



## Sudan Team

**A case study in progress from the KIX-EAP learning cycle “Equitable Access to Education with Geospatial Data” held in collaboration with IIEP UNESCO**

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## About case studies in progress

This case study in progress was drafted by a national team that participated in the KIX EAP Learning Cycle: Equitable Access to Education with Geospatial Data. Case studies in progress are ongoing and incomplete studies. As such, the KIX EAP Hub/ NORRAG does not guarantee the quality of the work nor the accuracy of the data.

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## About the KIX-EAP Hub

The Global Partnership for Education (GPE) Knowledge and Innovation Exchange (KIX) is a joint endeavour with the International Development Research Centre (IDRC) to connect expertise, innovation, and knowledge to help GPE partner countries build stronger education systems and accelerate progress toward SDG 4. There are globally four KIX hubs or Regional Learning Partners, overseen by IDRC. The hub functions as a regional forum within KIX. NORRAG (Network for International Policies and Cooperation in Education and Training) is the Regional Learning Partner for the KIX Europe Asia Pacific (EAP) hub.

The KIX EAP hub facilitates cross-country knowledge and innovation exchange and mobilisation, learning, synthesis, and collaboration among national education stakeholders in 21 GPE partner countries in the EAP region. The hub also offers opportunities for peer learning and exchange by means of professional development and inter-country visits.

## About the KIX EAP Learning Cycle Equitable access to education with geospatial data

This case study is a result of the KIX EAP Learning Cycle “Equitable access to education with geospatial data”. Organised by NORRAG and the UNESCO International Institute for Educational Planning (IIEP), this professional development course ran from 15 June to 16 July 2021. Across 5 weeks, this Learning Cycle enabled participants to apply basic mapping techniques on a geographic information system (QGIS), understand the geospatial dimension of educational planning and management, and challenge the different aspects of equitable access to education by harnessing the power of geospatial data in their daily work. 10 national teams from Afghanistan, Bangladesh, Bhutan, Cambodia, Kyrgyz Republic, Maldives, Moldova, Pakistan, Papua New Guinea, and Sudan took part in this Learning Cycle.



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# 1. Introduction

The course Equitable access to education with geospatial data is very useful for us as a team working in the education sector. The method and the capacity we have had will assist very much in our working environment and planning by using special data in the determination of demand and supply instead of using traditional methods. Also, the training will encourage the staff for more deep training in the future. We would like as a team to thank very much the training team for their technical support and patience to ease the processes of education. The package in general will enhance the team's ability to deal with policy responses and challenges, demand and supply in the whole country, and the use of geospatial data for strategic thinking and decision making for top management and senior staff.

## **Sudan country context**

The population of Sudan is estimated to have reached 39.6 million people in 2016, growing at an annual average rate of 2.5% - more than one-third eligible for general education. The Gross Domestic Product is estimated to have reached SDG 571 trillion in 2017 having grown from SDG 114 trillion in 2009. Although the poverty levels are still high – 36% of the population lives below USD 1.9 a day – it is observed that the situation has improved from 46.5% in 2009 with significant disparities between rural and urban locations as well as across states. The improvement is attributed to the increased allocation of public resources to poverty reduction programs. As a percentage of the GDP, allocation to pro-poor programs increased from 4.5% in 2012 to 5% in 2014. On the health front, child mortality reduced from 123 deaths per 1,000 live births in 1990 to 68 deaths per 1,000 live births in 2014. Similarly, maternal deaths dropped from 534 deaths per 1,000 in 2006 to 206 deaths per 1,000 in 2014 signaling significant effects of social programs implemented by the government. According to the 2017 Humanitarian Needs Overview, Sudan bears the considerable weight of refugees with 1.7 million out of the 4.8 million people in need of humanitarian assistance having education needs.

## **Education policy framework in Sudan**

Education development in Sudan is anchored in the supreme law of the country with clear provisions to facilitate investment in human capital at all levels of education and training. The Interim Constitution of 2005, in its Chapter 2 and Article 13 provides a comprehensive framework for education development. In general education, the responsibility of education management in Sudan is shared between the federal, state, and local levels of government. The federal government through its Federal Ministry of Education is responsible for oversight in the sector and the development and maintenance of standards including curriculum development and mobilization of resources from internal and external sources. At the State level, educational boards organize and coordinate educational activities, paralleling the national councils. At both levels of government, non-government contributes to the provision of education alongside the Government.

## **Status of Education in Sudan**

Three-quarters and two-thirds of basic schools in rural and urban areas respectively have a pre-school attached to them. Overall, about 72% of basic schools have a pre-school attached to them. It is estimated that preschool GER increased by 6 percentage points from 37.1% in 2009 to 42.8% in 2016 which is no mean feat considering the level of development of preschool in some of the neighboring countries with bigger economies. Basic education GER remained stable at 72% between 2009 and 2016 before increasing by a single point to 73% in 2017. In secondary, the GER increased by 5 percentage points from 34% in 2009 to 39% in 2016 before dropping a point in 2017 to settle at 38%. More boys are accessing basic schools compared to girls, the former recording a GER of 75% while the latter posted 71%. In the majority of the states, the gap between boys and girls is considerably small but, in some cases, the disparity is overwhelming. In secondary, girls have a coverage of 41% compared to 35% for boys, this pattern is evident in all the states except Central Darfur, West Kordofan, Al Gadarif, and West Darfur where boys have slightly higher GER.



Even though more children are accessing school today compared to 2009, the system is slowed down by high dropout rates rendering the achievement of universal basic education a big challenge for Sudan. The retention rate dropped from 67% in 2009 to 62% in 2017. There is considerable disparity between rural and urban locations, the GIR for urban schools is 91%, 9 percentage points higher than the average while in rural schools, the GIR is 78%. Retention is also better in urban schools compared to rural schools. By the end of basic education, the Completion Rate for urban schools is 77%, more than double the completion rate in rural schools (38%) translating to the retention rates of 85% and 49% for urban and rural schools respectively.

Although there is a late entry to basic education in the country, there has been considerable improvement between 2009 and 2014. In 2009, 40% of children aged 6 reported to have attended school compared to 7 in 10 children in 2014 – a 30 percentage point improvement in five years only. Notwithstanding the improvement, close to 3 million children of school-going age remain out of school 2.86 million children eligible for basic and secondary education were out of school, a majority of whom were in the basic education reference age range. Data from the survey conducted in 6 states with a high concentration of refugees indicate that majority of the children enrolled in the surrounding schools are natives. In basic education, the number of refugees enrolled in these schools accounts for up to 5% of the total enrolment signaling the need to focus additional efforts on the foreign nationals who are granted refugee and asylum status in the country.

Sudan is in rural areas, with only around one-third living in cities. The country has a young population: 41% of Sudanese people are aged 14 years or younger, and 20% are between 15 and 24 years old. With an annual growth rate of 2.1% in 2014, as well as a high fertility rate of 4.4 children born per woman, the population of the country is growing rapidly. At the same time, demand for pre-primary education in Sudan has shown an upward trend from 2010 to 2013 (UNICEF, 2015). For the same period, the gross enrolment rate (GER) for primary and secondary schools also increased slightly, despite an unstable growth pattern. Yet Sudan has both the largest number and highest rate of out-of-school children in the Middle East and North Africa region. Education Management Information System (EMIS) data from 2010 indicate that about 3 million children between the ages of 5 and 13 years old remain out of school in the country. Thus, despite a small share of repeaters and high transition rates, education is not provided for all children in the country. This makes the demographic pressure a threat to education, as Sudan still has a long way to go to achieve universal primary education.



## 2. Equity in Sudan

In the context of Sudan, equity and equality are a big challenge since independence due to different factors such as the political, geographical, social to education sectors in Sudan. This subsection investigates three types of disparities in the provision of education within the country. It first looks into the regional disparities, then examines gender differences, and finally turns to social discrepancies. When relevant and possible, these three kinds of disparities are discussed together to offer a full picture of the national context regarding equity in education.

### Structure of the education system in Sudan

The responsibility of education management in Sudan is shared between the federal, state, and locality levels of government. The federal government through its Federal Ministry of Education is responsible for oversight in the sector and the development and maintenance of standards including curriculum development and mobilization of resources from internal and external sources. At all levels, non-government actors contribute to the provision of education alongside the Government.

- Pre-school education: This level covers two years targeting children aged 4-5. The pre-primary programs are provided by Government and private institutions with significant effort also coming from the community. Overall, the standards for the delivery of pre-primary education are developed by the Federal Ministry of Education with localities and private organizations executing the delivery process.
- Basic education: Basic education has a length of eight years targeting children between the ages of 5-13. Like Pre-primary, primary education is provided by Government and private entities. After 8 years of education, learners who complete and attain basic examination certificates may proceed to academic or technical secondary schools. The Ministry of Education has begun the implementation of a new structure of basic education whose first cohort is expected to mature in 2023. Under the new structure, basic education will last 9 years.
- Vocational training: This is a post-basic education program that lasts two years and attracts enrolment from learners completing basic education who do not make it to secondary education.
- Secondary education: This level has a length of three years with two pathways (i) academic and technical and (ii) vocational Education and Training (TVET). Students completing both pathways may sit for the Sudan School Certificate (SSC). Students who meet the expectations of the examination board become eligible for higher education

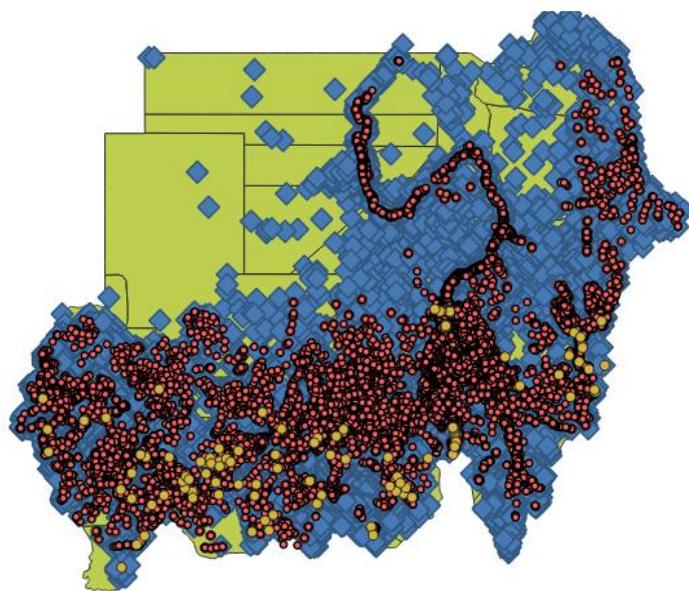
### Demand for education and key variables

Demand means the enrolment of individuals in an educational system. Social demand refers to the total number of persons enrolled in an educational system. In Sudan, there are many factors influencing the demand for higher education generally considered such factors to fall into four main categories, namely, social/familial, psychological/individual, economic/occupational, and structural/ institutional. The most important that can be summarized in the following: Social, individual, family, wellbeing, and social context. The following are the main factors that affect the demand for education in Sudan:

- Economic and well-being of the families and the poverty status.
- The cost of education and expected outcome of education to the family compared with the current utilization of children in economic activities.
- School fees and other extra costs of education to the family
- Transportation costs and food costs to the poor family
- Students' education needs such as clothes and text and exercise books
- Social and cultural factors especially related to girl education

- School distance from homes and availability of schools in the area and security issues for girls in some areas in Sudan
- Water and sanitation especially the lack of latrines in some schools affect the girls' education
- School feeding and the cost of breakfast
- Conflict affects the demand and displaced people
- Community expectation: different from rural to urban
- Free education
- Literacy community Vs Illiterate communities

*Fig 1. Types of school maps for Sudan's educational system compared to residents*



### **Supply for Education**

The supply side is the delivery of education services either by the government or the private sector to meet the people's requirements and needs for education. The supply side is usually affected by different influential factors such as Economic, political, policy, and resources. In the context of Sudan, the responsibilities are distributed between the federal government and State government regarding the supply side. The federal government is responsible for policy and planning, provision of textbooks, and design of the standard of education system while the state level is responsible for teacher workforce distribution, training, and deployment of teachers. Between the two systems, there are many negative implications such as inequitable textbooks and teacher distribution between rural and urban areas. The location of schools and distance to schools is average between one hour to one hour and a half in a rural area while the distance and time are very short in an urban area. The provision of services is different between the rural and urban especially the electricity and water supply, the gap between the two is big.

### **Factors influencing the supply of education**

Several factors influence the supply of education in Sudan. These include:

- Communities' needs and interest in education
- Population growth and the need for extra schools
- Limited resources and government expenditure affected the provision of schools by the government
- Political interest and politicization pressure to provide schools in such area

- Security situations affect the government's interest to provide education services in no-go areas.
- The availability and distribution of teachers to cover all government schools.
- Geographical location and distribution of schools affect the school supply
- Provision of Textbooks and the government capability
- Teacher distribution to cover all schools
- Policy response from government and equity of education to all regions equally

### **Examples of policies that affect the supply of education in Sudan**

- Distribution of Teachers in Basic Education

While overall, there are enough teachers in the country to guarantee efficient and quality learning, there is a weak distribution of the teachers in schools. There is a weak correlation between learners and the teachers deployed to schools. As illustrated below, the extent to which the distribution of teachers is based on school size is only 32%. It is observed that schools with 1,000 learners can either have 5 or 20 teachers. Similarly, a school with 200 learners and another with 1,500 learners could have the same number of teachers.

- Textbooks and Pupil Textbook Ratios

With a total of 1.6, million 2.9 million, 2.2 million, and 1.2 million Science, Mathematics, Arabic, and English textbooks respectively in basic education, there is an apparent shortage of textbooks with multiple children sharing books among themselves. At least 4 learners share a science book amongst themselves; in mathematics, two learners are sharing a book while in Arabic, there are up to three learners sharing a book. In Non-Government schools, there is relative ease in some subjects with learners enjoying a 1:1 ratio of textbooks in Mathematics and Arabic. As shown in Table 16, the situation in Government schools especially in English is terrible with up to 6 learners having to share a book.

- Classroom Environment

Table 18 presents the summary of the number of classrooms based on the 2017 rapid survey. The results indicate that there are close to 15,000 classrooms in basic education, 2 in 3 being permanent structures. 6 in 10 classrooms in Government basic schools are permanent compared to 95% in Non-Government schools. Taking into account all classrooms (permanent and the ones under maintenance), the average number of learners in a class at basic education is 41. Excluding the structures under repair, the average class size rises to 62 which is 12 learner spaces above the recommended class size. We also take note of the variation between Government and Non-Government schools, with an average class size of 45 in Government compared to 22 in non-government schools for all classrooms and 76 and 24 considering only permanent structures.

- Electricity Connectivity in Basic Education

Less than half of the schools are connected to power sources and for those that are connected the majority have access to stable power. Only 46% of basic education schools are connected to electricity with more than 10,000 schools not able to carry out any school activity before daybreak or late in the evening. Of the connected schools, 92% are connected to the main power network which guarantees them stability in the supply of electricity.

- School Health and Hygiene

In a study to establish the prevalence of intestinal parasites among school children, (Siddig, Imad Mohammed, Mosab Mohammed, Bashir, 2017) found out that the infection rate of the intestinal parasites among school children of Alhag Yousif, East Nile locality was 70% - higher prevalence in male learners (80%) compared to 60% in female. The study also established that intestinal parasites were more prevalent among the age group 5 to 7 years old (82.5%) compared to 11/1% in the 12-14 age bracket. The study recommended that health education be implemented as a major subject in the education curriculum alongside treating all infected children to avert the further spread of the worms.

### **Policy Recommendations**

Introduce a school mapping effort to address the efficient and effective use of resources. School mapping is a strategic planning effort to ensure the efficient and equitable distribution of resources within and between school systems, particularly when an education system engages in a large-scale reform or significant expansion.



Decentralize policy and implementation. In such a process, the central authority plays a key role, and its effectiveness in M&E becomes critical. Decentralization leads to increased participation in the decision-making process and enhanced accountability for local authorities.

### **Basic Education**

The overall aim of basic education is to achieve quality and inclusive education for all children eligible for primary education. The Gross Intake in basic education is good but the system struggles to retain them in school. In all the states except for the capital and Northern, the retention profile shows dramatic dropout from basic education at all grades. Other challenges presented in the ESA include disparity among the rural/urban and poor versus rich as well as challenges with learning as highlighted in the NLA results. The sector has identified 5 policy priorities in basic education to address the issues identified in the review. These include:

#### *Policy priority 1: Enhance retention in basic education.*

To ensure that the gains achieved from system expansion are long-lasting, ensuring that learners are retained in the system is the government's top priority in basic education. With half of the children who begin basic school failing to make it to the end of grade 8, this priority will support activities that will retain children in school and only allow them to leave at the appropriate exit. The expected outcome under this priority is improved completion rates in basic education. This will be achieved through the following strategies:

- i) Expanding education opportunities for children at risk of dropping out of school; and
- ii) Addressing socio-economic barriers to basic education.

#### *Policy priority 2: Improving the quality of basic education*

Despite the fairly good performance at the end of the basic education examination – which is norm-referenced and may not provide an accurate picture of learning – the recent NLA presented a bleak picture of the learning situation in basic schools. The majority of children in lower grades are struggling to do that which they are expected to be good at. It is expected that when implemented the strategies aligned to this priority will yield improved learning outcomes in lower grades and improved delivery of curriculum in basic education. The strategies identified for this policy priority include:

- i) Curriculum and assessment reforms including early grade learning interventions;
- ii) Provision of teaching and learning materials in governmental basic schools; and
- iii) Enhancing teacher preparation, recruitment, and continuous support.

#### *Policy priority 3: Increasing access to and equity in formal basic education*

The sector has continued to expand its capacity, but the rate of expansion has not been commensurate to meet the rate of growth of children eligible for basic education. The GIR for instance is 82% (2017), only 2 percentage point improvement since 2009. While this is partly due to supply issues, there are also demand-side issues that cause potential learners to not be in school. In addition, rural areas continue to fall behind concerning participation in basic education with girls from rural poor households being the most excluded from education. The expected outcomes include increased gross access to basic education; the reduced disparity between rural and urban GER; reduced disparity in participation between boys and girls. These will be met through the following strategies:

- i) Expanding opportunities in government basic schools; and
- ii) Supporting children with vulnerable backgrounds including refugees.

#### *Policy priority 4: An increasing opportunity for literacy programs*

Despite the education efforts, 3 million children are out of school and another 1 million are at risk of dropping out due to their learning environment. The plan will support re-entry to learning programs to ensure literacy is delivered to all the children and youth in Sudan. The OOSC who are of basic education going age will be targeted



for formal basic education. Under the plan, it is expected that the expansion of literacy programs will reduce the number of OOSC and subsequently improve literacy rates in the country. The expected outcomes will be achieved through:

- i) Strengthening of the delivery framework for alternative basic education and
- ii) Provision of learning materials for alternative basic education programs.

*Policy priority 5: Strengthen delivery of basic education programs*

While the capacity of the system improved to take up about 1 million children in basic education, the level of improvement has not been sufficient for the eligible school-age population. The existing capacity accommodates just under three-quarters of children in the basic education school-age population. In secondary, less than half of the reference population is accommodated by existing capacity. This is also the case in preschool where 4 in 10 children are considered to be in school even though a significant number of them are attending programs that are not provided for in the formal curriculum.

Achievement of universal basic education remains a major challenge for the country with basic and secondary education exhibiting weak retention in the gulf region. 13% of basic education schools do not offer Grade 5 to Grade 8 and 1% of schools do not have lower grades. 3 million children remain out of school with 8% of the current school generation likely not to attend school.

Although access to Gross Intake Rate to Basic Education is not too far from 100%, only 51% and 13% of learners are likely to access end of basic education and end of secondary education respectively with significant disparities exhibited between boys and girls; rural and urban locations; and across wealth statuses.

The results of the National Learning Assessment (NLA) have shown that despite being in grade 3, four in 10 children show no awareness of any relationship between letters and sounds, and less than half of those who can read comprehend what they read. In numeracy, even though the children posted better performance compared to reading, less than half of the children can correctly solve level 1 addition and 4 in 10 children can solve level 1 subtraction.

### 3. Micro Policy for the planning of Education in Sudan

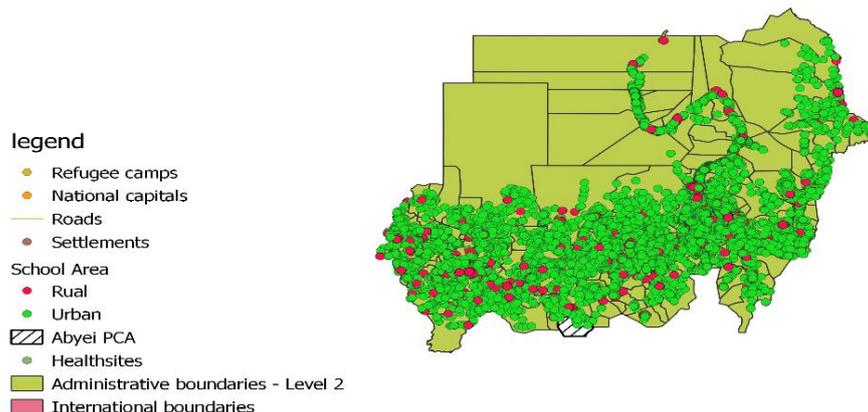
The micro-planning by using the special data is very useful to help determine the following issues:

- Distance between schools and students' Homes
- Remote schools from the Education Administrative Unit
- The types of roads and the accessibility to school, especially during the rainy season in Sudan
- Gender and equity and equality between girls and boys
- Free education is a big challenge in Sudan
- Conflict and security concerning student enrolment
- Teacher deployment and teacher distribution between rural and urban
- Equal opportunities for teacher training and upgrading their skills between the rural and urban
- Education environment and types of buildings (temporary and fixed buildings) which affect the student interest
- Community and family awareness of the importance of education
- Girl education and the classification at a different level the special data will help a lot in the determination of the data, analysis, and forecasting.
- The planning for refugees and IDPs camps schools with hosting communities

#### Schools Distribution in Sudan

The map below reflects the school distribution between rural and urban in Sudan by using the source of information collected through the rapid survey for education 2020. The map replicates the majority of schools are concentrated in urban areas which reflects the unequal distribution of schools between the rural and urban areas.

*Fig 2. School areas in Sudan*

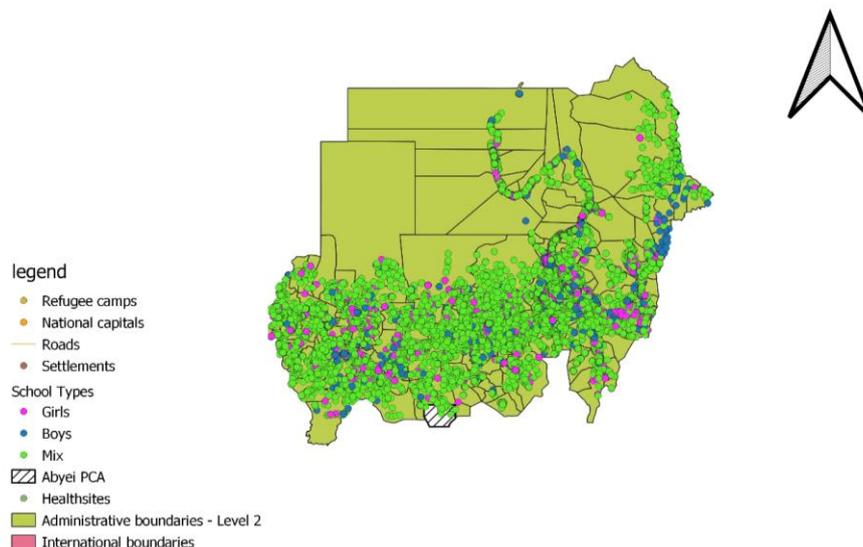


#### School types

The team of Sudan used the existing data collected and available by categorizing the school distribution in Sudan. The observation by the team is that the majority of schools are mixed schools, especially in rural areas due to the lack and sufficient of resources such as teachers and financial resources to run the operation cost as well as the number of students sometimes is not enough to separate the girls and boys. It is observed that

the majority of mixed schools are located in rural areas and remote areas within the urban area and towns in Sudan.

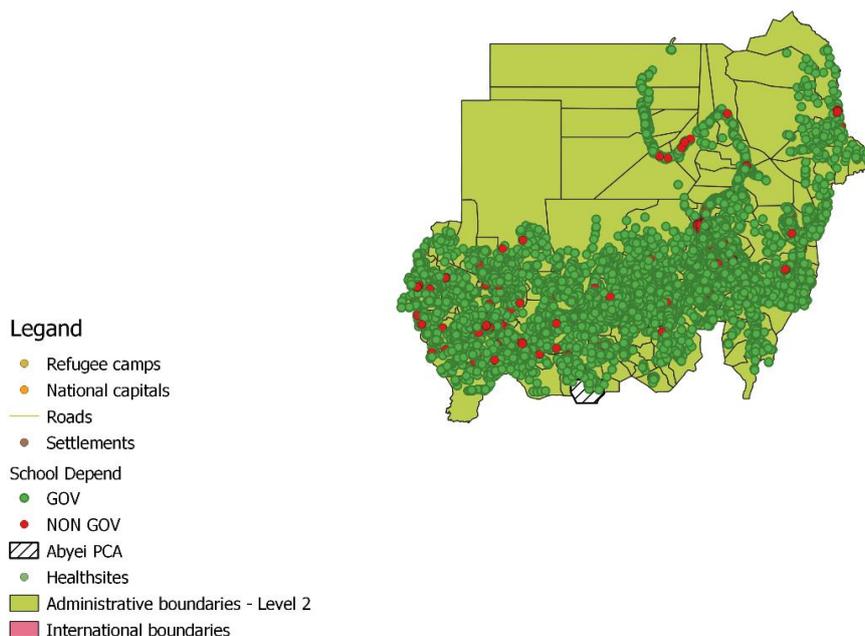
Fig 3. School types in Sudan



### School dependency

School dependency It is noted that most schools are affiliated with the government and that the private sector education rate is weak compared to the government. It is noted that private schools are concentrated in large cities in Sudan.

Fig 4. School dependency in Sudan





### Student Distribution by Age Groups

The map below reflects the student distribution in Sudan. The status of the density of students is subject to the population density, especially in the big towns and villages, which reflects the positive relationship between the number of students and the population.

Fig 5. School by number of students

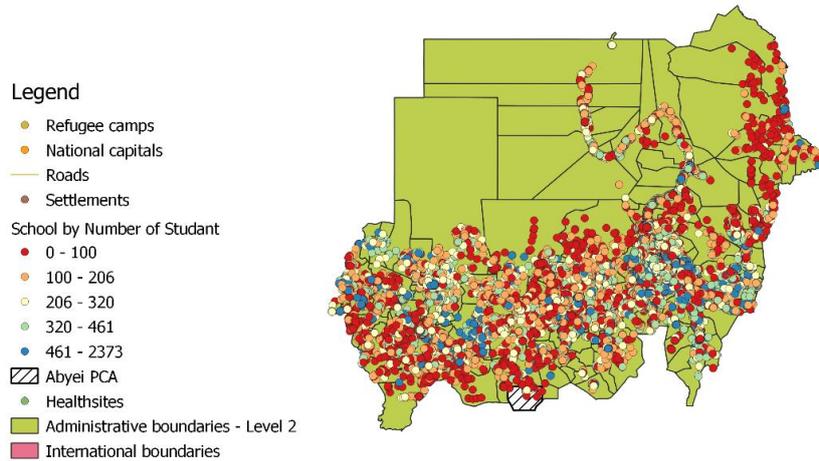
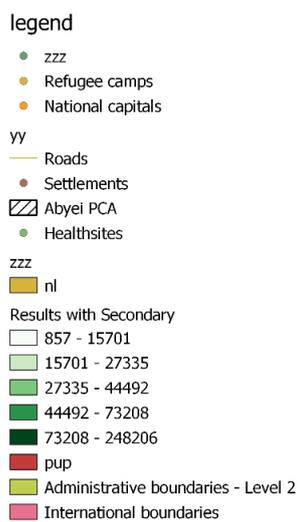


Fig 6. Population in basic education age





### **Challenges**

The team, although had technical skills in the course and will utilize these skills in the planning, faced the following challenges:

- How to use the Buffer and modeling by using geo-Reference in module 5
- The time constraints to apply all skills acquired in a short limited time

### **Solutions**

- Review all materials and to be applied practically in our project.
- Go through the materials step by step to solve the challenges highlighted above.
- Receive advanced training in the same field and the experience is going to be replicated to other staff in The Ministry of Education in Sudan.
- The interaction with international and their emails is an advantage to exchange the experience with them and take the best practice with the team to be applied in Sudan.