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Poverty among Sudanese communities along the eastern borders:

A case study from the Kassala and Gedarif States

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1. INTRODUCTION

Studies on European, African, and American borders reveal border variations, their heterogeneity and the difficulty in comparing them. Interstate relationships are diverse and so are the links between border societies and their nation-states. In Africa, several authors and experts stress the fact that state and nation may not match, and that border areas can represent spaces where transnational identities take shape as well as conflicts and, in some cases, stigmatization of national groups (Association of European Border Regions 2012). The arbitrary drawing of border lines by colonial powers has in many cases ripped tribal and ethnic groups apart, placing them in two or more countries. The imposition of certain borderlines also resulted in a lack of recognition of these borders by local communities, with the creation of border zones rather than borderlines, characterized by their own peculiarities, which set them apart from the interior of the country. As described by Gogoi, Goswami and Borah (2009), in Africa such areas are, generally, less accessible, suffering from illegal cross border movements and insecurity.

The eastern Sudan border is a result of a series of agreements between the British and Italian colonial powers, in Sudan and Ethiopia respectively. Several tribal groups were split along the Ethiopian-Sudanese border. The eastern border of Sudan has been unstable for over 50 years as a result of the continued conflicts and recurrent droughts in the African Horn region. Mobility of population was one mechanism for escaping hazards and disasters during a crisis. Nomadic groups, who naturally cross borders in pursuit of grass and water, moved mostly within the terrain of their, now, split tribes. Movement along or across border areas has also represented an economic survival mechanism and a means for capital accumulation (mostly through "illegal" methods) for both local communities and migrants to the border area. Because of this potential for accumulation, the assumption is that border populations are better off than the majority of the population of the interior of eastern Sudan, for which economic and social indicators reveal very poor conditions, in Kassala and Gedarif States especially.

According to the National Baseline Household Survey, the incidence of poverty is estimated at 36.3% in Kassala State and 50.1% in Gedarif State; the poverty gap ratio (depth) at 14.7% in Kassala and 15.9% in Gedarif State; and the poverty gap (severity) at 8% in Kassala State and 6.7% in Gedarif State (National Baseline Household Survey 2010). These percentages signal a level of poverty that contradicts the richness of the region in terms of natural resources and its importance in terms of national food security, particularly in the case of Gedarif State. Because of the adverse natural conditions and complex geopolitical and macro-economic factors, communities living along the eastern border of Sudan remained relatively isolated, largely neglected and legging behind in almost all political, social, economic and development aspects. Armed conflicts and droughts pushed large sections of the population to move from border areas towards towns in the interior. There also is, however, a temporary move of some groups from the interior towards border areas for purposes of participating in mechanized agriculture (in Gedarif) or in illegal activities, such as smuggling (especially in Kassala). Lack of employment opportunities, the relative isolation, and the lack of government control have also contributed to youth taking part in various illegal activities, including smuggling, arms trade, and human trafficking (Abdel Ati and Egemi 2005; European Union Emergency Trust Fund for Africa 2016; Abdel Ati 2016).

During the last two decades, the border areas experienced major developments, which caused major changes in the livelihoods of border communities, in their relationship with the other side of the border, and in the type, form and volume of cross-border activities. The main developments include (a) the separation of Eritrea from Ethiopia and the emergence of a new, largely poor, and economically isolated state; (b) the armed conflict between the Sudanese opposition forces, particularly the Eastern Front and the Central Government along the border (1994–2006); (c) the developments in the Sudan/Eritrean and Sudan/Ethiopian diplomatic relationships; and (d) the changes in the role played by Eritrea as a mediator and guarantor of the East Sudan Peace Agreement (2006). The most important livelihood changes related to the displacement of Sudanese farmers, agricultural laborers and pastoralists along the Ethiopian border as a result of armed gangs' (*shifta*) activities and of the intensification of informal border trade along the Eritrean border (including arms trade and human trafficking), with diminishing agricultural and pastoral activities.

2. OBJECTIVES AND METHODS

The data for this paper was collected through a survey aimed at reviewing the socioeconomic conditions of the communities living along the Sudanese border between Eritrea and Ethiopia. The survey was conducted during July-August 2013 (Abdel Ati, ElTayeb Mohamadain, and Faiz Hamad ElNil 2014). Its main objectives include:

- Estimating poverty indices among eastern Sudan border communities. Measuring poverty levels and depth, and the decomposition of socioeconomic characteristics;
- Establishing a baseline for further research and analysis of poverty and livelihoods in the area as one of the few field-based studies; and
- Assisting decision-makers and other stakeholders at state and national levels by providing recommendations on appropriate policies and programming aimed at poverty reduction.

Several methods were used for data collection, including literature review, interviews (with government officials, local leaders, and community informants), and household questionnaires. In the absence of other sources of statistical data, especially at local levels, information on poverty relied heavily on the sample household questionnaire that was administered to 146 households in 16 settlements in the two states.[1] The sample covered both local communities (indigenous and settlers) as well as temporary users of the border area. An understanding of the state of livelihood and poverty among border communities in the two states was the key issue.

2.1 Welfare measurements

Several methodological approaches were adopted to measure poverty, including poverty line, poverty indices and poverty profile. First, using the expenditure approach, the study sought to estimate the poverty line based on the food poverty line and the non-food poverty line. Second, several poverty indicators, including incidence, depth and severity of poverty, were estimated based on the aforementioned poverty line, all of them closely matching the general standard methodology for poverty analysis recommended by the World Bank for data resulting from a single cross-section survey.

Of note is that the poverty line based on consumption expenditures is more accurate and relevant for low income countries than an income-based poverty line, which can be misleading in such areas due to social factors and/or the household's tendency to conceal income (to avoid tax payment, or as a result of a failure to account for non-cash income or simply to remember it).

Under the Money Metric Approach (MMA), the first step towards the measurement of poverty is to determine the poverty line by agreeing on a relevant measure for the standard of living and determining the threshold of deprivation below which a person can be identified as poor.

To calculate the poverty line on the eastern Sudan borders the study follows Ravallion's approach (1992). Ravallion uses an equation in which food expenditure is a function of household total expenditures, as shown below:

$$\ln X = \alpha + \beta \ln \gamma \ \square$$

Where:

X is the ratio between food poverty line per month and expenditure on food in the reference quintile (food expenditure that falls within the first quintile or lowest 20% of the data

Y is the total per capita expenditure per household per month.

α and β are coefficients.

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[1]   The sample covered 7 settlements in Kassala (AlLaffa, AlMaria, Gulsa, Bagdeer, Tahdai, Katakawa, and Shalalob) and 9 in Gedarif State (Gallabat, Khor Saad, Atrab, Kunneina, Tabaldiya, Umkharayet, Mahala, Sundus, and Kuseiba). With the exception of Gallabat, which is classified as urban, all the others are rural settlements. Within each, a sample of 8-10 households was selected according to population size. Sampled cases were randomly selected. The total sample size is estimated to represent 6% of the total number of households.

Assuming that X=100 for those whose per capita food expenditure equals the food poverty line, lnX= 4.61. α and β are estimated from the regression results and allow for a solution for total expenditure for those considered to be poor. Thus, the exponential of the natural logarithm (ln) of Y is equal to the monthly poverty line in the border areas, which equals SDG 229 per person. The national monthly poverty line, according to the national population census figures from 2008 (SBS 2010), was SDG 114, 61% of which represents food items and 39% non-food items. The High Council for Wages (Sudan) provided a more recent estimate (in 2015), which is more in line with ours. They set the line at SDG 250 per month.

3. THE CONTEXT

The study focuses on the two states of Kassala and Gedarif, respectively neighboring Eritrea and Ethiopia.

Kassala borders Eritrea from the east and meets Ethiopia in its southeastern corner, at the village of Hamdaiet. The state is poor in underground water, has low and highly variable rainfall levels (150–300 mm from north to south) the effectiveness of which is reduced by their short duration, seasonal variability and the high evaporation rates. The state is heavily dependent on running water sources; the Atbara and Gash Rivers annually irrigating an area of about 200,000 and 24,000 feddans respectively. The area irrigated by both rivers has, however, enormously decreased as a result of siltation. Natural pastures cover an estimated 7 million feddans, supporting about 7 million heads of livestock in addition to the several millions that come seasonally from neighboring states.

The state economy is largely agricultural, relying on artificial irrigation along the Atbara River, on flood irrigation in the Gash delta, on pump-irrigated horticulture in urban areas, and on agro-pastoral activities in rural areas. The total cultivable area in the state is about 4 million feddans, but the areas actually cultivated are on average about 1.5 million feddans (39%). Other than the agricultural, pastoral, and seasonal agro-pastoral activities, income sources revolve around woodcutting, charcoal production, petty trade and border trade. Border trade with Eritrea also has a significant effect on the state economy and on the economic status of some of the border communities.

Most assessments and studies classify the state as a food-deficit state with chronic food insecurity, large scale human displacement, and low economic and social development indicators, mainly caused by adverse environmental conditions, inefficient traditional production systems, disruption of livelihood by the long conflict along the Sudan-Eritrean border, and the continuous influx of refugees and IDPs into the state (Abdel Ati, et. al., 2014).

Gedarif has a total area of around 71,000 km² and borders with Ethiopia to the east. Although poor in underground water, it enjoys relatively high rainfall levels (500–900 mm), but because of the seasonality and variability of rainfall the state suffers from an acute water deficit. The total population is about 1.4 million, with one of the highest annual growth rates in Sudan at 3.9%.

It is endowed with 10.5 million feddans of cultivable land, 5.8 million of which are under rain-fed mechanized farming. Mechanized farming constitutes the backbone of the state economy, a major source of employment, both for the state population and for seasonal workers from within and outside the country, and a major contributor to food security in Sudan. The state is also rich in animal resources, with 5.2 million heads of livestock (sheep, goats and camels), and also has significant mineral resources (though largely untapped).

Despite its rich resources, the state's population continues to suffer from high levels of poverty and food insecurity. The majority of the population lives at subsistence level, achieved through diversification of livelihood strategies by engaging in wage labor, small-scale farming and animal husbandry.

The two major threats to livelihood and stability in the state are (a) the continued expansion of mechanized farming to the detriment of small-scale farmers, with the obstruction to traditional livestock routes and an increase in tension between farmers and nomads; and (b) the repeated incursion of the Ethiopian army and armed gangs (*shifta*) into the Alfashaga area, which forced a re-settlement of farmers from border areas to the interior.

Both states have low development indicators, but they differ in that Gedarif has a higher child (under 15) population, higher fertility and birth rates, higher annual growth and average family size. Kassala has a larger nomadic population, higher infant and child mortality rates, higher literacy and labor participation rates (see Abdel Ati, et. al., 2014), but much lower net migration, an indicator of the scarce job opportunities. The two states also share the longest history of receiving and accommodating refugees from Eritrea, Ethiopia and West Africa, as well as the scores of displaced individuals from other parts of Sudan. Both states face the following challenges:

- High susceptibility to natural disasters;
- Large scale degradation of natural resources and the environment;
- High illiteracy rates, inadequate social capital, limited skills and limited access to the labor market leading to high unemployment rates;
- High levels of poverty, in both urban and rural areas; and
- Poor social services, which fail to meet the demands of the growing population of rural migrants, IDPs and refugees (UNDP 2008).

Table 1: Selected demographic and human development indicators in Kassala and Gedarif States
Source: SBS 2010

Indicator	Kassala	Gedarif	Sudan
Total population (million)	1.8	1.3	31
M/F ratio (%)	121.2	97.1	104.0
Urban population (%)	26.1	28.3	29.8
Population growth rate (1993-2008) %	2.8	3.9	2.4
Nomadic population (%)	11.1	1.4	7.1
Dependency ratio	78	102	84
Population under 15 years (%)	41	57.1	42.1
Total fertility rate (%)	3.1	4.8	5.5
Average family size	5.1	6.81	5.6
Crude birth rate	21.8	34.5	17.3
Infant mortality rate	111	101	122
Crude death rate	17	16	10.4
Life expectancy at birth – both sexes (Years)	58.7	59.8	59.5
Disability incidence (%)	4.6	4.9	4.8
Maternal mortality rate (2010)	245	267	216
Economic activity rate - both sexes (%)	35.8	32.3	37.4
Labor participation rate (%)	26.3	21.5	37.4
Literacy rate (6 and over) - both sexes (%)	43.8	57.2	61.2
Net migration (%)	0.1	1.4	–

4. BORDER COMMUNITIES: A GENERAL PROFILE

About 37.5% of the 16 settlements included in the socioeconomic survey sample are small, with less than 2 thousand persons per settlement; 37.5% have a population between 5 and 10 thousand; and 25% are large settlements with over 15 thousand people. The main tribal groups along the Kassala-Eritrea border are the Beni Amir, Hadandawa, Maria and Sabadarat. In Gedarif the main groups are the Masaleet, Hawsa, Bargo, Fallata, Tama, Daju and other Darfurian tribes, with few Nuba people.

With the exception of two settlements, all are relatively new and over 50% of them were established after 1950. This can be attributed to the nomadic style of living that dominated the area up to the 1970s (before the droughts) and to the movements caused by the drought and the armed conflict along the border. In Gedarif, most of the population is non-indigenous and settlements are a result of migrations linked to mechanized farming activities in the state.

Only 3 of the 16 settlements enjoy daily public transport to and from the village, yet 75% of villages are over 10 kilometers away from the nearest serviced road. The scarcity

or absence of health services and the lack of potable water are the main issues stressed by inhabitants. Water and education were mentioned as the major social problems in 69% of settlements, health services in 62%, lack of electricity in 50%, poor roads in 25%, and lack of security in 12.5% of settlements.

Agriculture is the dominant economic activity in all surveyed villages, followed by manual labor (mostly in agriculture), trade (mostly petty trade in the informal sector), and animal herding. Community leaders flagged low productivity and poor cultivation methods (44%), lack of finance/credit (56%), insecurity (44%) and low rains (12.5%) as the main obstacles to production. Some villages in Kassala pointed to low rains as their main problem, while issues with security were mentioned only in Gedarif.

Houses are predominantly built with non-permanent materials (wood, grass and thatch)—representing 96% of construction in Gedarif and 88% in Kassala. Other construction materials are used as well, such as mud (3% and 10% in Gedarif and Kassala respectively) and bricks (1.3% in both states). Building materials obviously reflect the environmental conditions, types of resources available and the economic status of the households. About 61% of the houses in the Kassala border area and 32% in Gedarif are composed of one room, and only a small portion of them (16% in Gedarif and 12% in Kassala) has more than two rooms. Over 33% of the dwellings in Gedarif and 66% in Kassala lack bathroom facilities. Traditional pit latrines are available in 61% of the houses in Gedarif and in about half as many in Kassala. VIP[2] toilets were reported by 2.6% of the sample population, all in Kassala state (Table 2).

Table 2: Distribution of households by type of latrine (percentag*es)*
Source: Field Survey, 2014)

Latrine Type	Gedarif	Kassala	Both States
VIP	0.0	2.6	1.4
Pit latrine	60.9	29.9	44.5
Other	5.8	1.3	3.4
None	33.3	66.2	50.7
Total	**100.0**	**100.0**	**100.0**

5. SERVICES IN THE AREA

5.1 Water

The border areas in both states suffer from an acute deficiency of water, particularly Gedarif, where boreholes are the main source of supply and the only year-round source. About 6% of households in Gedarif depend on the Atbara River, while some 40% rely on unprotected sources. Along the border area of Kassala State, some households enjoy tap water from water towers (29%), from within their homes (17%), from public distribution points (12%), or boreholes and surface wells (5.2%). A massive amount of households (82%) depends on open sources or distant sources of water supplied by trucks.

While in both states the largest segment of households depends on vendors for its water supply (61% and 44% in Gedarif and Kassala respectively), water for domestic use is primarily fetched by children in Kassala (39%) and youth in Gedarif (25%). It is worth noting that over 75% of households in the Gedarif border area and 31% in Kassala store water in uncovered old steel barrels, 10% and 27% respectively use plastic containers and 13% and 27% traditional mud pots (*Zir*).

5.2 Domestic energy

Only 1.3% of households in Kassala and 5.8% in Geadrif have access to electricity. Both states heavily depend on wood and charcoal for cooking, which impacted vegetation around settlements. Cooking gas is only used by 7.2% and 5.3% of households in Gedarif and Kassala, respectively.

5.3 Education

About 87% of households in Gedarif and 93% in Kassala have children of school age who are currently outside the education system and who either never enrolled (84% in Gedarif and 49% in Kassala) or dropped out of school. Distance from schools, high costs and lack of children's interest in education were the main reasons provided in Kassala for very low

2   Ventilated Improved Pit

school enrollment rates. In Gedarif, the need to help the family, the high costs, and family disapproval, in addition to other reasons such as early marriage, disability and cultural attitudes, are the primary reasons for low enrollment.

5.4 Health

The most common diseases reported in both border areas are malaria, which affects over 40% of households, and typhoid, which was reported by 12% of household heads (HHHs) in Gedarif and 13% in Kassala. Kala Azar and tuberculosis (TB) were only reported in Gedarif, while in Kassala about 17% of households reported suffering from Cholera (Table 3).

Disease	Gedarif	Kassala	Both
Malaria	42.0	42.9	42.5
Kala Azar	5.8	0.0	2.7
TB	1.4	0.0	.7
Typhoid	11.6	13.0	12.3
Cholera	0.0	16.9	8.9
Others	4.3	2.6	3.4
None	34.8	24.7	29.5
Total	**100**	**100.0**	**100.0**

About 65% of the households who experienced diseases during the previous 12 months reportedly visited health institutions. In Gedarif, it was mainly local governmental health units (health centers and dispensaries), while in Kassala the majority relied on public hospitals. While in Kassala quite a large number sought treatment in private clinics (17%), in Gedarif about 3% were treated in NGOs' health stations and about 3% relied on traditional healers. One reason for the use of public and private hospitals in Kassala is probably that over 22% of the households are covered by health insurance, compared to less than 12% in Gedarif.

6. EMPLOYMENT AND INCOMES

As shown in Table 4 below, about 70% of the HHHs in Gedarif are employed in the agricultural sector, as opposed to 23% in Kassala. The biggest category of employment in Kassala falls under "others," which includes public sector and wage labor types of employment (29%), followed by agriculture and skilled work. Of note is that the percentage of population engaged in trade in Gedarif is more than double that of Kassala, while the percentage of those involved with livestock in Kassala is more than seven times that in Gedarif. This does not indicate an absence of animals in Gedarif households; only that it does not constitute HHHs' main occupation.

Occupation	Gedarif	Kassala	Both States
Manual work	4.3	13.0	8.9
Skilled Work	5.8	14.3	10.3
Agriculture	69.6	23.4	45.2
Animal husbandry	1.4	11.7	6.8
Trade	13.0	5.2	8.9
Marginal/informal	0.00	3.9	2.1
Other	5.8	28.6	17.8
Total	**100.0**	**100.0**	**100.0**

In Gedarif, most of the population (65%) is self-employed or owns a business (mostly in agriculture)—compared to about 30% in Kassala. In Kassala, over 23% of HHHs are wage laborers (compared to the almost 15% in Gedarif) and an outstanding 25% are either unemployed (16%) or unable to work (9%) because of physical disability, old age or sickness (Table 5).

Private businesses (in the agricultural field) and the informal sector are the largest employers in Gedarif while most of HHHs in Kassala are engaged in the informal and pastoral sectors (Table 6).

Employment Status	Gedarif	Kassala	Both
Wage laborer	14.5	23.4	19.2
Business owner	31.9	16.9	24.0
Self employed	33.3	13.0	22.6
Unemployed	4.3	15.6	10.3
Unable to work	1.4	9.1	5.5
No Response	14.5	22.1	18.5
Total	**100.0**	**100.0**	**100.0**

Employment Sector	Gedarif	Kassala	Both
Public Sector	8.6	18.2	13.7
Private	62.3	15.6	37.7
Informal	21.7	24.7	23.3
Pastoral sector	5.8	22.1	14.4
No Response	1.4	19.5	11.0
Total	**100.0**	**100.0**	**100.0**

7. POVERTY AMONG BORDER COMMUNITIES

The relatively high incidence of poverty in eastern Sudan has generally been attributed to the region's constant vulnerability to environmental hazards and disasters, conflicts and instability, and particularly the deterioration of the agricultural sector in recent years (NBS 2010). The Poverty Assessment Study undertaken by the National Bureau of Statistics (NBS) in 2010 indicated that 62% of the population was living in poverty. According to the report, 42% of the population lives in households that are below the food poverty line, and 62% of the incomes of households are inadequate to meet basic needs (Cumpa 2010).

7.1 Welfare measurements

Since all poverty indicators are based on consumption expenditure, it is important to discuss the per capita consumption expenditure before dealing with the poverty profile. Table 7 shows the average monthly per capita consumption for the eastern Sudan borders and indicates that the consumption expenditure of households is close to SDG 150 for both the Gedarif-Ethiopia border area (SDG 149.7) and the Kassala-Eritrea border area (SDG 148.1). As Table 7 below shows, inequality as measured by the Gini Coefficient is lower in the border area than that the two states as a whole, with Kassala rate standing at 45.1% and Gedarif at 36.5% (Amel S. Omer et al. 2014).

Table 7: Mean and median per capita consumption expenditure and the Gini Coefficient among border communities
Source: Field survey (2014)

Border	Mean	Median	Gini Coefficient
Gedarif	151.1	179.0	15.6
Kassala	148.1	179.0	15.9
Total	**149.7**	**179.0**	**15.8**

Measured by the headcount index (Table 8), poverty incidence in the Kassala border area (68.6%) is greater than in Gedarif (63.8%), which suggests a higher vulnerability of population living along the state's eastern border. The high incidence of poverty in both states, with only a small difference between the two, generally reflects the high percentage of poor people in the border areas, mainly as a result of the deterioration of the agricultural and pastoral sectors as well as of the high percentage of the poor who move into the border areas as a result of the deterioration of economic conditions in the interior (UNDP 2008; Abdel Ati, et. al., 2014).

The poverty gap estimates the average shortfall in consumption relative to the poverty line and, thus, it overcomes the main limitation of the head count ratio (HCR). It indicates that the average deficit in the consumption of each household on the eastern Sudan border is about 19.2% below the poverty line, if the non-poor are considered to have a zero shortfall. As shown in Table 8, the severity of poverty is 8.3%. Unlike the HCR or poverty gap, this measure is sensitive to the distribution of consumption among the poor. This means that, if a transfer occurs from one poor household to a richer household, consequently the level of poverty should increase. Generally, however, as the table shows, variations are not that significant in the level and percentage of population affected irrespective of the changes in the measure used.

Table 8: Poverty measures (%)
Source: Field survey (2014)

State	Poverty HCR	Distribution of the poor	Distribution of population	Poverty gap	Contribution to overall poverty	Distribution of population	Squared poverty gap	Contribution to overall poverty	Distribution of population
Gedarif	63.8	49.7	51.5	18.5	49.7	51.5	8.1	49.8	51.5
Kassala	68.6	50.3	48.5	19.9	50.3	48.5	8.6	50.2	48.5
Both	**66.1**	**100.0**	**100.0**	**19.2**	**100.0**	**100.0**	**8.3**	**100.0**	**100.0**

Another important finding is that although poverty rates are high in most of the villages surveyed, variations in poverty levels in the border area are low in the two states compared to those of the state as a whole. For instance, variations calculated for the Kassala border area are 17% compared to the 28% for the state as a whole (Faki et al. 2012). In Gedarif, the variations in poverty levels are 14% in the border area, well below the state's 34% (Faiez 2013). The tight correlation between the percentage of the poor and that of the total
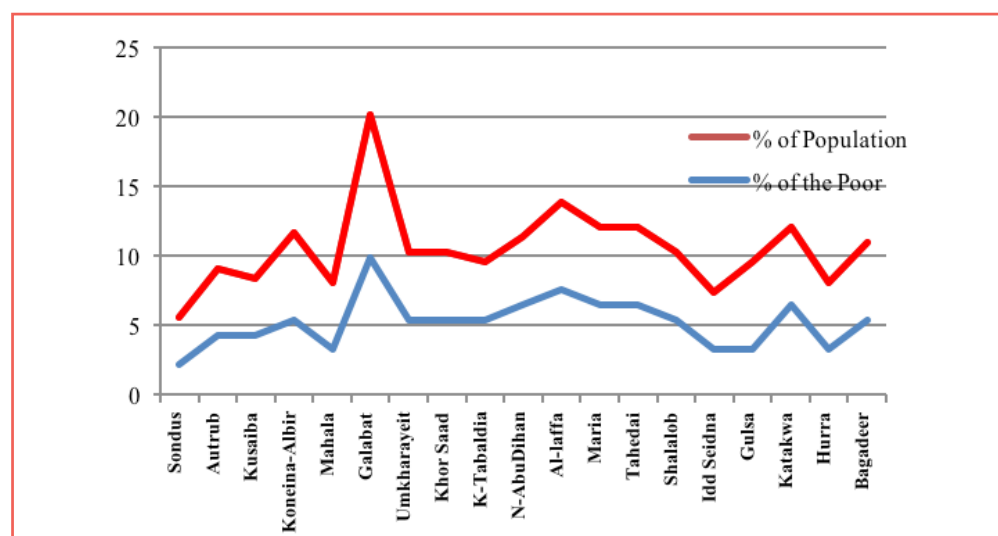
population in almost all villages surveyed is also an indicator of the equal distribution of the poor in border areas (Fig. 1).

Table 9 shows the elasticity of the poverty measures with respect to per capita consumption expenditures. The average absolute elasticity for the eastern Sudan border communities, as shown in the table below, indicates that an increase in per capita consumption expenditure by one percentage point would result in a reduction in the poverty HCR of approximately 2.73% and a reduction of the poverty gap ratio of 1.57%. Therefore, the increase in per capita consumption expenditure will in general reduce incidence and depth of poverty and particularly the severity of poverty in border areas of east Sudan.

State	Poverty HCR	Poverty gap	Squared poverty gap
Gedarif	-2.57	-1.62	-2.33
Kassala	-2.88	-1.52	-2.37
Total	**-2.73**	**-1.57**	**-2.35**

If one takes the chosen consumption level as the poverty line, the curve will show the associated poverty head count; and hence, it can be seen as a poverty incidence curve. Based on the selected poverty line in this study, 66.1% of the border community households can be classified as poor.

7.2 Poverty breakdown

7.2.1 Poverty breakdown by type of employment

Table 10 shows that, for example, 45.2% of the population works in the agricultural sector and constitutes about 44.6% of the poor. The poverty HCR is the highest for those engaged in the trade sector (76.9%), followed by skilled workers (73.3%), and informal sector workers (66.7%).

Table 11 shows that the poverty HCR for HHHs employed in the public sector is high, amounting to 75%, followed by the informal (64.7%) and private sector (60%), which includes the largest percentage of population (37.7%) and the highest percentage of the poor (35.9%). In contrast, households in the cooperative sector are less likely to be poor.

Occupation	Poverty HCR	Distribution of the poor	Distribution of population
Manual work	53.8	7.6	8.9
Skilled Work	73.3	12.0	10.3
Agriculture	62.1	44.6	45.2
Herding	60.0	6.5	6.8
Trade	76.9	10.9	8.9
Informal sector	66.7	2.2	2.1
Other	57.7	16.3	17.8
Total	**66.1**	**100.0**	**100.0**

Table 11: Poverty HCR by labor sector (percentages)

Source: Field survey (2014)

Sector	Poverty HCR	Distribution of the Poor	Distribution of Population
Public	75.0	13.0	11.0
Private	60.0	35.9	37.7
Cooperative	25.0	1.1	2.7
Informal	64.7	23.9	23.3
Others	47.6	10.9	14.4
No response	n\a	15.2	11.0
Total	**66.1**	**100.0**	**100.0**

As showcased in the three tables that follow, the survey results also suggest that:

a. Households headed by unemployed or salaried persons alike are more likely to be poor (Table 12);
b. Households with economically productive wives are less likely to be poor (Table 13); and
c. Households with permanently working children are likely to be in deep poverty (Table 14).

Female spouse's economic status	Poverty HCR	Distribution of the poor	Distribution of population
Active	35.7	5.4	9.6
Inactive	64.4	51.1	50.0
N/A	67.8	43.5	40.4
Total	**66.1**	**100.0**	**100.0**

Table 12: Poverty HCR by HHH type of employment

Source: Field survey (2014)

Type of employment	Poverty HCR	Distribution of the poor	Distribution of population
Salaried worker	67.9	20.7	19.2
Business owner	60.0	22.8	24.0
Self-employed HHH	57.6	20.7	22.6
Unemployed HHH	73.3	12.0	10.3
Disabled HHH	62.5	5.4	5.5
Other	63.0	18.5	18.5
Total	**66.1**	**100.0**	**100.0**

Table 13: HCR for households with economically engaged female spouses

Source: Field survey (2014)

Type of employment	Poverty HCR	Distribution of the poor	Distribution of population
Permanent	78.6	12.0	9.6
Seasonal	41.2	7.6	11.6
Irregular	55.6	5.4	6.2
Unemployed	62.2	55.4	56.2
N/A	75.0	19.6	16.4
Total	**66.1**	**100.0**	**100.0**

Table 14: Poverty HCR for households with working children

Source: Field survey (2014)

7.2.2 Poverty breakdown by HHHs' education attainment

The sample survey results revealed that most of the HHHs in the border areas are either illiterate (22%) or have an informal *Khalwa* education (50%). Survey results also showed that most of the poor households are headed by illiterate persons or persons with no formal education. The highest poverty HCR was recorded among households headed by persons with basic education (86.2%) followed by those with *Khalwa* education (56.9%), and the illiterates who constitute 56.3% of the sample population (Table 15).

Table 15: HCR by HHH education attainment

Source: Field survey (2014)

Education level	Poverty HCR	Distribution of the poor	Distribution of population
Illiterate	56.3	19.6	21.9
Khalwa	56.9	44.6	49.3
Basic	86.2	27.2	19.9
Secondary	58.3	7.6	8.2
Above Secondary	48.0	1.1	0.7
Total	**66.1**	**100.0**	**100.0**

7.2.3 Poverty breakdown by geographical area

One of the interesting statistical results that the survey provided was that poverty rate is higher among the household members born in their same village (indigenous groups), and lower among those born outside the two states (Table 16). This, on the one hand, confirms the assumption that outsiders are benefiting more from the opportunities in the border area than its indigenous population, mainly as investors in agriculture or border trade. On the other hand, these results support the claim that high poverty levels make local population vulnerable to exploitation in illegal and clandestine activities along the border, including smuggling and human trafficking—the two main problems currently affecting the region (Abdel Ati 2016).

Table 16: HCR by place of birth

Source: Field survey (2014)

Place of birth	Poverty HCR	Distribution of the poor	Distribution of population
Same village	64.3	89.4	88.3
Khartoum	50.0	1.1	1.4
Kordofan	24.0	0.8	0.7
Darfur	29.0	1.1	0.7
Other states	53.8	7.6	8.9
Total	**66.1**	**100.0**	**100.0**

7.2.4 Poverty breakdown by access to land

According to the survey results, over 55.5% of the border population in eastern Sudan has no access to agricultural land and, as would be expected, a corresponding 48.9% of that population is poor. Surprisingly, however, the percentage of the poor is higher among those who rent or own land than among the landless population of agricultural workers (Table 17). This higher poverty rate among land owners/renters, can be attributed to a number of factors including the large family size, small size of holdings, and traditional production systems that lack technological advancements, all leading to low production under conditions of uncertainty and constant or increasing consumption demand. Change in consumption habits can also be a factor, as the HCR is based on "cash" income, which is easier to calculate for non-agricultural earners than for direct food consumers (farmers).

Type of land possession	Poverty HCR	Distribution of the poor	Distribution of population
None/none stated	55.6	48.9	55.5
Family ownership	70.2	43.5	39.0
Sharecropper	92.1	1.1	0.7
Land rental	85.7	6.5	4.8
Total	**66.1**	**100.0**	**100.0**

Table 17: HCR by type of land possession

Source: Field survey (2014)

Table 18 below shows the limited variations in poverty levels when correlated with the size of land holdings. With the exception of the landless, the percentages of the poor in fact correspond to the size of population in each category. Paradoxically, the figures in Table 18 also show higher percentages of poverty among the larger landowners, though in small numbers. This could be a result of universally small plot sizes in the border areas or, most probably, of the variations between the owned and actually cultivated land, which is by and large a function of the technology used and of the level of access to credit (less available to rural communities).

Quartiles of land holdings	Poverty HCR	Distribution of the poor	Distribution of population
No land	74.4	34.8	29.5
Lowest quartile	56.0	15.2	17.1
Second quartile	42.3	12.0	17.8
Third quartile	69.2	19.6	17.8
Highest quartile	65.4	18.5	17.8
Total	**66.1**	**100.0**	**100.0**

Table 18: HCR by quartiles of land holdings

Source: Field survey (2014)

8. CONCLUSIONS

1. The statistical results of the study suggest that, because of their limited access to assets, poverty is very high among all groups, yet a small increase in consumption can significantly reduce poverty. Thus, to be effective, a poverty reduction policy targeting border areas must adopt a comprehensive development plan that aims at increasing incomes and improving consumption patterns.

2. The high incidence of poverty among border communities (60.9% in Gedarif and 64.9% in Kassala) can be attributed to the deterioration of agricultural and pastoral sectors during the last few decades, to armed conflicts and insecurity, to the limited opportunities outside the agricultural sector, to the structural problems of traditional production methods and techniques, and to the population's poor access to adequate social services.

3. The level of poverty inequality, as measured by the Gini index, is lower in the border areas than in both Kassala and Gedarif, or at the national level. Poverty is also less sensitive to increases in income inequality, but an increase in per capita consumption expenditure is more likely to reduce incidence, depth and severity of poverty.

4. Most households in the eastern Sudan border area have limited access to land or are landless, and those who own land have limited access to credit or technology. Although access to land represents a source of income, of food security, and of one's status in society, in the border area land ownership does not contribute much to the distribution of wealth or inequality in poverty. Inequality, in fact, seems to be primarily a function of non-agricultural activities, such as trade or wage labor.

5. With the abundance of productive land, especially in Gedarif, the high poverty levels may suggest that the users and economic beneficiaries of the border area (traders or mechanized scheme owners) are outsiders and not indigenous groups or settlers of the border area.

6. Given the fact that inequality is low in the border areas of both states, a poverty reduction policy would be more effective to enhance growth if it aimed at raising per capita consumption expenditure and/or household income. Such pro-poor growth policy should target broadening the productive capacities of the economy and creating employment.

7. Increasing access to land for local populations, with the required inputs to operate it (e.g., technology and credit), and providing basic social services and opening up for new economic options (e.g., informal cross-border trade as a mechanism for poverty reduction in the border areas) are critical in order to educate and formulate effective poverty alleviation policies and strategies.

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The data for this paper was collected through a survey aimed at reviewing the socioeconomic conditions of the communities living along the Sudanese border between Eritrea and Ethiopia. The survey was conducted during July-August 2013 (Abdel Ati, ElTayeb Mohamadain, and Faiz Hamad ElNil 2014). Its main objectives include:

- Estimating poverty indices among eastern Sudan border communities. Measuring poverty levels and depth, and the decomposition of socioeconomic characteristics;

- Establishing a baseline for further research and analysis of poverty and livelihoods in the area as one of the few field-based studies; and

- Assisting decision-makers and other stakeholders at state and national levels by providing recommendations on appropriate policies and programming aimed at poverty reduction.