging to meet the unprecedented demand for materials and supplies with the urgency required by Southern Sudan. The quick delivery of services can be attributed to the flexibility of donors and NGOs who overcame often complex procurement and recruitment processes in response to the urgency of the situation. Such work was often assisted by “spontaneous” community participation. Parents were often

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<sup>3</sup> This section is based on interviews with members of donor and development organizations who were engaged in the education reconstruction of Southern Sudan prior to and immediately after the CPA 2005.

<sup>4</sup> In this paper, terms “nationwide”, “national”, and “nationally” refer to Southern Sudan, not Sudan as a whole.

waiting at river ports to help carry school materials, and teachers and volunteer instructors filled deserted learning spaces to “spark” the rebirth of elementary schooling. Two very active NGOs in this process, among others, were Save the Children and the Episcopalians.

### ***Challenges Remaining in Southern Sudan after Rapid Reconstruction in 2006-2009***

Despite the fast reconstruction of the educational infrastructure and the rapid growth of enrollment, there are many challenges remaining in Southern Sudan.

1. ***Significant gender disparity despite rapid expansion***: Despite the rapid growth in enrollment in primary schools, a significant gender disparity is present in all states, and most severe in places where the growth has been the greatest.
2. ***Low pupil promotion and retention***: Promotion rates are low and dropout rates are high throughout the country—particularly in upper grades of primary school, which then leads to low completion of primary education.
3. ***Severe shortage of trained teachers***: The country is experiencing a severe shortage of trained teachers. The absolute number of teachers has expanded, but the number of trained teachers has stagnated and now makes up a declining portion of the teaching force while enrollment continues to grow rapidly.
4. ***Demand for more permanent learning facilities***: Despite the relatively rapid construction of classrooms, there remains enormous demand for classrooms—and particularly more permanent classrooms of brick, fired clay, or mortar. Semi-permanent classrooms and roof-only and open-air learning spaces make up more than 50% of all learning spaces—these often do not meet the standards of a safe learning environment.
5. ***Critical for effective instruction***: Textbook shortage and implementation of English as the language of instruction are barriers to effective teaching and learning. The pupil-textbook ratio remains alarmingly high in most regions, with as many as eight pupils sharing one textbook. Mandated English instruction has created another complexity in teaching and learning for the northern, largely Arabic-speaking population.

In subsequent sections of this report, both the successes of reconstruction and challenges for the future are presented.

## School Structure and Access: Significant Gender Disparity despite Rapid Expansion<sup>5</sup>

The story of post-conflict Southern Sudan is one of rapid expansion of school access, especially considering the limited learning spaces and low school enrollment for many decades before the signing of CPA in 2005. Unlike the North, where education had been more readily accessible for a longer period, Southern Sudan during the civil war was “embargoed,” with its education system severely underdeveloped, and without much international assistance, for a long period of time.

Southern Sudan has a 3-8-4-4 school system with 3 years of pre-primary, 8 years of primary, 4 years of secondary, and 4 years of higher education. The official school entrance age is 6 for primary school and 14 for secondary school. Primary education is the largest sub-sector among the four, with the next largest being the AES, which has been operating parallel to primary education. The pre-primary sector is still in development. Secondary education has both very low enrollment and limited learning facilities (See Appendix 1 for more information).

As noted above, by September 2006, primary school enrollment in Southern Sudan was about 700,000 and has more than doubled to 1.6 million (including AES students) by July 2009. Primary education is now provided in more than 3,200 traditional primary schools and about 1,000 AES centers. AES, with 2009 enrollment of 217,000, makes up about 14% of primary enrollment. (Figure 1 and Figure 2). Between 2008 and 2009, the enrollment in 158 secondary schools increased from about 25,000 to 44,000.

### *Introduction of Alternative Education System (AES)*

Because of the long conflict period, there remains a considerable education deficit among older children—such that primary schools still include many teenagers in first grade—alongside six and seven year-olds. This situation was partially remedied with the introduction of the Alternative Education System (AES), which initially targeted demilitarized child soldiers, focused on expanding the country’s EFA response, and now invites pupils of all ages. The enrollment in AES almost tripled from 81,000 in 2008 to 217,000 in 2009. Many of these pupils are overage and would never be in school if it were not for AES.

AES programs have been supported by international organizations more than by the government of Southern Sudan. The major international organizations offering AES programs include UNICEF, WFP (World Food Program), NRC (Norwegian Refugee Council), ADRA (Adventist Development and Relief Agency), and USAID (U.S. Agency for International Development). There are four grade levels in AES, compressing a more traditional six or eight years of primary education into four years. This provides youth/adults in various circumstances flexibility in completing school in a shorter period of time. AES offers a wide range of programs—adult literacy, accelerated learning programs (ALP), intensive English course, pastoral schools, and girl’s education—and among those, the most widely offered programs, are basic math and English<sup>6</sup> programs. AES programs most often operate in the afternoons, often in primary school buildings. Some AES pupils enter or re-enter formal primary schools and some primary school pupils transfer into AES schools. While some completing ALP enter into the formal secondary school system, this pattern of transferring across school systems and transitioning from one school level to the next has not yet been tracked.

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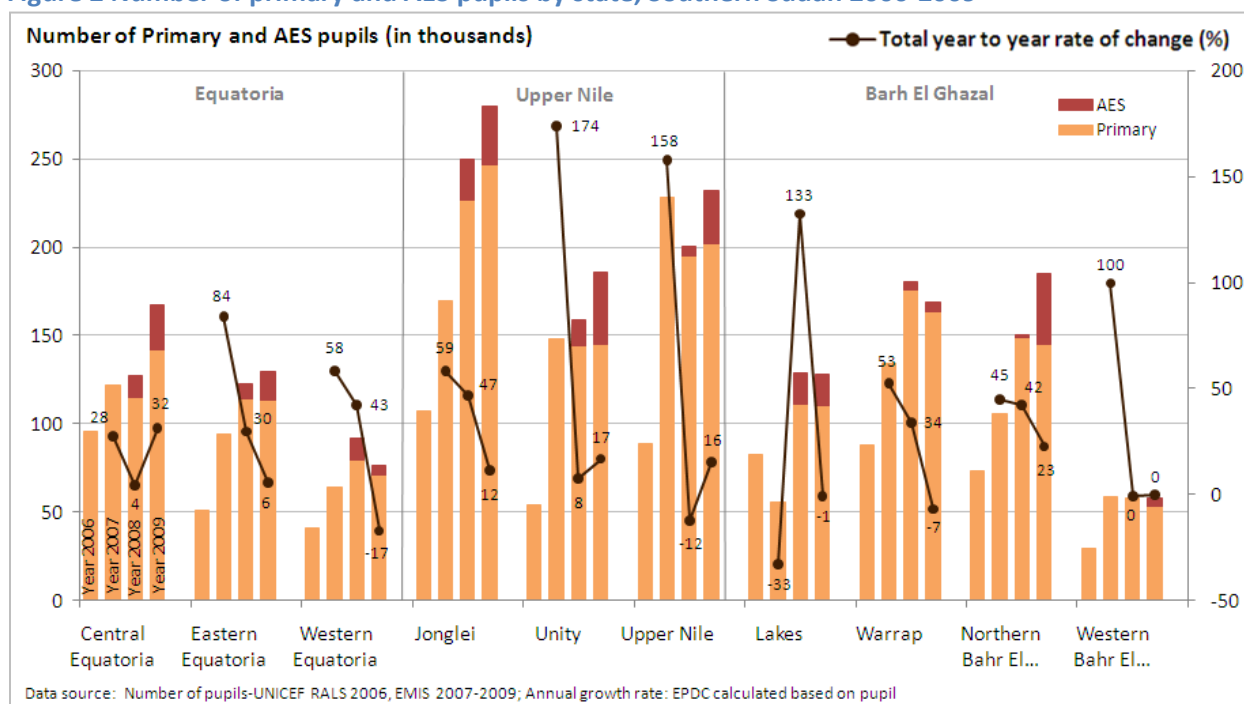
<sup>5</sup> The data used for this study include 2006 Rapid Assessment of Learning Spaces (RALS) from UNICEF and 2007-2009 Education Management Information Systems (EMIS). UNICEF RALS data are “estimates” without consistent coverage of the survey nationwide and EMIS data are adjusted estimates based on census coverage rates of 77% in 2007, 87% in 2008, and 97% in 2009.

<sup>6</sup> Some AES English programs are offered as a required course in teacher training.

### Growth in Primary Enrollment at State Level and Gender Disparity

Southern Sudan is divided into three main regions: the Equatoria, Greater Upper Nile and Greater Bahr El Ghazal, each with states within them. The growth in enrollment has been rapid in both traditional primary and AES schools in all ten states in the immediate post-conflict era 2006-2009 (Figure 2). From 2008 onwards, much of the growth has been in AES schools, perhaps as some children transferred from traditional primary schools to AES. Pupil growth has been most rapid in the three states of the Upper Nile region—Jonglei, Unity, and Upper Nile. In Jonglei, annual enrollment growth has been substantial in both traditional primary and AES schools whereas in Unity and Upper Nile, enrollment growth in traditional primary schools appears to have stagnated since 2007, with any growth in primary schooling confined to AES schools. The pupil growth in AES was most substantial in Northern Bahr El Ghazal and Upper Nile from 2008 to 2009. A part of this growth can be attributed to increasing coverage of the existing population (higher enrollment rates) and a part is the effect of returning refugees, causing the school-age population to grow (Appendix 2)

Figure 2 Number of primary and AES pupils by state, Southern Sudan 2006-2009<sup>7</sup>



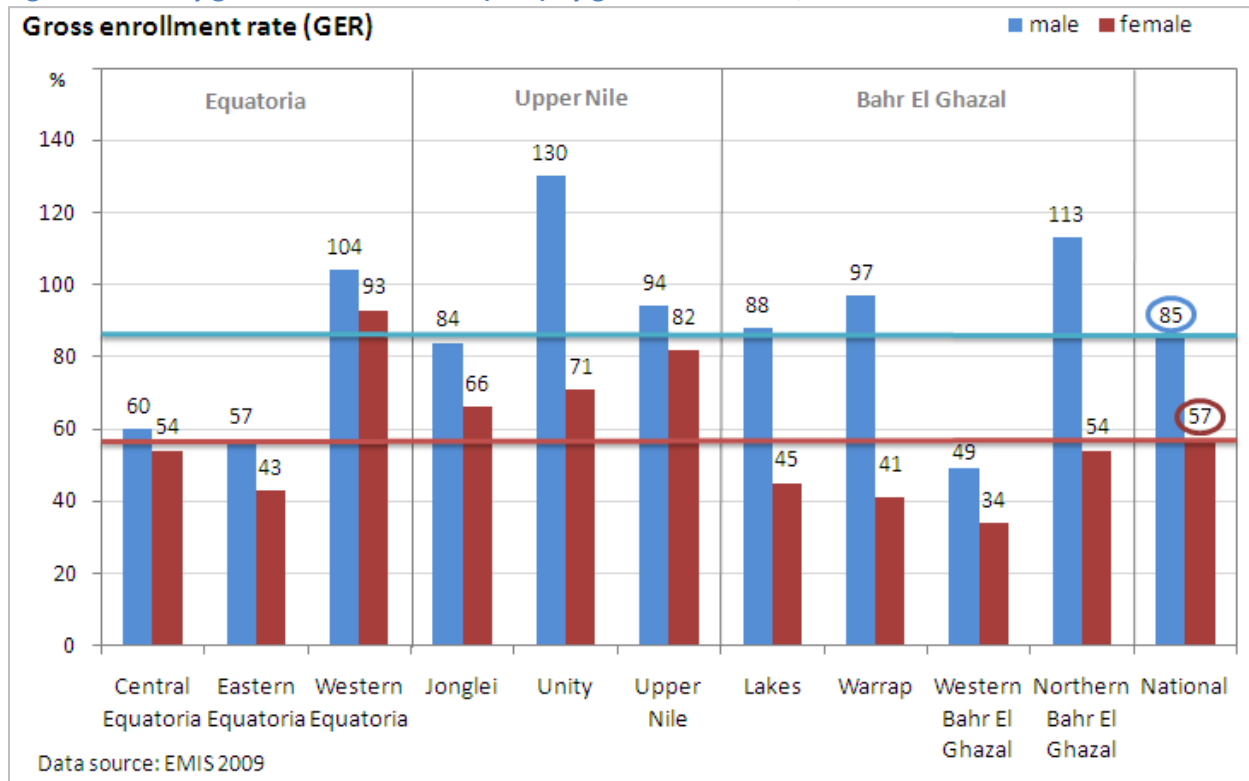
By 2009, the gross enrollment rate (GER) in Southern Sudan was 85% for males and 57% for females, with the general trend of males attending schools more than females in all ten states (Figure 3). The low enrollment rate of girls is important because girls make up only 44% of the school-age population, and thus are doubly under-represented in schools (Appendix 2). In terms of GER, the most poorly performing state in 2009 was Western Bahr El Ghazal. Gender disparity in primary enrollment exists in a number of states, with the most severe inequity observed in the Bahr El Ghazal region—namely the States of Lakes, Warrap, and Northern Bahr El Ghazal—where the female enrollment rate is much lower than the national average for females (Figure 1, Figure 3).

<sup>7</sup> The EMIS data of 2007 did not differentiate AES from the primary school system; therefore, AES data are only available and presented from 2008 when EMIS started a separate questionnaire for AES.



It is not possible to tell how much the enrollment rates – coverage of the school-age population – have increased in the reconstruction period, because there is no population data except for 2009, and there are likely to have been large fluctuations in the population as refugees returned home over several years. Thus, for example, we know that the number of primary and AES pupils in Jonglei more than doubled from 72,104 in 2006 to 159,072 in 2008. It is not possible to estimate the enrollment rate because of the population-effects of returning refugees. The project was unable to find reliable numbers on population, distribution, and timing of returning refugees.

**Figure 3 Primary gross enrollment rate (GER) by gender and state, Southern Sudan 2009**



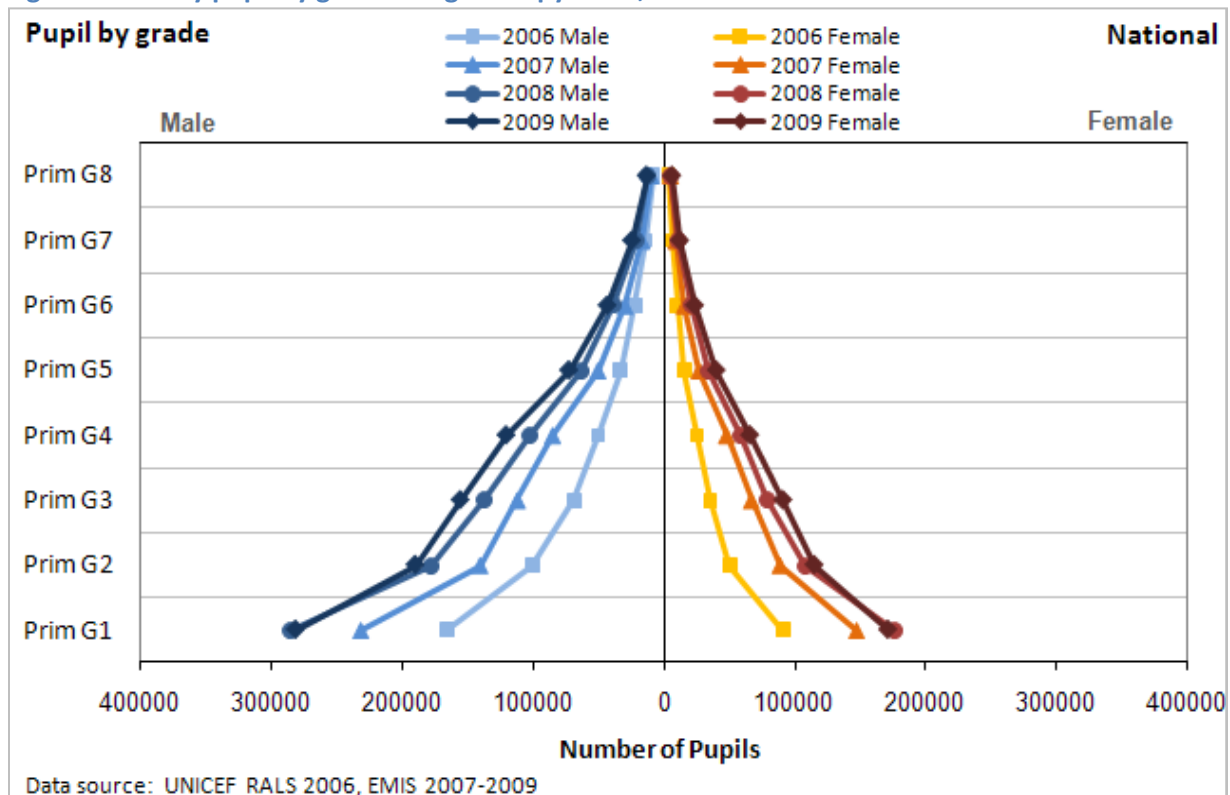
## School Efficiency: Low Pupil Promotion and Retention

### *Pupil Distribution across Grades in Primary School*

While a positive aspect of the reconstruction has been a rapid growth in the number of primary pupils, this has resulted in a “lopsided” distribution of pupils across grades (the high number of dropouts exacerbated this effect, as discussed below). The pupil by grade pyramid is very wide, with many pupils in the early grades and few at the top. Figure 4 shows the number of pupils by grade and gender in Southern Sudan from 2006 to 2009. To the right of the middle-line are the number of female pupils, to the left are the male pupils. Each colored dot represents the pupils in each grade with grade 1 on the bottom, going up to grade 8. The dots are connected by lines of the same color for data from the same year.

The figure shows clearly that there are many more boys in every grade and every year than girls. While the gender gap began closing since CPA 2005, there are still a considerable number of females not receiving any form of education compared to their male counterparts. This similar pattern of pupil distribution and gender disparity is seen in all ten states (Appendix 3)

**Figure 4 Primary pupil by grade and gender pyramid, Southern Sudan 2006-2009**



A pupil pyramid with such a wide base is a sign of a growing, or an immature, or a disrupted school system. In Southern Sudan, it is all three. In a mature and stable system, the number of pupils in each grade is roughly equal, with small irregularities caused by unequal sized age-groups, and higher or lower repetition rates.

A wide-based pupil pyramid can also be partially attributed to the rapid population growth – namely, there are fewer children of the older age-groups for grade 8 than the younger age-groups for grade 1. In Southern Sudan, the ratio of 6 year-olds to 13 year-olds was roughly 2:1 based on 2008 Census.

Comparatively in 2009, there were 439,000 pupils in grade 1 and 18,000 pupils in grade 8, a ratio of 24 to 1, which is much higher than that of official school-age populations for those grades.

Second, the wide-based pupil pyramid can result from rapidly expanding intake in grade 1 (a success). The rapid expansion of grade 1 intake means that every year, the grade 1 cohort is larger (a success)—as seen in the bottom row of dots in Figure 4, where each consecutive year is further from zero. The smaller cohort in the upper grades is a residual of earlier years when intake was much lower. In time, with an efficient school system, the pyramid top will widen, after the intake rates are saturated—all children enter school—and the higher grades retain pupils from a cohort with successful promotions from grade 1 to grade 8.

Third, a wide-based pupil pyramid can result from high dropout rates, if, with each grade, a fairly high percentage of children leave school. In Southern Sudan, some of these dropouts leave permanently, some transfer to AES, but others re-enter after a temporary absence; the pyramid shows the net effect from these flows. The dropout rates are discussed next.

### *Pupil Flow –Promotion, Repetition, and Dropout Rates*

South Sudan, in the reconstruction phase, has not yet managed to produce adequate promotion and dropout rates-- although the reported repetition rates are reasonable at around 10%<sup>8</sup>. In Southern Sudan, promotion rates are lowest for first and for upper grades as shown in Figure 5, which has flow pyramids for promotion, repetition, and dropout rates by grade and sex for 2007 and 2008. Of real concern in Southern Sudan is that the dropout rate, with a peak in grade 1 in all ten states and a similar high rate in upper grades, has gotten worse from 2007 to 2008<sup>9</sup>. Promotion rates are lower for upper grades, repetition rates are steady around 10% from grade 1 through grade 8 (Figure 5). From academic year 2007 to 2008, a smaller portion of pupils were promoted to the next grade and a larger portion of pupils dropped out of school for all grades in primary school. Unfortunately, both population and EMIS details on drop-outs do not allow for a more detailed analysis.

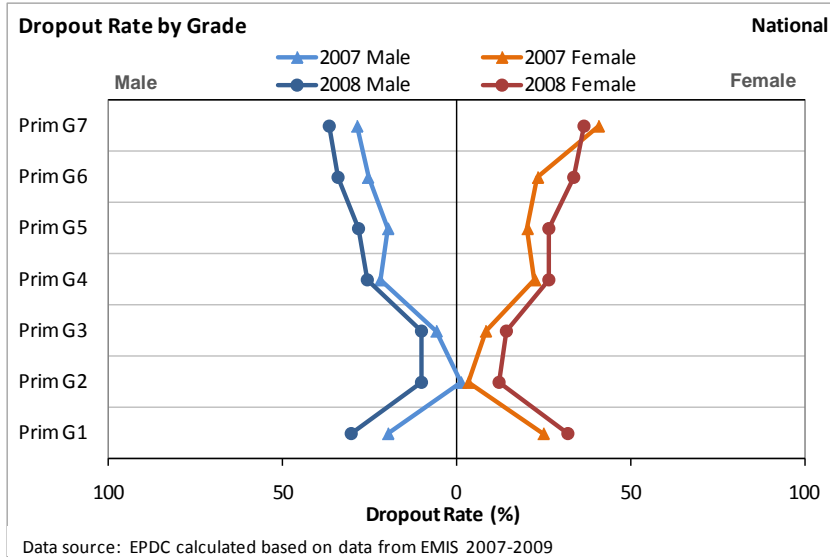
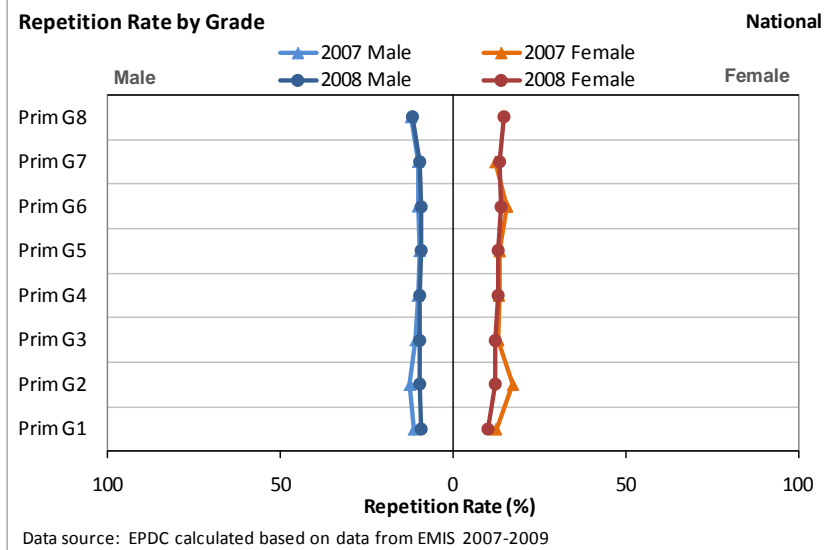
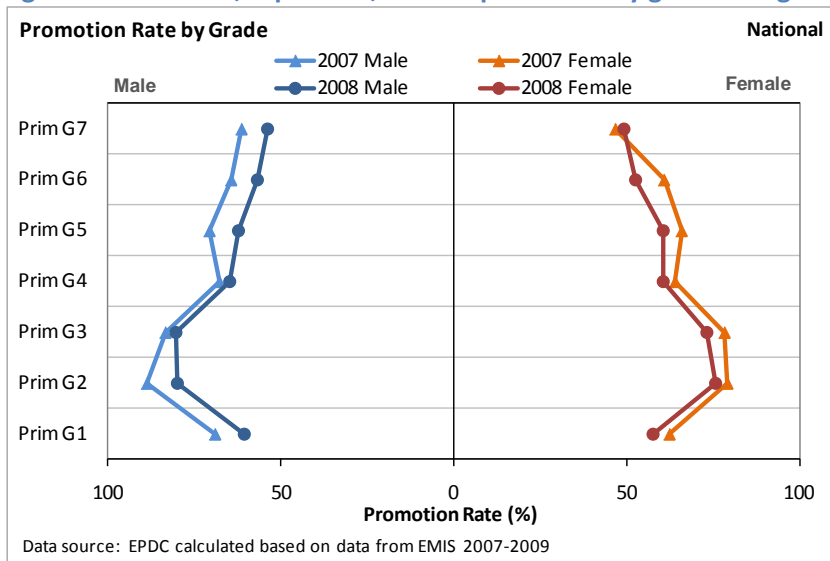
The increase in the dropout rate by grade signals that the barriers to remaining in school rise as pupils move up elementary grades. There are many reasons this might be the case. It is possible that parents have low education expectations and tend to remove children from school once they have received “enough” education; or are not able to adapt the household economics to the children’s absence; or school facilities and learning resources are scarcer, or education requirements become more stringent. Many educators in Southern Sudan attribute high dropout to both economic and security factors (demand side) and poor schooling conditions (supply side).

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<sup>8</sup> A measure of an education system’s success is the efficiency with which pupils flow through the system towards the completion of the education cycle. The pupil flow from one year to the next—promotion, repetition, dropout rates—shows how well pupils are performing in order to be promoted from one grade to the next and eventually complete primary education. These flow rates calculate the portion of cohort in year one that are promoted to the next grade, repeating the same grade, or have dropped out of the school system by the following school year—absent immigration and intake from other systems—which should sum up to 100%. The equations used for the flow rates are as follows: **Promotion rate(Grade G, Year T)** = (Pupils (G+1, T+1) - Repeaters (G+1, T+1)) / Pupils (G, T); **Repetition rate (Grade G, Year T)** = Repeaters (G, T+1) / Pupils (G-1, T) ; **Dropout rate (Grade G, Year T)** = 100% - Promotion rate (G, T) – Repetition rate (G, T)

<sup>9</sup> Some readers might object that the dropout rate as shown here is not indicative of the real dropout rate because pupils stop-out and stop-into school. Some dropout is undoubtedly temporary. However, the EMIS system measures the *net effect* of stop-out and stop-in, thus capturing a good approximation of actual, permanent dropout rates.

Figure 5 Promotion, repetition, and dropout rates by grade and gender, Southern Sudan 2007-2008

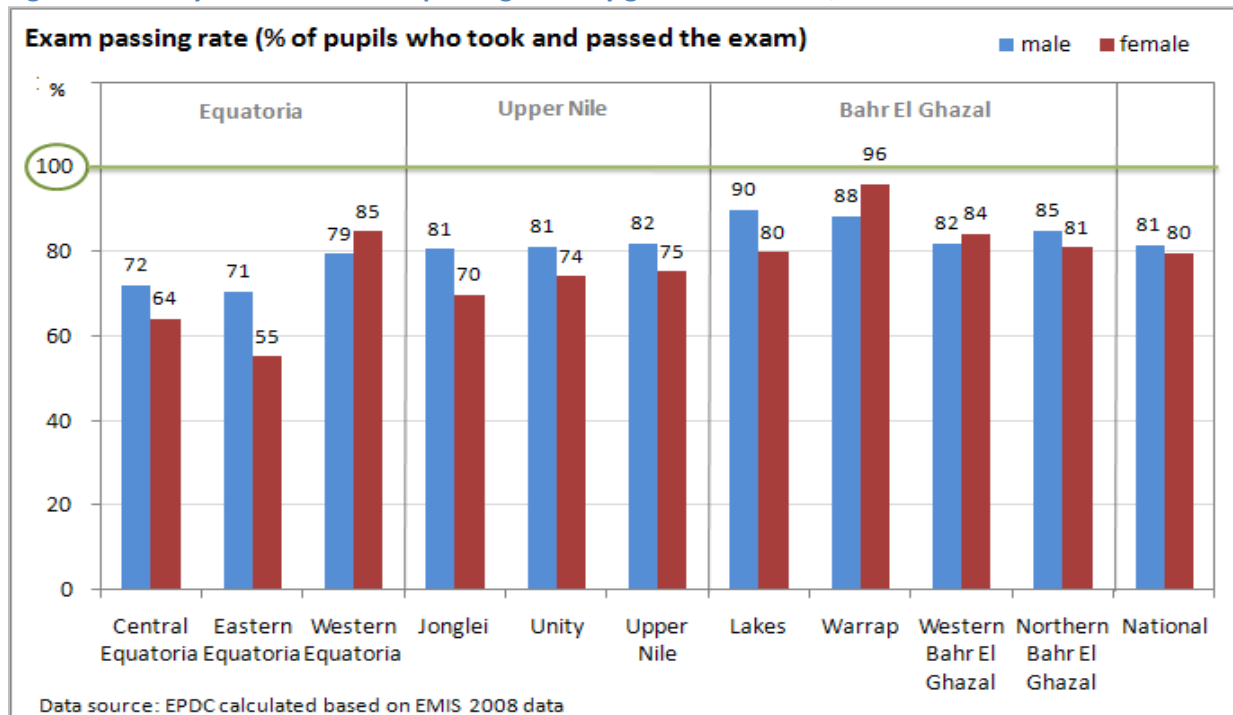


### Pupil Learning

Another measure of school success is how much children learn. One indication of learning is given by pupil performance on examinations.

In Southern Sudan, pupils have to take an exam in each grade to be promoted to the next grade. At the end of primary education, pupils are given school leaving exams<sup>10</sup> and only those who pass this exam can continue to secondary school. Different exams are given on varying subjects across districts and states in Southern Sudan; therefore, the exam results are not comparable at the state and national level. The data show that there are more pupils taking the primary leaving exam than there are pupils in the last grade of primary school because anyone who desires can register and take the exam—in some cases, multiple times. Those attending school that follow the Ugandan education system take the Ugandan Primary Leaving Examination (PLE) in 7<sup>th</sup> grade. In 2008, among those who took the exam at the end of primary school, males generally passed the exam at a higher rate than females with the exceptions of Western Equatoria, Warrap, and Western Bahr El Ghazar (Figure 6). The passing rate was the highest in Warrap (92%), and then Lake (89%), Northern Bahr El Ghazar (84%) and Western Bahr El Ghazar (83%)—all above the national average of 80%, males and females combined. Central, Eastern and Western Equatoria states, where the education system is perceived to be more stable, again show relatively lower passing rates than other states, which may signify different levels of exams given, lower quality of education, or some other factors.

Figure 6 Primary school exit exam passing rates by gender and state, Southern Sudan 2009



<sup>10</sup> The primary leaving exam is sometimes used as a filter for access to the next level of education. The lack of resources leads to limited learning space in secondary school.

## Teachers<sup>11</sup>: A Severe Shortage of Trained Teachers

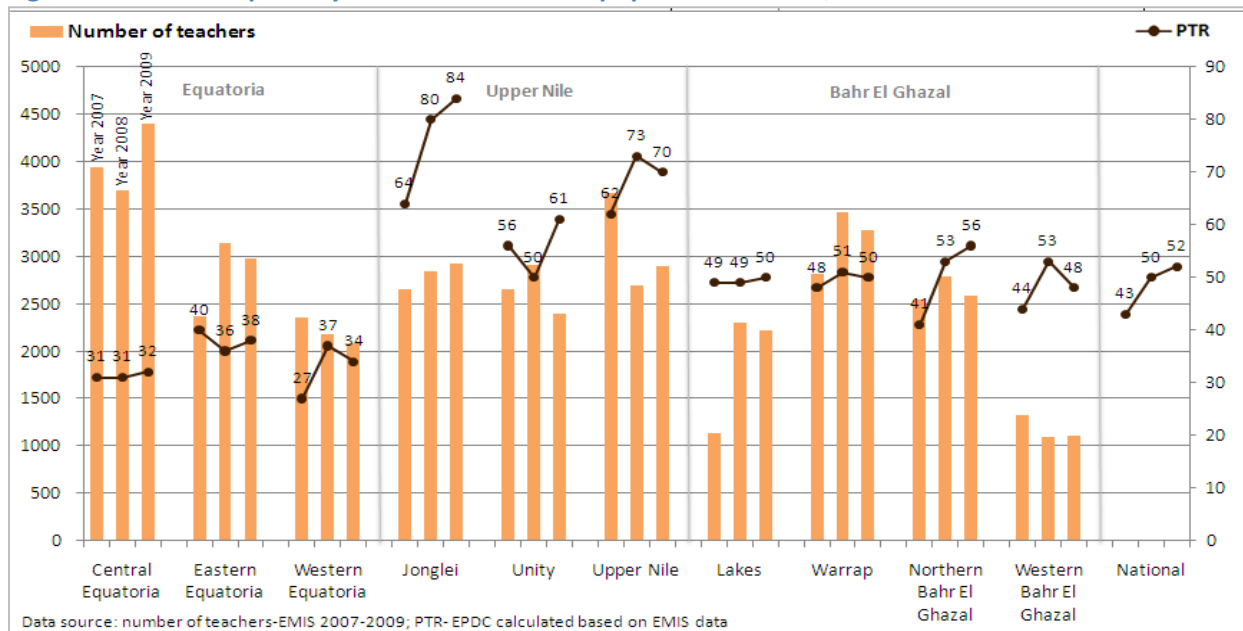
### *Pupil Teacher Ratio (PTR)*

Ideally, the pupil-teacher ratio should be stable or improving; indicating the number of primary school teachers is staying proportionate to pupil enrollment. In a situation of rapid enrollment expansion such as in Southern Sudan, it is often difficult to recruit sufficient teachers to meet these demands.

The number of primary school teachers increased from about 25,000 in 2007 to 33,000 in 2009, including teachers in AES schools. Teacher numbers increased by 14% annually nationwide. However, due to the more rapid growth of pupils, the pupil teacher ratio increased in all states with the national average rising from 43:1 in 2007 to 52:1 by 2009 (Figure 7).

At the state level, there are some significant disparities. A few states appear to have lost teachers—Western Equatoria, Unity, Upper Nile, Northern and Western Bahr El Ghazar (Figure 7). The Equatoria and Bahr El Ghazal regions are relatively stable in maintaining the pupil teacher ratio below 40:1 and 60:1 respectively. The high and increasing PTR trend is observed in all three states in the Upper Nile region and in Northern Bahr El Ghazal where there was a substantial growth in the number of primary pupils. The PTR is alarmingly high at 84:1 in Jonglei and at 70:1 in Upper Nile. In the case of Jonglei, where the primary pupil growth was the greatest and the most rapid, more than 80 pupils are taught and managed by one teacher on average, with 92% of these teachers either untrained or under-trained (Figure 8)

**Figure 7 Number of primary school teachers and pupil teacher ratio, Southern Sudan 2007-2009**



### *Qualifications of Teachers*

As noted, a major constraint in an emerging education system is the lack of trained teachers. The conflict in Southern Sudan not only affected primary education, but also disrupted virtually all teacher training colleges. Unlike an increase in pupils, which can take effect almost immediately, there are

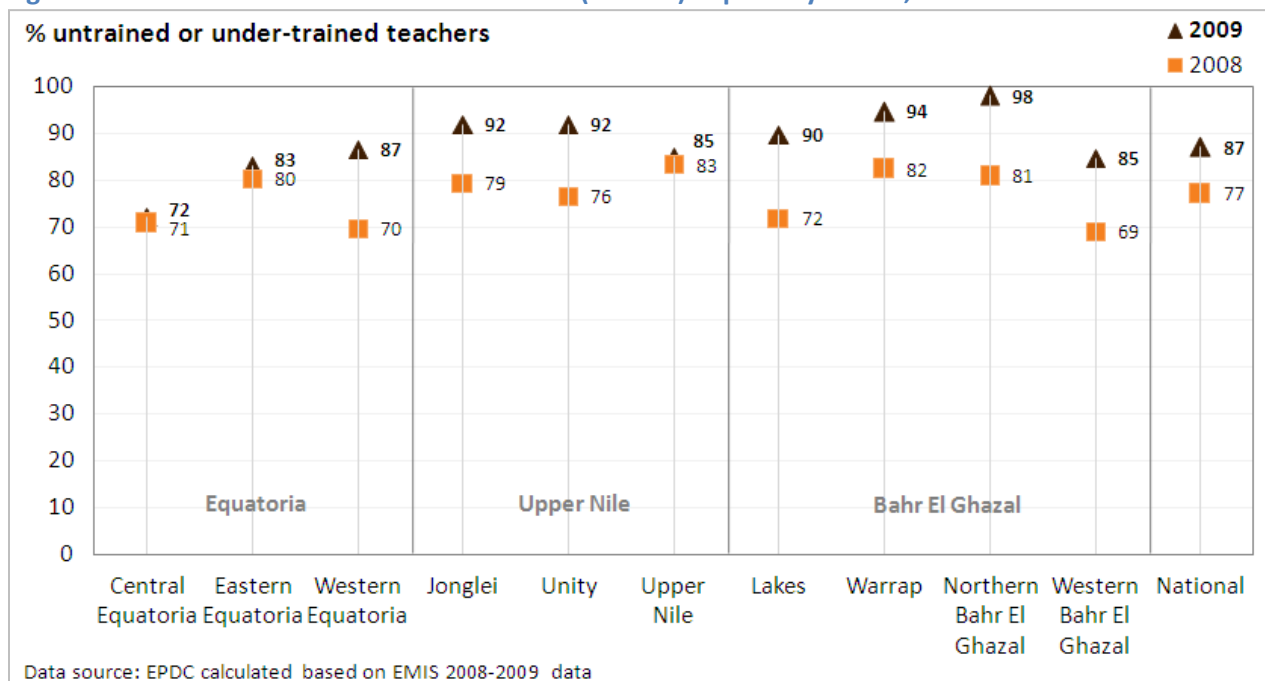
<sup>11</sup> The EMIS questionnaire asks teachers to specify the first year of appointment as a teacher but does not ask where they were certified. Teachers in Southern Sudan include former refugees who were certified in camps.

delays in the provision of trained teachers, because pre-service training for teachers typically requires 2-3 years. For example, even in the unlikely event that 50,000 students had enrolled immediately into teacher training programs after the signing of the CPA, these teachers would not have been available to teach until 2008 or 2009. Unless there is a pool of unemployed teachers which had been trained before the conflict, qualified teachers will remain in short supply in Southern Sudan.

In Southern Sudan, trained teachers<sup>12</sup> make up only a small portion of the teaching force—23% in 2008 and even fewer, 13%, in 2009 nationwide. This means that almost 90% of the teaching force is either untrained or under-trained in Southern Sudan. The fact that the portion of untrained and under-trained teachers is rising in all states suggests that it may be challenging for Southern Sudan to meet the demand for trained teachers given the rate of enrollment expansion. This clearly signals the importance of the rapid development and expansion of teacher training programs.

At the state level, Central Equatoria has the highest portion of its teaching force with formal teacher training—around 28%—and the rest of the regions less than 20% (Figure 8). Untrained and under-trained teachers make up more than 90% of the teaching force in Jonglei, Unity, Lake, Warrap, and Northern Bahr El Ghazal, where the pupil growth was the greatest and the most rapid. From 2008 to 2009, because of the overall expansion of the teaching force, the portion of under-trained and untrained teachers became even larger, with more than 15% increase in Lakes, Western Equatoria, Northern and Western Bahr El Ghazar, and Unity. The severe shortage of trained teachers is of serious concern for all ten states in Southern Sudan.

**Figure 8 Untrained and under-trained teachers (% of all) in primary school, Southern Sudan 2008-2009**



<sup>12</sup> In the *Education Statistics for Southern Sudan 2009: National Statistical Booklet*, trained teachers include those who have completed in-service or pre-service training or hold a diploma in teaching, and under-trained teachers include those that are in “phase” training—namely sequenced, in-service training.

## Classrooms<sup>13</sup>: Demand for More Permanent Learning Facilities

While a safe learning space is crucial as a setting for education, permanent learning facilities are essential for sustaining an education infrastructure.

Unlike pre-service trained teachers, classroom construction, particularly temporary tent classrooms, can take effect immediately and, with sufficient resources, can keep up with rapid pupil growth. This has been the case in Southern Sudan. The pupil classroom ratio (PCR) dropped rapidly from 260 in 2006 to 129 in 2009.

Classroom growth in Southern Sudan continued at an extremely fast pace from 2006 to 2009 after the CPA 2005 and the total number of classrooms almost quadrupled from 3,000 to 11,000 in four years. This growth has been largely due to the rapid influx of semi-permanent classrooms and temporary tents and roof-only facilities, which now make up 50% of all classrooms<sup>14</sup>.

Tents are not only immediate, but relatively inexpensive. The estimated cost of UNICEF tents, which were provided immediately after CPA 2005 during the initial phase of reconstruction, was approximately \$9,000/tent with a lifetime of roughly 5 years. An experiment through the StrokProject out of Norway produced environmentally and culturally sensitive Aluronda tent for use in Southern Sudan, for which the price was as high as \$22,000/tent with a lifetime up to 15-20 years. In addition to the unit cost of these tents, Southern Sudan usually paid a 30% transportation premium on many imported or shipped items.

Classrooms have increased in every state, often more than doubling in number from one year to the next, with the greatest increase in Central Equatoria, Jonglei and Warrap where the enrollment growth was also the greatest (Figure 2, Figure 9). The pupil classroom ratios were alarmingly high in all ten states in 2006, but all have been reduced substantially by 2009. Despite the rapid construction, there are still many states with overcrowded classrooms—namely Jonglei, Unity, and Upper Nile in the Upper Nile region—all above 150:1 in 2009. This may be partially explained by the fact that 16% (513 out of 3,221) of primary schools in Southern Sudan use a shift system where the classrooms are used by more than one learning group at different times of the day, in morning and afternoon shifts—thus, using traditional PCR approaches, overstating the actual number of students in a classroom at any one time. Costs for permanent classrooms have varied from around \$9,000 to over \$15,000 per classroom when less local labor and imported or shipped materials are used.

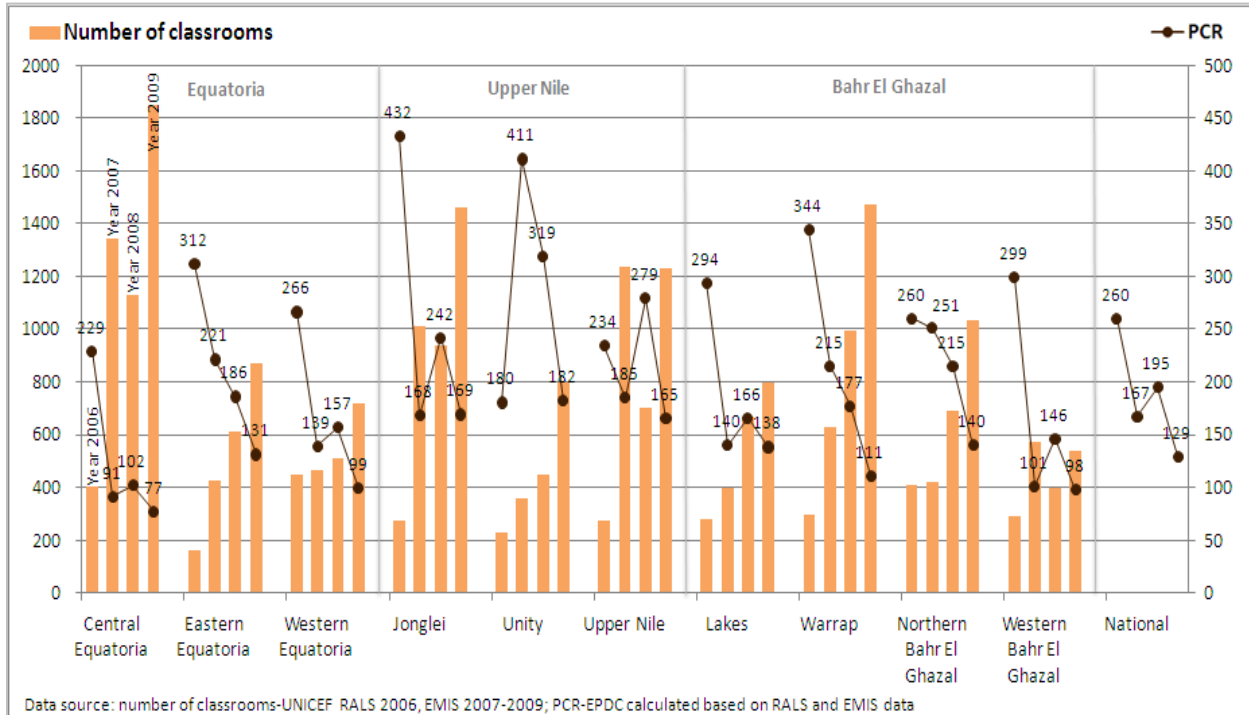
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<sup>13</sup> The previous efforts at school mapping by various organizations have often been incomplete. Because of a lack of coordination in this area, the organizations often used different GIS systems and approaches, some of which did not map school location correctly. The EMIS team of FHI Global ED\*ASSIST and MOES will be initiating a GIS review sub-project using Google Earth standards in October 2010.

<sup>14</sup> Classrooms in post-conflict Southern Sudan include permanent and semi-permanent classrooms and other types of learning spaces, which meet the international standard of learning facilities. Permanent classrooms are built with bricks and have stable windows, and doors. Semi-permanent classrooms typically are made out of wood or mud and often have unstable windows, doors and usually grass/thatched roofs. There are other types of “learning spaces” that are not considered as classrooms, including open-air, roof-only, and tents. The semi-permanent classrooms and other types of learning spaces have constituted more than 50% of learning facilities, consistently, from 2007 to 2009.



Figure 9 Number of primary school classrooms and pupil classroom ratio by state, Southern Sudan 2006-2009



## Textbooks: Critical for Effective Instruction

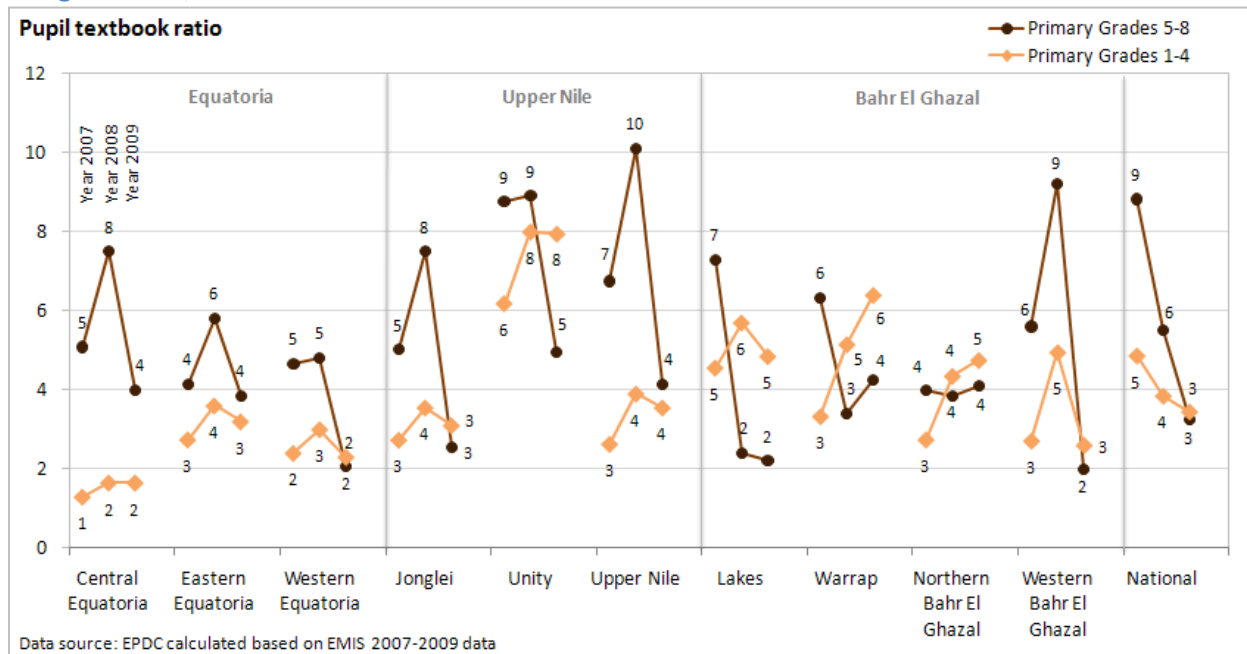
There has been a continuing effort by many international organizations and NGOs to provide textbooks and learning supplies. Some schools in Southern Sudan have been using the curricula of neighboring countries, particularly Kenya and Uganda. With the effort to provide a uniform curriculum and develop national standards in primary education, by 2009, the use of foreign curricula has been reduced to only 5% of all primary schools. The official language of instruction is English in Southern Sudan, which has presented challenges to teachers and pupils in Arabic speaking regions in particular, since teaching and learning in a new language takes a considerable amount of time (See Appendix 4 for more information).

Nationally, even with a huge influx of entrants in lower grades of primary school, the pupil textbook ratio (PBR) for primary grades 1-4 of core subjects English and Mathematics has been reduced from 5:1 to 3:1 from 2007 to 2009. The PBR for primary grades 5-8 is generally higher than the PBR for primary grades 1-4, mainly because UNICEF has been focusing first on providing sufficient textbooks to lower primary grades. Regardless, the PBR for primary grades 5-8 has reduced substantially from 9:1 in 2007 to 3:1 in 2009, which is compatible to the PBR for primary grades 1-4 now (Figure 10).

At the state level, Warrap had the most substantial increase (a bad outcome for the system) in PBR for grades 1-4 from 3:1 to 6:1 and the highest PBR is observed in Unity at 8:1 and all remaining states below 5:1 in 2009. The PBR for primary grades 5-8 had reduced substantially from 2007 to 2009 in states with high PBR previously and many states now have lower PBR for grades 5-6 than for grades 1-4. The Equatoria region generally has lower PBR than the other two regions.

The collaborative effort by international donor communities to deliver and supply textbooks seems to have met, or at least kept up with the growing number of pupils entering and returning to school at primary level. However, in a number of states, too many pupils are still sharing the same textbook—Unity, Lakes, Warrap, and Northern Bahr El Ghazar in particular— the effort clearly needs to continue.

**Figure 10 Pupil textbook ratios of English and Mathematics textbooks combined, primary grades 1-4 and grades 5-8, Southern Sudan 2007-2009**



## Lessons Learned from Reconstruction of Education in Post-Conflict Southern Sudan

### *The Role of EMIS Data in Southern Sudan's Education System*

EMIS data have been the only comprehensive and consistent source of education data in Southern Sudan. The Ministry of Education (MoEST), as well as donor agencies and development partners, have been using these data in various contexts for “evidence-based decision making.” The aim of EMIS has been to introduce a “culture of information,” in which budgeting and resource allocation will be based on these education data—supplemented in select instances by additional information and surveys. EMIS data has, thus far, been progressively used in identifying “ghost” teachers, to help build a teacher payroll system, and in monitoring and evaluating changes for future planning. EMIS data have been used extensively by international donors and the national government, and now increasingly at the state level—including analyses based on disaggregated school- and county-level information. Most participants have agreed that EMIS results have been a “critical component” in mobilizing reconstruction resources and providing a consistent baseline of data for the reconstruction of the education system in Southern Sudan.

### *Targeted Interventions: Moving Forward based on Data Analysis*

Southern Sudan appears to be at a new phase in its education development—moving in part from “emergency” mode to “development” mode, and expanding its focus, gradually, from pupil access to the quality of education. The GoSS and the State Ministries, along with many private NGOs are successfully providing education to a growing number of pupils in a wide age range, especially with the introduction of the Alternative Education System. GoSS and its partners have successfully built some learning facilities and supplied learning materials immediately after the Comprehensive Peace Agreement in 2005. The following are possible policy interventions to improve the quality of education, as Southern Sudan continues expanding access to education:

1. **Tracking pupils for targeted policy interventions:** Despite the large number of entrants into the school system, promotion has been low and dropout has been high with trends apparently worsening from 2008 to 2009. This tends to signify a larger number of dropouts. Pupil promotion and retention are of concern in many states in Southern Sudan which are experiencing a smaller portion of its education cohort being promoted to the next grade each year. With high migration across states, as well as returning refugees from neighboring countries, it is also difficult to tell how many children are returning to school as opposed to being promoted to the next grade. With school registries in place, which can then support special student migration surveys, and which allow tracking pupils into and across schools, EMIS data can provide more accurate counting of pupils and allow identification of grades and regions where more focused education intervention should take place.
2. **Closing the gender gap to raise educated female population:** The gender gap has been closing in primary school over the years—except between 2008 and 2009. However, there is still a large female school age population (about 40%) not receiving any form of education. Since the gender gap, in some states, is less severe in AES, alternative education programs targeted specifically at female populations, with relevant curriculum, may provide easier access as well as quality education needed for this population. The same gender gap can be found in the teaching force, most likely due to the relatively small portion of educated female population compared to the male population. Increasing the number of educated females in schools with targeted teacher recruitment and training programs will eventually bring more female teachers into the school system.

3. **Formalizing AES for a reliable and compatible primary education:** Currently, the AES system allows pupils to enter and exit the system freely at any grade, and there is no clear path to the “next level of education” where pupils continue their learning. This increases the challenge of retaining pupils in school for both completion and continuation of education. Considering that AES has provided widely expanded and rapidly growing access to learning for both school-age and over-age populations, AES could become a more reliable learning system by formalizing its structure and addressing the compatibility with primary education. This could open a clearer path for pupils to continue learning upon completion of an AES program.
4. **Raising and training teachers for quality education:** Looking at the education system through EMIS, the most alarming issue seems to be the severe shortage of trained teachers in all states. The most urgent needs are in those states where children are entering and returning to schools at the most rapid rate. With a continued growth in pupils, there is a huge demand for teachers overall, and for proper, rapid training for both new and existing teachers.
5. **Constructing permanent learning facilities for a sustainable education system:** The number of classrooms, both permanent and semi-permanent, has increased at a rapid rate since 2003. However, in order to maintain a reasonable class size and sustainable learning facilities for continued learning, Southern Sudan needs to continue constructing more permanent classrooms and school buildings for quite some time. Recent research into affordable, permanent facilities, making maximum use of local, renewable resources is now available and could be highly applicable in many States.
6. **Providing English language courses and training:** With Southern Sudan mandating English as the national language of instruction, and still many regions speaking Arabic and other mother tongues more widely and frequently, it is critical for Southern Sudan to provide English language courses and training to both teachers and pupils. New mediated instruction techniques and community based efforts widely used in other countries could contribute to addressing this need.

### *Lessons Learned from Donor and Development Organizations<sup>15</sup>*

The importance of coordination among organizations emerged as one of the key requirements for responding to the needs in post-conflict countries like Southern Sudan. Interviews identified the low level of infrastructure (particularly communication and transport) as one of the greatest challenges in working in Southern Sudan. For example, the limited number of paved roads, few buildings, low agricultural production capacity, and absence of stable power or communication systems frequently curtail rapid delivery of services. The lessons learned that most leaders agree on include:

1. **Agencies that had little flexibility in terms of planning, spending, and mobilizing were not able to contribute fully, despite their good intentions.** Post CPA, Southern Sudan had very short timelines, required “cash” funds quickly, and needed rapid, “on the ground” decisions in the face of a constantly changing environmental and political situation.
2. **Coordination in a “cluster mode” was very crucial.** Cluster coordination was built around, initially, fortnightly (20 day) “meeting, action, and reporting” cycles eventually evolving into quarterly meetings. A key element of this cycle was the additional, lengthier Education Reconstruction and Development Forum (ERDF) annual meeting where a biannual or annual “taking stock” was, and still is, a critical component.

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<sup>15</sup> This section is written based on interviews with donor or development organizations.

3. **The Cluster Mode was supplemented by Committees.** Because of the time required, committees were led by an interested donor and included the government ministry representatives. Committees also worked on a “meeting, action, reporting” cycle and reported back to the whole group on a regular and rapid basis.
4. **All parties needed to be aware of the most basic administrative constraints.** Assistance to Southern Sudan was, and still is, very constrained by the lack of basic infrastructure and human capacity. This remains a challenge in terms of financial tracking, moving funds, accounting for funds, shortening procurements, logistical movements (e.g. which, nearest port facility could handle needed materials), in-country logistics, and coordination. All of these issues needed to be thought through, addressed, and supported for any intervention to be effective.
5. **Southern Sudan education expansion did not always occur along traditional lines.** Whereas education expansion would be expected to occur first along roads and in major towns, this seems not have been the case. Politically influential personnel and the lack of a consistent road infrastructure meant that some of Southern Sudan’s educational development occurred first in pockets/clusters of villages and even in areas with high refugee concentrations, rather than in more traditional locations.

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## Appendix

### Appendix 1 Information on pre-primary and secondary education from the 2010 Annual Education Census Manual

#### Pre-primary

Very little information is available on Pre-Primary education in Southern Sudan. It is recognized as part of formal education and has a division of its own under the Directorate of General Education. However, not much time and resources have been dedicated to date in developing the sector, compared to the progress made in Primary, Secondary, and Alternative education sectors. There is no documentation of formal regulations about teaching and learning, operations, and management.

Description of Pre-Primary education herein is based on what is understood to be common practice based on observation; there are no formal, existing empirical findings. Pre-Primary education consists of three (3) levels: 1) baby/infant (3-4 years of age), 2) middle/nursery (4-5 years of age), and 3) top/graduate (5-6 years of age). Many Pre-Primary schools also serve early grade levels of Primary school. For instance, a Pre-Primary school would serve children between the ages of 3 and 6, as well as P1 and P2. Instead of transitioning their Top/Graduates pupils on to a nearby Primary school, schools mostly open up P1 to accommodate the graduating pupils' needs. This phenomenon was seen most clearly in 2009; 20 of the Pre-Primary schools also provided P1, P2, and/or P3 education on their compound.

Instruction is comprised of reading, math, arts and crafts, and science/geography/social studies (combination of natural and social science, in which pupils learn about the human body, places, animals, nature, environment, etc.). Some schools use textbooks to teach reading.

#### Secondary

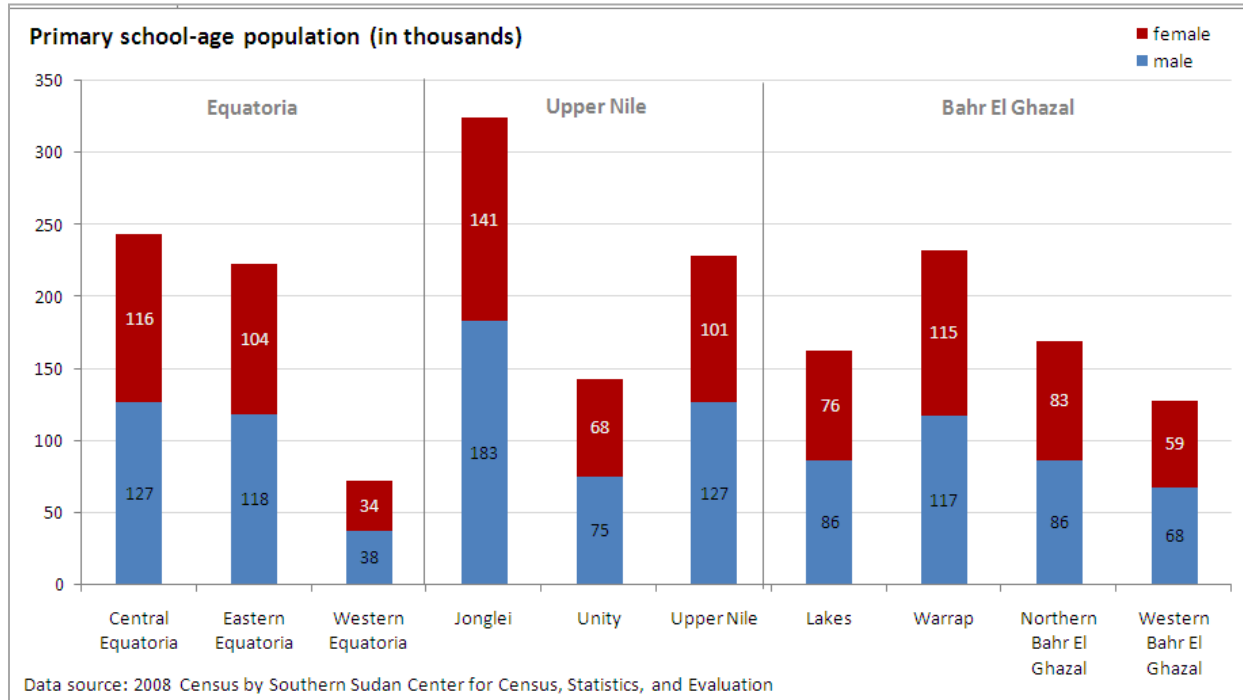
Secondary education is a small sector of education in Southern Sudan. Most Secondary schools are owned and operated by the Government of Southern Sudan (GoSS).

There are four (4) grade levels in the Southern Sudanese Secondary education—from Secondary 1 to Secondary 4 (“S1” to “S4”). The official S1 entrance age is 14. The official Secondary leaving age is 17. One must pass the end-of-the-year exam at each grade level to be promoted to the next grade level.

English is the official language of instruction, although schools may choose to teach in Arabic and/or tribal Mother Tongue. Most schools have adopted the Southern Sudanese curriculum. However, in 2009, about 44% of the Secondary schools reportedly were using Kenyan, Ugandan, and Northern Sudanese curricula. (Unlike Primary schools, Secondary schools were not using Ethiopian curriculum in 2009.) Such schools can be found across eight (8) states of Southern Sudan. It is possible that a school uses different curricula across grades. For instance, a school may use Southern Sudanese curriculum from S1 to S2, but use Kenyan curriculum from S3 to S4.

The type of curriculum largely determines the type of Secondary Leaving Exam pupils take for a Secondary Certificate. The difference in the education ladder adds a layer of complexity: Ugandan Secondary education consists of six (6) years, from S1 to S6. Southern Sudanese and Kenyan Secondary education consists of four (4) years, from S1 to S4. Currently, Kenyan and Ugandan exams are recognized as equivalent to the Southern Sudanese exam.

## Appendix 2 Primary school-age (age 6-13) population by gender and state, Southern Sudan 2008



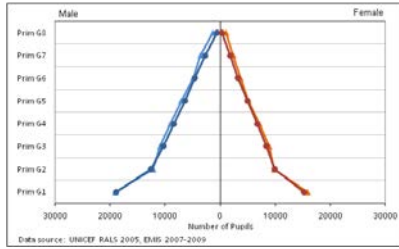
Based on 2008 Census data, there are fewer females than males in school age population (age 6-13), with females 46% and males 54% nationwide. The same population trend is present at the state level with the largest gap in Jonglei, with males 56% and females 44%. The size of pupil enrollment in primary school is largely in proportion to the school age population in each state.



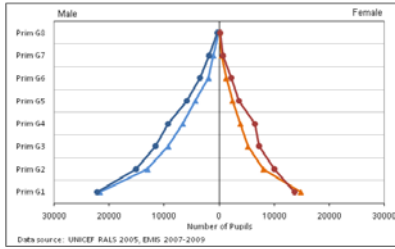
## Appendix 3 Primary pupil by grade and gender pyramids by state, Southern Sudan 2007-2008

### Equatoria

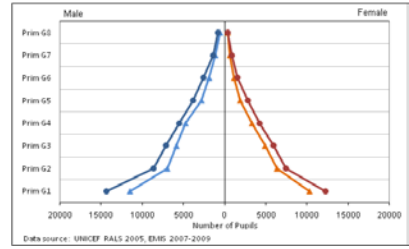
#### Central Equatoria



#### Eastern Equatoria

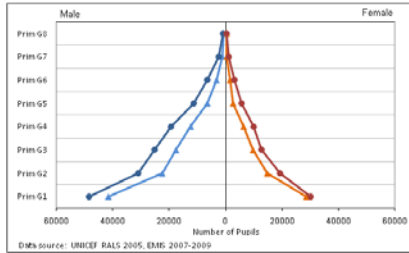


#### Western Equatoria

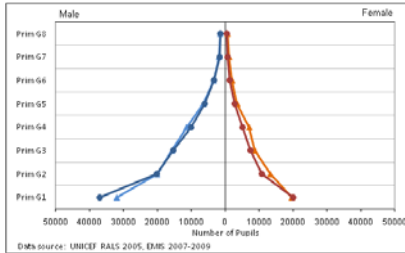


### Upper Nile

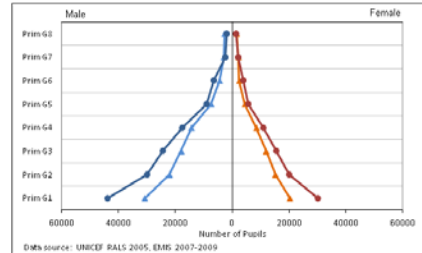
#### Jonglei



#### Unity

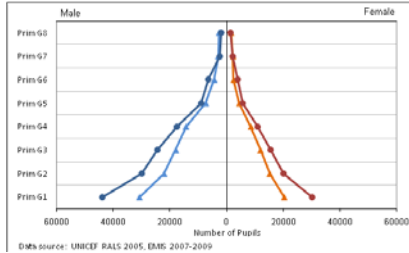


#### Upper Nile

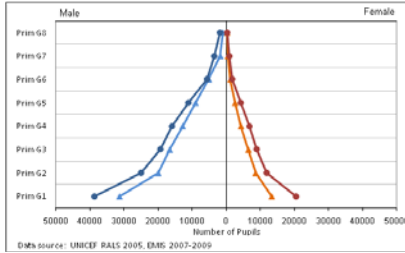


### Bahr El Ghazal

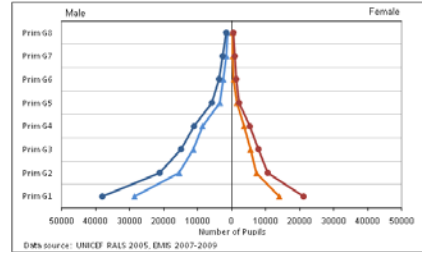
#### Lakes



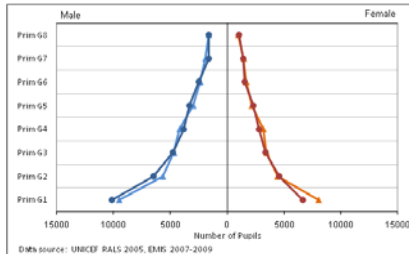
#### Warrap



#### Northern Bahr El Ghazal



#### Western Bahr El Ghazal

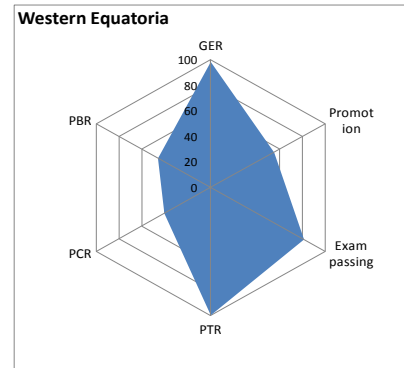
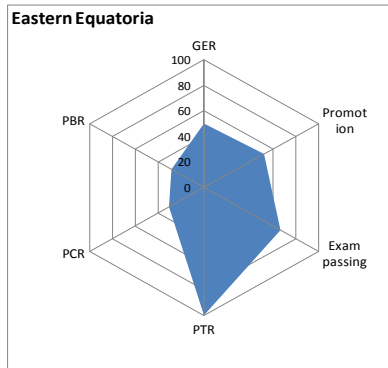
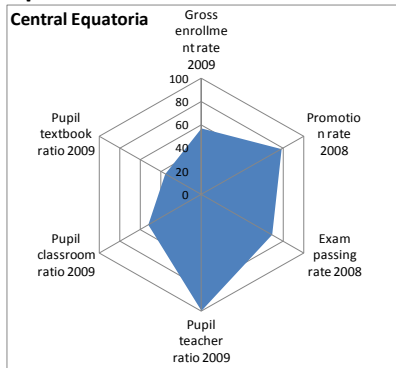


#### Appendix 4 Additional Information on National Curriculum

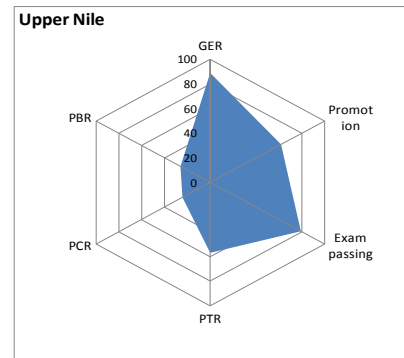
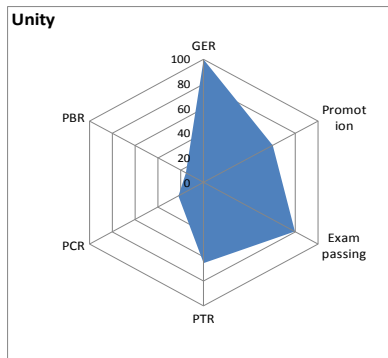
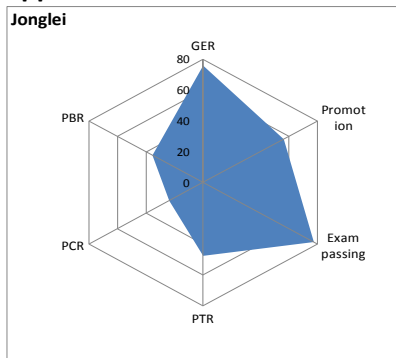
- <http://www.fmreview.org/FMRpdfs/EducationSupplement/13.pdf>: This article cites a particular struggle in the Arabic-speaking states regarding language of instruction that may have played a role. See the end of pp. 20 and beginning of pp. 21.
- <http://unesdoc.unesco.org/images/0014/001467/146759e.pdf>: This report cites the "erasing" of education curriculum (in terms of history) on pp 3 and discusses the non-standardization of the curriculum on pp 9. Note that this was written in 2003.
- <http://www.irinnews.org/Report.aspx?ReportId=82013>: This article discusses the use of a foreign curriculum with Southern Sudanese "twist."
- [http://www.norad.no/en/\\_attachment/118184/binary/7070?download=true](http://www.norad.no/en/_attachment/118184/binary/7070?download=true): This report by Norwegian Church Aid has information on the development of national curriculum. Note that this was written in 2006.

## Appendix 5 Overall performance and patterns across states through spider radar graphs on education indicators, Southern Sudan 2008-2009

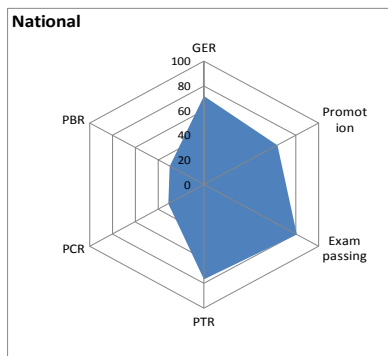
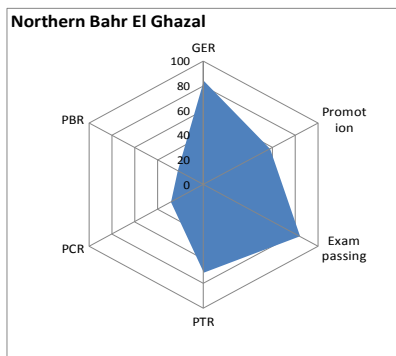
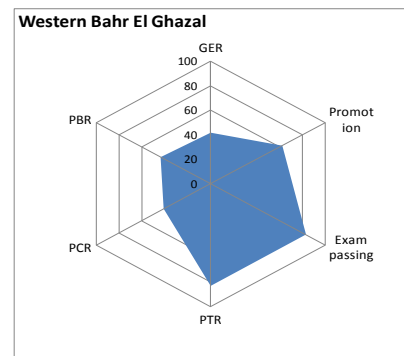
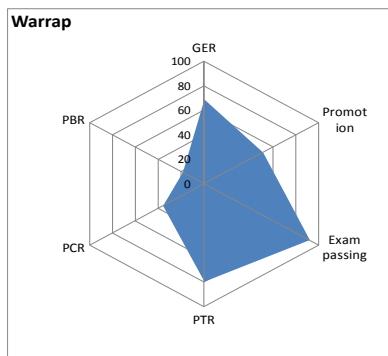
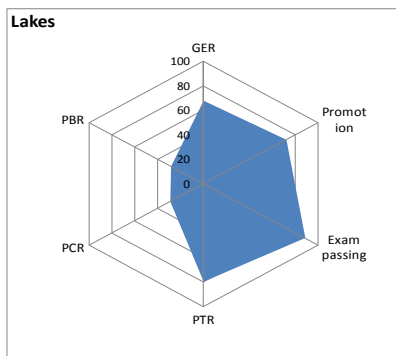
### Equatoria



### Upper Nile



### Bahr El Ghazal



#### Data notes:

1. Promotion rate (%) = average primary promotion rate (grades 1-7)
2. Exam passing rate (%) = (# pupils passed/# pupils took the exam)x100
3. PTR (%) = (40 (ideal PTR) / PTR of state) x 100
4. PCR (%) = (40 (ideal PCR) / PCR of state) x 100
5. PBR (%) = (1 (ideal PBR) / PBR of state) x 100

## Seeing the Reconstruction of Primary Education in Southern Sudan through EMIS 2006-2009

Author: Education Policy and Data Center and Systems Services Center, FHI 360<sup>1</sup>

### Executive Summary

After one of the longest lasting wars in the history of Africa, Southern Sudan experienced one of the fastest reconstructions of its education system and the most rapid expansion of school access since the signing of the Comprehensive Peace Agreement in 2005. The international donor community, the Southern Sudanese government, and the people of Southern Sudan came together with a common goal of providing education to children and starting to build roads and classrooms, deliver learning materials and textbooks, recruit teachers and ministry leaders, and enroll into schools as many children and uneducated adults as possible. After five years of successful construction in such a devastated and empty place, there are at least three major lessons we can learn from post-conflict Southern Sudan:

1. Countries entering a post conflict situation should anticipate and plan for the possibility of a rapid and large intake of new students immediately after the cessation of hostilities. In Southern Sudan, primary-level pupils increased from 700 thousand in 2006 to 1.6 million by 2009.
2. After prolonged conflict, such as experienced in Southern Sudan, an Alternative Education System (AES) is critical to allow those children and young adults previously deprived of education the opportunity to acquire the skills they will need to build a modern society. The AES established in Southern Sudan in 2005, compressing eight grades into four years, provided a venue for overage youth to gain an education, and enrolled over 217 thousand students by 2009. The integration of this alternative system into the regular government school system and the GoSS education strategy remains to be accomplished.
3. The role of donors in low income, post conflict situation is extremely important. However, as shown in Southern Sudan, for donors to be successful they must forgo their normal emphasis on extensive preplanning and comprehensive documentation before acting. The keys to donor effectiveness in this instance appear to be: considerable flexibility, both rapid response and perseverance in very difficult circumstances, and a multi-year commitment. Southern Sudan was fortunate to have this from several donors.

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<sup>1</sup> This background report is written collaboratively by HyeJin Kim and Annabette Wils from the Education Policy and Data Center and Kurt D. Moses and Bosun Jang from the Systems Services Center at FHI 360.