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EASTERN NILE TECHNICAL
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BARO-AKOBO-SOBAT MULTIPURPOSE WATER RESOURCES DEVELOPMENT PROJECT STUDY

BASELINE, DEVELOPMENT POTENTIALS,
KEY ISSUES AND OBJECTIVES REPORT

Annex 3: Socio-economic environment

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CONTENT OF ANNEX 3

Annex 3-A

Socio-economic environment in the Ethiopian part of the basin

Annex 3-B

Socio-economic environment in the South Sudanese part of the basin

Annex 3-A: Socio-economic environment in the Ethiopian part of the basin

BARO-AKOBO-SOBAT MULTIPURPOSE WATER RESOURCES DEVELOPMENT STUDY - BASELINE STUDY

Annex 3-A Socio-economic environment in the Ethiopian part of the basin

| | |
|--|---------------|
| 1. POPULATION DYNAMICS | 1 |
| 1.1 Size | 1 |
| 1.2 Population Distribution and Density | 2 |
| 1.2.1 Population Growth | 4 |
| 1.2.2 Age Dependency Ratio/Population Pyramid | 4 |
| 1.2.3 Mobility and Rural-Urban/Urban-Rural Migration | 4 |
| 1.2.4 Refugees | 5 |
| 1.2.5 Resettlement and Communization (Villagization) | 8 |
| 1.2.6 Resettlement and Villagization in Gambella Region | 9 |
| 1.2.7 Resettlement and Villagization in Benishangul-Gumuz Region | 10 |
| 1.3 Population-Related Issues | 10 |
| 2. EDUCATION AND HEALTH | 12 |
| 2.1 KEY EDUCATION INDICATORS | 12 |
| 2.2 Health Status and Trends | 14 |
| 2.2.1 Health Status | 14 |
| 2.2.2 Nutrition | 15 |
| 2.2.3 Health Issues | 16 |
| 2.2.4 Summary of Health Issues | 16 |
| 3. GENDER RELATIONS..... | 17 |
| 3.1 Status of Women In Ethiopia | 17 |
| 3.2 Gendered Division of Labour in regions in the BAS Basin | 17 |
| 3.2.1 Gambella Region | 17 |
| 3.2.2 Benishangul-Gumuz Region | 17 |
| 3.2.3 SNPPR Region | 18 |
| 3.2.4 Oromia Region | 18 |

| | |
|---|-----------|
| 4. SOCIAL STRUCTURE AND ORGANIZATION..... | 19 |
| 4.1 Central, state, regional and local Government | 19 |
| 4.2 Socio-ethnic Groups in Ethiopian part of the Sub-Basin | 20 |
| 4.2.1 Oromia Region | 20 |
| 4.2.2 Gambella Region | 21 |
| 4.2.3 Benishangul-Gumuz Region | 23 |
| 4.2.4 SNNPR | 24 |
| 4.2.5 Religions affiliation | 25 |
| 4.2.6 Implications for Development Initiatives in the basin | 25 |
| 5. CONFLICTS | 26 |
| 5.1 Introduction | 26 |
| 5.2 Types of Conflicts | 26 |
| 5.2.1 Intra-ethnic Conflicts | 27 |
| 5.3 Summary | 28 |
| 5.4 Conclusion | 28 |
| 6. LAND TENURE..... | 30 |
| 6.1 Introduction | 30 |
| 6.2 Water Security | 30 |
| 6.3 Food Security and Humanitarian Assistance | 30 |
| 6.4 Security of Livelihoods | 30 |
| 6.5 Summary of Issues | 31 |
| 6.6 Conclusion | 31 |
| 7. ECONOMIC STATUS..... | 32 |
| 7.1 Occupations and Household Income | 32 |
| 7.1.1 Introduction | 32 |
| 7.1.2 Agriculture | 32 |
| 7.1.3 Non-Farm Activities | 32 |
| 7.1.4 Other Sources of Income | 33 |
| 7.1.5 Public Assistance | 34 |
| 7.2 Expenditure | 35 |
| 7.2.1 Food | 35 |
| 7.2.2 Non-Food Items | 35 |
| 7.3 Asset Ownership | 37 |
| 7.4 Poverty Levels, Distribution and Trends | 38 |
| 7.5 Summary | 40 |
| 8. INFRASTRUCTURE..... | 42 |

| | | |
|------------|---|-----------|
| 8.1 | Water Supply and Sanitation | 42 |
| 9. | AGRICULTURAL MARKETS | 43 |
| 9.1 | Markets in the Baro Akobo Basin in Ethiopia | 43 |
| 9.2 | Mechanization | 44 |
| 9.3 | Potential | 44 |
| 10. | KEY ISSUES, CHALLENGES AND OPPORTUNITIES FOR DEVELOPMENT OF THE BAS BASIN..... | 45 |
| 10.1 | Introduction | 45 |
| 10.2 | Key issues, challenges and opportunities | 45 |

TABLES AND FIGURES

LIST OF FIGURES

| | |
|---|----|
| Figure 1-1: Distribution of the region's population in the Ethiopian part of the basin..... | 2 |
| Figure 1-2: Population density in the BAS basin..... | 3 |
| Figure 1-3: Location and Population of Refugee Camps in Ethiopia | 6 |
| Figure 1-4: Refugee Camp Sites and Population in Gambella Region..... | 7 |
| Figure 1-5: View of refugee camp in Bambasi Woreda, Benishangul-Gumuz Region | 8 |
| Figure 1-6: Shift of Source of Income in a New Village | 9 |
| Figure 1-7: Scene from a Villagisation Centre in Benishangul-Gumuz..... | 10 |
| Figure 2-1: Net Enrolment Rate in the Basin's Regions (Grade 1-8) (2013/14) | 13 |
| Figure 2-2: Availability of Basic Facilities in Secondary Schools | 14 |

LIST OF TABLES

| | |
|--|----|
| Table 1-1: Key demographic characteristics - Ethiopia..... | 1 |
| Table 1-2: Population Distribution by Region in Ethiopian Part of the Basin | 1 |
| Table 1-3: Proportion of population of administrative level 2 (Zones) within BAS | 2 |
| Table 1-4: Population Growth Rate and Density in Regions in the BAS Basin in Ethiopia | 4 |
| Table 1-5: South Sudanese refugee population in Gambella (October 2015)..... | 6 |
| Table 2-1: Key Education Indicators | 12 |
| Table 2-2: Adult Literacy Rate Aged 15 Years and Older in the Ethiopian Part of the Basin (%)..... | 12 |
| Table 2-3: NER Trends at Primary Level (Grade 1-8)..... | 12 |
| Table 2-4: Net Enrolment Rates for Secondary School (9-10) and Preparatory (11-12)..... | 13 |
| Table 2-5: Number of TVETs in Ethiopia and in the Basin Regions (2013)..... | 13 |
| Table 2-6: Health indicators | 15 |
| Table 2-7: Trends in Nutritional Status of Children under age 5 (2000-2014). | 15 |
| Table 4-1: Zones,Woredas and Urban/Rural Kebeles by Region..... | 19 |
| Table 4-2: Distribution of Religious Groups in Ethiopian Area of the Sub-Basin | 25 |
| Table 5-1: Inter-and Intra-ethnic Conflicts in the Ethiopia Side of Sub-Basin..... | 26 |
| Table 7-1: Percent of households reporting one or more NFE by type of NFE, region and place of residence, Ethiopia 2014 | 33 |
| Table 7-2: Households reporting other income and income received by source, 2014..... | 34 |
| Table 7-3: Households reporting other income by source, region, and place of residence, Ethiopia 2014 (%)..... | 34 |
| Table 7-4: Households receiving assistance by region and place of residence, 2014 (%)..... | 35 |
| Table 7-5: Household expenditure in the last year by place of residence, 2014 | 36 |
| Table 7-6: Households and average expenditure in the past month by place of residence, 2014..... | 36 |
| Table 7-7: Asset Ownership by Place of Residence, 2104 | 37 |
| Table 7-8: Key Indicators of Poverty and Inequality in Ethiopia (2000-2011)..... | 38 |
| Table 7-9: Poverty Headcount Ratio by Region..... | 39 |
| Table 7-10: Population below the poverty line and Change in Regions in the Ethiopian Part of the Basin..... | 39 |

| | |
|--|----|
| Table 7-11: Population below the food poverty line and percentage change (1995/96 and 2010/11) in the Ethiopian Part of the Basin..... | 39 |
| Table 8-1: Households by Source of Drinking Water by Place of Residence (2014) | 42 |
| Table 9-1: Trends in Price Indexes in Regional Markets (2011-2015)..... | 43 |
| Table 9-2: Agriculture Investors, Crops and Area Leased- Gambella Region | 44 |
| Table 10-1: Issues, Challenges and Opportunities for Development of the BAS Basin | 46 |

ACRONYMS AND ABBREVIATIONS

| | |
|--------|---|
| AfDB | African Development Bank |
| ACORD | Association for Cooperative Operations Research and Development |
| ACTED | Agency for Technical Cooperation and Development |
| BAS | Baro Akobo Sobat |
| CAMP | Comprehensive Agriculture Development Master Plan |
| CBA | Cost Benefit Analysis |
| CMA | Catchment Management Association |
| CRA | Cooperative Regional Assessment |
| DEM | Digital Elevation Model |
| EEPCCO | Ethiopian Electric Power Corporation |
| EHA | Erosion Hazard Assessment |
| EIA | Environmental Impact Assessment |
| ENID | Eastern Nile Irrigation and Drainage |
| ENCOM | Eastern Nile Committee Of Ministers |
| ENPM | Eastern Nile Planning Model |
| ENPT | Eastern Nile Power Trade |
| ENSAP | Eastern Nile Subsidiary Action Plan |
| ENTRO | Eastern Nile Technical Regional Office (NBI) |
| EPA | Environmental Protection Authority |
| FAO | Food and Agriculture Organization |
| GDEM | Global Digital Elevation Model |
| GDP | Gross Domestic Product |
| GEF | Global Environment Facility |
| GIS | Geographic Information System |
| GTP | Growth and Transformation Plan |
| GWh/y | GigaWatt hour/year |
| HEP | Hydroelectric Power |
| IDEN | Integrated Development of Eastern Nile |
| ILWRM | Integrated Land and Water Resources Management |
| IPCC | Intergovernmental Panel on Climate Change |
| IUCN | International Union for Conservation of Nature and Natural Resources |
| IWMI | International Water Management Institute |
| IWRDMP | Integrated Water Resources Development and Management Plan |
| IWRM | Integrated Water Resource Management |
| JMP | Joint Multipurpose Project |
| MAFCRD | Ministry of Agriculture, Forestry, Cooperatives and Rural Development |
| MASL | Meters Above Sea Level |
| MCA | Multi Criteria Analysis |
| MDG | Millennium Development Goals |
| MEDIWR | Ministry of Electricity, Dams, Irrigation and Water Resources |
| MERET | Managing Environmental Resources to Enable Transitions |
| MLFI | Ministry of Livestock and Fisheries |
| MoA | Ministry of Agriculture |
| MoEN | Ministry of Environment |
| MoWIE | Ministry of Water, Irrigation and Energy |
| MSIOA | Multi Sector Investment Opportunity Analysis |
| MTR&B | Ministry of transport, roads and bridges |
| MW | Mega Watt |
| MWC&T | Ministry of Wildlife Conservation and Tourism |
| NB-DSS | Nile Basin Decision Support System |
| NBI | Nile Basin Initiative |
| NCORE | Nile Cooperation for result project |
| NDVI | Normalized Difference Vegetation Index |

| | |
|----------|--|
| NELSAP | Nile Equatorial Lakes Subsidiary Action Program |
| NGO | Non-Governmental Organization |
| Nile-COM | Nile Council of Ministers |
| PIM | Project Implementation Manual |
| PLSPP | Policies, Legislation, Strategies, Plans, and Programs |
| PPP | Private Public Partnership |
| PMU | Project Management Unit |
| PRSP | Poverty Reduction Strategy Program |
| RATP | Regional Agricultural Trade and Productivity Project |
| RPSC | Regional Project Steering Committee |
| RSS | Republic of South Sudan |
| RUSLE | Revised Universal Soil Loss Equation |
| SAP | Subsidiary Action Program |
| SEA | Strategic Environmental Assessments |
| SIS | Soil Information System |
| SLMP | Sustainable Land Management Program |
| SNNPR | Southern Nations, Nationalities and Peoples' Region |
| SRFE | Satellite Rainfall Estimates |
| SRTM | Shuttle Radar Topographic Mission |
| SSEA | Strategic Social and Environmental Assessment |
| SVP | Shared Vision Program |
| SWAT | Soil and Water Analysis Tool |
| SWOT | Strength Weakness Opportunity Threat |
| SWSC | Soil-Water Storage Capacity |
| UNDP | United Nations Development Program |
| UNHCR | United Nations High Commissioner for Refugees |
| UNICEF | United Nations Children's Fund |
| USAID | United States Agency for International Development |
| WaSH | Water Sanitation and Hygiene |
| WB | World Bank |
| WBISPP | Woody Biomass Inventory and Strategic Planning Project |
| WCYA | Women, Children and Youth Affairs |
| WEES | Water for Eastern Equatoria |
| WFP | World Food Program |
| WM | Watershed Management |
| WRMA | Water Resources Management Authority |
| WRMD | Water Resources Management and Development |
| WSS | Water Supply and Sanitation |
| WUA | Water Users Association |

1. POPULATION DYNAMICS

1.1 SIZE

Ethiopia is the second most populous country in Sub-Saharan African with an estimated population of 96.6 million and with average growth rate of 2.9% as of July 2104. The gender distribution of the population is estimated to be roughly at parity. Some 64% of the population is under 25 years old, and children under the age of 15 account for nearly 45% of the total population. The age dependency ratio is some 84%. The majority of the country's population (83%) lives in rural areas and 17% in urban area. Other demographic indicators are shown in Table 1-1 below.

Table 1-1: Key demographic characteristics - Ethiopia

| Indicator | Value |
|--|-------|
| Population (millions) | 96.6 |
| Rural population (%) | 83.0 |
| Urban population (%) | 17.0 |
| Household size (mean) | 4.6 |
| Average annual growth (%) | 2.9 |
| Total fertility rate (children born/woman) | 5.2 |
| Birth Rate (births/1,000 population) | 37.7 |
| Death rate (deaths/1,000 population) | 8.5 |
| Total dependency ratio (%) | 84.0 |
| Average life expectancy (years) | 63.0 |
| Population density (people per km ²) | 87.0 |
| HDI rank | 178 |

Sources: World Bank, 2015; World Development Indicators (2013); UNDP, Human Development Report 2013; CIA, World Fact Book (2015).

The Ethiopian part of Baro-Akobo-Sobat sub-basin includes Gambella Regional State and parts of Oromia, SNNPR and Benishangul-Gumuz regions. The total population of these parts of Ethiopia is estimated at 5,680,298 of which 2,830,100 (49.8%) were males and 2,850,198 (50.2%) females. The majority (i.e. 88.4%) of the people live in rural areas and the rest 11.6% are urban residents (Table 1-2)

Table 1-2: Population Distribution by Region in Ethiopian Part of the Basin

| Region | Population | | | Proportion of region's population (%) |
|-------------------|------------------|----------------|------------------|---------------------------------------|
| | Rural | Urban | Total | |
| Gambella | 277,002 | 132,000 | 409,002 | 7.2 |
| Oromia | 3,180,287 | 269,917 | 3,450,204 | 60.7 |
| SNNPR | 1,322,972 | 184,802 | 1,507,774 | 26.6 |
| Benishangul-Gumuz | 240,516 | 72,802 | 313,318 | 5.5 |
| Total | 5,020,777 | 659,521 | 5,680,298 | 100 |

Source: CAS (2012): Projected population for 2015

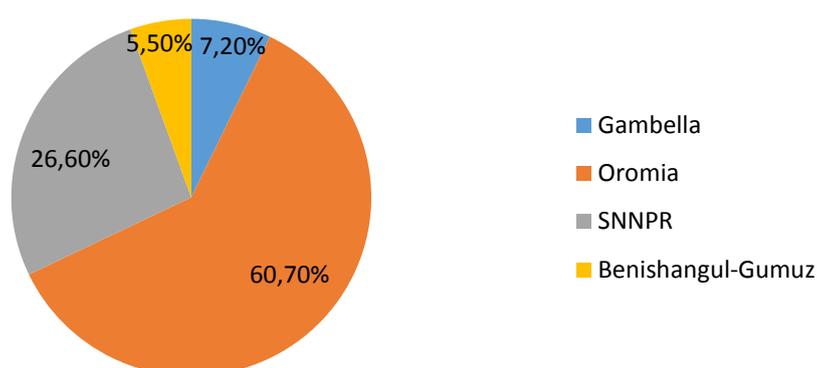
Table 1-3: Proportion of population of administrative level 2 (Zones) within BAS

| Regions in Ethiopian Side of the Basin | Administrative level 2 | Total surface area (km ²) | Surface area within the BAS (km ²) (A) | % of administrative level 2 within the BAS (B) | Total population of zones in Ethiopian side of BAS (C) | Population of administrative level 2 (Zones) within BAS (B x C) |
|--|------------------------|---------------------------------------|--|--|--|---|
| GB | Asossa zone | 14,398 | 6,197 | 43.0 | 313,318 | 134,727 |
| Gambella | Agnuak zone | 23,505 | 23,505 | 100.0 | 145,833 | 145,833 |
| | Majang zone | 2,334 | 2,334 | 100.0 | 75,078 | 75,078 |
| | Nuer zone | 4,784 | 4,784 | 100.0 | 142,067 | 142,067 |
| Oromia | Ilubabor zone | 15,560 | 10,421 | 67.0 | 1,011,331 | 677,592 |
| | Jimma zone | 18,403 | 1,165 | 6.3 | 378,543 | 23,848 |
| | Kelem Welega zone | 9,428 | 7,426 | 78.8 | 946,735 | 747,921 |
| SNNPR | Mirab welega zone | 12,856 | 3,445 | 26.8 | 1,113,595 | 300,671 |
| | Bench Maji zone | 19,108 | 10,702 | 56.0 | 741,385 | 415,176 |
| | Keffa Zone | 10,543 | 2,609 | 24.7 | 511,541 | 125,885 |
| | Sheka Zone | 2,347 | 2,342 | 99.8 | 254,848 | 254,338 |
| Total | | 133,266 | 74,930 | | 5,634,274 | 3,043,135 |

1.2 POPULATION DISTRIBUTION AND DENSITY

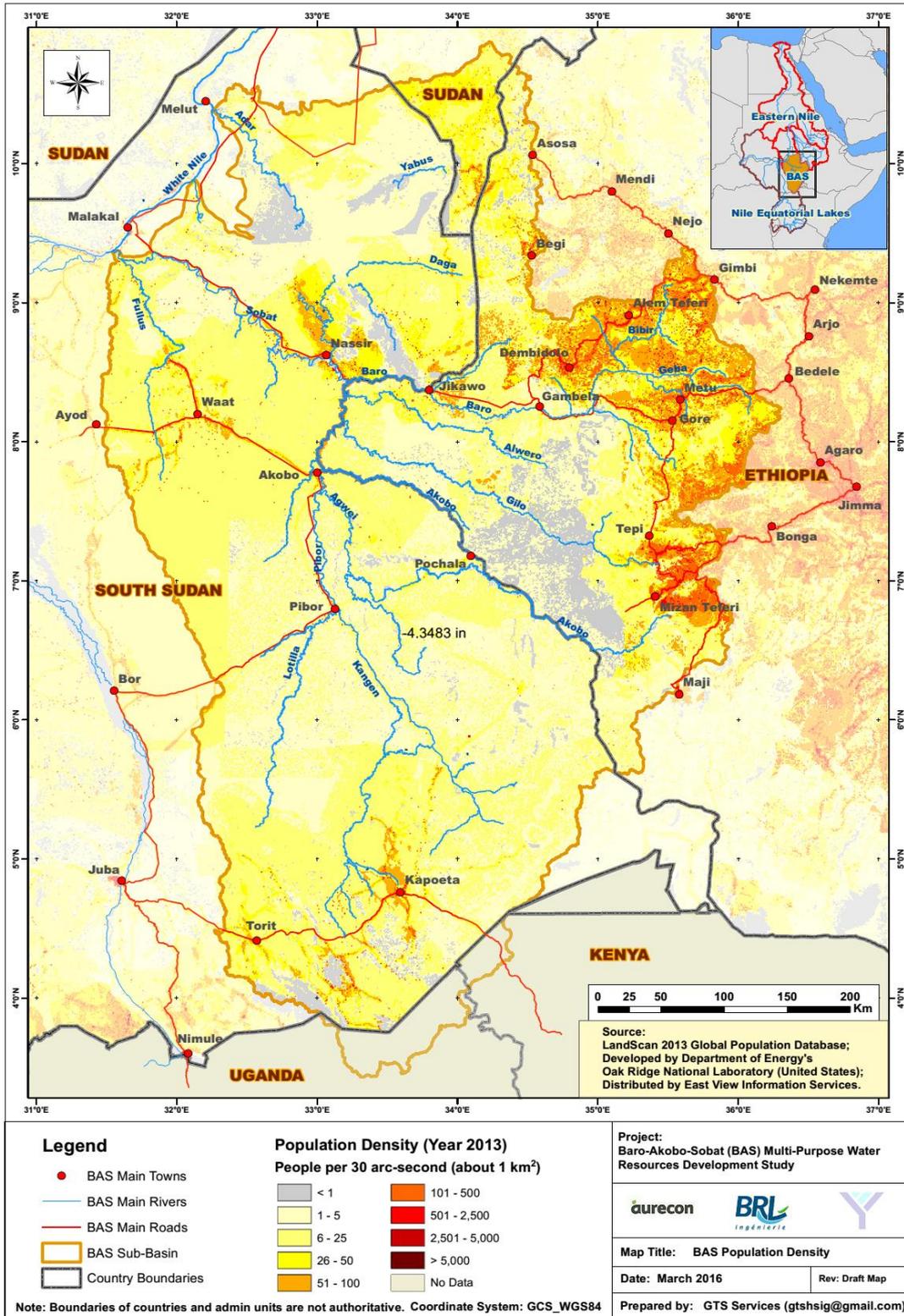
As depicted in Table 1-2, Oromia region accounts for about 61% of the proportion of the population within the Ethiopian part of the BAS sub-basin, followed by SNNPR (27%). Gambella and Benishangul-Gumuz regions account for 7% and 5% respectively.

Figure 1-1: Distribution of the region's population in the Ethiopian part of the basin



The highlands of the BAS basin in Ethiopia (in Oromia and SNNPR) are relatively densely populated with average crude density varying from 43-70 people per km², whereas areas in the Gambella and Benishagul-Gumuz regions are less populated, with the average crude density varying from 10-16 people per km² (See Figure 1-2).

Figure 1-2: Population density in the BAS basin



1.2.1 Population Growth

Ethiopia has a relatively high birth rate of 38 births/1,000 people and death rate of 9/1,000 people. The annual population growth rate for Ethiopia is estimated to be 2.9% in 2014. It is projected that the Ethiopian population will reach 106 million by 2020 (Aynalem, 2014), making Ethiopia the second most populous country in Africa after Nigeria.

An annual population growth rate of 2.9% means that the population of Ethiopia will double in 26 years, i.e. by 2040. Population growth has serious implications for national socio-economic development and use of natural resources. Table A4.4 presents the population growth rates and densities in the Ethiopian side of the sub-basin. The population density in the regions varies from 10 people per km² in Gambella to 70 people per km² in the parts of Oromia region.

Table 1-4: Population Growth Rate and Density in Regions in the BAS Basin in Ethiopia

| Region | Growth Rate | | Population Density (per km ²) |
|-------------------|-------------|-------|--|
| | Rural | Urban | |
| Gambella | 2.71 | 10.3 | 10 |
| Oromia | 2.56 | 17.0 | 70 |
| SNNPR | 2.98 | 9.7 | 43 |
| Benishangul-Gumuz | 2.43 | 16.9 | 16 |

Source: ENTRO (2009): One System Inventory.

1.2.2 Age Dependency Ratio/Population Pyramid

The age structure of the Ethiopian population is dominated by the youth, with the population under age 15 years accounting for about 45% of the total population. The productive population (15-64 years) makes up 53% of the total population. The youth and elderly dependency ratios are 77.2% and 6.3% respectively. The total dependency ratio is estimated to be 83.5% as of 2014 (CIA Factbook, 2015). An age structure dominated by young population approaching reproductive age will further support rapid population growth in the decades to come.

1.2.3 Mobility and Rural-Urban/Urban-Rural Migration

In Ethiopia, internal migration flows are currently large and substantial, occurring as traditional internal mobility (i.e. for marriage), rural-urban migration, rural-rural migration, resettlements, displacement and refugees. This mobility occurs due to push factors (lack of development or social and economic opportunities, conflicts, natural disasters such as floods and droughts, etc., in the place of origin); and pull factors (economic and social opportunities - both real or imagined - in the receiving areas).

The main push factors in Ethiopia are overpopulation, famine, poverty, land scarcity, governmental agricultural policies and a lack of agricultural resources. Resettlement policies and development initiatives of the government also contribute to internal migration and mobility in Ethiopia. Besides, urbanization in Ethiopia is a growing trend that influences mobility and puts pressure on urban infrastructure and resources (via De Waal, 1991; Ezra & Kiros, 2001).

The basin areas, especially Gambella and Benishangul Gumuz regions, are experiencing rural-rural migration, resettlements, displacement and refugee flows. The two regions also have a high mobility of their own population. The in-migration rate is significantly higher than the national average. Though limited in size, urban areas in these regions show immigration rates of over 200 per thousand.

Gambella region has received a large number of new settlers and refugees during the last 2-3 decades as a result of government resettlement policies, internal conflicts and civil war in South

Sudan. More recently, there has been a growing influx of people into the region due to the demand for labour by large-scale commercial farms as well as people fleeing conflicts in South Sudan.

Urbanization and development in rural settlement in the regions contributed to rural-urban migration and internal mobility in the basin area. Therefore, population mobility and migration have become important development issues, since they exert increasing pressure on existing social and economic services and local livelihood resources.

The main drivers of large involuntary migration include resettlement programs; acquisition or allocation of large tracts of land for investments, intra- and interethnic conflicts; frictions between new settlers and indigenous people, natural hazards (e.g. floods and droughts), political violence, and civil conflicts in South Sudan.

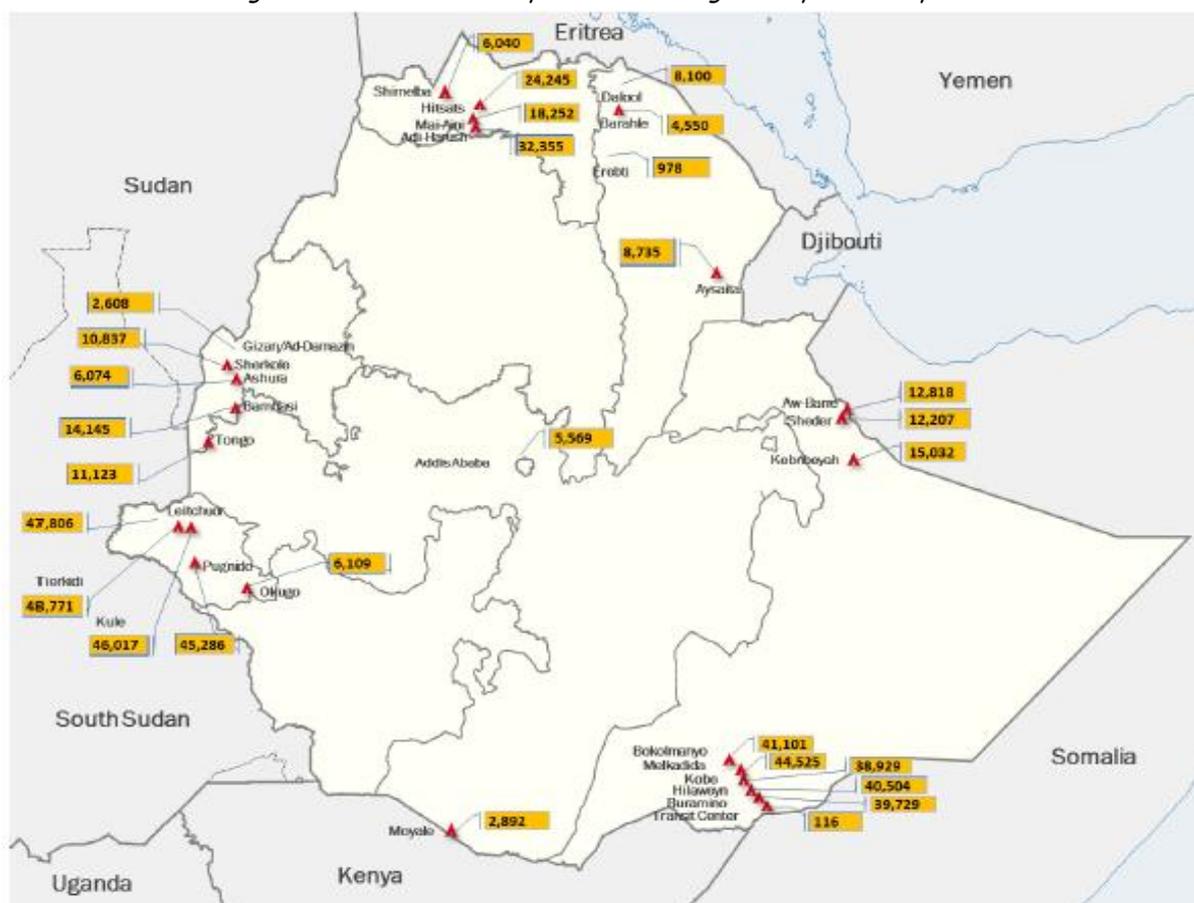
Employment opportunities as well as current urbanization trends and high levels of unemployment are likely to become the major catalysts of migration into the basin in the future. It is likely that migration flows into the basin will continue to increase due to limited employment opportunities, poverty, overpopulation, food scarcity in the sending areas (i.e. the highlands), and conflicts, political instability in receiving areas (i.e. lowlands).

New migrants contribute to labour supply for the growing number of large-scale investments in the basin in Ethiopia, thereby contributing to the local economy. Therefore, future basin development planning must consider net migration flows into the basin and how the likely impacts of involuntary migration and refugee problems will be addressed to reduce adverse impacts and to enhance the potentially positive effects of population mobility. The likely impacts of these factors on the future development of the basin should be explicitly addressed at both policy, program and specific project levels.

1.2.4 Refugees

Ethiopia hosts over 643,010 refugees from other countries, including those from the part of the basin in South Sudan. The largest population groups comprise South Sudanese (39% of the total number of refugees) and Somalis (38%), followed by Eritreans (17%) and Sudanese (6%). In addition, there are persons of concern from Kenya in Moyale, and urban refugees from several other countries including the Democratic Republic of Congo (DRC), Yemen, Burundi, Djibouti, Rwanda and Uganda (about 1% of the population) (See Figure 1-3).

Figure 1-3: Location and Population of Refugee Camps in Ethiopia



Source: ARRA/UNHCR/WFP and Partners (2014): Ethiopia: Joint Assessment Mission Report

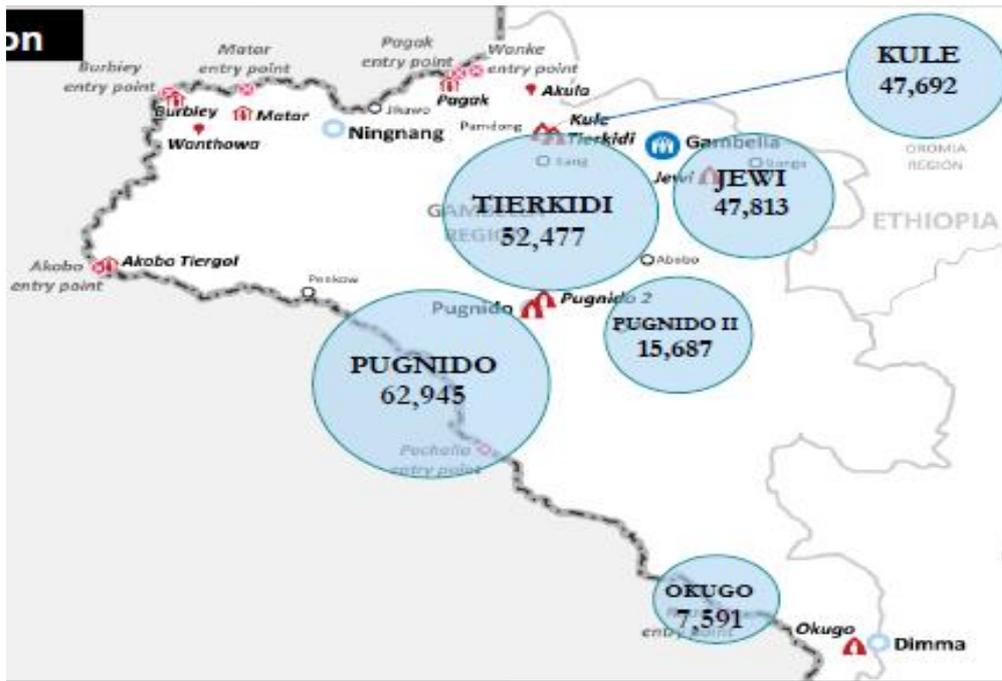
There has been a high influx of refugees into the Ethiopian part of the basin, especially into Gambella and Benishangul-Gumuz regions. These regions receive and host large numbers of refugees, mainly from South Sudan. As of October 2015, the total number of South Sudanese refugees in the Ethiopian part of the basin was 277,757, of which 234,205 were living in camps in Gambella region and 43,552 were living in host communities. The distribution of refugees in camps with a total number of persons in each camp is shown in Table 1-5. Of the persons living in camps, a large majority (i.e. 67%) were children, and 33% were adults.

Table 1-5: South Sudanese refugee population in Gambella (October 2015)

| Camp | Children (age <18 years) | | Adults (age >18 yrs) | | Total | % |
|-------------|--------------------------|---------|----------------------|---------|---------|-----|
| | Males | Females | Males | Females | | |
| Pugnido | 21,259 | 20,027 | 6,936 | 14,723 | 62,945 | 27 |
| Tierkidi | 18,558 | 17,891 | 3,993 | 12,035 | 52,477 | 22 |
| Jewi | 17,803 | 17,093 | 2,359 | 10,558 | 47,813 | 20 |
| Kule | 15,552 | 14,824 | 6,020 | 11,296 | 47,692 | 20 |
| Okugo | 2,362 | 2,203 | 976 | 2,050 | 7,591 | 3 |
| Pugnido II | 5,298 | 4,991 | 1,729 | 3,669 | 15,687 | 7 |
| Sub-Total | 80,832 | 77,029 | 22,013 | 54,331 | 234,205 | 100 |
| Grand Total | 157,861 | | 76,344 | | | |
| % | 67 | | 33 | | | |

Source: UNHCR Gambella, Ethiopia; 09 October 2015.

Figure 1-4: Refugee Camp Sites and Population in Gambella Region



Source: UNHCR Gambella, ETHIOPIA; 09 October 2015.

In addition to the 277,757 South Sudanese refugees living in Gambella region, there were 44,787 refugees at refugee camps in Benishangul-Gumuz region as of October 31, 2014.

The total number of registered refugees in Benishangul-Gumuz was 50,926 at the end of January 2016 (Source: UNHCR, February 2016).

The influx of refugees into the Ethiopian part of the basin (i.e. Gambella and Benishangul-Gumuz) has significant but relatively undocumented consequences for the host communities. Although these regions have one of the lowest population densities in Ethiopia, there is, however, a growing pressure on land, particularly the fertile but limited riverine land that supports flood-retreat farming for the Anuak people and provides pastureland for grazing for the Nuer during the dry season.

This phenomenon is particularly pronounced in the Gambella region. Use of this riverine land is contested, not only at the inter-ethnic level but also intra-ethnically, the various Nuer clans have frequently fought over access water points in this area. The protracted conflict between the Jikany and Lou Nuer, and the violent conflicts among the various Gaajak clans are also cases in point.

The leasing of hundreds of thousands of hectares of land to foreign companies with the advent of large-scale commercial agriculture in the region has further increased pressure on land. Refugees might, as was the case in previous times, also seek to access the contested land, further fueling this resource-based conflict. The problem is further compounded as the Nuer to aggregate into kinship groups (clans, sub-clans, etc.).

Another impact is pressure on the environment (see Figure 1-5). This is due to refugees' dependency on wood for energy and construction, as well as clearing of land for habitation, which are serious problems in most refugee camps and leading to rapid deforestation in most areas around the camps. Firewood is commonly used in all camps for cooking. Women spend a significant amount of their time walking long distances in search of firewood, which creates protection related risks and is a source of conflict between refugees and host communities.

The large influx of refugees has also created pressure on existing social services and infrastructure. In addition, health problems and risks to the host or receiving communities are significant in receiving

areas. Health risks from the transmission of diseases across borders and from refugee camps are significant risks to both refugees and host communities.

Figure 1-5: View of refugee camp in Bambasi Woreda, Benishangul-Gumuz Region



Source: Shewakena and Harris, D (2105).

1.2.5 Resettlement and Communization (Villagization)

Successive Ethiopian governments since the 1970s have initiated population relocation schemes and villagization to varying degrees. During the Derg (1974-1991) people were forcibly resettled from highlands to the south and southwest, particularly in Gambella, Benishangul Gumuz and in western Oromia (then known as Wellega Province).

The EPRDF (Ethiopian People's Revolutionary Democratic Front), which took over state power from Derg in 1991, was apathetic to the benefits of such schemes (resettlement and villagization). In the early 2000s, however, population relocation schemes were resuscitated and reintegrated into Ethiopia's food security and rural development strategies. To a significant extent, villagization remained on paper until the end of the decade when, in 2009, the Ethiopian government announced plans to "villagize" an estimated 1.5 million individuals by mid-2015 (Fana, 2014).

The government planned to undertake villagization in four regions: Afar, Somali, Gambella, and Benishangul-Gumuz. The plan calls for relocating 1.5 million people (i.e. 500,000 people in Somali; 500,000 in Afar; 225,000 in Benishangul-Gumuz and 225,000 in Gambella). In Afar and Somali this was supposed to be done in a one-year program, while in Gambella and Benishangul-Gumuz it was to be done in a three-year program starting in mid-2010 (Davison, 2011). Villagization and its implementation faces many challenges and criticism from various stakeholders, including local people, donors, financial agencies, activists, human rights groups, research institutes, etc.

While the Government maintains that the objective of villagization is to enable social services to be provided through the concentration of scattered households from within a five-kilometers radius into a single village, activist organizations and human rights groups argued that villagization is the forced relocation of local people to make way for large-scale investments in agricultural land (HRW, 2012; OI, 2013).

The Government, in responding to such criticism, stresses that these two issues – land allocation to investors and villagization – are unrelated. However, relocated people have many grievances due to adverse impacts of the relocation in the new village sites. A respondent from Gambella, asked by a researcher about his view of the processes of villagization, replied as follows: "We came here on the promise that the Government would provide us with sufficient land for farming and other purpose.

But, still we are not given any land for farming. Now, we are surviving by selling wood, burning charcoal, selling tukuls at Etang town". (Moti, 2014). The same source also noted change in the livelihood activities of people relocated in new village (Figure 1-6).

Figure 1-6: Shift of Source of Income in a New Village



Source: Moti, 2014

In spite of the Government's insistence that villagization and land concessions for large-scale investments are unrelated, the villagization scheme is sometimes seen as a process to create 'vacant spaces to be leased to investors' and 'through its villagization program.' (HRW, 2012a; OI, 2013). The main issues which are raised are the lack of prior consultation with and consent by the local people. Reports indicate that local populations were sometimes coerced to move to new villages and that implementation is proceeding without obtaining "free and informed prior consent" from the affected population (Fana, 2014; IO, 2013).

1.2.6 Resettlement and Villagization in Gambella Region

In the 1980s the Derg Government established large resettlement schemes in the present Gambella region. In 1984, the Derg Government began (sometimes forcibly) resettling highlanders to this area, bringing in more than 150,000 settlers to Gambella from 1984-1988; all were resettled on land customarily claimed by the Annywa people. After the Derg Government, the migration of highlanders has continued, due mainly to the fertile land in the region - and numbers of recent migrants from the highlands has exceeded 60,000 (UNICEF, 2006).

"Voluntary resettlements" were renewed in mid-2000s by the current Government. In 2010/2011, villagization in Gambella region has occurred in woredas such as Gambella, Godere, Gog, Abobo, Dimma, and to a lesser extent also in Itang and Jor. These woredas are for the most part inhabited by Anuak, and are the closest to major infrastructure in the region, such as main roads and larger towns. These are also the areas of most intensive new agricultural land investment (HRW, 2012). In the region the villagization program was completed in mid-2013. All rural households in the region have already been villagized and reports indicate that there are difficulties in returning to old villages. There are not any more relocations, but what remains is the servicing of those already relocated to the new villages (Fana, 2014).

There are also indications that the approach to villagization is not consistently coercive. Some communities voluntarily join the new villages. When government officials failed to convince local people of the advantages of joining the new villages, local people effectively resisted relocation and remained in their old villages (Yonas and Ezra, 2013). Therefore, it was argued that differences could be better addressed by a nuanced approach based on local realities and perceptions. Options should also include a planned and regulated return to old villages, with improved governance and services. Rather than suspending all support to villagization schemes, the adoption of a sectoral approach would serve local communities best. This may include provision of better health services and food aid on humanitarian grounds that could make life more bearable in the new villages in the short term and ensure self-reliance over the long term (Fana, 2014).

1.2.7 Resettlement and Villagization in Benishangul-Gumuz Region

The first settlers in the Benishangul Region are now well-established, live in self-contained villages (e.g. around the regional capital Assosa) and farm their land according to traditional highland practices, on small fields using ox ploughs. Since the end of Derg rule in 1991, there has been regular voluntary movement of people from the highlands into Benishangul-Gumuz, due to population pressure in the highlands and available land in Benishangul-Gumuz. Many of these recent settlers rent land from the indigenous people (Shewakena and Harris, 2105):

The official rationale for pursuing the villagization program is that the traditional dispersed settlement patterns of the indigenous communities makes it difficult to provide important and basic social services such as health, drinking water, schools, and market infrastructure. Therefore, the main objective of villagisation is to increase communities' access to social services. In Benishangul Gumuz, more than 15,000 households have already been moved to new villages by 2010/2011 (2002/03EC).

The region has planned to relocate 45,000 families. However, reports indicated that some farmers returned to their old villages, which has created challenges to the systematic land registration process in the region. Figure A4.9 shows Villagisation Centres from where some relocated farmers return back to their original dwelling place.

Figure 1-7: Scene from a Villagisation Centre in Benishangul-Gumuz



Source: Shewakena and Harris, 2105.

1.3 POPULATION-RELATED ISSUES

Following is a summary of issues related to population dynamics in the Ethiopian part of the basin as identified in the foregoing section.

- ▶ Rapid population growth, dominated by young population in the country level as well as in the Ethiopian parts of the basin.
- ▶ Migration of outsiders into the Ethiopian parts of the sub-basin (i.e. into Gambella and Benishangul-Gumuz regions) affects the demography of the sub-basin.
- ▶ Villagisation impacts both the indigenous population and the relocated settlers in terms of disrupting the established land access arrangements and exacerbates the regional food security situation.
- ▶ Development/investment-induced involuntary relocation.
- ▶ Influx of people and refugees may escalate social conflicts and competition over land, water and other natural resources.

- ▶ There is an increased potential for conflicts over resources between new settlers as well as among indigenous people.
- ▶ Increased pressure on local resources; social services and infrastructures due to influx of refugees, migrants and large scale allocation of land to outside investors.

Although the Ethiopian side of the basin, mainly Gambella and Benishangul-Gumuz, are low populated areas, the current influx of people and refugees into these areas could lead to population increase, competition over local natural resources and pressure on social facilities and infrastructures. Therefore, population increase, migration, refugees and increased pressures on local resources, facilities and infrastructure are the key development issues in the regions under consideration.

Moreover, the resettlement and villagization programs, which were undertaken hastily and without appropriate planning and consent of the both settlers and hosting communities by the past and present governments, have adverse consequences on the local people and environments of the receiving areas. The local communities lost their lands to the schemes thereby adversely affecting livelihoods of the indigenous people. The schemes also have led to deforestation and land degradation, and thereby fuelling conflicts among ethnic groups over natural resources. Therefore, as the areas under consideration are ecologically and social sensitive ones, future development interventions need to give due attention to such key. Future policies, and development programs and projects should be preceded by a potential impact assessments that would guide for decisions.

2. EDUCATION AND HEALTH

2.1 KEY EDUCATION INDICATORS

An estimated 45% of the Ethiopian population have no schooling, while 44% have some primary schooling (CSA, 2011). Urban population is more literate (78.6%) compared to rural population (49.1%). Only 0.1% have completed secondary school in rural areas compared to 3.2% in urban areas (CSA, 2011). Key indicators of education status at national level are given in Table 2-1.

Table 2-1: Key Education Indicators

| Indicators | Value |
|--|-------------------------|
| Literacy rate, adult total (aged 15 and older) | 39% (2012) |
| Gross Enrolment Rate for primary (2013/14) | 101.3% |
| Net Enrolment Rate for primary (2013/14) | 92.6% (m=95.1; f= 90.1) |
| Pupil-Teacher Ratio, Primary level | 47 (2013/14) |
| Pupil-Class ratio primary level (2013/14) | 54 |

Sources: MoE (2015, June); Education Statistics Annual Abstract for 2006 EC (2013/2014GC); WHO (2014); Ethiopia: Factsheets of Health Statistics.

At country level, the literacy rate (for reading and writing in any language) was 53% for males and 36% for females (CSA and WB, 2013). The literacy rate in the Ethiopian part of the Basin is shown in Table A4.8 below. All areas in the basin have a low literacy level ranging from 18% in Benishangul-Gumuz to 29% in Gambella.

Table 2-2: Adult Literacy Rate Aged 15 Years and Older in the Ethiopian Part of the Basin (%)

| Region | Literacy (>15 years of age) | | |
|-------------------|-----------------------------|--------|---------|
| | Male | Female | Average |
| Gambella | 38.6 | 10.5 | 29.3 |
| Oromia | 29.3 | 16.6 | 22.4 |
| SNNPR | 33.9 | 15.2 | 24.4 |
| Benishangul-Gumuz | 24.9 | 10.5 | 17.7 |

School enrolment in Ethiopia has increased in the last five years. Table 2-3 below presents the current situation and trends in the net enrollment rate (NER) for five years. As noted in the same table, NER increased by 3.3% in 2013/14 from the previous year and by 6.9% from 2009/10.

Table 2-3: NER Trends at Primary Level (Grade 1-8)

| Year | Boys | Girls | Total |
|-------------------|------|-------|-------|
| 2002 EC (2009/10) | 83.7 | 80.5 | 82.1 |
| 2003 EC (2010/11) | 87.0 | 83.5 | 85.3 |
| 2004 EC (2011/12) | 86.8 | 83.9 | 85.4 |
| 2005 EC (2012/13) | 87.5 | 83.9 | 85.7 |
| 2006 EC (2013/14) | 95.1 | 90.1 | 92.6 |

Source: MoE (2015, June); Education Statistics Annual Abstract for 2006 EC (2013/2014GC)

Net enrollment rates for secondary education (9-10) and preparatory (11-12) are provided in Table 2-4 here after.

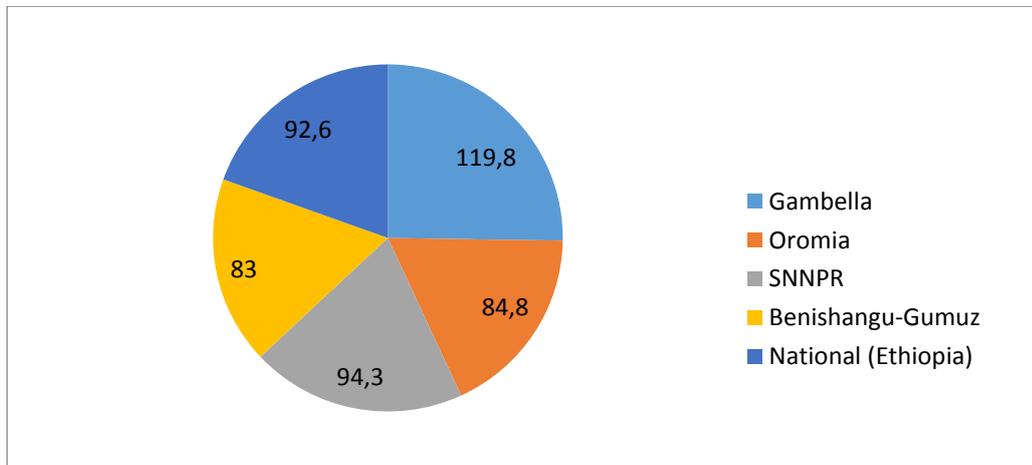
Table 2-4: Net Enrolment Rates for Secondary School (9-10) and Preparatory (11-12)

| Year | Secondary (9-10) | | | Preparatory (11-12) | | |
|-------------------|------------------|-------|-------|---------------------|-------|-------|
| | Boys | Girls | Total | Boys | Girls | Total |
| 2002 EC (2009/10) | 16.8 | 16.1 | 16.4 | 4.1 | 2.8 | 3.5 |
| 2003 EC (2010/11) | 16.4 | 16.2 | 16.3 | 4.5 | 3.9 | 4.2 |
| 2004 EC (2011/12) | 16.9 | 17.6 | 17.3 | 5.0 | 4.6 | 4.8 |
| 2005 EC (2012/13) | 18.8 | 20.1 | 19.4 | 5.4 | 5.2 | 5.3 |
| 2006 EC (2013/14) | 19.6 | 20.9 | 20.2 | 5.5 | 5.5 | 5.5 |

Sources: MOE (2002-2006EC): Educational Statistical Abstracts

The Net Enrolment Rate (NER) by regions in the sub-basin is given in Figure 2-1 below. SNNPR and Gambella rank above the national average (92.6). The NER in Gambella region exceeded 100% which suggests that the education system should put more effort into this region to enhance the on-time participation of students in primary education.

Figure 2-1: Net Enrolment Rate in the Basin's Regions (Grade 1-8) (2013/14)



Source: MoE (June 2015): Education Statistics Annual Abstract for 2006 EC (2013/2014GC).

As can be seen from Table 2-5, as of 2013/14 there were 1,919 Technical Vocational Education and Training (TVET) institutions in Ethiopia. Of this number, 1,350 were public owned, 538 private and 31 owned by NGOs. The number of trainees in 2013 were 404,041, of which 50.2% were males and 49.8% were females. There are 284 TVETs in the Ethiopian side of the sub-basin.

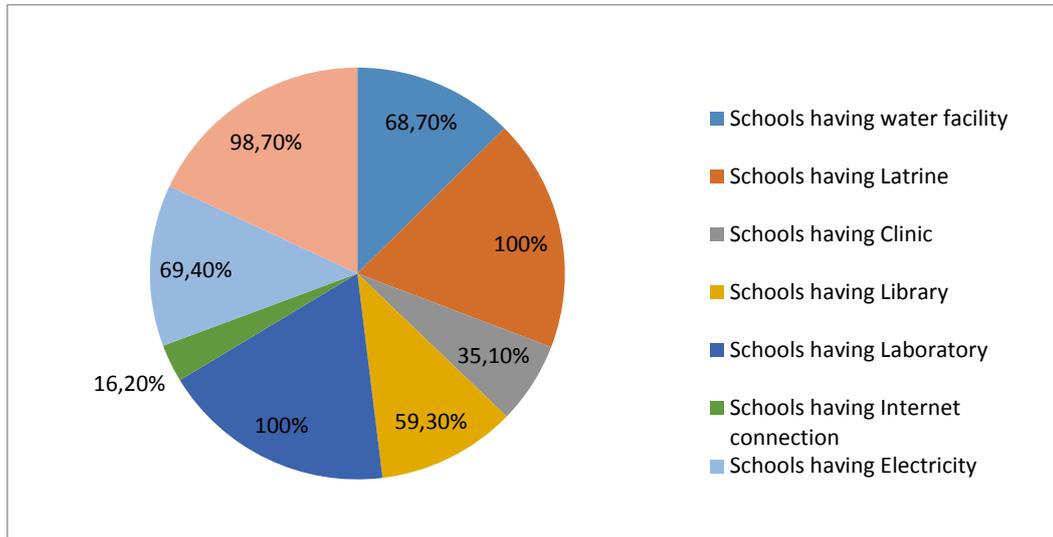
Table 2-5: Number of TVETs in Ethiopia and in the Basin Regions (2013).

| Whole Country and Basin Regions | Distribution of TVETs by Ownership and Basin Regions |
|--|--|
| TVETs in Ethiopia (total) | 1919* |
| Public | 1,350 |
| Private | 538 |
| NGOs | 31 |
| TVETs in Regions in the basin (total): | 284 |
| Oromia | 212 |
| Gambella | 3 |
| Behnisahgul_Gumuz | 4 |
| SNNP | 65 |

Source: MoE, 2014; MoE (2015, June): Education Statistics Annual Abstract for 2006 EC (2013/2014GC).
*The figure includes TVETs from nine regions and from the two city administrations.

Figure 2-2 shows that nearly all schools have facilities such as latrines, laboratories and TVs. About 69% of schools have water and electricity. Only 16.2% of secondary schools have internet connections, and about 59% have a library.

Figure 2-2: Availability of Basic Facilities in Secondary Schools



Source: Computed from Education Statistics Annual Abstract for 2006 EC (2013/2014GC), MOE, 2015.

Recent surveys indicate that the literacy level was 60% for males and 43% for females in 2013-2014. For school-age population (7-18 years of age), about 36% of boys and 34% of girls were not in school. Primary and secondary enrollment rates were similar for both sexes. About 60% were enrolled in primary schools and the remainder (less than 4%) were enrolled in secondary school. (CSA and WB, 2015). Generally, literacy levels of the population are still low, both at the national and sub-basin levels.

Issues and Indicators:

- ▶ Literacy level is still low in the country, as well as in the BAS basin.
- ▶ Much of the school age population (about 36% of boys and 34% of girls) still remains out school.
- ▶ On-time participation of students in primary education is low in Gambella and BG.
- ▶ Shortage of school facilities such as water facilities, library, internet connections, etc.

2.2 HEALTH STATUS AND TRENDS

2.2.1 Health Status

The Ethiopian population is predominantly rural with limited access to safe water, housing, sanitation, food and health care (Table 2-6). Total expenditure on health was 4.7% of the GDP in 2011. Investment in health through development of health infrastructure and improvement of access to clean water sources and sanitation has kept Ethiopia's health status on upward trend in recent decades. The key health indicators are summarized in Table 2-6.

The country has a death rate of 9/1,000 people. The average life expectancy has increased significantly from about 49 years in 1994 to 63 years in 2014. The maternal mortality ratio was 950 per 100,000 live births in 1990, and 420 by 2013. The infant mortality rate decreased from 122 per 1,000 live births to 44/1,000 in 2013. Less than half (49%) of the households have access to an improved water source, and only 24% of the population use improved sanitation.

Table 2-6: Health indicators

| Indicator | In units and % |
|---|---------------------|
| Death rate | 9/1000 |
| Infant mortality (in 2014) | 44/1000 live births |
| Life expectancy (in 2014) | 63 |
| Contraceptive prevalence rate (2010/11) | 28.6% |
| HIV/AIDs (adult prevalence rate) (in 2012) | 1.3% |
| HIV/AIDs (people living with HIV/AIDs) (2012) | 758,600 |
| HIV/AIDs – death (in 2012) | 47, 200 |
| Maternal mortality rate (deaths/100,000 live births (2013). | 420 |
| Antenatal care coverage (2013). | 43% |
| Underweight children under the age of 5 years (2012) | 29.2% |
| Health expenditures (2011) | 4.7% of GDP |
| Physicians density (physicians/1000 pop. (2009) | 0.03 |
| Hospital bed density (beds/1000 pop.) (2011) | 6.3 |
| Population using improved drinking water sources (2012) | 52% |
| Population using improved sanitation (2012) | 24% |

Sources (i) WHO, Regional Office for Africa (2014): Factsheets of Health Statistics: Ethiopia (ii) http://www.indexmundi.com/ethiopia/demographics_profile.html

The health indicators shown above indicates that Ethiopia has made major strides in the past 15 years, investing heavily in health infrastructure and in developing community-based primary care that is sustainable in low-resource settings. By the end of 2010, a total of 33,819 HEWs (Health Education and Welfare) had been trained and deployed, covering 89% of communities in the country. Antenatal coverage (percentage of women receiving at least one ANC visit) has increased from 26.8% in 2000 to 43% in 2013. This gain is partly due to the work of the HEWs.

2.2.2 Nutrition

The poor nutritional status of children and women continues to be a serious problem in Ethiopia. The health sector has increased its efforts to support nutritional practices through health education, treatment of extremely malnourished children, and provision of micronutrients to mothers and children. The 2014 Mini-DHS revealed that there has been a substantial decline in the proportion of children stunted and underweight in the last 15 years and a smaller decline in the prevalence of wasting. Some 40% of children under the age of five were stunted, 9% were wasted and 25% underweight in 2014.

Table 2-7 shows a decreasing trend in the proportion of children stunted and underweight over the four DHS surveys. The prevalence of stunting decreased by 31% (from 58% to 40%) between 2000 and 2014. The decline in the proportion of stunted Ethiopian children shows a reduction in chronic malnutrition over the past 15 years. The proportion of children underweight declined even more substantially, by 39% during the same period. There has only been a small decline in the prevalence of wasting over the last 15 years.

Table 2-7: Trends in Nutritional Status of Children under age 5 (2000-2014).

| Year | Stunting | Wasting | Underweight |
|------|----------|---------|-------------|
| 2000 | 58 | 12 | 43 |
| 2005 | 51 | 12 | 33 |
| 2011 | 44 | 10 | 29 |
| 2014 | 40 | 9 | 25 |

CSA, 2014: Mini DHS Survey

2.2.3 Health Issues

In Ethiopia diseases responsible for deaths and disability (i.e. disease burden) include malaria, prenatal and maternal death, acute respiratory infection, nutrition deficiency, diarrhea and HIV/AIDS. Communicable diseases are the main cause of mortality in the country that account for about 70% of the causes (WHO, 2013), followed by non-communicable diseases (20%) and injuries (10%)¹.

The main health problems in the sub-basin in Ethiopia are diseases which include tsetse, yellow fever, malaria, Onchocerciasis and Schistosomiasis. These diseases are major constraints to economic and social development in the basin. In the future, there is a risk that many of these diseases are likely to increase as a result of development interventions such as irrigation, hydropower reservoirs, expansion of human settlements, and influx of people into the basin due to large-scale farm development and investments. There is a risk that malaria will become perennial instead of seasonal; and tsetse will increase with the increase in the livestock population and with the use of animal traction for crop production.

2.2.4 Summary of Health Issues

Key determinants for health status, and health systems in the basin in Ethiopia include the following:

- ▶ High prevalence of communicable diseases
- ▶ Unsafe drinking water and poor sanitation facilities
- ▶ Nutritional deficiencies among children and mothers
- ▶ Prevalence of non-communicable diseases (blood pressure; cholesterol) and other risks factors for health (smoking, alcohol consumption) and prevalence of physical inactivity among adults.
- ▶ Budget limitations in financing health care
- ▶ Poverty, inequality, and low literacy

1 Ethiopia: Health Profile (undated) <http://www.who.int/gho/countries/eth.pdf?ua=1>

3. GENDER RELATIONS

3.1 STATUS OF WOMEN IN ETHIOPIA

In its commitment to gender equality, the Ethiopian government has issued a national policy of Women in 1993 that granted equal rights to women in the country's constitution. Various policies and affirmative actions have been taken for improving women's status and for their social, economic and political empowerment. These include amending discriminatory provisions in the civil code; establishing women's affairs offices in ministries and in regional states; affirmative measures during recruitment and employment in government and in education and training; increased proportion of women in the house of peoples' representatives, etc.

Women in Ethiopia have a longer life expectancy than men, living on average to age 65, while men live to 62 years (WHO, 2013). The adult literacy rate for women lags behind that of men, though is slightly higher for the younger generation aged 15-24 (WB, 2012). School enrolment is approaching gender parity; boys and girls are attending almost equally. Primary school attendance ratios are 64.3% for boys and 65.5% for girls. Secondary school attendance ratios by sex are almost equal (15.7% of males and 15.6% of females) (WB, 2012).

However, women still have a lower socio-economic status than men in Ethiopia. Out of 136 countries, Ethiopia ranks 118 on the Global Gender Gap Index. In educational attendance, the country is 131 in equity in educational attainment, due to the large gap in literacy rate (29% for women and 49% for men) (WEF, 2013).

3.2 GENDERED DIVISION OF LABOUR IN REGIONS IN THE BASIN

3.2.1 Gambella Region

Women in the region are mostly engaged in household and farm activities. Involvement in off-farm activity such as petty trading is limited. In addition, women are constrained by a lack of capital, lack of access to credit and lack of time due to the burden of household responsibilities. This prevents them from participating fully in income earning activities.

The role of women and men is in most cases similar from one ethnic group to the other. In Anywa/Aniak culture, there is a division of labor among family members. Anywa women are responsible for cultivation, collecting and preparing food, while men clear and prepare land, grow and sell locally grown tobacco.

Among the *Nuer*, there is also a division of labor between men and women. Men look after cattle, cultivate crops, and construct huts. Women take care of household chores such as child care, cooking, milking cows, carrying wood and elephant grass for construction. In addition, women are also involved in grinding grain.

3.2.2 Benishangul-Gumuz Region

Women in this region are the primary agricultural producers, income earners, and responsible for food preparation and care for the family. They are involved in hard labour and work for more than 16 hours in a day, compared to the lax working culture of men. This overstretched time of women affect their health, reduces time for care of infants and elders and preparation of food. Moreover, they lack access to productive assets such as arable land and inputs for production. They do not have access to participate in local decision-making processes and have no access to credit, or to improved technologies. There are also many traditional practices that still exist and particularly affect women,

such as female genital mutilation (among the **Berta and Shinasha** people), early, exchange and levirate marriages, polygamy and abduction. The practice of early and exchange marriage denies women the right to participate in education and participation in wider socio-economic development.

Moreover, during childbirth, **Gumuz** women culturally leave their home and go to the forest, where birth takes place unassisted sometimes with disastrous consequences. Gumuz women are not allowed to stay at home during menstruation. Food avoidance practices due to cultural taboos (avoiding eating eggs and milk among some clans) mostly affect women.

The practice of scarification of their body (for beauty and identity), smoking and similar practices affect both men and women. Many cultural practices have adverse effects on health including the transmission of HIV/AIDS and other communicable diseases.

3.2.3 SNPPR Region

Although the role of men and women from one ethnic group to the other is similar in many respects, in **Shekicho (Mocha)** nationalities, women are prohibited from consuming certain foods, as women do not eat meat, but they only cook. Thus, diets and nutritional status of men and women are determined by gender-based prohibition on preparation and consumption of certain foodstuffs such as meat.

3.2.4 Oromia Region

In **Oromo** communities, women in most cases do all the work except ploughing and sowing. They participate in all forms of crop production and livestock raising. In the absence of a male child, women have the right to inherit their father's property. Even when there are male children, they get a small amount of the property.

4. SOCIAL STRUCTURE AND ORGANIZATION

4.1 CENTRAL, STATE, REGIONAL AND LOCAL GOVERNMENT

Ethiopia has a federal system of government which was established in the 1990s. Ethiopia comprises nine ethnic regional states and two city administrations. The nine states are divided into 84 zones, 725 woredas (districts), and 14,817 rural kebeles (the lowest administrative unit) as shown in the following table .

Table 4-1: Zones, Woredas and Urban/Rural Kebeles by Region

| Region | Zones | Woredas | Kebeles | | |
|----------------------------|-------|---------|---------|--------|--------|
| | | | Urban | Rural | Total |
| Tigray | 6 | 47 | 92 | 600 | 692 |
| Affar | 5 | 30 | 49 | 331 | 380 |
| Amhara | 12 | 139 | 340 | 3,039 | 3,379 |
| Oromiya | 20 | 278 | 540 | 6,349 | 6,889 |
| Somali | 9 | 53 | 154 | 277 | 431 |
| Benishangul-Gumuz | 5 | 20 | 30 | 410 | 440 |
| SNNP | 22 | 145 | 264 | 3,587 | 3,851 |
| Gambella | 4 | 13 | 17 | 207 | 224 |
| Harari | 1 | 1 | 19 | 17 | 36 |
| Addis Ababa | 10 | 10 | 99 | 0 | 99 |
| Dire Dawa | 1 | 1 | 10 | 32 | 42 |
| Special Areas ³ | | 4 | 4 | 8 | 12 |
| Country Total | 95 | 741 | 1,618 | 14,857 | 16,475 |

Source: CSA, 2013.

Each level of administration has an elected head, a council with an executive committee and a sector bureau/office. However, zonal governance structures vary and do not always have a council. Zonal administrators oversee woredas; provide technical assistance to woredas and are responsible for development activities and the provision of public services.

Woredas (districts) are responsible for planning and implementing their own development activities in line with Federal and State policies and plans. They oversee the role and function of kebele administrations under their jurisdiction. Woreda councils consist of directly elected representatives from each kebele in the woreda. The woreda has a dual accountability: upward to its respective zonal and regional executive committees, and downward to its electorate.

The woreda cabinet (also referred as the executive committee) consists of members, mostly from sector bureau chiefs. Woredas also have a court which falls under the authority of regional judicial system. The main constitutional powers and duties of the woreda council and its executive are as follows: (Yilmaz and Venugopal, 2008):

- ▶ Preparing and approving annual woreda development plans and budgets, and monitoring their implementation,
- ▶ Setting tax rates and collecting local taxes and levies (principally land use tax, agricultural income tax, sales tax and user fees,
- ▶ Administering the fiscal resources available to the woreda,
- ▶ Constructing and maintaining rural roads, water points and woreda level administrative infrastructure (offices, quarters),
- ▶ Administering primary schools, health institutions, and veterinary facilities,
- ▶ Managing agricultural development activities, protecting natural resources, etc.

Kebeles are in practice the primary contact level for most Ethiopians. They consist of an elected Kebele Council (in principle 100 members), a kebele cabinet (executive committee of 5-7 persons) a social court (comprising three judges), and the development and security staff posted in the kebele. Kebele executive committees answer to their Woreda Council. The kebeles provide a link between the state and households and are responsible for enforcing the directives from the government ministries. In remote areas, the kebeles may be the only administrative body; and governmental services are delivered through them. The main responsibilities of kebele council and executive committee are (Yilmaz and Venugopal, 2008):

- ▶ Preparing an annual kebele development plan;
- ▶ Ensuring the collection of land and agricultural income tax;
- ▶ Organizing local labour and in-kind contributions to development activities;
- ▶ Mobilizing community members for development works (such as road construction);
- ▶ Resolving conflicts within the community through the social courts.

Community level governance operates through a twin system of traditional and formal leadership involving elders and the formal kebele administration. Ethnic groups in SNNPR, Oromia, Gambella and Benishangul-Gumuz regions have a traditional governance system based on an age or a generation-based system of seniority. At community level, the most senior members of a community will often be a group of elders who are responsible for making key decisions. However, even elders do not have absolute power of decision-making as decision-making often based on agreement and consensus among a group of elders, with input from other members of the community and the formal kebele administration. At household level, decision making is typically the responsibility of the senior male.

4.2 SOCIO-ETHNIC GROUPS IN ETHIOPIAN PART OF THE SUB-BASIN

The Ethiopian part of the sub-basin includes four regional states. The major socio-ethnic groups inhabiting each of these regions are presented in the following section:

4.2.1 Oromia Region

In terms of ethnic composition, the major ethnic groups in the region include Oromo (85%), Amhara (9.1%), and the remaining 5.9% are other ethnic groups (CSA, 2007). Afan Oromo, presently written with Latin characters, is the official language (ONRS, 2011). The large majority in the Oromia part of the sub-basin are Oromo people.

Oromo people occupy compact farming villages on the upland slopes and plateau of Halu Bure Woreda, Alledidu Woreda and Sale Nono Woreda, in the Illu-Ababora zone of Oromia Regional State. Their way of life revolves around subsistence agriculture, trading in local markets, animal husbandry (mainly keeping draught oxen), and the harvest of wild coffee from the forest (NORPLAN, 2006).

Oromos respect their elders and value social responsibility, helping others, bravery, and hard work. Knowledge of history and culture is admired. Oromos can count their family trees through ten generations or more. These values are expressed in *geerarsa* or *mirisa* (singing), storytelling, poems, and proverbs. *Geerarsa* is used to praise good behaviour and discourage inappropriate behaviour.

The Oromo regard harmony and solidarity as a virtue that can help create an indissoluble unity. The idea of Oromo unity incorporates harmony and solidarity between nature, God and human beings. The Oromo oral arts and belief systems emphasize that the existence of an individual is reliant on the stability and continuity of the society. It means that the right, value and attribute of an individual is driven from and shaped within the larger society. Yet personal initiatives and action may not be discouraged in so far as they do not violate the socio-cultural standards (Jeylan, 2006).

The Oromo have an indigenous calendar based on skillful readings of the astronomical configurations of the moon and the stars. They have also indigenous systems of resolving social, economic and political conflicts. They have used these systems to live in peaceful coexistence with neighboring tribal and ethnic groups and to negotiate or redefine their relationships with them.

The *Gada* System is the most common among the largest Oromo ethnic groups. The Oromo have a well-developed age-based system grouping upon which the religious, political, economic and social life of the people is based. The *Gada* system organizes Oromo society into age groups and rotates leadership in egalitarian democracy every eight years and is most remarkable and unique.

The socio-political functions of the *Gada* system, a system of an age grade classes that succeed each other in assuming economic, political and social responsibilities. A complete *Gada* cycle consists of five age-grades. The authority held by the elders is derived from their position in the *Gada* system. According to *Gada*, those people who have entered the *Luba* group (individuals in the 40-48 age group) are considered to be elders.

Elders in the Oromo community form a dominant component of the customary mechanisms of conflict management. The *Lubas* (elders) settle disputes among groups and individuals and apply the laws dealing with the distribution of resources, criminal fines and punishment, protection of property, theft, etc. After *Luba*, men automatically retire from *Gada* and move into an advisory role known as *Yuba*. They receive a great deal of respect as wise experienced authorities and repositories of knowledge and law, but their decisions are no longer final as they had been before. At this point they turn their attention to private family businesses or religious activities, while their sons enter *Gada*, the public service (Junior Worldmark Encyclopedia of World Cultures, 1999)

The *Gada* system has always guided the religious, social, political, and economic life of the Oromo people. The institution is still functional in different parts of Oromia along with the modern administration system. In the *Gada* system, elders were responsible for teaching, resolving conflicts, and nurturing Oromo culture. Seniority is thus an important factor in Oromo relationships. The system helps to exercise democracy, participatory government and leadership.

For example, the Borana use their *Gada* leadership to avoid conflict over water resources. The wells are managed by a council of the clan group which includes a retired *hayyuu* (special counsellors or individuals who hold ritual authority to judge, the *Jallaba* (a local lineage of clan elder or special messenger, the *Abbaa Konfi* (trustee of each well), the *abbaa herregaa* (the coordinator of water use and maintenance) and other members of the traditional leadership (Jeylan, 2006).

4.2.2 Gambella Region

The Nuer, Anywa, Mejeng, Amhara and Keffa ethnic groups form the largest socio-ethnic groups. The Nuer constitute 46.65%, Anywa 21.17%, Amhara 8.42%, Oromo 4.83%, Mejeng 4%, Kefficho 5.05%, and the rest are Kembata, Shekecho, Bench, Tigrians and others (CSA, 2008).

Nuers are predominantly cattle-breeders but they also cultivate flood recession maize and sorghum to supplement their diet of milk and blood, thus cattle are jointly owned by families. The Nuer are pastoralists and transhumance cultivators. They move from the banks of the rivers to the uplands and vice versa, depending on the seasons and the flooding of rivers. The rivers typically flood the plains from June through August, at which time the Nuer and their livestock move to live in the upper woodland areas and cultivate crops for this season. At the end of the floods in October/November, they return with their livestock to the banks of the rivers and stay there until May to herd their animals and cultivate crops on land enriched by the floods. For the Nuer the rivers are vital for their sustenance as well as the survival of their livestock (Desalegn, 2011).

The seasonal movements in "Nuerland" is mainly to find suitable grazing lands for the Nuer's cattle, a practice directly threatened by the villagization process. As agro-pastoralists, the majority of Nuer have little experience living in sedentary settlements. Cattle are uniquely dependent on their livelihood strategy, ethnic identity, and cultural patterns. Nuer language is unique within the Gambella

region, and cannot be understood by other ethnicities. The Nuer are also well-known for their unique cultural practices, including their ritual scarification (HRW, 2012).

The Nuer people belong to Nilotic ethnic group. The majority of Nuer are found in South Sudan but a significant number of Nuers are found in Gambella Region. They inhabit five woredas of the region and are the largest ethnic group consisting of more than 46% of the population in Gambella.

Until very recently, cattle have historically been of the highest symbolic, religious and economic value for the Nuer. Cattle are particularly important due to their role as bride wealth, where they are given by a husband's lineage to his wife's lineage. It is this exchange of cattle which ensures that the children will be considered to belong to the husband's lineage and to his line of descent.

The classical Nuer institution of ghost marriage, in which a man can "father" children after his death, is based on this ability of cattle exchanges to define relations of kinship and decent. In their turn, cattle given over to the wife's patrilineage enable the male children of that patrilineage to marry, and thereby ensure the continuity of her patrilineage.

The Nuer in Ethiopia share similar culture with the Nuer in South Sudan. The Nuer have marks called "gaar" in the local dialect. The marks are placed on the forehead of male individuals only. Nuer females do not have anything on their faces to identify them from other women in the region. These marks on male faces do not only serve as identical symbols which distinguish them from other ethnic groups in the region or from other tribes found in South Sudan, but they also initiative another function. They act as a prerequisite for marriage and joining or participation in the tribal or clan wars. Those who don't have marks on their face cannot either get marry nor participate in communal strife as they are deemed too young regardless of how mature a person might be even if they might be well past their twentieth birthday.

However, beliefs in the symbolic power of marking no longer exists among Nuers in Ethiopia. Globalization has made the world smaller and people are now aware that strength and power is not only for those who have markings on their face. As a result, the practice of facial marking is being abandoned.

The Anywa live in dispersed settlements. They are dependent mainly on the cultivation of the land and crop production (maize, sorghum, sweet potato and groundnuts). They also supplement their income with fishing on riverbanks, with hunting as a source of meat, honey production, and access to a wide variety of forest resources and grasslands around them.

Cultivation is based on the use of hoe and other hand tools, and most of the time the produce is not sufficient for the needs of families the whole year round. Therefore, the period from January to May is known as the "hardship season". April and May is the difficult and "hungry season" and during this period people may be reduced to starvation. During the scarcity of food, families depend on wild foods collected from the forests and to live through the hardship and hunger seasons. The Anywa eke out a precarious existence and depend greatly on the ecosystem and surrounding natural resources for their survival (Desalegn, 2011; UNCEF, 2006).

The Anuak are a Luo Nilotic Ewhic group. The Anuak in Ethiopia are the second largest ethnic group occupying most parts of Anuak zone of Gambella region. The Anuak share some cultural traits with the Nuer and the largest ethnic groups in the region have a mutual understanding. Cultural similarities exist between the Nuer and Anuak, but in a limited extent even though these tribes are both from Nilotic group.

The Mejeng are shifting cultivators who also practice hunting and extract honey from the forest. They occupy the escarpment west of Met down to Gog, a landscape of broad-leaved tropical rain forests. The Mejeng inhabit the area which is the most densely forested in the region and they depend on forest resources for their livelihood. They cultivate maize, sorghum, godere (cassava), taro, yams and pumpkins, spices, herbs and peppers, sesame, beans, peas and pulses. Their principal source of livelihood, and the distinguishing feature of their culture, is bee-keeping. Mejeng families tend numerous hives, often more than fifty. They are particularly noted as honey producers for which the

forest ecosystem is critical. Selling honey and clay pots provides their main - almost only - cash income.

The Mejeng/Majang are found in southeastern Gambella bordering SNNPR. They are the third largest ethnic group accounted for 4% of the Gambella population. The Mejeng inhabit mainly in Godere and Mengesh woredas. They live in scattered communities in the forests of South-western Ethiopia and are often interspersed with other ethnic groups. Their livelihood activities include slash and burn farming, hunting, fishing and bee keeping. They prepare a special drink made by boiling coffee leaves with a mixture of spices. While the Mejeng traditionally shifted their residence often, they have recently established permanent villages.

For all population groups the ecosystem provides a variety of essential resources, including wood for tools, grass for homesteads, wild food, medicinal and other useful plants, and access to water resources (NORPLAN, 2006; Desalegn, 2011).

The Opuo and Komo tribes are smaller in number compared to the major indigenous ethnic groups. The Opuo depend on sedentary cultivation for their livelihood, while the Komo depend on shifting cultivation (NORPLAN, 2006). These people depend heavily on the natural resources for their livelihoods. They cultivate a variety of crops using simple tools and shifting cultivation.

Gambella region is one of the main regions where resettlement programs of the previous government took place. Many highlanders have settled in Gambella, Gog, Jor, Abobo and Godere woredas. Late in 1993, after the demise of the Derg, there were 13,000 settlers in Abobo Woreda with an unknown number in Godere Woreda. In addition, there have been large numbers of refugees settling in Gambella due to the civil war and other conflicts in Sudan (NORPLAN, 2006) and later in South Sudan. A critical issue is the relationship between indigenous people and recent settlers/migrants.

4.2.3 Benishangul-Gumuz Region

The region is home to diverse ethnic groups, of which five are indigenous. The indigenous ethnic groups according to size are Berta (26.7%), Gumuz (23.4%), Shinasha (7.0%), Mao (0.6%) and Komo (0.2%). Significant numbers of Amhara (22.2%), Oromo (12.8%) and others (7.1%) also live in the region. There are also significant numbers of settlers in the region from various parts of the country as a result of resettlement programs carried out by previous governments.

“Gumuzland” is endowed with vital natural resources such as abundant land with fertile soils, extensive forest and vegetation with diverse plant species that also serve as a habitat for wildlife, and ample perennial water resources. The Gumuz base their livelihood on these natural resources, deriving their livelihood from agriculture (cultivation of crops and rearing livestock), hunting and gathering wild food. Shifting cultivation alongside gathering wild forest food, raising livestock (mainly goats and chickens), hunting, fishing, collecting honey, handicrafts, and local market exchange are major elements of the Gumuz subsistence economy.

Agriculture accounts for about 93.2% of the people’s livelihood. Individuals also engage in income-generating activities to supplement food gaps. These activities include artisanal mining, sale of firewood and charcoal, day labor, pottery and similar activities.

The Gumuz have a special relationship to their land and the environment. They possess knowledge about their natural resources and environment based on observation and experience. Indigenous knowledge is important to the Gumuz system of natural resource management which can be best understood along with their traditional belief systems. The Gumuz hold that vital natural/land resources are sacred and that natural resources are a gift, blessing and creation of *Yamba* (the supreme deity), which is the source of all life and livelihoods to the past, present and future generations. *Yamba* endows the Gumuz with knowledge of proper use, management and a responsibility of passing the natural resources to the next generation. Different resources have their own *Missa* (poly-spirits) that ensure their proper use and management; violations result in severe punishments and retribution from the respective *Missa* (Woldesilassie, 2007).

The Berta are mostly Muslim and many speak fluent Arabic. They are very conservative in their religion and culture. Most of them speak Bertigna/Rutanigna - the indigenous language as well as Arabic, Amharic and Oromifa. They have traditional customs that are similar to those of their Nilo-Saharan neighbours. Ritual specialists called *neri*, who have healing and divination powers, still exist and can communicate with evil spirits (*shuman*).

Rain-making rituals are also found among the Berta, as among other Nilo-Saharan and Nilotic communities. In their wedding ceremonies music is played by males with large calabash trumpets (*was'a*). The Berta decorate their faces with scarifications, usually three vertical lines on each cheek, which they consider to be symbols of God (each line is interpreted as the initial letter of Allah, the Arabic *alif*). The Berta are slash-and-burn agriculturalists. Their staple food is sorghum, with which they make porridge in ceramic vessels. Working parties play an important role in Berta society. When somebody needs to build a house or cultivate a field, he calls his neighbors for help and provides them with beer and food.

4.2.4 SNNPR

There are about 56 ethnic groups inhabiting SNNPR. These ethnic groups reside in their own administrative/geographical area (zones), special woredas or woredas having unique language, culture and other social values. More than 80 indigenous and non-indigenous languages are spoken in the SNNPR. Among them, about 50 indigenous languages are spoken by different ethnic groups.

The ethnic composition of the population includes seven major languages (Sidamigna, Wolaytigna, Hadiyigna, Siltigna, Goffigna, Guragigna, and Kaffigna) which are widely spoken by 60.7% of the region's population. Sidamigna and Wolaytigna are the two major languages spoken by 17.3% and 11.1% of the total population, respectively. In urban areas, Amharic is spoken by 39.8% of the total urban population and followed by Wolaytigna and Hadiyigna language spoken by 11.8 and 5.2% of the urban population, respectively (Aweke, 2011).

In SNNPR, Benchi Maji, Keffa and Sheck zones fall in the Ethiopian part of the basin. The seven largest ethnic groups in the Bench Maji Zone were the Bench (45.11%), the Me'en (21.36%), the Amhara (8.23%), the Kafficho (6.55%), the Dizi (5.17%), the Sheko (4.21%), and the Suri (3.88%); all other ethnic groups made up 5.49% of the population. In Keffa Zone the four largest ethnic groups are the Kafficho (82.72%), the Bench (5.05%), the Amhara (3.67%), and the Oromo (3.5%). Other ethnic groups make up 5.09% of the population. The seven largest ethnic groups reported in Sheka zone were the Shakacho (32.41%), the Amhara (22.17%), the Kafficho (20.16%), the Oromo (7.39%), the Bench (5.23%), the Sheko (4.24%), and the Mejeng (1.73%); all other ethnic groups made up 6.67% of the population (CSA, 2007 Census).

The institution of *Sera* is operative among many ethnic groups on SNNPR. The *sera* institution has been operative in one form or another among, Gamo, Gofa and among Oromos in some localities. The institution of *Sera* has been operative among many ethnic groups, particularly in the SNNPR region (e.g. among Sidama, Gurage, Walaita, Kambata, Gamo, Gofa, and Hallaba) and as well as among Oromos in some localities. Traditionally, it is an ethical and moral code. It provides social security to members and provides a means of decision making through consensus. It obliges the individual to accommodate the majority, to seek harmony and consensus rather than an individual opinion and personalized justice.

Sera mainly relates to domestic communal life and traditionally is a means of consensus and consent over individualism. It also requires social collaboration and cooperation from its members, for example, when a house is built or a funeral is held. It regulates the contributions and obligations within the community.

4.2.5 Religions affiliation

In the 2007 census, the 'question on region' included six religions; Orthodox Christian, Protestant; Catholic, Muslim/Islam, traditional and others. Religious groups reported in the 2007 Census in the Ethiopian part of the Basin are shown in Table 4-2 below.

In Gambella region, the majority of the people (70.1%) are protestants; 16.8% Orthodox Christians; 4.8% Muslims, 3.4% Catholic; while 3.8% practice traditional beliefs. Other religious groups make up 1.1 % of the population.

In Benishangul-Gumuz 45% of the population were Muslim, 33.3% Orthodox Christians, 13.5% Protestant, and 7.1% practice traditional beliefs. Other religious groups made up 1.1% of the population.

Table 4-2: Distribution of Religious Groups in Ethiopian Area of the Sub-Basin

| Region | Religious affiliation (%) | | | | | |
|-------------------|---------------------------|-------------|----------|--------|-------------|--------|
| | Orthodox | Protestants | Catholic | Muslim | Traditional | Others |
| Gambella | 16.8 | 70.1 | 3.4 | 4.8 | 3.8 | 1.1 |
| Oromiya | 30.4 | 17.7 | 0.5 | 47.5 | 3.3 | 0.6 |
| SNNPR | 20 | 55.5 | 2.3 | 14.1 | 6.6 | 1.5 |
| Benishangul-Gumuz | 33.3 | 13.5 | - | 45 | 7.1 | 1.1 |

Source: CSA (2007): Population Size and Characteristics, Part I

According to the 2007 census, the religious composition of the population of Oromia Region was 47.5% Muslims, 30.4% Orthodox Christians, 17.7% Protestants, and 3.3% traditional, 0.5% Catholic, and 0.6% were followers of other religions. In SNNPR 55.5 % of the population were Protestants and 20% were Orthodox Christians. Of the total population, 14.1% were Muslims, 6.6% traditional worshipers, 2.3% catholic and 1.5% were followers of other religions. Generally, in terms of religious composition, protestants are the majority in Gambella and SNNPR, while Muslims are the majority in Oromia and Benishangul-Gumuz.

4.2.6 Implications for Development Initiatives in the basin

- ▶ Many indigenous peoples, with their distinct cultures, values and belief systems, and cultural heritage, inhabit the Ethiopia part of the basin. The needs, livelihoods and priorities of the indigenous people in the basin are a key factor in development planning.
- ▶ The great diversity in culture, language, religion and economic activities of local communities suggests the existence of various interests, demands and potential for conflicts at the local level.
- ▶ The existence of a variety of traditional knowledge, natural resource management and conservation systems can be used in planning interventions for protecting and conserving natural resources such as water.
- ▶ Relationships among the various ethnic groups are characterized by both cooperation (reciprocity) and conflicts, which vary over space and time, depending on the demographic and socio-economic dynamics in the Ethiopian part of the sub-basin.
- ▶ Traditional governance systems and conflict resolution mechanisms can be entry points for addressing inter and intra-ethnic conflicts.
- ▶ High dependence of indigenous people, ethnic groups, and communities on natural resources (water, land, forests, etc.) for their livelihoods and economic activities suggests that any development impacting local natural resources would have far-reaching implications on the lives and livelihoods of the indigenous communities.

5. CONFLICTS

5.1 INTRODUCTION

Even though there is relative peace and stability in the Ethiopian part of the sub-basin, both inter and intra ethnic conflicts and sporadic border clashes are frequently occurring. The main ones include ethnic/tribal, natural resource-related, and political ones.

5.2 TYPES OF CONFLICTS

As described above, there are a number of ethnic groups in the Ethiopian part of the basin. Relationships between or among ethnic groups include both cooperation and conflict. Elements of cooperation include reciprocity and complementary socio-economic exchanges. Yet the dominant pattern of inter-groups relations in the basin, especially in Gambella and Benishangul-Gumuz, is conflict which manifests itself in the destruction of villages, riots in schools; attacking public transport to the killing of individuals to humiliate the group to which they belong (Dereje, 2009). Table 5-1 shows the main inter and intra-ethnic conflicts in the Ethiopian part of the basin.

Table 5-1: Inter-and Intra-ethnic Conflicts in the Ethiopia Side of Sub-Basin

| Region | Level of Conflict | |
|---|--|---|
| | Inter-ethnic conflict | Intra-ethnic conflict |
| Gambella | Anuak and the Nuer | Regional cleave among Anuak clans (Lull/Openo divide). |
| | | Resource conflicts among Nuer clans (i.e. Gaajak and the Gaajak). |
| | Anuak and the Majang | Party politics among the Mejeng clans: (emerging separate identity of the Thiang vis-a-vis the Gaajak). |
| | Anuak with Nuers of Thiang sub-clan | Nures with Chengajawa sub-clan and with Lou Nuers. |
| | | Lou Nuers from South Sudan with Nuers in Gambella. |
| | | Gaajak/Gaajok divide (in South Sudan). |
| Resource conflicts among the five Gaajak clans (e.g. Thiang with two Gaajak sections – Cieng Reng and the Cieng Nyajani). | | |
| Benishangul Gumuz | Gumuz and Bertha conflict. Gumuz and Amhara conflict. Conflicts between indigenous people and settlers over land resource. Gumuz and Oromo conflicts. Conflicts between indigenous and migrants. | Intra-clan conflicts among Gumuz. Intra-ethnic conflicts due to adultery. The Bertha inter-familial disputes (intra-Bertha division). |
| Oromia | Oromo and Gumuz conflict over regional boundaries. | |
| SNNPR | Mejeng and Sheka conflict over land resources. Mejeng and Oromo conflict over land resources. Conflict among Surma, Dizzy and other ethnic groups. | |

Gambella is the most conflict-ridden region in the Ethiopian part of the basin. Although there are examples of reciprocity and complimentary socio-economic exchanges, the dominant pattern of inter-group relations in the region is conflict.

The Anuak-Nuer conflict is the most prominent of all conflicts in the region. It dates back to the second half of the 19th century when a section of the Nuer (Jikany) migrated to the east from southern Sudan. The main driving force of Nuer territorial expansion are access to and control over vital natural resources, cultivation and pasture lands along the tributaries of the Sobat.

5.2.1 Intra-ethnic Conflicts

Intra-ethnic conflict in the Gambella region is evident in the regional cleavages among the Anuak; party politics among the Mejeng and the resource conflict among the Nuer clans. The main fault line in Anywaa politics is the Lull/Openo divide, those who live along the Baro River and the forest region, respectively. Struggle for political power among the Anuak is often framed in the language of Lull against Openo.

There is also tension among the Mejeng on issues related to political power within the MPDO (the Mejeng People Political Organisation) and the divergent reactions of the Majang to land encroachments by their neighbours.

The most intense intra-ethnic conflict is among the Nuer. This conflict is expressed at two levels: political competition among the tribal and clan elites and the conflict over scarce natural resources among the villagers. The Nuer who live in the Gambella region (the Jikany) are divided into three tribes: The Gaajak, the Gaajok and the Gaanguang. The mode of political relation among the three tribes is competitive and at times very hostile. This is true particularly between the Gaajak and the Gaajok. The Gaajak resent the dominant political status of the Gaajok in the wider Nuer society particularly in Southern Sudan (Dereje, 2009).

Due to their size in Gambella Region and a higher degree of incorporation into the Ethiopian state system, the Gaajak occupy a dominant status in Nuer politics in Gambella. Intra-ethnic identity politics among the Nuer is also acted out in the emerging separate identity of the Thiang vis-a-vis the Gaajak. Immigration of the South Sudanese Nuers into Ethiopia is a major factor contributing to tension and land conflicts, and often sparks armed inter-ethnic conflicts in which Anyawa have almost always been the losers (UNICEF, 2006)

In Benishagul-Gumuz there are two major interrelated political conflicts that have gripped the region in the last few years - the Bertha and Gumuz dispute regarding political power, and the demands of the non-titular ethnic groups in the Assosa Zone of the region for political representation. There is competition for political dominance and for advancing the economic and political interests of each ethnic group. Bertha inter-familial disputes and intra-Bertha divisions is the political power against the Gumuz which has led to tensions between Bertha and the Gumuz ethnic groups.

In addition, the adoption of the federal system and the creation of the Benishangul-Gumuz region led to changes in inter-ethnic relationships between the titular and the non-titular communities. The different groups accepted the formation of the region differently. The historically marginalised titular ethnic groups not only embraced the new system warmly but also seek to use its structures to advance their economic and political interests at times at the expense of the non-titular communities (Dereje, 2001). The settlers, in contrast, 'felt that they were treated as second-class citizens with restricted rights to live and work', Therefore, there have been tensions in the relationships between the two groups.

Intra-ethnic conflicts are mainly caused by adultery, belief in evil eye, incest, refusal to pay debt, abducting girls, and claims for return or replacement for exchange sisters in marriage (among Gumuz). Once the intra-ethnic clan conflicts emerge and begin claiming lives, the chance of easy resolution remains difficult due to cyclical revengeful actions. It was observed during in 2010s that lack of security was the prior problem for many people in different woredas.

Local-level conflict is an important development issue in woredas such as Dibate and Mandura. Conflict was listed as the number one problem out of eleven socio-economic problems identified by local communities in Dibate and the second important problem in Mandura Woreda. Conflicts are mostly between the indigenous population and resent settlers. Intra-clan conflicts are also common among the indigenous communities. Major causes of conflicts are encroachment, murder, theft and land disputes. Therefore, conflict resolution and management has to be understood and addressed in future development interventions in the basin.

Natural resource-related conflicts are also common. Major causes of inter-ethnic conflicts are often due to encroachment on land and over the use of natural resources. The influx of government-sponsored settlers during the Derg regime, encroachment by highland farmers and other immigrants into the sub-basin has created hostile attitudes between the settlers and indigenous people, which often leads to conflicts. Degradation of land resources in resettlement areas and encroachment are forcing settlers to move into the lands which are relatively well preserved, which also creates mistrust and conflict.

In recent years, the expansion of private farms (large-scale investments) and the influx of outsiders has created tension and mistrust between the indigenous people and investors, migrants and laborers. All conflicts have an impacts on production, marketing, loss of lives and assets, disruption of social relationships (like sharecropping, borrowing money, etc.), land use rights of the indigenous population, forest and forest products which the local people depend on for their livelihoods. Conflicts also discourage donors and development partners and negatively affect sustainable development and food security. Therefore, conflict management and resolution should be a part of development and food security strategies. Conflict resolution mechanisms and strategies involving key stakeholders, including the Government will be necessary.

In the Bench Maji zone in SNNPR conflict among the Surma, Dizzy and other ethnic groups is common and has a long history. This conflict is a major causes of human and livestock death and injury. Cattle raids, destruction of property, disruption of livelihoods, environment and displacement of people due to conflicts has been the most frequently observed phenomena in these areas.

5.3 SUMMARY

- ▶ There are various forms of social and political conflicts which affect development activities in the Ethiopian part of the basin. They are also serious threats to the human and physical security of the local communities.
- ▶ There are political conflicts among ethnic groups seeking political and economic dominance.
- ▶ Resettlement and villagization programs have serious effects on relationships among ethnic groups as well as between settlers and indigenous people.
- ▶ There are tensions between local people, migrants and farm laborers due to competition over resources, mainly over land and other economic assets.
- ▶ Large-scale land investments can negatively affect local peoples' access to and control over livelihood resources (land, water, pasture, and forests and forest products, etc.).
- ▶ There are conflicts between ethnic groups due to unclear borders of their woredas.
- ▶ Spillover effects of conflicts from South Sudan into the Ethiopia part of the basin affect Gambella and Benishangul-Gumuz in particular.

5.4 CONCLUSION

The Ethiopian part of the basin, especially Gambella and Benishangul–Gumuz regions, is subject to various forms of conflicts, including inter and intra-ethnic conflicts; natural resource-related conflicts and political conflicts. The first two are common and show an increased trend due to a number factors, including competition over resources; social and culture factors; land allocation for large-

scale commercial farms/investments; involuntary relocation of local people; influx of outsiders into the fertile lands in the basin; flooding and drought; climate change effects, etc. Therefore, conflicts in any forms are major constraints to social and economic development the basin.

6. LAND TENURE

6.1 INTRODUCTION

Article 40 (3) of the Constitution provides for the public ownership of both rural and urban land as well as natural resources. The Constitution provides a mandate for the Federal government to enact laws for the utilization and conservation of land and other natural resources, including water resources, while regional states have mandates to administer land and other natural resources in accordance with federal laws. This means that regions have to abide by the laws of the federal government in administering and managing water and land resources in their regions.

In Ethiopia all land is owned by the state. Equal access, use, transfer, administration and control to/over land are provided for in the Constitution. Persons who earn their living by farming have the right to use land freely. Pastoralists have the right to free land for grazing and cultivation. Federal land laws grant all inhabitants in rural areas a right to access land for their livelihoods.

While land can be leased to private individuals, they cannot own it. The Constitution provides for equal access, use, transfer and administration of land. It grants access to agricultural land for rural residents and allows all inhabitants to utilise land for farming. Farmers and pastoralists are granted lifetime 'holding rights', giving them rights to the land except for its sale and mortgage.

In Gambella and Benishangul-Gumuz, land, grazing and other resources are typically common property administered at the clan level. Each clan manages its resources collectively based on customary principles and norms. Although each clan member has an inalienable use right over the resources, intra-clan customary laws regulate these use rights. In Gambella and Benishangul-Gumuz land is allocated by the kebele and is administered by clans.

6.2 WATER SECURITY

The fundamental key in the assessment of climate change's impact requires a greater understanding of the level of water stress, its accessibility and the quantity and quality uses, drought impacts and livelihood strategies. Water security should be understood as the nexus between the availability, accessibility and use of water. The concept is defined as 'availability of, and access to water in sufficient quantity and quality to meet livelihood needs of all households throughout the year.

6.3 FOOD SECURITY AND HUMANITARIAN ASSISTANCE

In Ethiopia, food security greatly depends on the amount and distribution of rainfall. Agriculture is the foundation of the economy, employing some 80% of the country's population. Some 85% of the population live in rural areas and is therefore mainly engaged in rain-fed subsistence agriculture. Food production is dominated by small-scale farmers who depend on rain-fed and traditional agricultural practices. This renders farmers highly vulnerable to climate variability. Household food security is largely determined by external factors such as rainfall patterns, land degradation, climate change, population density, low levels of investment and the market for agricultural produce (Ndaruzaniye, 2011).

6.4 SECURITY OF LIVELIHOODS

Growing evidence shows that climate change is increasing the frequency and intensity of climate-related hazards, and hence, the level and patterns of interrelated risks, particularly water and food security, exacerbate levels of vulnerability, mainly for rural communities. Ethiopia remains one of the world's least developed countries, ranking 157 out of 169 in the 2010 UNDP Human Development

Index. Climate variability is now imposing a significant challenge on communities in the basin by affecting water and food security. Changing weather patterns, in addition to other environmental stresses, including overexploitation of land and deforestation, have increased soil degradation and led to water stress, drought, and crop failure (Ndaruzaniye, 2011).

In Ethiopia, securing water for production is integral to obtaining adequate food and income which are necessary for food security. Water insecurity can affect wider household production and income earning opportunities than agricultural production alone. Ethiopia depends greatly on the agricultural sector for income, foreign currency and for the food security (Ndaruzaniye, 2011).

6.5 SUMMARY OF ISSUES

- ▶ *Land tenure insecurity* due to allocation of land for various development initiatives (land investment, resettlement, villagization, irrigation schemes and hydropower projects; fear of anticipated land distribution, etc).
- ▶ Scarcity of water due to competing demand for existing water resources; drought and impacts of the climate change on water sources.
- ▶ *Livelihood insecurity* due to loss key resources (farm land, pasture and water), shocks and inflation.
- ▶ Increased food insecurity due to failure of crops, impacts of drought, increased food prices, etc.

6.6 CONCLUSION

The objective of any development initiative in the Ethiopian side of the basin should focus on addressing issues of access to productive resources (land and grazing land), water security, livelihood enhancement and food security.

7. ECONOMIC STATUS

7.1 OCCUPATIONS AND HOUSEHOLD INCOME

7.1.1 Introduction

The main occupation of rural households in Ethiopia are farming and livestock rearing. Some households are also engaged in non-agricultural enterprises. Main sources of income are crop and livestock sales. Livestock sale is an important source of cash income for many households. Livestock sales is also an important coping mechanism in coping with shocks. Non-farm activities are also additional sources incomes, especially for households in small towns. These sources of household incomes are briefly described below.

7.1.2 Agriculture

A rural socio-economic survey indicated that at national level, 79% of households cultivate land, 76% rear livestock, 72% are engaged in both livestock and farming. The study also showed that 83% of households practice at least either of the two agricultural activities and about 17% of households neither do farming nor rear livestock. Differences exist between rural areas and small and large towns. Around 39% of small town and 87% of households in large town are not engaged in agricultural activities (ERSS, 2015).

The most common livestock type owned is cattle. The ERSS found out that about 90% of livestock owning households reported to own at least one head of cattle.

7.1.3 Non-Farm Activities

Non-farm enterprises (NFE) are important in the lives of households and their number is increasing. Nationally, about 28% of households have one or more NFE. NFEs are much more common in urban than rural areas. About 60% of households in small towns and 34% of households in large towns reported having one or more NFE, compared with 26% among rural households (ERSS, 2015).

Table 7-1 below shows non-farm enterprises (NFE) by type of activity and place of residence. The three most important NFE activities are non-agricultural businesses or services from home including shops (about 8% of households), selling processed agricultural products including food and local beverages (6% of households), and businesses such as selling goods on a street or in a market (about 5% of households).

Table 7-1: Percent of households reporting one or more NFE by type of NFE, region and place of residence, Ethiopia 2014

| Region | Any NFE | Non-agricultural business/ services from home/ shop | Processed agricultural products (flour, tella, enjera) | Trading business on a street or in a market | Firewood, charcoal, etc. | Professional | Taxi/ pick-up truck | Bar/ restaurant | Other small business |
|--------------------|---------|---|--|---|--------------------------|--------------|---------------------|-----------------|----------------------|
| Tigray | 22.5 | 8.9 | 3.3 | 2.8 | 0.2 | 0.2 | 0.5 | 1.2 | 4.2 |
| Amhara | 24.1 | 8.2 | 6.0 | 2.9 | 0.8 | 0.0 | 0.7 | 0.3 | 3.4 |
| Oromiya | 26.5 | 7.9 | 5.7 | 3.6 | 1.9 | 0.1 | 0.5 | 0.1 | 5.2 |
| SNNP | 34.4 | 7.2 | 7.8 | 12.1 | 3.4 | 0.0 | 0.6 | 0.2 | 4.7 |
| Addis Ababa | 23.1 | 12.3 | 1.0 | 3.1 | 0.3 | 0.3 | 1.3 | 1.5 | 3.6 |
| Other regions | 36.5 | 12.2 | 4.9 | 3.1 | 7.4 | 0.2 | 1.7 | 0.7 | 5.0 |
| Rural | 26.0 | 6.7 | 6.1 | 4.7 | 2.3 | 0.0 | 0.4 | 0.1 | 4.1 |
| Small town (urban) | 60.4 | 25.3 | 13.7 | 12.0 | 4.0 | 0.5 | 1.4 | 2.4 | 10.4 |
| Large town (urban) | 33.9 | 15.5 | 4.1 | 6.0 | 0.6 | 0.4 | 2.3 | 1.3 | 6.2 |
| Country | 27.6 | 8.4 | 5.8 | 5.0 | 2.0 | 0.1 | 0.7 | 0.4 | 4.5 |

Source: ERSS, 2015.

7.1.4 Other Sources of Income

The various forms of non-agricultural income received during the 12 months before the survey are shown in Table 7-2. Cash transfers and gifts by relatives remain the most important form of non-agricultural income. Twelve percent of households reported receiving cash transfer and gifts with an average amount of 4,345 Birr. Food transfers and non-food transfers were also received by 8% and 5% of households respectively. With the exception of income from rental of agricultural equipment and tools (7% of households), other sources of income were reported by very few households.

Table 7-2: Households reporting other income and income received by source, 2014

| Forms of non-agricultural income. | Households reporting source (%) | Average income received in the last 12 months |
|--|---------------------------------|---|
| | | Birr |
| Transfers/Gifts (from individuals) | | |
| Cash | 11.7 | 4,345 |
| Food | 8.3 | 995 |
| Non-food/in-kind | 5.2 | 1,508 |
| Rental income from | | |
| Land | 7.3 | 1,569 |
| Shop, store, house, car, truck, other vehicle | 3.8 | 4,381 |
| Transport animals | 0.7 | 1,122 |
| Agricultural tools | 0.8 | 2,084 |
| Pension and investment income | | |
| Interested or other investment income | 1.3 | 1,583 |
| Pension income | 2.0 | 2,646 |
| Revenue from sales of assets | | |
| Income from real estate sales | 1.1 | 4,698 |
| Income from household non-agricultural asset sales | 0.6 | 3,498 |
| Income from household agricultural/fishing asset sales | 0.2 | 3,419 |
| Other income | | |
| Inheritance, lottery, gambling winnings | 0.7 | 8,546 |

Source: ERSS, 2015.

The main sources of income are shown in Table 7-3. Private transfers are more important in large town than in small towns and rural areas (37% compared to 27% and 15% respectively). Rental income is more widespread in Amhara (23%) but rare in SNNP and other regions. More than 18% of households in Addis report income from pensions and investment, compared to only 3% at national level.

Table 7-3: Households reporting other income by source, region, and place of residence, Ethiopia 2014 (%)

| Region/Residence | Transfers/gifts | Rental income | Pension and Investment | Revenue from sale of assets | Other income |
|--------------------|-----------------|---------------|------------------------|-----------------------------|--------------|
| Tigray | 18.8 | 12.0 | 5.4 | 5.1 | 0.8 |
| Amhara | 19.5 | 23.1 | 4.2 | 0.8 | 1.8 |
| Oromiya | 17.7 | 8.4 | 1.4 | 0.6 | 0.3 |
| SNNP | 18.5 | 4.8 | 1.6 | 5.0 | 0.3 |
| Addis Ababa | 22.0 | 14.3 | 18.3 | 0.8 | 0.0 |
| Other regions | 22.1 | 7.9 | 1.7 | 2.1 | 0.0 |
| Rural | 14.9 | 11.5 | 1.9 | 2.0 | 0.6 |
| Small town (urban) | 27.2 | 15.7 | 6.7 | 4.7 | 1.2 |
| Large town (urban) | 37.5 | 14.7 | 9.5 | 1.0 | 1.0 |
| Country | 18.9 | 12.1 | 3.2 | 1.9 | 0.7 |

Source: ERSS, 2015.

7.1.5 Public Assistance

Governmental and non-governmental agencies provide food and cash assistances to food insecure households in Ethiopia. One of the programs of assistance is the Productive Safety Nets Program (PSNP) which targets chronically food insecure woredas. About 4% of rural households and 2% of small town households report receiving assistance under the program. Its coverage varies by region, with 12% of households in Tigray, compared with 3% nationally. In addition to PSNP, households also received food and non-food assistance for free or in conjunction with food-for-work or inputs for

work programs. Free food was the most prevalent, with coverage of 5% of rural households and 6% of small town households.

Table 7-4: Households receiving assistance by region and place of residence, 2014 (%)

| Region/residence | Source | | | | |
|--------------------|--------|-----------|--|-------------------------|-------|
| | PSNP | Free food | Food-for-work or cash-for-work program | Inputs-for-work program | Other |
| Tigray | 11.8 | 4.5 | 4.3 | 0.0 | 1.3 |
| Amhara | 4.2 | 4.1 | 2.9 | 0.1 | 1.2 |
| Oromiya | 0.9 | 4.9 | 1.5 | 0.0 | 0.5 |
| SNNP | 3.3 | 0.5 | 1.1 | 0.0 | 0.5 |
| Addis Ababa | 0.0 | 0.7 | 0.3 | 0.0 | 1.4 |
| Other regions | 3.6 | 23.7 | 4.9 | 0.1 | 0.4 |
| Rural | 3.5 | 5.3 | 2.6 | 0.1 | 0.7 |
| Small town (urban) | 1.9 | 6.3 | 1.0 | 0.1 | 5.1 |
| Large town (urban) | 0.7 | 2.0 | 0.2 | 0.0 | 1.0 |
| Country | 3.0 | 4.8 | 2.1 | 0.0 | 0.8 |

Source: ERSS, 2015

7.2 EXPENDITURE

7.2.1 Food

In rural areas and small towns, the highest household expenditure is on food items. Cereals (rice, sorghum, barley, wheat) are the most important food items with over 90% of households reporting consuming one of these items almost daily. The ERSS survey indicates that households who reported consumption of *teff* daily were 78% in small town and 42% in rural areas. Compared to rural households, urban households consume a more diverse diet.

A substantial proportion of households (85%) also reported consumption of edible oils, fats or butter for six days a week. About three quarters of households also consume beans, lentils or nuts for five days a week on average. Other important food categories that are consumed by over a third of households are vegetables, sugar and sugar products, milk, yoghurt and cheese, potatoes, and meat products, in order of importance.

7.2.2 Non-Food Items

As can be seen from Table 7-5, clothing and shoes are the most important non-food expenditure in both rural areas and small towns. In a given year, more than 60% of the households spent on average Birr 1,352 (approximately USD 68) on clothing and shoes. Households in large towns areas spent more on clothing and shoes followed by small town and rural areas with a reported average expenditure of about Birr 1,529 (approximately equal to USD 76), Birr 1,349 (approximately equal to USD 67) and Birr 1,316 (approximately equal to USD 67) per year, respectively (ERSS, 2015).

Table 7-5: Household expenditure in the last year by place of residence, 2014

| | Country | | Rural | | Small town (urban) | | Large town (urban) | |
|---|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|
| | % of households reporting | Mean expenditure (Birr) | % of households reporting | Mean expenditure (Birr) | % of households reporting | Mean expenditure (Birr) | % of households reporting | Mean expenditure (Birr) |
| Clothing: | | | | | | | | |
| Clothes, shoes, fabric for Women | 68.4 | 500 | 70.8 | 469 | 57.0 | 476 | 58.0 | 652 |
| Clothes, shoes, fabric for Men | 76.5 | 402 | 79.2 | 377 | 70.5 | 428 | 64.2 | 522 |
| Clothes, shoes, fabric for Boys | 61.5 | 247 | 67.5 | 259 | 49.8 | 219 | 33.8 | 190 |
| Clothes, shoes, fabric for Girls | 58.8 | 204 | 63.9 | 211 | 52.7 | 226 | 35.1 | 165 |
| Linens | 39.1 | 103 | 41.0 | 107 | 39.7 | 117 | 29.7 | 83 |
| Taxes, donations, and contributions: | | | | | | | | |
| Taxes and levies | 79.0 | 425 | 84.6 | 167 | 63.1 | 802 | 53.3 | 1636 |
| Ceremonial expenses | 76.6 | 772 | 77.2 | 698 | 80.6 | 1041 | 73.6 | 1114 |
| Donations to churches or mosques | 61.4 | 101 | 65.2 | 101 | 72.2 | 183 | 43.0 | 98 |
| Contributions to IDDIR | 60.7 | 76 | 64.2 | 70 | 60.5 | 98 | 44.0 | 103 |
| Equipment and furniture: | | | | | | | | |
| Kitchen equipment | 37.3 | 52 | 38.8 | 46 | 31.1 | 62 | 30.4 | 80 |
| Furniture | 31.4 | 68 | 32.0 | 54 | 23.7 | 68 | 29.0 | 134 |
| Lamp, torch | 42.5 | 18 | 49.3 | 21 | 30.7 | 14 | 10.9 | 6 |

Note: Mean includes households reporting no expenditure (0) and excludes outliers

Source: ERSS, 2015

Households also spent an substantial amount on laundry soap, kerosene, firewood, charcoal, transport and taxes and levies (Table 7-6). The average household expenditure was higher in small towns than in rural areas.

Table 7-6: Households and average expenditure in the past month by place of residence, 2014

| | Country | | Rural | | Small town (urban) | | Large town (urban) | |
|----------------------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|---------------------------|-------------------------|
| | % of households reporting | Mean Expenditure (Birr) | % of households reporting | Mean expenditure (Birr) | % of households reporting | Mean expenditure (Birr) | % of households reporting | Mean expenditure (Birr) |
| Laundry soap | 92.2 | 25 | 91.0 | 21 | 97.4 | 35 | 97.7 | 43 |
| Matches | 82.9 | 4 | 80.9 | 3 | 89.5 | 9 | 91.7 | 6 |
| Batteries | 58.5 | 9 | 67.8 | 11 | 39.6 | 6 | 15.5 | 2 |
| Kerosene | 45.9 | 14 | 51.6 | 15 | 30.0 | 7 | 19.7 | 10 |
| Hand soap | 44.8 | 6 | 37.9 | 4 | 58.8 | 8 | 77.2 | 13 |
| Other personal care goods | 33.4 | 5 | 30.3 | 3 | 40.5 | 4 | 48.2 | 14 |
| Candles (tua'af), incense | 31.3 | 3 | 24.2 | 2 | 54.7 | 6 | 63.6 | 7 |
| Transport | 37.3 | 45 | 31.7 | 30 | 39.8 | 56 | 63.8 | 113 |
| Cigarettes, tobacco, suret, gaya | 7.3 | 3 | 8.3 | 4 | 7.0 | 8 | 2.5 | 3 |
| Firewood | 12.6 | 10 | 4.9 | 5 | 53.9 | 53 | 47.0 | 34 |
| Charcoal | 17.5 | 16 | 4.5 | 3 | 59.1 | 46 | 76.9 | 76 |

Source: ERSS, 2015

Taxes and Levies are also important expenditure items. About 85% of rural areas, 63% of small towns and 53% of households in large town paid taxes and levies. On average, rural households paid Birr 167 (approximately USD 8) per year in taxes and small town households paid Birr 802

(approximately equal to USD 40) per year while households in large towns paid Birr 1,635 (approximately USD 82).

Ceremonial expenses are another major non-food expenditure. More than half of rural, small and large town areas households had expenditure on ceremonial activities. These include weddings, birthdays and funeral expenses. In rural areas, household level expenditure on these activities was Birr 698 (approximately USD 35) per year and in small town areas it was Birr 1,041 (approximately equal to USD 52) per year while it was Birr 1,114 (approximately USD 56) in large towns. Over half of households also made contributions to religious establishments and *iddir* in rural areas and small towns, while contributions of household in large towns was more than 40%.

7.3 ASSET OWNERSHIP

Asset ownership is an important indicator of welfare; and assets are an indicator of improving living standards. Depletion of assets, on the other hand, would mean declining household wealth and thus a decline in welfare. The 2014 ERSS survey collected information on ownership of assets such as modern and traditional farm implements, furniture, communication and entertainment equipment, household durables and other items such as automobiles, bikes and jewelry. Table 7-7 shows households' ownership of assets.

Table 7-7: Asset Ownership by Place of Residence, 2104

| | Country | Place of Residence | | |
|-----------------------------|---------|--------------------|-----------------------|-----------------------|
| | | Rural | Small town (urban) | Large town (urban) |
| Farm implements | | | | |
| Sickle (Machid) | 69.8 | 82.3 | 35.8 | 12.2 |
| Plough (traditional) | 57.6 | 69.5 | 10.7 | 3.3 |
| Pick Axe (Geso) | 42.2 | 49.8 | 26.7 | 6.9 |
| Axe (Gejera) | 34.5 | 40.3 | 27.8 | 7.4 |
| Plough (modern) | 1.6 | 1.7 | 0.8 | 0.8 |
| Water storage pit | 3.0 | 3.3 | 4.5 | 1.4 |
| Furniture | | | | |
| Blanket/Gabi | 89.6 | 88.3 | 95.4 | 95.3 |
| Mattress and / or Bed | 72.3 | 67.3 | 92.2 | 95.1 |
| Shelf for storing goods | 16.2 | 9.9 | 35.5 | 44.8 |
| Mitad-power saving (modern) | 8.8 | 4.0 | 21.9 | 30.6 |
| Kerosene stove | 6.7 | 2.1 | 16.7 | 28.1 |
| Wardrobe | 8.2 | 2.6 | 12.7 | 35.0 |
| Sofa set | 5.6 | 0.7 | 8.7 | 28.6 |
| Refrigerator | 4.7 | 0.3 | 7.5 | 25.1 |
| Electric Stove | 5.3 | 0.6 | 10.2 | 27.4 |
| Biogas stove (pit) | 0.3 | 0.2 | 0.2 | 0.7 |
| Butane Gas Stove | 0.8 | 0.0 | 0.0 | 4.5 |
| Mitad-Electric | 5.1 | 0.2 | 8.7 | 28.0 |
| Electronics | | | | |
| Radio/radio and tape/tape | 32.0 | 27.6 | 49.4 | 52.4 |
| Television | 12.0 | 2.5 | 39.9 | 56.0 |
| CD/VCD/DVD/Video Deck | 8.0 | 1.4 | 26.7 | 38.7 |
| Satellite Dish | 6.3 | 1.1 | 25.2 | 30.4 |
| Mobile telephone | 46.4 | 37.2 | 74.9 | 88.4 |
| Fixed line telephone | 3.8 | 1.1 | 14.5 | 16.3 |

Source: ERSS, 2015

The rural socio-economic survey carried out in 2012-2013 asked households, about asset ownership such as productive assets (farm implements; tools, machinery); entertainment and communication equipment, personal items such as jewelry, as well as vehicles. Farm implements are important assets in most rural households. On the other hand, households in small towns own more diversified set of assets. Furniture and electronic items are more common among households in urban areas (ERSS, 2015).

Subsistence agriculture is a primary economic activity in almost all rural areas. Most rural households own traditional farming tools such as sickles, axes, *Mofer*, *Kenber*, and other traditional ploughs. Only a few rural households have modern plows and improved farming equipment and machinery such as carts and water pumps. (ERSS, 2015).

Other common durable goods are mobile phones and radios. Three-quarters of households owned a mobile phone in small towns and 37% of rural households. Ownership of mobile phones in rural areas has increased 13% compared to 2011. While 17 percent of large town households own land lines, it is less than one percent for rural areas (ERSS, 2015).

7.4 POVERTY LEVELS, DISTRIBUTION AND TRENDS

In 2000 Ethiopia had one of the highest poverty rates in the world, with 56% of the population living below US\$1.25 PPP a day, and 44% of its population below the national poverty line. Ethiopian households have experienced a decade of progress in wellbeing. As shown in Table 7-8 below, in 2005, 38.7% of Ethiopians lived in extreme poverty. Five years later this had declined to 29.6%, which is a decrease of 9.1 percentage points. This was mainly due to economic growth that brought with it positive trends in reducing poverty in both urban and rural areas.

Table 7-8: Key Indicators of Poverty and Inequality in Ethiopia (2000-2011)

| Indicators | 2000 | 2005 | 2011 |
|---|--------|--------|--------|
| National absolute poverty headcount (National Poverty Line) | 44.2% | 38.7% | 29.6% |
| - Urban | 36.9% | 35.1% | 25.7% |
| - Rural | 45.4% | 39.3% | 30.4% |
| Number of people living beneath the national poverty line (thousands) | 28,064 | 27,523 | 25,102 |
| International extreme poverty headcount (US\$1.25 PPP Poverty Line) | 55.6% | 39.0% | 30.7% |
| Poverty depth (National Poverty Line) | 11.9% | 8.3% | 7.8% |
| Poverty severity (National Poverty Line) | 4.5% | 2.7% | 3.1% |
| Gini coefficient | 0.28 | 0.30 | 0.30 |
| - Urban | 0.38 | 0.44 | 0.37 |
| - Rural | 0.26 | 0.26 | 0.27 |

Source: World Bank, 2015

Table 7-9 below presents the poverty headcount ratio by region. Positive trends have been observed at regional level, however Tigray, Afar, Amhara, Somali and Gambella regions have poverty ratios that are higher than the national ones.

Table 7-9: Poverty Headcount Ratio by Region

| | National Poverty Line per adult | | | |
|-------------------|---------------------------------|-------|-------|-------|
| | 1996 | 2000 | 2005 | 2011 |
| Tigray | 56.0% | 61.4% | 48.5% | 31.8% |
| Afar | 33.1% | 56.0% | 36.6% | 36.1% |
| Amhara | 54.3% | 41.8% | 40.1% | 30.5% |
| Oromia | 34.0% | 39.9% | 37.0% | 28.7% |
| Somali | 30.9% | 37.9% | 41.9% | 32.8% |
| Benishangul-Gumuz | 46.8% | 54.0% | 44.5% | 28.9% |
| SNNP | 55.9% | 50.9% | 38.2% | 29.6% |
| Gambela | 34.2% | 50.5% | | 32.0% |
| Harari | 22.5% | 25.8% | 27.0% | 11.1% |
| Addis Ababa | 30.2% | 36.1% | 32.5% | 28.1% |
| Dire Dawa | 29.4% | 33.1% | 35.1% | 28.3% |

Source: WB (2015): Ethiopia: Poverty Assessment

As can be seen from above tables, household poverty and food poverty rates have fallen in recent years. However, this trend does not reflect the actual situation on the ground. A more realistic picture is portrayed by the poverty head count which takes population growth into consideration. In this case, poverty reduction and food poverty reduction are significantly less marked. Between 1995/96 and 2010/11 the number of poor Ethiopians dropped by 1.8 million people, while the decrease in the number of people suffering from food poverty is even less with a decrease of about 0.8 million people. Furthermore, looking at regional population figures, the number of poor Ethiopians in fact increased over the 15-year period in 7 out of 11 regions as shown in Table 7-10.

In Somali, Gambella and Afar regions, the number of poor people increased by over 50% between 1995/96 and 2010/11. Regions that have seen a substantial reduction in the number of poor are Tigray, SNNPR, Harari and Amhara.

Poverty was higher in Gambella. As depicted in Table 7-10, the number of people under poverty line has increased over 50% in Gambella and in Oromia by 28.3%.

Table 7-10: Population below the poverty line and Change in Regions in the Ethiopian Part of the Basin

| Region | 1995/96 | 1999/00 | 2004/05 | 2010/11 | % change 1995/96-2010/11 |
|-----------|---------|---------|---------|---------|--------------------------|
| Gambella | 65 | 107 | NA | 100 | 53.9 |
| Oromia | 6.725 | 8.919 | 9.280 | 8.630 | 28.3 |
| Ben/Gumuz | 226 | 290 | 264 | 233 | 3.1 |
| SNNPR | 6.139 | 6.370 | 5.381 | 4.861 | -20.8 |

Source: CSA and WFP, 2014, March

As depicted in Table 7-11, the number of people suffering from food poverty has increased in Gambella and Oromia regions, with largest increase in Gambella (50%). Food poverty has decreased in Benishangul-Gumuz and SNNPR with a decrease of 25.2% and 1.1% respectively.

Table 7-11: Population below the food poverty line and percentage change (1995/96 and 2010/11) in the Ethiopian Part of the Basin.

| Region | 1995/96 | 1999/00 | 2004/05 | 2010/11 | % change 1995/96-2010/11 |
|----------|---------|---------|---------|---------|--------------------------|
| Gambella | 54 | 121 | NA | 81 | 50.0 |

| | | | | | |
|-----------|-------|-------|--------|-------|-------|
| Oromia | 8.287 | 8.495 | 92.261 | 9.953 | 20.1 |
| Ben/Gumuz | 286 | 296 | 264 | 283 | -1.1 |
| SNNPR | 5.688 | 6.846 | 5.211 | 4.53 | -25.2 |

Source: CSA and WFP, 2014, March

The main drivers for the decline of poverty are the following factors (WB, 2015):

- i. High and consistent economic growth driven by high levels of public investment and growth in services and agriculture in the last ten years.
- ii. Growth was broad-based and thus has been the main driver of reductions in poverty over the fifteen-year period from 1996 to 2011.
- iii. Growth in agriculture was particularly inclusive and contributed significantly to poverty reduction.
- iv. Manufacturing growth and urban employment contributed to poverty reduction in more recent years.
- v. Although the impact of service sector growth on poverty reduction was small relative to growth in value added by the service sector in national accounts, there is some evidence that agricultural growth may drive poverty reduction in part by encouraging rural service sector activity.
- vi. The direct transfers provided in the Productive Safety Net Program (PSNP) have also had an effect on poverty reduction. In addition to the direct impact of transfers on poverty, PSNP transfers have been shown to increase agricultural input-use among some beneficiaries thereby supporting agricultural growth.

Poverty reduction among rural, self-employed, agricultural households accounts for the major share of poverty reduction from 1996 to 2011. (WB, 2015).

A recent Poverty Assessment (WB, 2105) revealed that an agricultural growth drove reductions in poverty, bolstered by pro-poor spending on basic services and effective rural safety nets. However, although there is some evidence of manufacturing growth starting to reduce poverty in urban centers at the end of the decade, structural change has been remarkably absent from Ethiopia's story of progress. The same document asked that 'what would be needed to end extreme poverty in Ethiopia'. In addition to the current successful recipe of agricultural growth and pro-poor spending, the role of the *non-farm rural sector, migration, urban poverty reduction and agricultural productivity gains* for women have to receive further consideration (WB, 2015).

In addition to the successful mix of agricultural growth and investments in the provision of basic services and direct transfers to rural households, additional drivers of poverty reduction will be needed, particularly those that encourage the structural transformation of Ethiopia's economy. Structural transformation will entail the transition of labour from agricultural activities into non-agricultural activities and it may also entail the movement of people from rural to urban areas. Although non-farm enterprise ownership in rural areas, and rural to urban migration are important realities in Ethiopia today, both have remained quite limited. Neither have been significant contributors to poverty reduction as they have in some other countries in the region and elsewhere².

7.5 SUMMARY

- ▶ Livelihoods of the local people depend on the use of natural resources.
- ▶ The local economy (crop production and livestock) is subsistence-oriented depending highly on rainfall and employing low technology.

² For example the role of non-farm enterprises in Rwanda and Uganda and elsewhere; and another example is the role of rural to urban migration in China.

-
- ▶ There is increasing trend for engaging in non-agricultural enterprises, as supplementary sources of income.
 - ▶ Income expenditure is more on food than productive assets, which confirms the highly subsistence nature of the local economy.
 - ▶ Scarcity of water for crop production, livestock and drinking water.
 - ▶ Land tenure insecurity due to land deals for investments; encroachment into community land; relocation of farmers/and pastoralists (i.e. villagization).
 - ▶ Food poverty and food insecurity are still high in the basin.
 - ▶ Social well-being/welfare (i.e. access to decent housing, water supply, sanitation, social security) is still very low.
 - ▶ Physical and human security is not fully guaranteed due to recurrent political and ethnic conflicts in the Ethiopian part of the basin.

8. INFRASTRUCTURE

8.1 WATER SUPPLY AND SANITATION

Increasing access to improved drinking water is one of the Millennium Development Goals. The source of water is an indicator of whether it is suitable for drinking. Sources providing water suitable for drinking are identified as improved sources that include piped source within the dwelling, yard or plot; a public tap/standpipe; borehole; a protected well; a protected spring; and rainwater (WHO and UNICEF, 2010).

The majority of the population lives in rural areas. As shown in Table 8-1 below, more than half of households (57%) have access to an improved source of drinking water, with a much higher proportion (94%) among urban households than rural households (46%). The most common source of improved drinking water in urban households is piped water, used by 87% of urban households. In contrast, only 18% of rural households have access to piped water. Some 16% of rural households have access to drinking water from a protected well, and 11% have access to drinking water from a protected spring (CSA, 2014).

Table 8-1: Households by Source of Drinking Water by Place of Residence (2014)

| Characteristic | Households | | | Population | | |
|--|--------------|--------------|--------------|--------------|--------------|--------------|
| | Urban | Rural | Total | Urban | Rural | Total |
| Source of drinking water | | | | | | |
| Improved source | 94.3 | 46.4 | 56.9 | 92.0 | 44.8 | 52.7 |
| Piped into dwelling | 2.6 | 0.0 | 0.6 | 2.5 | 0.0 | 0.5 |
| Piped to yard/plot | 52.4 | 0.9 | 12.2 | 48.5 | 0.7 | 8.7 |
| Public tap/standpipe | 32.0 | 16.7 | 20.1 | 32.3 | 16.9 | 19.5 |
| Borehole | 0.0 | 0.3 | 0.3 | 0.0 | 0.4 | 0.3 |
| Protected well | 4.6 | 16.4 | 13.8 | 5.3 | 15.0 | 13.4 |
| Protected spring | 2.2 | 11.3 | 9.3 | 3.0 | 11.0 | 9.6 |
| Rain water | 0.0 | 0.6 | 0.5 | 0.1 | 0.8 | 0.7 |
| Bottled water | 0.5 | 0.0 | 0.1 | 0.2 | 0.0 | 0.0 |
| Non-improved source | 4.7 | 53.1 | 42.5 | 7.2 | 54.7 | 46.8 |
| Unprotected well | 1.3 | 5.0 | 4.2 | 2.2 | 5.4 | 4.8 |
| Unprotected spring | 0.9 | 31.6 | 24.8 | 1.0 | 32.4 | 27.1 |
| Tanker truck/cart with tank | 0.6 | 0.3 | 0.4 | 0.7 | 0.3 | 0.4 |
| Surface water | 1.9 | 16.3 | 13.1 | 3.2 | 16.7 | 14.4 |
| Other source | 1.0 | 0.5 | 0.6 | 0.8 | 0.4 | 0.5 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Using an improved source of drinking water (%) | 94.3 | 46.4 | 56.9 | 92.0 | 44.8 | 52.7 |
| Weighted number | 1,861 | 6,614 | 8,475 | 6,720 | 33,384 | 40,104 |
| Unweighted number | 2,556 | 5,919 | 8,475 | 9,563 | 30,436 | 39,999 |

Source: CSA, 2014

9. AGRICULTURAL MARKETS

9.1 MARKETS IN THE BARO AKOBO BASIN IN ETHIOPIA

There are large markets in the Baro Akobo sub-basin in Ethiopia, such as Asosa, Dembidolo, Gambella, Metu, Jimma, Bedelle, Mizan teferi and Maji. Both agricultural and consumer goods are transacted in these markets. Coffee is a cash crop available in the local markets. Cross-border markets play important roles in flow of goods along the border.

The Gambella market⁹ is a strategically important market in the Baro-Akobo basin. This market is a very important source of food supply to the people who live along and near the Ethiopia-South Sudan border. Most of the food supply (90%) comes from neighboring markets, namely Mechara, Bonga, Masha, Nekemte, Mettu, Weliso, Tulubolo and Addis Ababa. There are also other nearby cross-border markets including Lare, Pagak and Dima, Burbe, Akobo and Nasir are the main destination markets in the Sudan. There is also a trade in livestock along this route to South Sudan.

Maize and sorghum are main food commodities in the market and are in transit to South Sudan. The supply of these commodities is good during the harvest season; October to December. Livestock markets along the border are also common. The largest flow of agricultural commodities is from Ethiopia to South Sudan.

Prices of food crops vary with the season. Prices are usually lower during the harvest season; October to April and increase again from May to August. Despite the strategic importance of the Gambella market, there are challenges to its operation that includes limited storage capacity, high municipal charges, seasonal flooding and taxation.

The other cross-border market is Kurmuk on the Ethiopian-Sudan border. Both food and non-food commodities are traded across this border. Edible oil and onion are inflows from Sudan to Ethiopia, while sorghum, maize, faba beans, chickpeas, maize, garlic, groundnuts, cattle and goats are outflows from Ethiopia to Sudan.

Trends in market prices in Ethiopia show fluctuations over the last years. In December 2015, the overall Ethiopian year-on-year inflation rate was 10%; the food and nonfood inflation rate was 12.1% and 7.7% respectively. The inflation rate in Gambella and Oromia was 12.4% and 12.5%, ranking of 4th and 3rd respectively⁸. The general price index in the Baro Akobo area shows an increase in goods and services. The increase in the general price level is higher in Oromia, followed by SNNPR and Gambella as shown in Table 9-1 below.

Table 9-1: Trends in Price Indexes in Regional Markets (2011-2015)

| Month/year | REGION | | | | | | | | | | | |
|------------|---------------------|-----------------------|----------------|---------------------|-----------------------|----------------|---------------------|-----------------------|----------------|---------------------|-----------------------|----------------|
| | Gambella | | | Oromia | | | Benishangul Gumz | | | SNNPR | | |
| | General Price Index | Food and non-beverage | Non-food index | General Price Index | Food and non-beverage | Non-food index | General Price Index | Food and non-beverage | Non-food index | General Price Index | Food and non-beverage | Non-food index |
| Dec 2011 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Dec 2014 | 125.7 | 125.2 | 126.7 | 133.9 | 133.5 | 134.4 | 123.9 | 113.5 | 139.6 | 135.8 | 134.0 | 137.1 |
| Dec 2015 | 140.7 | 139.8 | 142.2 | 150.6 | 155.4 | 145.1 | 136.4 | 130.1 | 146.1 | 143.2 | 145.6 | 141.4 |

Source: CSA Ethiopia

According to the WFP report for the month of January 2016, price levels are increasing. The cost of living measured by the Consumer Price Index (CPI) increased by 10.2%. Wholesale prices of maize and sorghum stood above prices in December 2015 and above the five-year average. When compared to the long-term average, national white wheat prices increased by 30%, sorghum by 24% and white maize by 21%. The *teff* price increased by 6% while maize prices in markets in the sub-

basin namely Gambella, Meti Lare and Gog in Gambella decreased, and sorghum prices in Gambella either declined or remained stable¹¹.

9.2 MECHANIZATION

Gambella is the region in Ethiopia where agricultural mechanization is progressing. Nearly 30% of the total land area is either delivered or identified for agricultural investment purposes. To date a number of companies have invested in or taken over land for investment as shown below¹⁰.

Table 9-2: Agriculture Investors, Crops and Area Leased- Gambella Region

| Investor/company | Origin | Crop | Area (ha) |
|--------------------------------|--------|---------------------------------------|-----------|
| Ruchi | India | Soybean | 25,000 |
| BHO | India | Edible oil crops | 27,000 |
| Sannati | India | Rice | 10,000 |
| Verdanta | India | Tea | 3,012 |
| Karuturi Agro Products | India | Palm, cereal, rice and sugarcane | 100,000 |
| Saudi Agricultural Development | Saudi | Rice | 10,000 |
| Toren Agro Industries Plc | Turkey | Cotton and soybean | |
| Huana Dafengyuan Agriculture | China | Sugarcane | 25,000 |
| Saber Farm PLC | India | Cotton and soybean | 25,000 |
| Green Valley Agro Plc | India | Cotton farming and related activities | 5,000 |
| JVL Overseas Pvt Ltd | India | Cotton farming and related activities | 5,000 |
| | | TOTAL | 235,012 |

9.3 POTENTIAL

In the Ethiopian part of the BAS sub-basin, Gambella is the region with the highest potential for mechanization of agriculture. The region has an estimated area of 2,580,201 hectares, of which 30% are allocated for mechanized farming. Gambella attracts interest from large firms due to its fertile soils which are suitable for the cultivation of crops for export such as rice, soybeans, cotton, sugar and tea. Palm oil and pulses also attract a lot of interest¹⁰. Upper Nile state in South Sudan is the area with the highest potential for future development of mechanized farming.

10. KEY ISSUES, CHALLENGES AND OPPORTUNITIES FOR DEVELOPMENT OF THE BAS BASIN

10.1 INTRODUCTION

In the Inception Report it was stated that a more detailed baseline report will identify key social development issues, challenges and opportunities for the development of the BAS sub-basin. Accordingly, critical baseline social data and information in these areas have been collected, analyzed and highlighted in the previous sections of this report.

This section summarizes the key issues, challenges and opportunities to be addressed in the IWRDM Plan and to define the framework of the Plan. This picture of Key issues, challenges and opportunities will inform strategic decisions regarding the approach to the development of water resources in the BAS basin.

10.2 KEY ISSUES, CHALLENGES AND OPPORTUNITIES

Important social and socio-economic issues that should be addressed in the IWRDM Plan include the following:

- ▶ **Incidence of poverty and food insecurity** is still high in the sub-basin and way of addressing poverty eradication will be a key focus area.
- ▶ **Low level of well-being:** The basin area has a low level of wellbeing and the development options will consider ways of enhancing the basin's population wellbeing.
- ▶ **Low level of provision of social services** due to weak social and infrastructural services and facilities: Most, if not all, of the basin areas are poorly served in terms of basic social services.
- ▶ **Vulnerable groups** (pastoral groups, women and children, conflict and war displaced people, IDP, refugees, etc): The basin areas are marginalized from the main stream economy of the countries and have experienced various forms risks (both natural and economic) and as well conflicts which adversely affected vulnerable groups. The issue of protection of vulnerable groups should receive attention in the plan and development options.
- ▶ Addressing **gender inequality** at household and community levels as women have low access to productive resources, education and health services; and women have high work burden.
- ▶ **Recurrence of various forms, intensity, duration and impacts of conflicts** in the basin are the major challenges for future development activities.
- ▶ There is a **potential for influx of people** (various forms of migration) into the basin following various development initiatives and interventions (ongoing and proposed ones). The likely consequences of the various development options/alternative on influx of people into the basin areas should be addressed in the plan. In addition potential effects of population increase, resettlement, increasing investment (commercial farms –leaseholds) will be considered in the plan.
- ▶ **Risks** (conflicts, flooding, disease outbreaks, economic shocks, insecurity) are common in the area. Therefore, the likely consequences of the various development options, either in exacerbating or reducing these risks will be addressed in the plan.
- ▶ **Land security/Land tenure issues**, regarding the rights of indigenous people will be the social and economic issue while designating land for any type of development (commercial farm; large scale irrigation, hydropower, national parks, protected areas). The plan will take into account these issues.

- ▶ **Basin population dynamics place heavy pressure on natural resources** (e.g. water, land, wetlands and forest) for their livelihoods: Thus, potential impacts of development of any of these resources on people's livelihoods will be adequately addressed in the IWRDM Plan.
- ▶ **Weak institutions, poor coordination and cooperation among existing institutions:** There are varying levels of capacities and resources in the basin countries and the BAS sub-basin. Therefore, the issue of capacity building for coordinating and implementing development programs and plans is important for planning and implementing basin development activities.

These issues and the identified challenges and opportunities are summarized in the table below.

Table 10-1: Issues, Challenges and Opportunities for Development of the BAS Basin

| Key issues | Opportunities | Challenges |
|---|---|---|
| Incidence of poverty | availability of good working policy framework and political commitment of the basin countries for poverty reduction | Lack or level of funding Social, economic and natural risks |
| Low level of social services and well-being in the basin | Existence of various efforts and institutional setups for enhancing capacity to design and implement programs and projects. | Lack of funds, and low capacity for evaluation and monitoring programs and projects |
| Social vulnerability (various vulnerable groups) | Various ongoing programs for poverty reduction and tackling food insecurity | Lack of fund, resources and capacity for implementing programs. |
| Gender inequality | Availability of Gender Mainstreaming Policy and Strategy. Ongoing social development programs in health education, water supply, and wellbeing run by governments and NGOs etc | Social constructed bias and practices that constrains gender equality, and women' s work burden. Lack of funds and resources and capacity for implementing policies, strategies and programs; lack of coordination |
| Migration into the basin. | Enhancing local economy due to commercial farms and labour migration into the area. | Increased pressure on the local natural resources and on existing social and economic services and infrastructures. |
| Various forms risks (conflict, natural disaster, flood, insecurity) | Long-established local level adaptation and coping strategies | Dynamics nature of risks and uncertainty in time, scope and location of most risks. |
| Sustainable use natural resources potential for development. | High natural resources potential in the basin | Various adverse impacts on the natural resources and on the livelihoods that are based these resources. |
| Land tenure | Availability of land for new development initiatives. | Loss of access to traditional or customary land rights, grazing and farmland to other uses like commercial farms, protected areas, etc. |
| Capacity building (human, resources and institutional). | Various ongoing trainings and capacity building activities in the basin countries | Low capacity and poor coordination among institution High turnover of trained manpower |
| Development cooperation and designing win-win programs | Established framework for development cooperation between the basin countries | Low institutional capacity and poor coordination between countries and among institutions within a country. Accommodating Varying interests. |

Source: Adapted from Inception Study and Updated During the Baseline Study

Annex 3-B: Socio-economic environment in the South Sudanese part of the basin

BARO-AKOBO-SOBAT MULTIPURPOSE WATER RESOURCES DEVELOPMENT STUDY - BASELINE STUDY

Annex 3-B Socio-economic environment in the South Sudanese part of the basin

| | |
|---|-----------|
| 1. DEMOGRAPHIC AND SOCIO-ECONOMIC ASPECTS..... | 1 |
| 1.1 Introduction | 1 |
| 1.2 Population Dynamics | 1 |
| 1.2.1 Introduction | 1 |
| 1.2.2 South Sudan | 1 |
| 1.2.3 Population distribution and density | 2 |
| 1.2.4 Age dependency ratio | 4 |
| 1.2.5 Household size | 4 |
| 1.2.6 Mobility | 5 |
| | |
| 2. EDUCATION AND HEALTH STATUS..... | 6 |
| 2.1 Introduction | 6 |
| 2.2 Health Status and Trends | 8 |
| | |
| 3. GENDER RELATIONS..... | 10 |
| 3.1 Introduction | 10 |
| 3.2 South Sudan’s National Gender Policy | 11 |
| 3.3 Gender Issues In Food Security | 12 |
| 3.4 Gender, the Environment and Natural Resources Management | 13 |
| 3.5 Conclusion | 13 |
| | |
| 4. GOVERNMENT AND ADMINISTRATIVE ORGANIZATION | 14 |
| 4.1 Ethnic Groups | 15 |
| 4.2 Language | 19 |
| | |
| 5. CONFLICTS AND DISPLACEMENT | 20 |
| 5.1 Political Conflicts – Creating losers | 20 |

| | | |
|------------|--|-----------|
| 5.2 | Historic Ethnic/Tribal Conflicts – Creating winners and losers | 21 |
| 6. | CROP PRODUCTION..... | 23 |
| 6.1 | Introduction | 23 |
| 6.2 | Traditional small-scale rainfed agriculture | 23 |
| 6.3 | Small-scale irrigated cropping | 23 |
| 6.4 | Fisheries | 24 |
| 6.5 | Forestry | 24 |
| 6.6 | Agro-forestry | 24 |
| 6.7 | Livestock | 25 |
| 7. | LIVELIHOODS..... | 26 |
| 7.1 | Introduction | 26 |
| 7.2 | Livelihood Zones | 26 |
| 7.3 | Eastern Floodplains Livelihood Zone | 27 |
| 7.3.1 | Markets | 27 |
| 7.3.2 | Seasonal Calendar | 28 |
| 7.3.3 | Hazards | 29 |
| 7.3.4 | Coping strategies | 29 |
| 7.4 | The Nile-Sobat Livelihood Zone | 29 |
| 7.4.1 | Livelihoods in the Nile-Sobat Zone | 30 |
| 7.4.2 | Markets | 31 |
| 7.4.3 | Seasonal calendar | 32 |
| 7.4.4 | Wealth breakdown | 32 |
| 7.4.5 | Coping strategies | 33 |
| 7.5 | Eastern Semi-arid Pastoral Zone | 33 |
| 7.6 | Highland Forest Livelihood Zone | 34 |
| 7.7 | Characteristics of Livelihood Zones | 35 |
| 8. | FOOD SECURITY..... | 37 |
| 9. | POVERTY IN SOUTH SUDAN | 39 |
| 10. | AGRICULTURAL POTENTIAL AND MARKETS..... | 41 |
| 10.1 | Introduction | 41 |
| 10.2 | Agricultural Potential | 41 |
| 10.3 | Markets in Upper Nile, Jonglei and Eastern Equatoria States | 41 |
| 10.4 | The Juba Market | 43 |
| 10.5 | Market Constraints for local produce from the basin | 44 |

| | |
|--|-----------|
| 10.6 Agricultural mechanization | 44 |
| 11. DEVELOPMENT OBJECTIVES AND ISSUES | 47 |
| 11.1 OBJECTIVES | 47 |
| 11.2 DEVELOPMENT ISSUES | 47 |
| 11.3 Severity of Need in South Sudan | 47 |
| 11.4 Development Priorities | 48 |

TABLES AND FIGURES

LIST OF FIGURES

| | |
|--|------------------------------------|
| Figure 1-1: BAS population density | 3 |
| Figure 1-2; Population Pyramid for South Sudan (2014) | 4 |
| Figure 2-1: Primary Net Enrolment Rate in South Sudan | 7 |
| Figure 4-1: Administrative Divisions in South Sudan | Erreur ! Signet non défini. |
| Figure 4-2: Administrative Organization of Government | 15 |
| Figure 4-3: Distribution of Major Ethnic Groups in South Sudan | 16 |
| Figure 4-4: Main annual pastoral migration routes in South Sudan and neighboring areas | 18 |
| Figure 4-5: Main Language Groups in South Sudan | 19 |
| Figure 5-1: Refugees in and from South Sudan – January 2016 | 21 |
| Figure 5-2: location of conflicts (2001-2011) | 22 |
| Figure 6-1: Typical Annual Agricultural Calendar – South Sudan part of the Basin | 24 |
| Figure 7-1: Livelihood Zones in South Sudan | 26 |
| Figure 7-2: Eastern Floodplains Livelihood Zone | 27 |
| Figure 7-3: Source and size of monthly household income – Eastern Floodplains | 29 |
| Figure 7-4: Map of the Nile-Sobat livelihood zone | 30 |
| Figure 8-1: Trends in Food Security at harvest time, 2008-2013 | 37 |
| Figure 8-2: Food Security Situation – South Sudan | 38 |
| Figure 9-1: Poverty Incidence by State (2010) | 40 |
| Figure 10-1: Status of Trade Routes in South Sudan (March 2016) | 43 |
| Figure 11-1: Severity of needs in South Sudan (2015) | 48 |

LIST OF TABLES

| | |
|--|----|
| Table 1-1: Projected Population of Basin States in South Sudan (2016) | 2 |
| Table 1-2: Average Household Size in Basin States | 4 |
| Table 2-1: Key Education Indicators for South Sudan | 7 |
| Table 2-2: Technical and Vocational Students by Subject and Gender | 8 |
| Table 2-3: Selected Health Indicators | 9 |
| Table 7-1: Wealth Group Characteristics for the Nile-Sobat Livelihood Zone | 33 |
| Table 7-2: Characteristics of Livelihood Zones in South Sudan | 36 |
| Table 9-1: Poverty Characteristics in South Sudan | 39 |
| Table 10-1: Merchants and Markets in Basin States in South Sudan | 42 |
| Table 10-2: Distribution Channels for Main Crops in Basin States in South Sudan | 42 |
| Table 10-3: Characteristics of Mechanized Agriculture in Upper Nile State (2014) | 44 |

ACRONYMS AND ABBREVIATIONS

| | |
|--------|---|
| AfDB | African Development Bank |
| ACORD | Association for Cooperative Operations Research and Development |
| ACTED | Agency for Technical Cooperation and Development |
| BAS | Baro Akobo Sobat |
| CAMP | Comprehensive Agriculture Development Master Plan |
| CBA | Cost Benefit Analysis |
| CMA | Catchment Management Association |
| CRA | Cooperative Regional Assessment |
| DEM | Digital Elevation Model |
| EEPCO | Ethiopian Electric Power Corporation |
| EHA | Erosion Hazard Assessment |
| EIA | Environmental Impact Assessment |
| ENID | Eastern Nile Irrigation and Drainage |
| ENCOM | Eastern Nile Committee Of Ministers |
| ENPM | Eastern Nile Planning Model |
| ENPT | Eastern Nile Power Trade |
| ENSAP | Eastern Nile Subsidiary Action Plan |
| ENTRO | Eastern Nile Technical Regional Office (NBI) |
| EPA | Environmental Protection Authority |
| FAO | Food and Agriculture Organization |
| GDEM | Global Digital Elevation Model |
| GDP | Gross Domestic Product |
| GEF | Global Environment Facility |
| GIS | Geographic Information System |
| GTP | Growth and Transformation Plan |
| GWh/y | GigaWatt hour/year |
| HEP | Hydroelectric Power |
| IDEN | Integrated Development of Eastern Nile |
| ILWRM | Integrated Land and Water Resources Management |
| IPCC | Intergovernmental Panel on Climate Change |
| IUCN | International Union for Conservation of Nature and Natural Resources |
| IWMI | International Water Management Institute |
| IWRDMP | Integrated Water Resources Development and Management Plan |
| IWRM | Integrated Water Resource Management |
| JMP | Joint Multipurpose Project |
| MAFCRD | Ministry of Agriculture, Forestry, Cooperatives and Rural Development |
| MASL | Meters Above Sea Level |
| MCA | Multi Criteria Analysis |
| MDG | Millennium Development Goals |
| MEDIWR | Ministry of Electricity, Dams, Irrigation and Water Resources |
| MERET | Managing Environmental Resources to Enable Transitions |
| MLFI | Ministry of Livestock and Fisheries |
| MoA | Ministry of Agriculture |
| MoEN | Ministry of Environment |
| MoWIE | Ministry of Water, Irrigation and Energy |
| MSIOA | Multi Sector Investment Opportunity Analysis |
| MTR&B | Ministry of transport, roads and bridges |
| MW | Mega Watt |
| MWC&T | Ministry of Wildlife Conservation and Tourism |
| NB-DSS | Nile Basin Decision Support System |
| NBI | Nile Basin Initiative |
| NCORE | Nile Cooperation for result project |
| NDVI | Normalized Difference Vegetation Index |
| NELSAP | Nile Equatorial Lakes Subsidiary Action Program |

| | |
|----------|--|
| NGO | Non-Governmental Organization |
| Nile-COM | Nile Council of Ministers |
| PIM | Project Implementation Manual |
| PLSPP | Policies, Legislation, Strategies, Plans, and Programs |
| PPP | Private Public Partnership |
| PMU | Project Management Unit |
| PRSP | Poverty Reduction Strategy Program |
| RATP | Regional Agricultural Trade and Productivity Project |
| RPSC | Regional Project Steering Committee |
| RSS | Republic of South Sudan |
| RUSLE | Revised Universal Soil Loss Equation |
| SAP | Subsidiary Action Program |
| SEA | Strategic Environmental Assessments |
| SIS | Soil Information System |
| SLMP | Sustainable Land Management Program |
| SNNPR | Southern Nations, Nationalities and Peoples' Region |
| SRFE | Satellite Rainfall Estimates |
| SRTM | Shuttle Radar Topographic Mission |
| SSEA | Strategic Social and Environmental Assessment |
| SVP | Shared Vision Program |
| SWAT | Soil and Water Analysis Tool |
| SWOT | Strength Weakness Opportunity Threat |
| SWSC | Soil-Water Storage Capacity |
| UNDP | United Nations Development Program |
| UNHCR | United Nations High Commissioner for Refugees |
| UNICEF | United Nations Children's Fund |
| USAID | United States Agency for International Development |
| WaSH | Water Sanitation and Hygiene |
| WB | World Bank |
| WBISPP | Woody Biomass Inventory and Strategic Planning Project |
| WCYA | Women, Children and Youth Affairs |
| WEES | Water for Eastern Equatoria |
| WFP | World Food Program |
| WM | Watershed Management |
| WRMA | Water Resources Management Authority |
| WRMD | Water Resources Management and Development |
| WSS | Water Supply and Sanitation |
| WUA | Water Users Association |

1. DEMOGRAPHIC AND SOCIO-ECONOMIC ASPECTS

1.1 INTRODUCTION

This Annex presents the main demographic and socio-economic features of the BAS basin in South Sudan, including the following aspects:

- ▶ Population dynamics – size, age composition, density, mobility (including migration, resettlement, internal displacement and refugees)
- ▶ Education and Health
- ▶ Gender Relations
- ▶ Government Framework
- ▶ Ethnic groups, language, religion
- ▶ Conflicts
- ▶ Humanitarian Assistance
- ▶ Livelihoods
- ▶ Security
- ▶ Poverty
- ▶ Markets
- ▶ Development Objectives, Issues and Potentials

1.2 POPULATION DYNAMICS

1.2.1 Introduction

The Baro-Akobo-Sobat Basin includes parts of three states from South Sudan; Eastern Equatoria, Jonglei and Upper Nile and parts of four regions from Ethiopia; Gambella, Benisgangul-Gumuz, SNNPR and Oromia. The population of these states and regions is depicted below.

The total population of the basin is estimated to be 3,703,238. Of this, 75% of the population lives in Ethiopian part of the basin while the remaining 25% live in the South Sudanese, Sudanese and Kenyan parts of the basin.

1.2.2 South Sudan

The present projected population for South Sudan in 2016 is 11,425,397¹. The projected annual population growth rate for the country is high, an estimated 3.77%, which means that if this growth rate continues, the country's population will double by the year 2040. This trend has huge implications for the country's future, for policies, institutions, environment and resources, including water resources – as well as for the potential for future competition for and conflicts over livelihood resources.

¹ Population Projections for South Sudan, Central Bureau of Statistics, March 2015.

The country's population is very young. Some 48% of the population is below 15 years old, while only 6% of the population is above 54 years old. (Source: National Baseline Household Survey, 2009.) Some 16% of the population is under the age of 5; 32% under 10 years of age; 51% under 18 years and a full 72% of the population under the age of 30 years (SSCCSE, 2008). The population of South Sudan is overwhelmingly rural, with 83% residing in rural areas.

In South Sudan Jonglei is the most populous basin state, followed by Upper Nile and Easter Equatoria, which have almost equal populations, as shown in the following table.

Table 1-1: Projected Population of Basin States in South Sudan (2016)

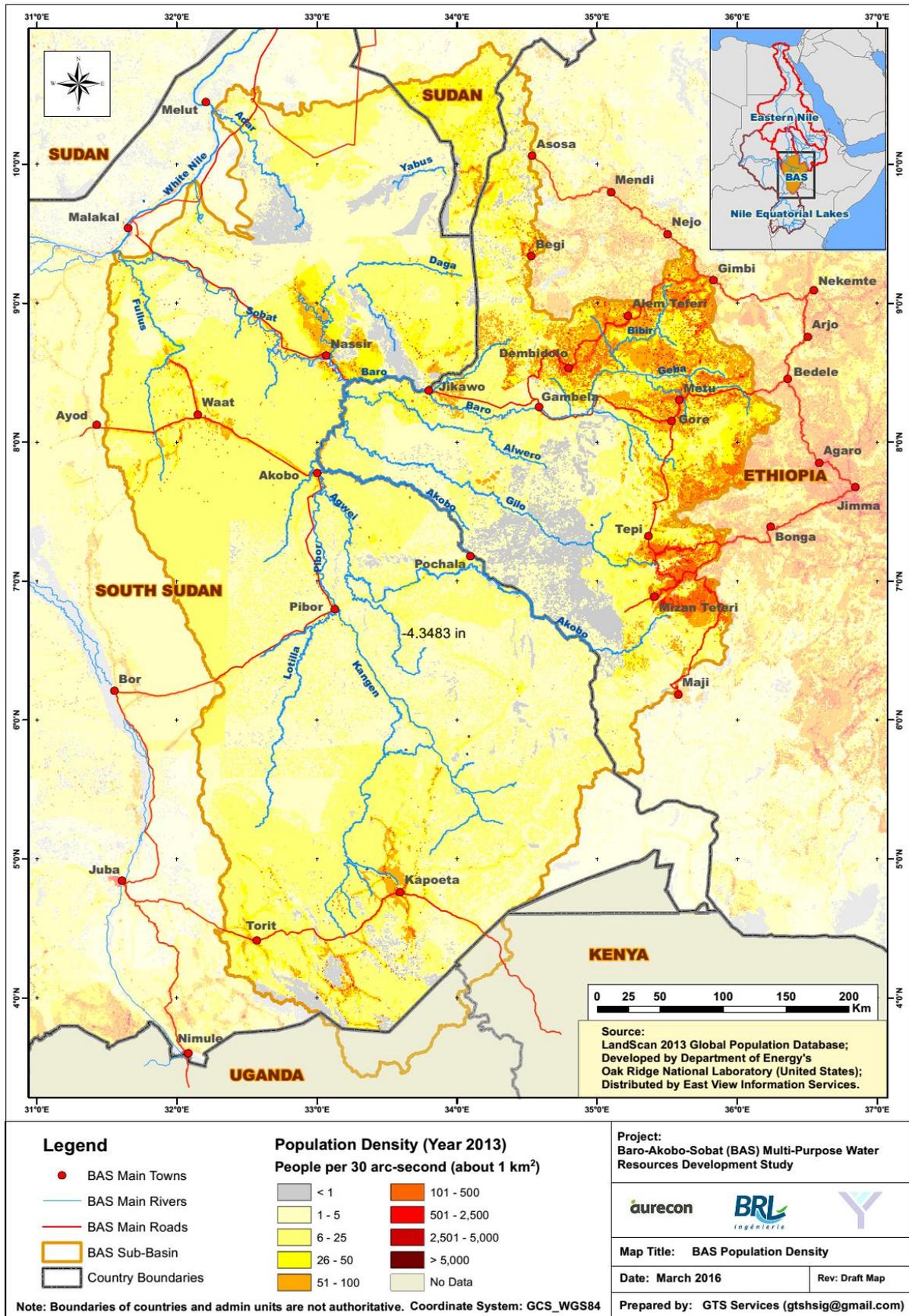
| State | Population | Percent in basin | Population in the basin |
|-------------------|------------|------------------|-------------------------|
| Upper Nile | 1,332,343 | 60.0 | 799,406 |
| Jonglei | 1,753,272 | 63.0 | 1,104,561 |
| Eastern Equatoria | 1,333,119 | 75.6 | 1,007,838 |
| TOTAL | | | 2,911,805 |

Source: Central Bureau of Statistics, 2012

1.2.3 Population distribution and density

The population is unevenly distributed across the basin, and its density within the basin shows considerable variation, as can be seen in the following map.

Figure 1-1: BAS population density



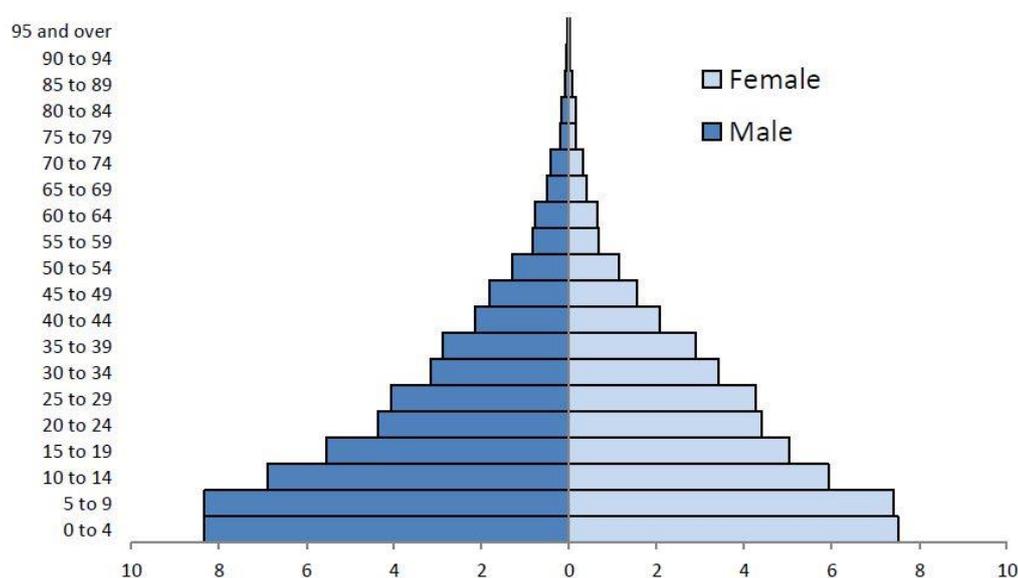
It can be seen from the above map that the largest part of the country - and the basin - in South Sudan - has a low population density, under 10 per km². In the basin, some areas, mainly in Upper Nile State, have the highest population density of over 25 per km², which is still relatively low.

1.2.4 Age dependency ratio²

South Sudan has a high age dependency ratio (85%) due to its large - and growing - young population and persistently high birth rates. During periods of conflict, the birth rate is usually expected to decline, but in the case of South Sudan, it remains surprisingly high. The age dependency ratio can be derived from the population pyramid, shown below.

Figure 1-2: Population Pyramid for South Sudan (2014)

Population Pyramid. Percent



The above population pyramid also shows that there are more males than females in almost all age groups, and particularly in the older age groups, which is very unusual and requires further explanation.

1.2.5 Household size

The average household size by basin state in South Sudan is shown in the following table:

Table 1-2: Average Household Size in Basin States

| State | Household Size |
|-------------------|----------------|
| Upper Nile | 7.6 |
| Jonglei | 6.4 |
| Eastern Equatoria | 5.7 |

Source: Central Bureau of Statistics, 2014

² The age dependency ratio is the ratio of dependents, defined as people younger than 15 or older than 64, to the working-age population--those aged 15-64, shown as the proportion of dependents per 100 working-age population.

The above large variation in household size among neighbouring areas is unusual and also requires further explanation. These differences can be at least partly explained by cultural preferences regarding the residence patterns of extended family members. Livelihoods and occupations that encourage larger numbers of children, among others.

1.2.6 Mobility

A dominant characteristic of the population in the basin is its high mobility, which is influenced by both voluntary and involuntary movements. Both immigration and outmigration are common in the basin. The population is sensitive to changes in socio-economic, environmental and political factors. Mobility is a defining feature of pastoral livelihood systems, which are found in parts of the basin along the border between South Sudan and Ethiopia.

2. EDUCATION AND HEALTH STATUS

2.1 INTRODUCTION

In South Sudan the national baseline household survey conducted in 2009 showed that more than 27% of the adult population (i.e. 15 years and above) was literate. Nationally, the literacy rate for males was 40% compared to 16% for females. 53% of the urban adult population was literate, compared to 22% of the rural adult population. 40% of the population between 15-24 years was literate.

The literacy rate for males in this age group was 55% compared to 28% for females (National Baseline Household Survey, 2009). In 2011 the Gross Enrolment Rate (GER) for primary school was 63% and the Net Enrolment Rate (NER) for primary school was 42.9%. The NER was highest in Upper Nile at 60% and lowest in Eastern Equatorial at 37%. The gross intake rate was 66% compared to the net intake rate of 14.9% for Primary one (National Educational Statistical Booklet, EMIS, Ministry of Education, 2009).

At primary level the distribution of girl and boy pupils is uneven, with girls comprising only 39% of the pupil population in 2011. This pattern is evident in all states in the basin.

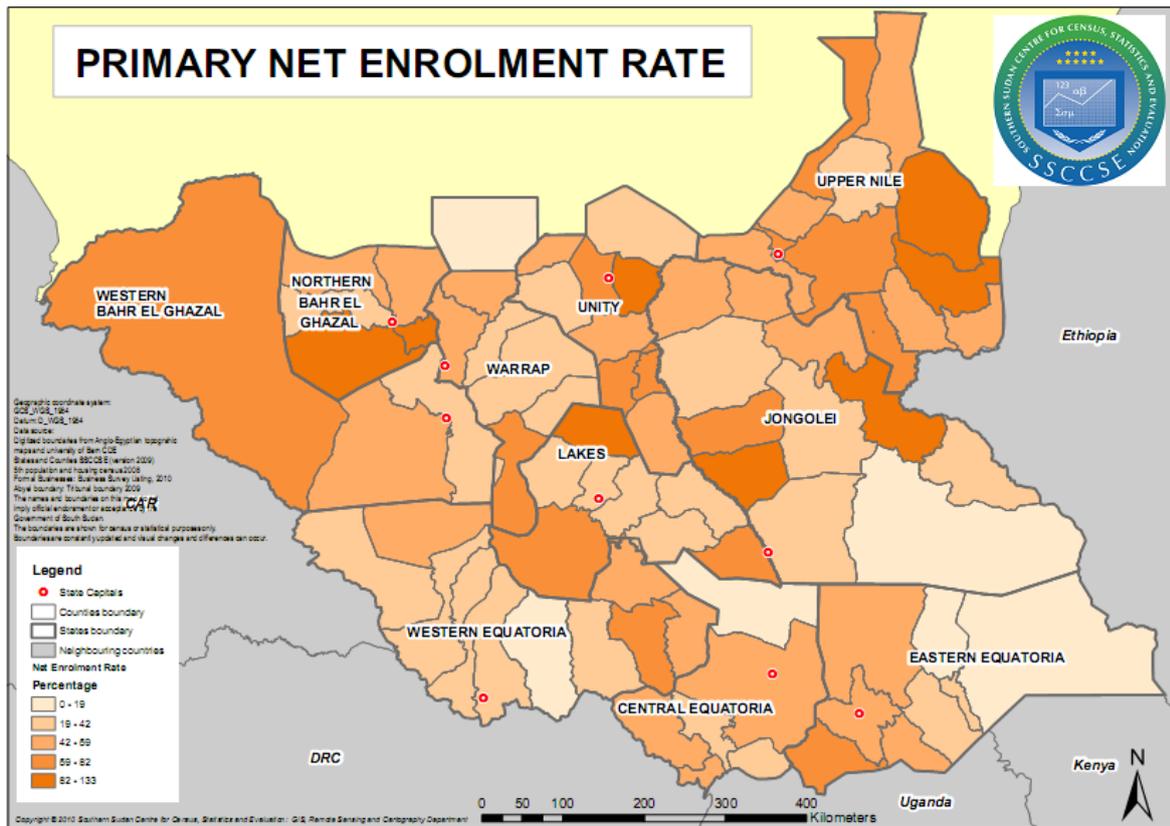
While the number of students has increased, there has been very little change in gender parity. Some 70% of secondary school students are male. The trend resembles that at the primary level, whereby boys have higher access to education than girls (MoGEI, 2012).

South Sudan has some of the lowest educational indicators, with education of girls being among the lowest. Only one girl in ten completes primary education, and girls comprise just a little over one-third of the secondary school population. Very few girls who complete primary education continue on to secondary school. There are many barriers (cultural, financial, poor infrastructure/quality) that prevent girls from going to and remaining in school. A girl child faces many barriers when she wants to go to school: her family may not be able to pay for her education, or may think education for girls is not important or necessary.

Therefore, the main challenge to education in South Sudan is to eliminate barriers to girls' education and promote gender equality through and throughout the education system³. As shown in the map here after, the Net enrolment Rate (NER) is highest (i.e. 82-129) in Upper Nile and lowest (below 20%) in Eastern Equatoria.

³ <http://www.girlseducationsouthsudan.org/about-girls-education-south-sudan>.

Figure 2-1: Primary Net Enrolment Rate in South Sudan



The following table presents key education indicators for South Sudan:

Table 2-1: Key Education Indicators for South Sudan

| | |
|---|---------------------------------|
| Adult Literacy Rate (% of people >15 years old) | 27% (2010) |
| Gross Primary Enrolment Rate | 63% (m=73.3%; f=52.5% (2011)) |
| Net Primary Enrolment Rate | 42.9% (m=48.0%; f=37.1% (2011)) |
| Primary Pupil-Teacher Ratio | 52.4 (2011) |
| Primary Pupil-Class Ratio | 124.7 (2011) |

The above table shows that adult literacy in the country is generally low, at 27% of the population over 15 years old. Further observations show that there is a significant difference in primary enrolment rates between males and females, and large number of students per class.

As shown in Table 2-2 here after, unlike formal education, vocational training is orientated for preparing individuals for an occupation in the world of work. Very wide gender disparities exist between subjects, with males dominating technical and manual skills such as welding (99.3%), and carpentry (95.5%), with females dominating in hairdressing, tailoring and a few others.

Table 2-2: Technical and Vocational Students by Subject and Gender

| Subject | Total | Male | | Female | |
|------------------------|-------|-------|------|--------|-------|
| | | N | % | N | % |
| Agriculture | 384 | 251 | 65.4 | 133 | 34.6 |
| Automotive technology | 547 | 500 | 91.4 | 47 | 8.6 |
| Carpentry | 531 | 507 | 95.5 | 24 | 4.5 |
| Computer technology | 307 | 177 | 57.7 | 130 | 42.3 |
| Electrical technology | 430 | 382 | 88.8 | 48 | 11.2 |
| Hairdressing | 16 | - | - | 16 | 100.0 |
| Masonry/Construction | 533 | 494 | 92.7 | 39 | 7.3 |
| Plumbing | 134 | 100 | 74.6 | 34 | 25.4 |
| Printing technology | 11 | 10 | 90.9 | 1 | 9.1 |
| Tailoring/Embroidering | 702 | 114 | 16.2 | 588 | 83.8 |
| Welding technology | 139 | 138 | 99.3 | 1 | 0.7 |
| Other | 1,725 | 726 | 42.1 | 999 | 57.9 |
| Total | 5,459 | 3,399 | 62.3 | 2,060 | 37.7 |

As can be seen from the above table, there are almost 5,500 students enrolled in vocational programs in South Sudan; the distribution of students between states is uneven. The majority of technical and vocational training centers are in Central Equatoria State, which represents almost half of all centers. The gender disparity between technical and vocational students is found in all states except Lakes.

South Sudan has an acute shortage of educational institutions and resources to maintain them. Seventy-three per cent of the population is illiterate according to the Southern Sudan Centre for Census, Statistics and Evaluation (2014). Nearly one in four civil servants lacks formal education.

In addition, a need exists for vocational and non-formal training to reintegrate thousands of ex-combatants and hundreds of thousands of newly arrived returnees into productive employment and to develop a labor force with the skills to support a growing economy, especially in the areas of construction, mechanics, plumbing and electrical work. In some cases, new returnees arrive in South Sudan with useful skill sets from work experience in Sudan, such as teaching, mechanics or construction. Making effective use of these human resources in the developing economy of South Sudan is a major challenge to making an enabling environment for development.

2.2 HEALTH STATUS AND TRENDS

Mortality in the basin has been exacerbated by acute malnutrition and disease, with more than one in five counties surveyed (10 out of 46) having Crude Death Rates (CDR) above the threshold of 1 death per 10,000 people per day. There continue to be deaths from preventable diseases. Malaria is the largest cause of death, with more than 1,100 deaths due to the disease reported in health facilities from January to October 2015.

The main health problems prevalent in the basin are human diseases which include tsetse, yellow fever, malaria, Onchocerciasis and Schistosomiasis. These diseases are a major constraint to the economic and social development of the basin. In the future, many human health problems are likely to be impacted by development interventions such as irrigation, reservoirs, expansion of human settlements, and influx of people into the basin due to large-scale farm development and investment. Malaria could well become perennial instead of seasonal; and tsetse will increase in accordance with the increase in livestock population and with use of animal traction for crop production.

Table 2-3: Selected Health Indicators

| Indicator | Country | |
|--|--|--|
| | Ethiopia | South Sudan |
| Birth rate (per 1,000) | 38 (2014) | 46 (2011) |
| Death rate (per 1,000 pop) | 8.5 (2014) | 11 (2013) |
| Infant mortality (per 1,000 live births) | 55.77 | 99 (2006) |
| Total fertility (children/woman) | 5.23 (2014) | 4.9 |
| Life expectancy at birth | 60.75 (2014) | 54.0 (2014) |
| HIV/AIDs – adult prevalence rate | 1.3% (2012) | 2.6% (2013) |
| Access to improved water sources | Urban 96.8% Rural 42.1% Total 51% (2012) | Urban 67% Rural 53% Total 55% (2009) |
| Access to improved sanitation | Urban 27.4% Rural 22.8% Total 23.6% (2012) | Total 20% (2009) |
| Maternal mortality (per 1,000 live births) | 350 (2010) | 730 (2006) |
| Underweight children under 5 | 29.2% (2011) | N/A |
| Health expenditure (% of GDP) | 4.7% (2011) | 0.7 (2011) |

Sources: WHO, 2012, World Bank, World Development Indicators, and SSCCE, Key Indicators for Southern Sudan, February 2011.

South Sudan's health situation requires urgent attention and its needs are considerable. Maternal mortality, at 730 women per 100,000 live births, is among the highest in the world and can be part of the explanation for the fewer number of women than men in South Sudan. Contributing to this situation is the fact that 90% of all births occur without a health care professional in attendance. Infant mortality, at 102 per 1,000 live births, is also among the world's highest. Nutritional data from the *2008 Annual Needs and Livelihoods Assessment*, revealed that a quarter of all children under five years of age were underweight, and nearly one in five was stunted. Less than 18% of children are fully immunized. Approximately 30% of the population does not have access to a health facility. The increasing prevalence of HIV/AIDS, a "negative peace dividend" resulting from increased traffic from neighboring countries with higher rates of HIV/AIDS, is cause for alarm.

From January to October 2015, more than 2.1 million cases of malaria were reported in health facilities, resulting in more than 1,100 deaths. These figures include only deaths at health facilities, and the overall death rate from this disease is likely to be much higher.

3. GENDER RELATIONS⁴

3.1 INTRODUCTION

South Sudan is the world's newest country with more than 60 ethnic groups and 80 local languages. Distinctions of ethnicity, language, religion, social class and rural or urban way of life cut across the society resulting in different gender relations even within the same overall ethnic group. Principle ethnic groups include the Dinka, Nuer, Bari, Murle and Shilluk. Most South Sudanese are Christian, there are also Muslims, and many South Sudanese practice traditional animist beliefs. The large majority of South Sudanese (some 83%) live in rural areas although there are significant differences between states.

The cattle culture is very important for most South Sudanese ethnic groups. The size of one's herd is a key marker of wealth, and cattle-raiding has been a main catalyst of inter-ethnic violence before the current political conflict erupted. In many parts of South Sudan, cattle are also used for bride price which is required for a man to marry.

Gender relations in South Sudan are shaped by the social and economic realities of being one of the world's Least Developed Countries and by decades of conflict and violence. The starkest results of women's poor health status and life chances are that, unlike many other countries in the world, there are more men than women in South Sudan: 52% male to 48% females, compared to the global average of 51% females to 49% males.

Education rates are low, with 27% of the adult population literate: 40% of men over 15 years compared to 16% of women over 15 years old.

Prevailing cultural norms, especially in rural areas, marginalize women from participation in political activity or decision-making. However, since independence, there have been real changes in national policy and laws on gender equality. The Transitional Constitution and Bill of Rights (2011) provides guarantees for the equality of men and women. It recognizes the historic inequalities between women and men in South Sudan and sets out a 25% Affirmative Action quota for women in legislative and executive bodies. Women currently comprise 26.5% of the National Legislative Assembly.

Women and men, trading women for food or security, traditional practices including 'girl compensation', and forced prostitution/sexual slavery. Domestic violence is also widely accepted by both women and men in South Sudan: 82% of women and 81% of men agreed that "women should tolerate violence in order to keep her family together".

Early marriage is very common: 45% of girls married before they were 18 years old and 7% of girls married when they were younger than 15 years old. Bride price paid by the husband to the girl's family is the norm.

To obtain cattle for the bride price, cattle-raiding has increasingly targeted women and children. Polygamy is very common, with 41% of marriages involving more than one wife. Divorce is extremely difficult for women to obtain: traditionally only men can ask for one and the wife's family have to pay back the bride price.

Masculine identity tied to cattle-raiding, bride-price, a lack access to legal recourse, and customary practices that favor compensation for crimes against women and girls like rape.

Gender relations in South Sudan are complex: the roles and responsibilities of women, men, boys and girls are clearly delineated in traditional cultural norms but sex roles for women and girls are more resistant to change than are the roles of men and boys. The roles of men and boys are being transformed by both new political and longstanding interethnic conflicts over land, water and other natural resources.

⁴ The following makes use of information contained in, Gender Brief, CARE, 2014

Women and girls have responsibilities for farming, collecting water and firewood, cooking, cleaning, childcare, and brewing beer. Men and boys have responsibilities as decision-makers for their communities and families, cattle (boys in particular tend to be cattle-herders), hunting, fishing and charcoal making.

In times of conflicts and crisis, gender roles and responsibilities change, survival needs and coping strategies families and individuals must engage in. Gender relations also affect the needs, coping strategies, participation and access of women, men, boys and girls to humanitarian assistance.

There are many female-headed households in the basin, where mothers have full responsibility for raising families while their spouses were “in the bush” fighting the war. This gendered burden was acknowledged by the southern Sudanese leadership, which characterized southern women as “the marginalized of the marginalized” .

The results of a gender assessment in South Sudan in 2010 made the following findings.

- ▶ Women do not have the right to own land
- ▶ Men get preference in training on traction methods and agricultural machinery
- ▶ There has been significant progress through new roads and improved market access
- ▶ Girls’ school enrollment has improved but dropout remains high
- ▶ There has been some improvement in school infrastructure, but water and sanitary facilities are still lacking causing girls to drop out of school
- ▶ There is a continued lack of trained female teachers, even with a program specifically to attract women teachers
- ▶ There is a need for functional literacy courses for uneducated youth and adults to become employed
- ▶ New roads continue to increase access to health centers but the problem remains; rural women still do not have access to health care.
- ▶ Women should also be offered opportunities to participate in training that involves mechanized farming techniques, use of tractors, automatic grinding machines, automated threshers, etc.
- ▶ Consider gender roles already in place and make sure that opportunities exist for women to reduce the number of hours tasks require through better methods and/or mechanization

3.2 SOUTH SUDAN’S NATIONAL GENDER POLICY

South Sudan’s first post-independence development plan (SSDP 2011-2013) recognizes the central role of gender equality in development and includes it among the nine cross-cutting issues which all sectors are required to mainstream in all policies, plans and programs. South Sudan enacted a National Gender Policy in 2012⁵. The Policy contains objectives and strategies for addressing eight focus areas as identified by the women and men of South Sudan during the policy consultation processes, These are:

- i. Gender equality and democratic governance
- ii. Gender, education and capacity development
- iii. Gender equality and health
- iv. Gender and food security
- v. Gender and women’s economic empowerment
- vi. Gender-based violence
- vii. Gender, peace and security
- viii. Gender environment and natural resources management

⁵ National Gender Policy, Ministry of Gender, Child and Social Development 2012.

The vision of the National Gender Policy for South Sudan is of a country that is just and free from all forms of discrimination and violence where women, men and children enjoy their human rights on the basis of equality and non-discrimination in all spheres of national life.

The mission of the policy is to achieve gender equality and non-discrimination at all levels of society and across sectors for the achievement of peace and sustainable development in South Sudan.

The ultimate goal of this policy is to make gender equality an integral part of all laws, policies, programs and activities of all government institutions, the private sector and civil society so as to achieve equality in the cultural, social, political and economic spheres in South Sudan.

The overall objective of the national gender policy is to serve as a framework and provide guidelines for mainstreaming gender equality and the empowerment of women in the national development process.

3.3 GENDER ISSUES IN FOOD SECURITY

All elements of food security (availability, access, utilization and sustainability) have been affected by decades of conflict and insecurity. South Sudan is, therefore, among African countries considered most at risk of food insecurity (African Human Development Report (AHD 2012). While women play a key role in food production and preparation, they and the children are among the first victims in times of food shortage and hunger and often suffer from malnutrition.

The Government has developed a policy framework in the food security related sectors, including agriculture, water, health, transport and trade. These policies, however, need to be more gender-aware and take into consideration the differential contribution and impact on men and women.

There is an urgent need to develop deliberate policies and interventions that recognize and reward women's multiple roles and unpaid labor and enable them to have better access to productive inputs, markets and food security in a sustainable manner. This requires investing more in education, capacity and skills building in improved agricultural production methods and better access to extension services and inputs for more sustainable production. Equally important is to diversify and extend women's role beyond subsistence production to other sectors, including agro-business, food preservation, value addition, storage and marketing and acquiring vocational and technical skills.

There is a specific objective and strategies in the National Gender Policy to address the roles of women in food security, as follows:

- ▶ **Objective:** To promote women-specific projects as a means of addressing women and children's vulnerability to food insecurity.
- ▶ **Strategies:**
 - i. Ensure gender mainstreaming throughout the food production sector, including value addition, packaging and marketing.
 - ii. Provide targeted investment to support women farmers as the main producers of food.
 - iii. Promote organization of women farmers into groups and cooperatives as a way of establishing mechanisms for better access to agricultural inputs, implements, credit and extension services.
 - iv. Establish and provide appropriate financial resources and technical services for rural women in the agricultural and food production sectors, such as training in improved farming practices, food storage and preservation, value addition and marketing .
 - v. Invest in research on laborsaving technologies
 - vi. Formulate policies and strategies to reduce women and girls' unpaid household workload

3.4 GENDER, THE ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT

South Sudan is among countries in the region that are most susceptible to environmental disasters including prolonged droughts and floods. Women play a critical role in providing food, water, fuelwood and subsistence farming, among other vital services and are the most affected by environmental degradation and hazards. Their needs and concerns must, therefore, be an integral part of the process of formulating environment and resource management policies and programs.

The following objective and strategies can help to ensure that environmental protection, conservation and management systems for the environment and natural resources, including water, are gender-responsive and able to meet the survival needs of present and future generations. Following is the objective as stated in the National Gender Policy:

- ▶ **Objective:** To mainstream gender equality in the formulation and implementation of a regulatory framework for environmental and Natural Resources Management
- ▶ **Strategies**
 - i. Provide women education opportunities and information on environmental and natural resources management in order to take up leadership roles in the sector.
 - ii. Invest in research and training of women in the development, production and utilization of energy-saving and environment –friendly cooking methods and materials.
 - iii. Make gender analysis obligatory in environmental impact assessments for investment and development projects and programs, including large-scale agriculture, dam building, and within the petroleum industry.
 - iv. Collaborate with the private sector, including the petroleum industry, to meet their corporate social responsibility by supporting women-led environment protection and rehabilitation activities.
 - v. Develop and implement gender-responsive and sustainable environment protection and conservation policies and programs and regulations.
 - vi. Conduct research on effects of environment change related to nat. resource management on women and families
 - vii. Gender dimensions of mismanagement and over-use of natural resources on women and links to conflict management and peace building

3.5 CONCLUSION

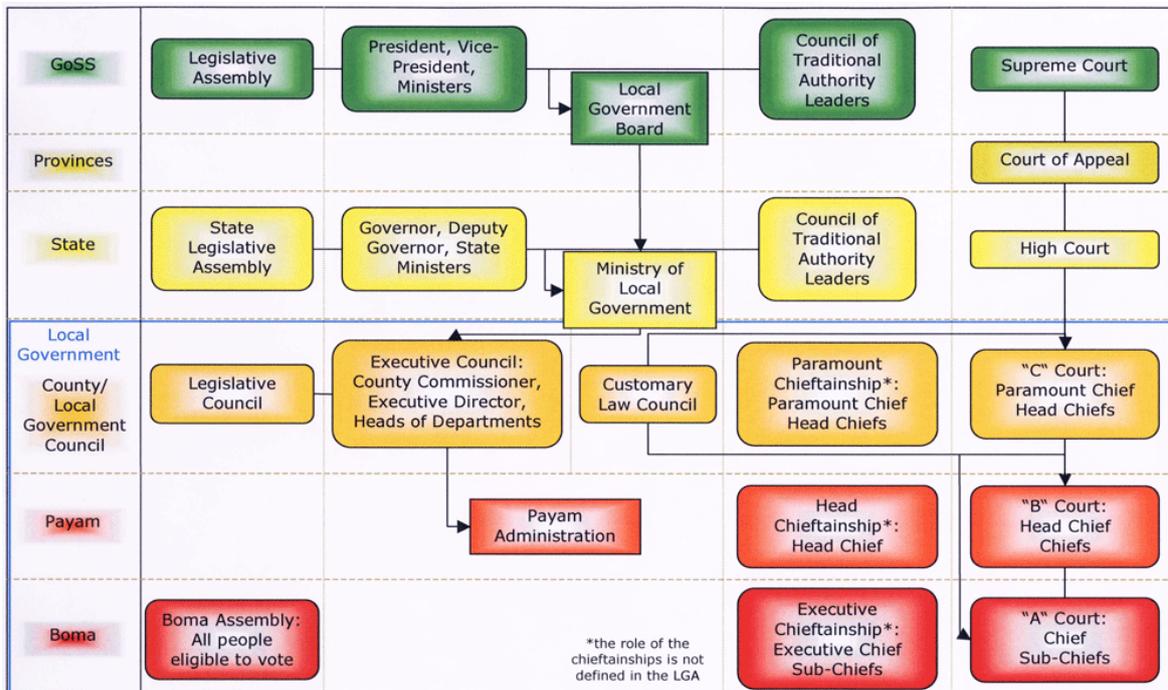
The present Study will support the implementation of the National Gender Policy by addressing the important issues of women's roles in food security and natural resources management and propose ways to enhance women's contributions in these important areas as well as to formulate a specific objective and strategies to achieve this in the context of the BAS basin.

As well as being a development objective, the largely unrealized role and contribution of women to the country's development process is both a key issue and one of the most important potentials to be addressed in subsequent phases of this study.

Counties are divided into smaller administrative units called *payam*, which are in turn divided into *bomas*, the lowest administrative level of the South Sudan state.

The administrative structure of the South Sudan state is based on the principle of decentralization and is shown in the diagram here after.

Figure 4-2: Administrative Organization of Government



Source: Decentralisation Hybridized, Annina Aeberli, Graduate Institute Publications, 2012

As can be seen from the above diagram, the South Sudan state’s structure contains a parallel hierarchy of traditional chiefs, which itself contains both an executive and a judicial arm based on a vertically aligned system of courts that apply and enforce both customary and formal laws. In addition, in many areas, traditional social customs and norms are enforced by a network of tribal, clan and sub-clan elders operating at the local level.

4.1 ETHNIC GROUPS

In South Sudan there are some 60 main indigenous ethnic groups. The major groups are the Dinka, Nuer, Azande, Bari, Shilluk, Lotuho, Toposa, Lou, Moru, Murle, etc. the map here afetr shows the distribution of major ethnic groups in South Sudan.

Figure 4-3: Distribution of Major Ethnic Groups in South Sudan



Source: Information Management Unit for Sudan, 2004

The **Dinka people** are organized into several independent, but interrelated clans. They form the largest ethnic group in South Sudan, accounting for 35.8% of the population. They are predominately pastoral people, but also practice shifting cultivation, growing millet, maize and occasionally cotton.

The **Nuer people** live in states of Upper Nile, Jungle and Unity. They are the part of Nilotic group and are the second largest group in South Sudan, representing 15.6% of the population. The Nuer are pastoralists or, more properly, agro-pastoralists.

The **Azande people** live primarily in Western Equatoria state of South Sudan, and are the country's 3rd largest (about 713,000 people) ethnic group. The Azande are primarily small-scale farmers, historically supplying much of the grain for South Sudan. Azande also appear to be one of a few groups of people in South Sudan that do not embrace the cow culture, requiring dowries of cows for marriage. There has historically been conflict with the Dinka.

The **Bari people** occupy the savanna lands of the White Nile Valley. The Bari number about 542,000 and are the country's 4th largest ethnic group. They embrace a cattle culture; the components of a typical traditional Bari dowry are made up of live animals, averaging 23 heads of cattle (cows, calves and bulls), 40 goats and sheep. Dowry is handed over when betrothed are of marrying age, followed by a Christian wedding.

The **Shilluk people**, with a population of over 381,000, are the country's 5th largest ethnic group in the country. They mainly live in upper Nile state in South Sudan. Shilluk are sedentary and practice rainfed cultivation of sorghum, maize, groundnuts, beans and tobacco near their villages. Shilluk people possess fewer cattle and depend less on cattle products. Thus they are not obliged to migrate with the seasons. Fishing is an important component of their economy.

The **Lotuho** are primarily a pastoral people numbering over 207,000 (the 6th largest ethnic group and are located in Eastern Equatoria State. Their religion is based on nature and ancestor worship. Land is held in

trust by the community. A group of people decide. They make gardens in a certain places, and the group decides the boundaries of each person's garden. Certain areas are fallow (for up to 10 years in the mountains) and other areas open to cultivation (for up to 4 years in the plains), with fallow areas being used for grazing livestock. In recent times, the Lotuho and their neighbors, the Lopit, have been in conflict with the Murle people, who have traditionally raided their cattle and abducted their children.

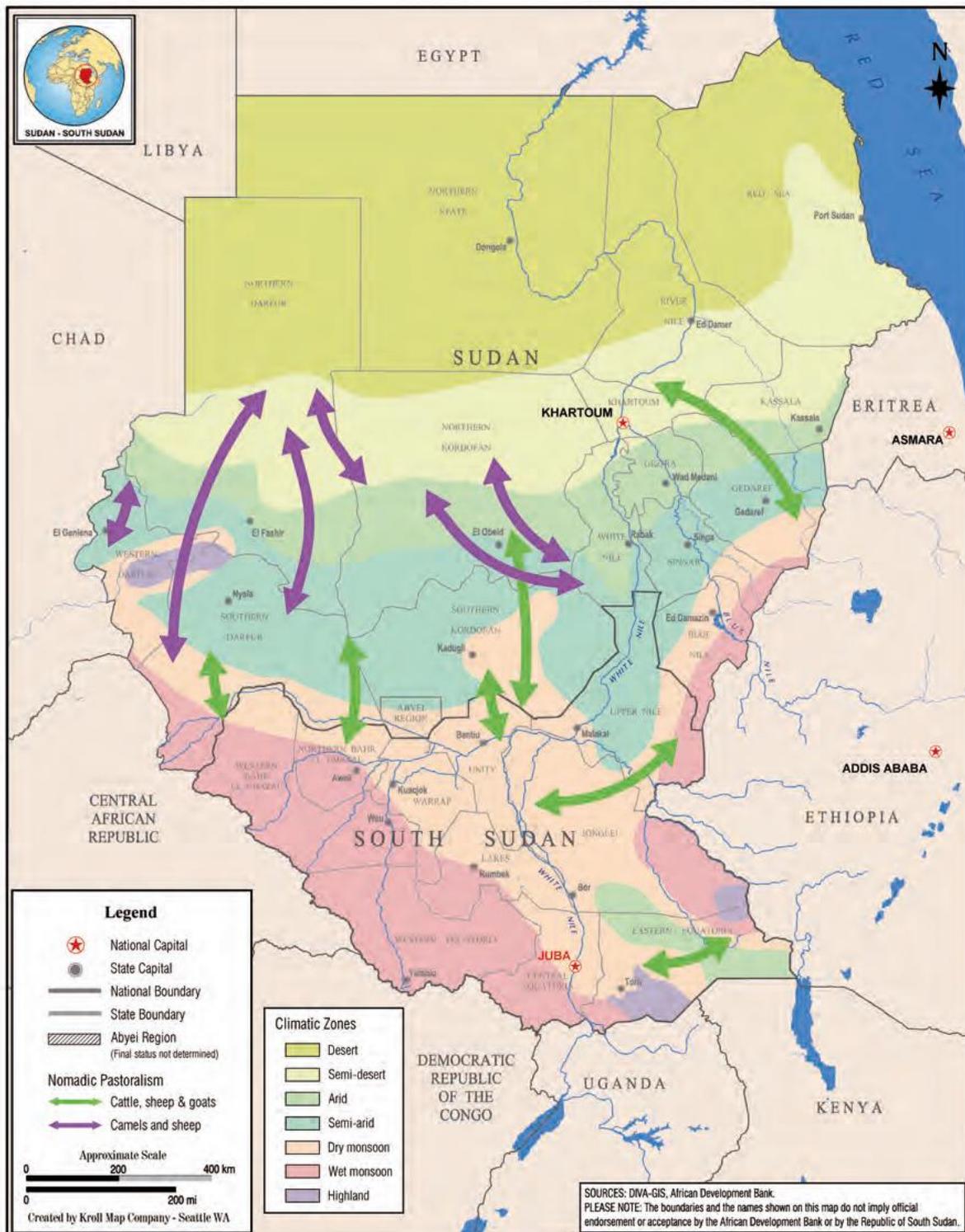
The **Toposa people** primarily live in Eastern Equatoria, and number about 207,000, representing the 7th largest ethnic group in South Sudan. Respect is paid to elders, chiefs and wise men. Most decisions affecting the clan or community are made in meetings attended only by men, traditionally held in the darkest hours before dawn. Traditionally they lived by herding cattle, sheep and goats, low-level warfare (mainly cattle raids against neighbors), and have always engaged in cattle raiding. They are mainly pastoralists, keeping cattle, camels, goats and sheep, but also cultivate some maize and sorghum.

The **Murle people** live primarily in the State of Jonglei in South Sudan as well as in neighboring regions of Ethiopia and practice a mix of traditional religion and Christianity. With a population of about 130,000, the Murle are the 11th largest ethnic group in South Sudan. The Murle (like the Dinka and Nuer) have a tradition in which men can only marry when they pay a dowry of several dozen cows. Because of poverty in the area, the easiest way to obtain a bride is to steal cows from other tribes. Historically the youth of the Murle, Dinka and Nuer seem to have equally raided each other for cattle dowries.

Nuers are predominantly cattle-breeders, but they also cultivate flood recession maize and sorghum to supplement their diet of milk and blood. Cattle are jointly owned by families.

The following map shows main annual pastoral migration routes in South Sudan and neighboring areas in Sudan.

Figure 4-4: Main annual pastoral migration routes in South Sudan and neighboring areas

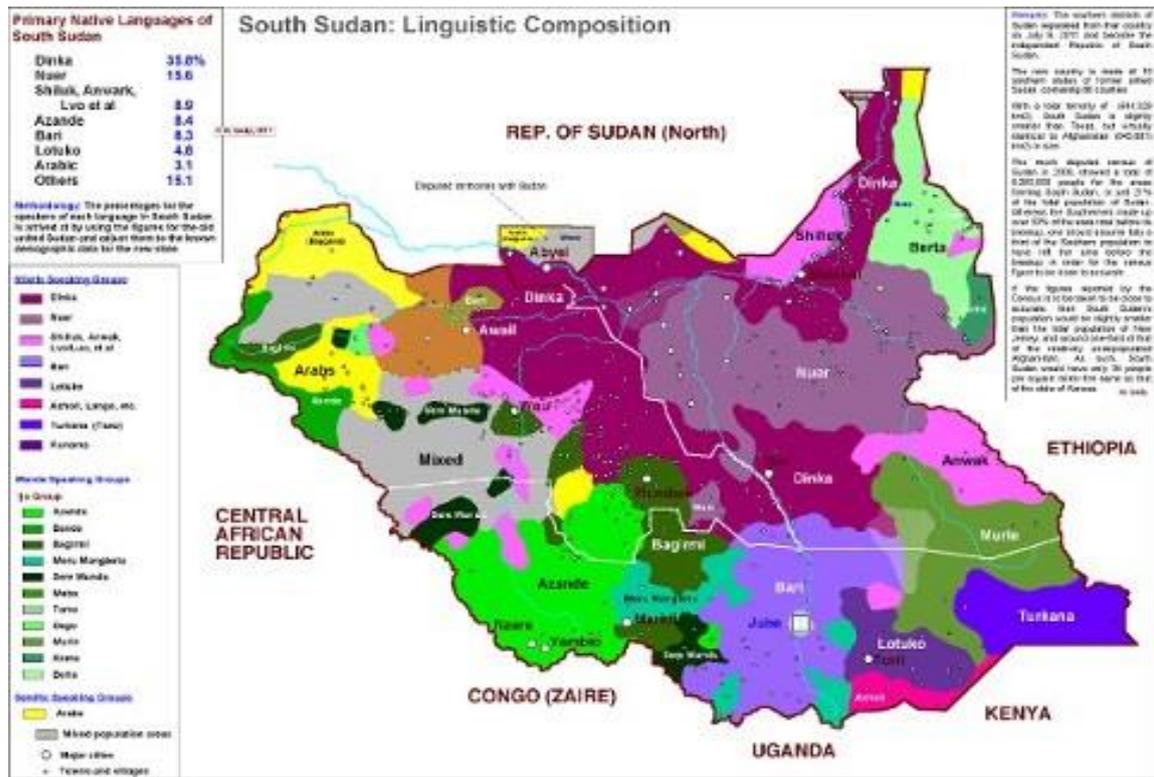


The above map shows that the main pastoral migration routes in the South Sudanese part of the basin are located in Eastern Equatoria State in the southern part of the basin and transecting Jonglei and upper Nile states. Migration routes are determined by the seasonal availability of water and pasture for livestock and are very sensitive to changes in rainfall and climatic patterns, as well as political and interethnic conflicts.

4.2 LANGUAGE

The South Sudan part of the basin is highly linguistically diverse. Not surprisingly, language is closely correlated with ethnicity and locality, except in the cases of the two main link languages, Arabic and English which serve as a means of communication across ethnic boundaries and by the State’s administrative apparatus, international organizations and businesses that have transactions across states or nationally. The following diagram shows the distribution of major languages in South Sudan.

Figure 4-5: Main Language Groups in South Sudan



Source:

As can be seen from the above map, the main languages spoken in the basin are Nuer, Dinka, Murle, Anuak, Toposa, Lotuko, Turkana, Berta and Shifter, with a number of dialects and languages spoken by smaller ethnic groups. Language is closely associated with identity and most of these languages are not used or understood across ethnic or geographic boundaries.

Indeed, the state in South Sudan could not exist or function without a common language(s) that are understood among horizontal elites across all parts of its national territory. Where there are two or more languages spoken by large ethnic groups within a country’s territory, the choice of an “official” language can be problematic and lead to conflicts. In such a situation, bridge languages such as English or Arabic can serve as official languages, even if they are used by a minority of the country’s population.

5. CONFLICTS AND DISPLACEMENT

5.1 POLITICAL CONFLICTS – CREATING LOSERS

South Sudan has experienced various forms of conflicts for many years: political, inter and intra-ethnic conflicts, border conflicts, and other traditional/social conflicts. The country was at war with Sudan for almost three decades, during which hundreds of thousands of civilians were killed, displaced and/or suffered various forms of trauma. After independence in July 2011, the country enjoyed a brief period of peace, during which a number of development programs were launched in collaboration with development partners.

However, in December 2013, growing political tensions among the leaders in South Sudan erupted in violence, only three years after the country gained independence from Sudan in an internationally-supported public referendum. While the political dispute that triggered this crisis was not overtly based on ethnic identity, it overlapped with pre-existing ethnic and political grievances that sparked armed clashes and targeted ethnic killings in the capital, Juba, and beyond.

Fighting between forces loyal to President Salva Kiir and forces loyal to former Vice President, Riek Machar, and among armed civilians, has resulted in a security and humanitarian emergency that, according to some analysts, may be drawing the world's newest country into another civil war (Blanchard, 2014). More than 200,000 civilians have been internally displaced by the violence, including more than 60,000 who sought refuge at U.N. peacekeeping bases⁶. As many as 40,000 people have fled to neighboring countries.

A major military confrontation between different SPLM factions erupted on 16 December 2013, three weeks after the end of the CFSA Mission. It spread quickly from Juba to Bor (Jonglei), Bentiu (Unity) and Malakal (Upper Nile) remained the major hotspots of conflict. A study conducted by the FAO/WFP assessment mission came up with different finding regarding the people affected by the recent war between the two forces.

A ceasefire was signed on 23 January 2014. In the few days after the signing of the cease-fire, confrontations took place in Jonglei, while tensions remained high elsewhere. The direct effects of this conflict have been more serious in Jonglei, Upper Nile Unity and Central Equatoria states. (FAO/WFP, 2014)

The number of people in crisis and a state of emergency has increased more than threefold (from 1 million to 3.2 million) during 2014 and 2015. The population in a state of emergency requires immediate humanitarian assistance for their survival.

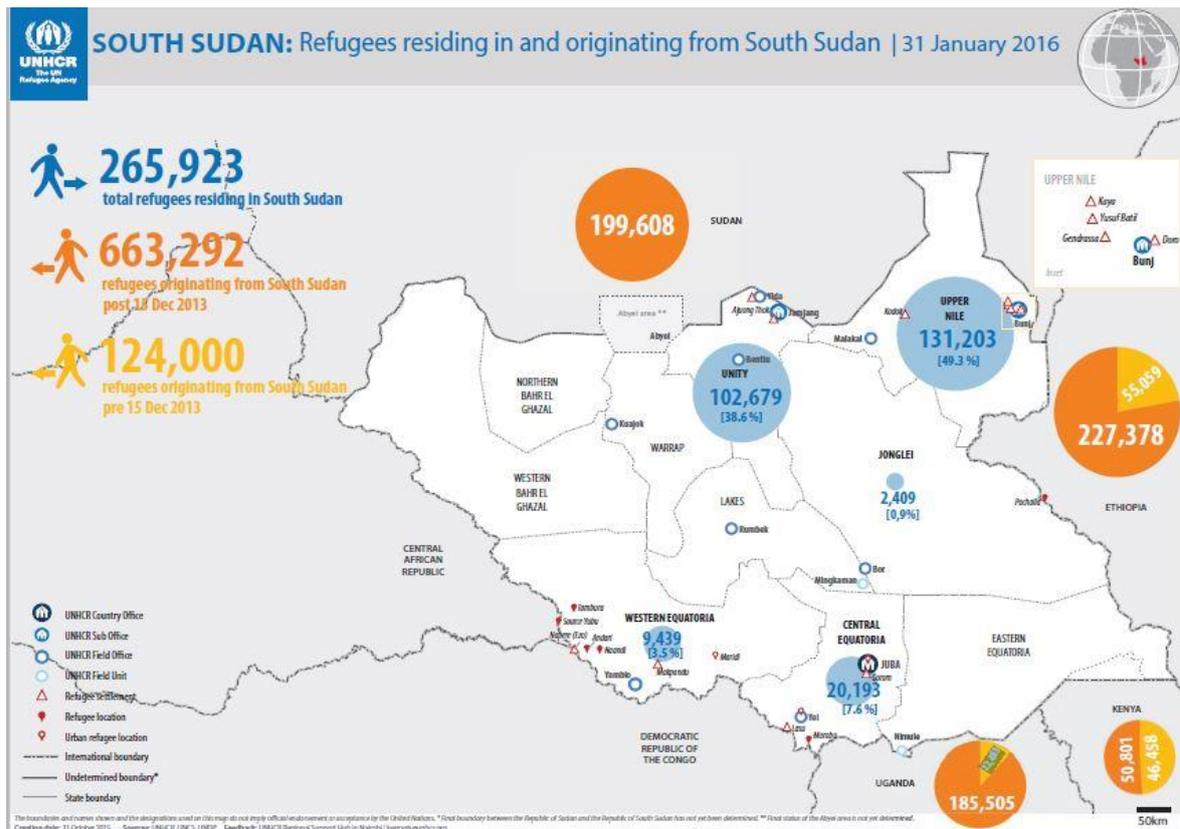
More than 2.3 million people - one in every five people in South Sudan - have been forced to flee their homes since the conflict began, including 1.66 million internally displaced people (with half estimated to be children¹) and nearly 646,000 refugees in neighbouring countries.

Therefore, conflict management and resolution is a critical issue for the future development of South Sudan. More than anything else, seeking a political solution to the current conflicts is an urgent matter to avert a looming civil war and to allow people's lives to stabilize. To address traditional as well as new conflicts, workable institutional arrangements at grassroots level and appropriate conflict management mechanisms/strategies that involve all actors are required

The following map shows the number of refugees by state and originating from South Sudan in neighboring countries at the end of January 2016.

⁶ U.N. Office for the Coordination of Humanitarian Affairs (UNOCHA), "South Sudan Crisis: Situation Report as of 7 January 2014," Report Number 8, January 7, 2014.

Figure 5-1: Refugees in and from South Sudan - January 2016



Source: UNHCR, 2016

Looking at the three basin states, it can be seen that the number of refugees is by far the highest in Upper Nile State, followed by Jonglei State. Using the numbers of refugees and displaced people as a proxy indicator of stability, it can be concluded that instability is highest in Upper Nile State and lowest in Eastern Equatoria State. It is also relevant for this study that there are over 227,000 South Sudanese living as refugees in Ethiopia. It can be assumed that the majority of this number are living in camps in the basin regions of Gambella and Benishangul-Gumuz. These figures are dynamic and are subject to frequent change as flash points and the location of incidents change in the South Sudan landscape.

Since the most recent political conflicts started in mid-December 2013, South Sudan's population size and geographical distribution has seen significant changes. According to OCHA and UNHCR, by early February 2015, about 2 million people had been forced to flee their homes due to insecurity, including 1.5 million IDPs and half a million people seeking refuge in neighboring countries (Ethiopia, Uganda, the Sudan and Kenya). Most South Sudanese refugees originate from Jonglei (mainly from South Bor, North Bor and Akobo counties) and Upper Nile states (especially from Latjor County). Over 400,000 people left the country during a six-month period in 2014.

Such "spontaneous" and involuntary population movements negatively impact farming activities, as only a small fraction of displaced people are able to cultivate their fields. In addition, the unplanned influx of large concentrations of IDPs in some counties significantly increase local food demand, which has led to higher food deficits and prices.

5.2 HISTORIC ETHNIC/TRIBAL CONFLICTS – CREATING WINNERS AND LOSERS

Inter-communal and inter-ethnic conflicts are prevalent in many local communities and among ethnic groups in the basin. Most conflicts revolve around cattle raiding and peaks during the dry season. The

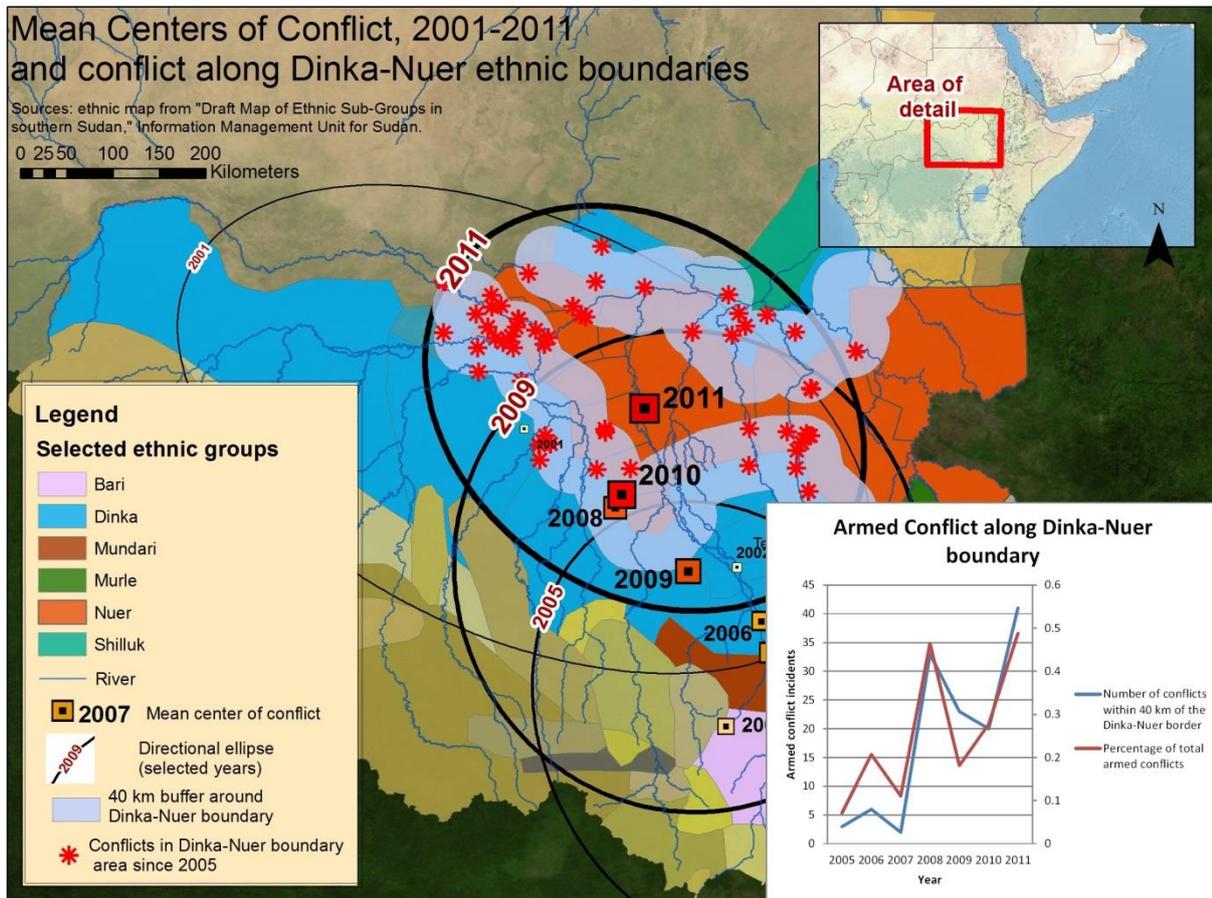
major causes of inter-ethnic conflicts are mostly various forms of encroachments on land and over the use of natural resources, including water.

Pastoralist lifestyles have a potential for conflicts due to the need to migrate over long distances seeking limited water and pasture resources. According to a representative from South Kapoeta in Eastern Equatoria State, nearly all major inter and intra-communal conflicts are linked either to cattle raiding and the subsequent spiral of violent retribution, or conflict among pastoralists and farmers over migration routes and access to water and pastureland. Providing adequate water points along major grazing routes will contribute to solving the present conflicts.

While all ethnic groups have conflict resolution mechanisms for internal conflicts which serve to maintain the internal legitimacy and cohesion of the group, no effective mechanisms exist to mediate inter-tribal conflicts and disputes. By default, this task falls to the national police force and formal courts, which are often ill-equipped and reluctant to handle such conflicts.

The following map shows the location and trends in armed conflicts and conflicts along the interface between Dinka and Nuer territory during a 10-year period.

Figure 5-2: location of conflicts (2001-2011)



Source; Information Management Unit for Sudan, n.d.

6. CROP PRODUCTION

6.1 INTRODUCTION

Crop production (agriculture) is one of the natural resources practices, as means of earning cash and foodstuff for sustaining livelihoods. Agricultural practices in the basin vary considerably across agro-ecological and livelihood zones. However, similarities exist in farming systems across national borders where historical ethnic and cultural affiliations. The main farming systems are rainfed and irrigated cropping. Rainfed agriculture is the most common farming system, ranging from small-scale subsistence production to large-scale farming (ENTRO, 2009).

Mixed cropping, poultry and livestock production are other common practices, along with shifting cultivation. In both highland and lowland areas in the basin of agricultural inputs such as fertilizers, agro-chemicals, improved seeds, tractors and other machinery is still minimal.

6.2 TRADITIONAL SMALL-SCALE RAINFED AGRICULTURE

In the highlands, traditional rainfed systems can be divided into cereal and enset-root based crop production. The enset-root based system is common among the Mocha (Sheka) people, living mainly in the highest parts of the Ethiopian highlands, cultivating enset as a co-staple crop with cereals and tubers. The common crops grown here include enset, root crops, yam, taro and sweet potato, pulses, vegetables, spices, teff, rice, cassava, maize, sorghum, cowpeas, groundnuts. Below 2,000 meters above the sea level coffee is produced in Ethiopia. Coffee, teff, maize, sorghum, cotton and root crops are the important cash crops (ENTRO, 2012; 2009).

The Anuwak, Opo and Komo peoples cultivate the banks and levees of the Baro, Akobo and Sobat rivers rather than woodlands on the interfluves. Crops grown are mainly maize, beans and sorghum. The average cropped area for maize is 1-2 hectares with 1 hectare of long season sorghum. The first maize and bean crops are grown on wetter soils where there is residual moisture. The second crop is grown during the rainy season on the high and better-drained levee soils with the sorghum and bean crops (ENTRO, 2012; 2009).

The Shilluk occupy a narrow strip of land along the banks of the Sobat River northwards to White Nile State. Around the villages, rainfed cultivation of sorghum, maize, groundnuts, beans, vegetables and tobacco occurs. The Shilluk possess far fewer cattle and depend less on cattle products than the Baggara, Dinka and Nuer, who are agro-pastoralists. They are not forced to migrate with the seasons. Fishing is an extremely important component of the Shilluk economy.

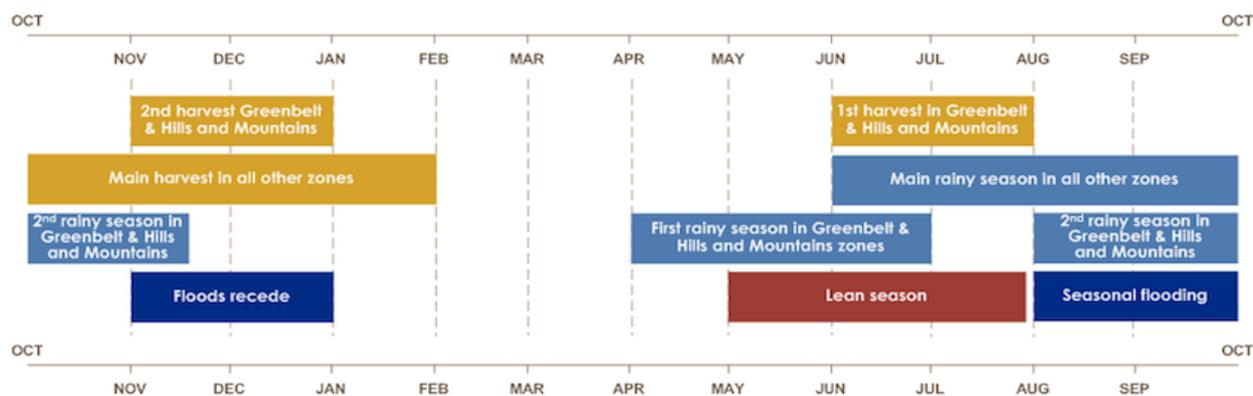
6.3 SMALL-SCALE IRRIGATED CROPPING

Traditionally, wetland areas have been avoided due to the presence of diseases such as typhus fever for humans and liver fluke for cattle. Limited wetland edge cultivation for maize practiced in the wetland areas. In addition, in the northern and eastern parts of the upper Baro-Akobo sub-basin, there is also a well-established cultivation of *taro* (*Colocasia esculenta*) in wetlands in Bench Maji Zone around Mizan Teferi, and in Sheka zone around Tepi.

This practice does not require much active water management, as this crop is tolerant of flooding. However, water management occurs in some places because farmers realize that yields can be increased in this manner with flooded areas and water availability improved before and after the rains (ENTRO, 2012; 2009).

Following is a typical agricultural calendar for the basin area in South Sudan:

Figure 6-1: Typical Annual Agricultural Calendar - South Sudan part of the Basin



6.4 FISHERIES

Capture and aquaculture fisheries sectors are among the renewable natural resources supporting a substantial population whose livelihood depends on direct and indirect exploitation of the fisheries resources of the basin. Fisheries are widely regarded in the basin as an important economic backbone to the inhabitants of the basin, such as the Anuwak, Nuer, Dinka, Bari, Shilluk and the Falata. Aquaculture potential is regarded high in the basin wetland ecosystem (ENTRO, 2009).

6.5 FORESTRY

Wood fuel and charcoal form important sources of domestic energy consumption in the South Sudan part of the basin. Woodlands provide all building materials in rural areas. They provide livestock feed as browse; and they also supply a number of non-timber forest products, the most important of which is Gum Arabic. In addition to these products, woodlands provide a number of services which have no direct monetary value, such as environmental protection, increase in crop production, conservation of soil fertility, biodiversity, protection of cultural heritage, forming habitat for wildlife and eco-tourism attraction and conservation of water catchment areas (ENTRO, 2009).

In Ethiopia, in the Baro-Akobo-Sobat basin some 7.95 million m³/year of fuel wood and charcoal (wood equivalent) are consumed as fuel forming about 65% of domestic energy consumption. The official figures for timber production do not include timber and poles produced and used outside the official market, in particular, for use for construction and other purposes in rural areas. (ENTRO, 2009).

6.6 AGRO-FORESTRY

The main components of agro-forestry are the harvesting of Gum Arabic, Gum Acacia and browse for livestock. The Gum Arabic Belt (GAB) in the Baro-Sobat-White Nile Sub-basin comprises the major part of the low rainfall savannah grassland zone extending from the border with Ethiopia through to North Kordufan west of the White Nile sub-basin on the sandy soils. The Gum Acacia belt is the savannah woodland zone extending from Eastern Equatoria through Upper Nile and South Blue Nile States. There is a distinct difference between the clay and the sand provenances of *Gum Acacia* and *Gum Arabic* in terms of their water-use efficiency and gum yield. The clay gum produced in Eastern Equatoria and Upper Nile States were distinctly superior to the sand States of White Nile and North Kordufan in all traits studied, especially in their basal diameter and crown width. The Gum Acacia are adapted for fast growth rates and high biomass and gum productivity than the Gum Arabic (ENTRO, 2009).

There are a number of direct (production) and indirect (environmental) benefits from gum production. Direct benefits from trees are as fodder for cattle, sheep, and goats. Older trees (i.e. 15+ years), which no longer

produce good quality gum, are often felled for fuel wood and for charcoal production. Indirect benefits are from deep taproots and extensive lateral root system which reduces soil erosion and runoff and stabilizes soils.

Its leguminous characteristics also fix nitrogen which encourages grass growth for grazing by livestock. The trees can act as windbreaks and can assist in the stabilization of shifting sand and moving dunes. Moreover, seasonal laborers from other parts of South Sudan and Sudan migrate to the Gum Belt seeking employment. Thus its production system supports and extends livelihood strategies to many people. They also gather shear nut and honey (ENTRO, 2009).

In the Ethiopian part of the basin, agro-forestry takes the form of coffee growing under shade. Some on-farm Eucalyptus planting is taking place in the Kaficho-Shakiso Zone where the forest has largely been cleared. In other highland areas considerable numbers of indigenous trees remain in and around cropland (ENTRO, 2009).

6.7 LIVESTOCK

In the Baro-Akobo-Sobat basin the political boundary between South Sudan and Ethiopia is mirrored by socio-cultural and physical affiliations. Many people have traditionally embraced pastoralist and agro-pastoralist livelihoods, keeping livestock has been deeply rooted in their lifestyle, and is now the source of both individual, cultural and even national identity, others who for one reason or another lost their livestock have become, sedentary farmers.

A number of groups in the basin retain their original way of life, but with some modifications. These include, among others, the Nilotic groups of Nuer, Dinka, Shilluk, Anuwak, Murle, Mundarin and other Bari speaking groups. The Nuer, Dinka and Murle are pastoralists keeping long-horned varied colored *nilotic cattle*.

Other groups can be classified as agro-pastoralists such as the Shilluk, Anuwak and Bari groups which keep the dwarf and compressed *Mangala* cattle (known for their resistance to tsetse fly) and these later groups are mainly sedentary cultivators.

The Taposa people live mainly in Kapoeta County in Eastern Equatoria, which experiences lower rainfall. The Taposa depend mostly on the Pibor catchment. They are mainly pastoralist keeping *Taposa* cattle, sheep and goats. They also cultivate maize, sorghum and engage in artisanal mining (ENTRO, 2009).

The Shilluk, Nuer and Dinka who mainly occupy riverbanks, alternate their economic activities with fishing to supplement their food and economic security. The Anuwak are also agro-pastoralists, and are found in both Ethiopia and South Sudan interacting with each other in the Gambella plain. They typically occupy the high levees along the Sobat River and its eastern tributaries in Ethiopia. They cultivate sorghum and maize on flood retreat soils below the levees. Fishing is also an important element of their livelihoods.

It is an urgent task of Governments, especially in South Sudan, to create a legitimate and overarching national identity and institutions which encourage the assimilation of diverse ethnic groups to a common purpose.

7. LIVELIHOODS

7.1 INTRODUCTION

The inhabitants of the basin predominantly engage in agriculture (crop production), livestock husbandry, fishing, forestry, gathering wild foods, wildlife (hunting), some mining, etc. People are highly dependent on locally available natural resources and the products they provide for their livelihoods.

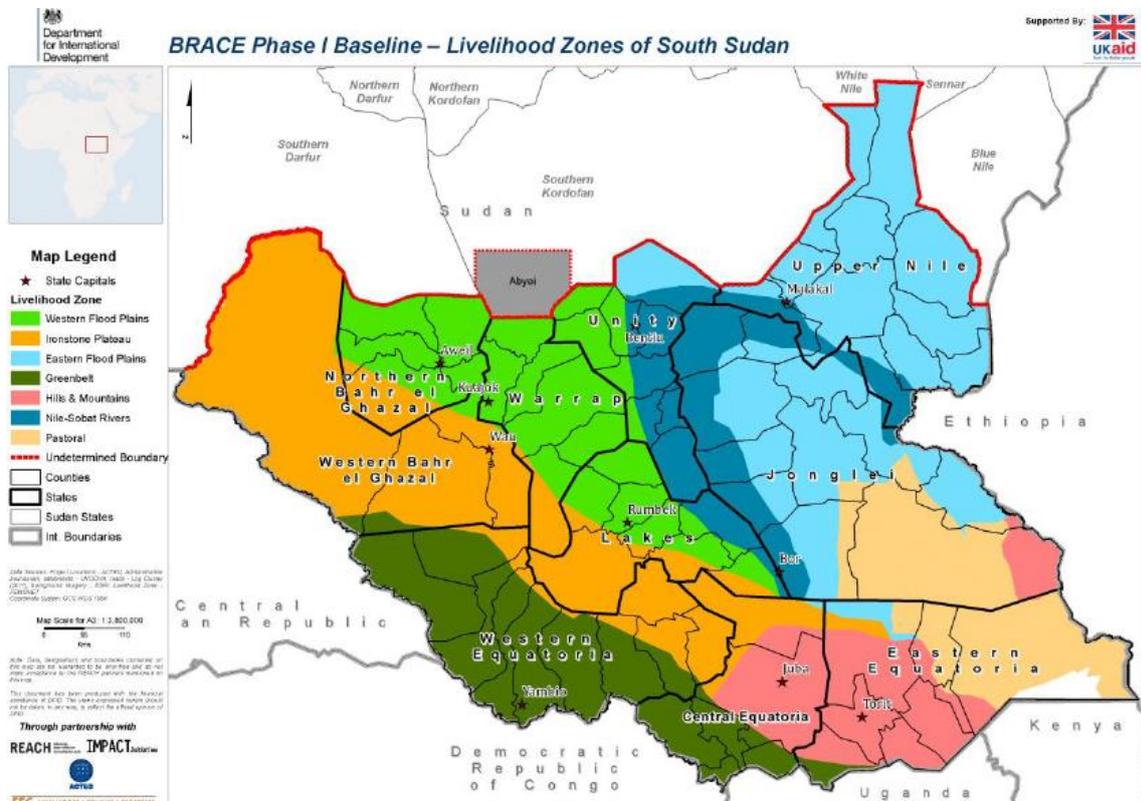
Accordingly, the renewable and non-renewable natural resources sectors influencing livelihoods in the basin include agriculture, fisheries, forestry, livestock, mining and wildlife. Therefore, a relevant approach to sustainable development in the basin should target communities whose lives almost entirely depend on the exploitation of these resources for their wellbeing, although sustainability and environmental management remains a challenge.

The following sections describes the main economic activities in the basin and their reliance of use of natural and environmental resources in the basin.

7.2 LIVELIHOOD ZONES

The following map shows the main livelihood zones in South Sudan. The dominant livelihood zones in the basin states are the Eastern Flood Plains and the Nile-Sobat zones.

Figure 7-1: Livelihood Zones in South Sudan

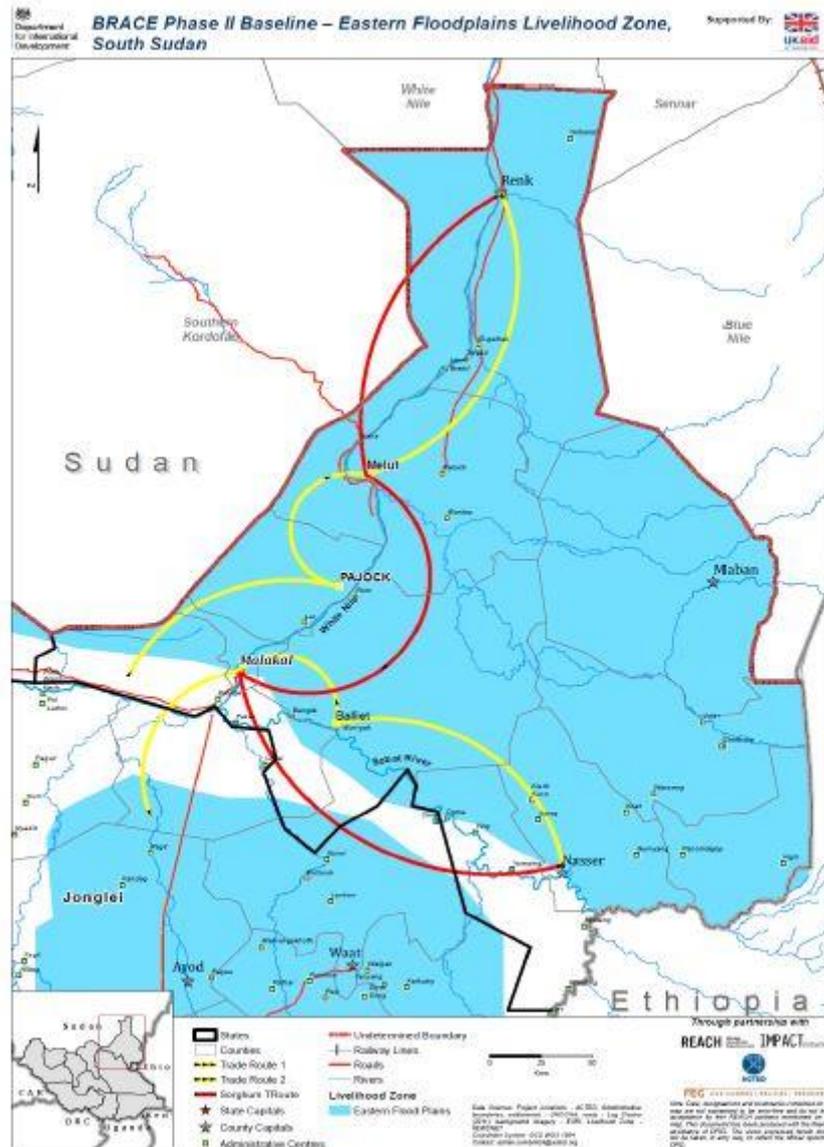


Source: Building Resilience through Asset Creation and Enhancement* ATEP/Impact, 2013

7.3 EASTERN FLOODPLAINS LIVELIHOOD ZONE

A more detailed picture of livelihoods can be obtained from smaller-scale area maps. Following is a more detailed map of the Eastern Floodplains livelihood zone.

Figure 7-2: Eastern Floodplains Livelihood Zone



Source: Building Resilience through Asset Creation and Enhancement” ATEP/Impact, 2013

The above map shows that the main trade routes in the Eastern Floodplains livelihood zone which includes a large part of Upper Nile State and extends into the northern part of Jonglei State, are from east to west from Nasir to Maliakai and north-south from Renk in the north, through Meluk to Malakal. The prevalent livelihoods and market flows for the Eastern Floodplains are provided in the following sections.

7.3.1 Markets

Food purchases from the market are affected by both market access and food availability. Access is typically poor in Upper Nile State as there are few all-season roads. During the rainy season, roads are often washed out and villages are usually inaccessible by vehicle for about seven months of the year. This

affects trader flow as well as raises the cost of goods. With regards to food availability, sorghum, the staple grain, is supplied to local markets from local farms. Sorghum is also imported from neighboring Sudan.

Maize and cowpeas are also supplied locally, although these items are not usually available from March to August. Prices for the staple foods fluctuate greatly during the year due to the poor condition of road infrastructure combined with limited access to cross-border trading with Sudan. During the baseline assessment, some households paid SSP 7-12/kg of sorghum between June-August 2012 when prices hit their peak. By contrast, post-harvest, at the end of 2011, sorghum sold for SSP 3/kg. Wheat flour and other non-staple foods are imported from neighboring Ethiopia. Other goods, such as household items, are typically imported from Ethiopia, Sudan and Kenya. A few commodities are sourced from Uganda through intermediate markets such as Juba.

Fish is an important commodity in the zone that is sold locally and is also exported. Fresh fish is available throughout the year in all local markets. Dry fish, by contrast, is sold only during the dry season. The main intermediate market for exporting dry fish north to Sudan is Nasir town. Nasir town is a major hub for fish traders coming from neighbouring livelihood zones or across the border where dried fish is packed and transported by river to Sudan.

Cattle, goat and sheep are traded in the local market. There are two main trade routes for livestock. The first route is north along the White Nile through Melut to Renk (Fagag → Pajok → Melut → Renk). The second route is along the Sobat River through Nasir → Baliet → Malakal → Jonglei. The trade route for sorghum is enk → Melut → Malakal → Nasir. This route follows both the White Nile and the Sobat Rivers. Both the South Sudanese Pound (SSP) and the Ethiopian Birr (ETB) are functional currencies particularly in counties bordering Ethiopia.

7.3.2 Seasonal Calendar

There are three main seasons in the Eastern Flood Plains livelihood zone. The main rainy season is between May and October. This is followed by a wet-dry season from November to January and then the dry season from February to April. The crop cycle begins with land preparation in April and May, followed by planting of sorghum and maize at the end of May and into June. By August, maize is typically ready to be eaten fresh (or green) from the fields. The harvest starts in October and carries on into November. If there is a late onset of rain, the sorghum harvest may extend into January (see Table 4, next page).

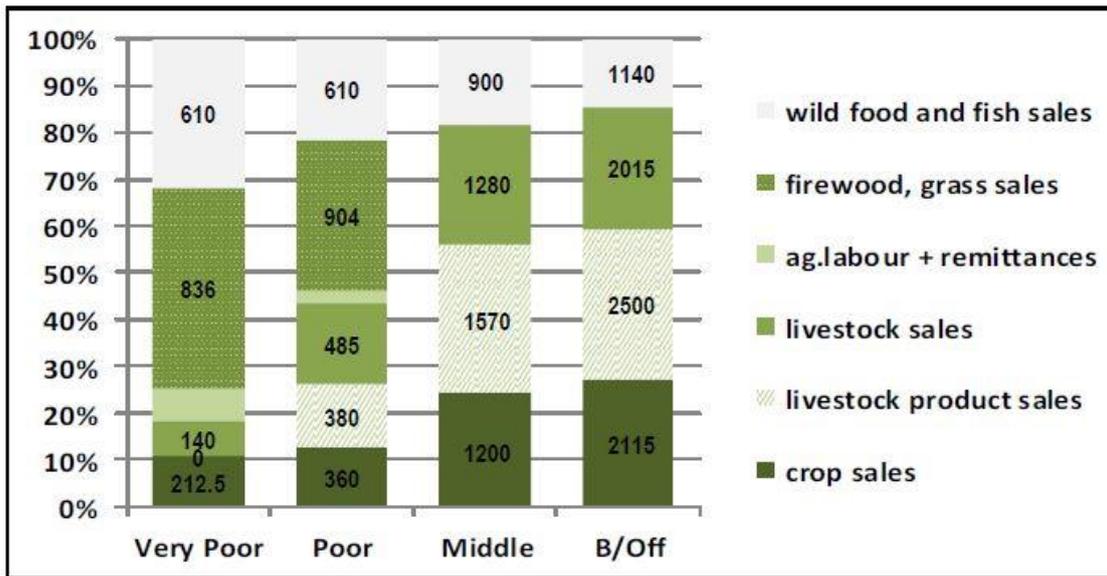
Milk production is highest during the rainy season when grass is plentiful. The main heat period for livestock starts after the germination of grasses during the rainy season. Livestock sales are common throughout the year but sales increase during the rainy season from July to August as more households need cash to purchase food. Livestock migration occurs during the dry season within the livelihood zone from *gok* (elevated areas) to the *toic* (swampy areas). Livestock return to their *yom* (settlement area) during the first rains.

Other productive activities also have defined seasons. The sale of firewood and grass for cash income occurs mainly during the dry season. Wild foods like *thou* (desert date), *lang* (*ziziphus* fruit) and *koat* or *cuei* (tamarind seed) are typically collected by the very poor and poor households for consumption and cash income between November to April (the wet/dry season). Fishing from the rivers is also most frequent from November to April. During the wet season, fishing activities switch to swamps and ponds instead of directly from the river.

Diseases such as malaria typically peak during the wet season from May to October. On the other hand, water-borne diseases are highest in the dry season when water is scarce.

The following figure shows the sources and relative size of the monthly income for different wealth groups in the Eastern Floodplains Livelihood Zone.

Figure 7-3: Source and size of monthly household income - Eastern Floodplains



Source: Building Resilience through Asset Creation and Enhancement" ATEP/Impact, 2013

7.3.3 Hazards

Drought, livestock disease and pests are main hazards affecting crop and livestock production. Stock borer aphids, crickets and birds are the major pests affecting crops. Trypanosomiasis, pneumonia and foot-and-mouth disease are the major diseases that affect livestock in the livelihood zone. Erratic rainfall such as late onset or uneven rainfall distribution and excessive rainfall and flooding are the principal climatic hazards that affect both livestock and crop production and leads to food insecurity for households at risk.

7.3.4 Coping strategies

In response to shocks, households use different strategies based on their wealth status. Better-off and middle-income households typically sell livestock or barter cattle for grain. They also reserved any crops harvested or fish caught (including dried fish) for own-consumption rather than for sale. Another strategy was to minimize expenditure on clothes and some household items.

Poor and very poor households cope with shocks in different ways than wealthier households. Poorer households increase fishing and wild food collection to make up food gaps from poor crop yields. Another strategy is to increase sales of firewood and grass to raise income for food purchases. Finally, young men may migrate to urban areas in neighboring Ethiopia to search for work. The very poor also appeal for gifts or loans from better-off clan members and relatives.

7.4 THE NILE-SOBAT LIVELIHOOD ZONE

The Nile-Sobat Livelihood Zone makes an important contribution to the economy of the basin. Following is a detailed map of the Nile-Sobat Livelihood zone.

Figure 7-4: Map of the Nile-Sobat livelihood zone



Source: Building Resilience through Asset Creation and Enhancement” ATEP/Impact, 2013

7.4.1 Livelihoods in the Nile-Sobat Zone

The economy of the Dinka, Nuer and Shilluk people of the Nile and Sobat Rivers is based on four key elements. During years of relatively good rainfall, agriculture is the principal economic activity but is

supplemented by livestock production, fishing and gathering. The rivers are the zone's major natural resource and productive asset. Fishing takes place towards the end of the rainy season in the swamps. As the river subsides, people fish from the rivers directly. The riverine area also provides essential pasture, browse and water for livestock. This area is treated as communal property.

The Nile and Sobat Rivers Zone is a lowland area, and is susceptible to flooding, with mainly clay soils. Agriculture is rain-fed and depends on a single rainy season from May to October. Rainfall ranges from 1,000-1,500 mm per year.

Sorghum and maize, supplemented by pumpkin, cowpeas and sesame, as well as vegetables such as okra, tomatoes and cabbage, are the main crops grown by households. Cultivation practices are simple: land is cleared of bush or crop residues and seed is sown. Very little weeding is done. The common measurement for land in the area is *feddan* which is almost equal to half a hectare. Farming is carried out with hand tools so the amount of land cultivated by a household is determined by how much labor – either family or hired – the household can access and/or can afford. There are no specific crops grown for cash per se but households do sell their crops at markets when they are accessible.

Better-off households keep relatively large herds of cattle, goats and sheep. Livestock are milked and the milk is consumed at home as well as sold and/or given to the poor. Villagers do not migrate far distances with their livestock as both water and pasture are relatively plentiful along the rivers. Livestock are sold when cash is required and bartering also occurs occasionally. Bartering was more common prior to the Peace Agreement when the cash economy was extremely limited. Livestock are mainly used for dairy and for sale, as well as to pay for bride wealth in marriage. Rearing livestock for transportation is not common in the zone. Items that need to be transported either to or from markets are simply carried even for long distances.

7.4.2 Markets

In the Nile and Sobat Rivers zone, main roads are seasonal and market access is often difficult. Most villages are inaccessible by vehicle during the rainy season. The local population does not use pack animals for transport goods. The absence of pack animals places a particular burden on women as they are responsible for transporting water, food and other items purchased in towns. Women usually carry these items on their backs and heads, sometimes walking several days. During the rainy season, the main means of transporting goods are by boat or small ships that sail on the Nile and Sobat Rivers.

Only villagers along the main road that crosses the county from Malakal to Nasir (on the Ethiopian border) have access to main markets in towns throughout the year. The major markets in this livelihood zone are the county towns of Malakal, Akoka, Ulang and Panyikang (Tonga). The major trade routes are Renk → Malakal, and Malakal → Nasir.

Every day is market day in the Nile-Sobat livelihood zone. Local markets have seasonal supplies of local sorghum, maize and cowpeas from September to January as well as milk from July to January. Local fish and livestock are also sold in village markets. During lean years and during months preceding the harvest, sorghum is brought in by traders from neighbouring areas, such as Renk in Upper Nile State or from Gambella across the border in Ethiopia. Traders also collect sorghum from local markets as well as fish at riverside landings from where they transport the goods to markets in Nasir or Malakal. Main food and non-food commodities available in local markets are sorghum, wheat flour, tea leaves, okra, meat, milk, sugar, salt, oil, clothes, imported soft drinks, and small quantities of soap, utensils and tools. Charcoal and grass are also commonly sold in local markets by poorer households.

Bartering used to be widespread, but cash transactions are now the most common form of exchange. Nonetheless, bartering is still practiced in the livelihood zone. Typically, livestock are exchanged for sorghum. Additionally, livestock are exchanged for other types of livestock (e.g. males for productive females). Labor other than local agricultural work is very scarce. Individuals do not usually migrate to other areas in search of work but stay within the zone.

7.4.3 Seasonal calendar

The seasonal calendar in the Nile and Sobat Rivers Zone is similar to the neighboring Eastern Flood Plains. The rainy season usually starts in May and continues until October. Rainfall patterns also determine the cropping calendar. Land preparation is carried out in April before the rain starts or when the first signs of approaching rains are seen. This is followed by planting as the rains begin.

The consumption of green maize normally begins in August and lasts for about one month. Vegetables such as okra, cabbage and pumpkin, as well as early maturing maize, are ready in September. Other early maturing crops, such as cowpeas and sesame and sorghum, are harvested in October. Late maturing sorghum is not harvested until December or January although some may be eaten fresh (or green) in November. A second crop of okra is often harvested in April.

Livestock production also follows the rainy season. The best time for births is once pasture is established around July. The milking season peaks for several months (July to December) but from January milk production becomes very low or negligible. Livestock sales are highest when cash needs are highest, typically between March and July, when farmers need to pay for agricultural inputs (including labour) and purchase food from the market.

During the wet/dry season and into the dry season, households supplement crops with fish and seeds, tubers and fruit gathered from the bush of forests. Swamp and pond fishing is carried out in August and September but households engage in river fishing when water levels subside around January.

Fishing typically continues until April. The period from January to April/May is when households supplement their diet with wild foods. A wide variety of bush foods are available for harvest. The most common of these are *thou* (desert date), *buaw* (wild tuber), *nur*, *koat* (tamarind fruit) and *lew* are typically gathered and consumed from January to May.

Food purchases are highest between March and July. Cash income to buy food is earned by gathering and selling grass, charcoal and firewood. Cash or food is also earned from agricultural labor during this period. The harvest period (September-January) is when demand for local labor is at its highest.

7.4.4 Wealth breakdown

In the Nile-Sobat zone, about 50% of households are considered to be either very poor (23%) or poor (27%). Households categorized as very poor or poor are low income earners with few assets. Crop production provides staple food for about five months of the year. Very poor and poor as households typically cultivate about half a hectare (or 0.75 – 1.25 *feddans*) of land. Most own a few (one to five) cattle for milk, and some poor may also own an ox. The majority of the poor own small livestock (1-5 goats and 1-5 sheep). Most poor do not own fishing nets, but have a few fishing hooks and/or a fishing spear.

In contrast, the middle-income and better-off households cultivate about 1-1.5 hectares (2-3.5 *feddans*) of land on which they produce sufficient befood for the household for 8-10 months of the year in an average production year. The majority of middle-income and better-off households own a pair of oxen or two as well as 5-15 cows (middle-income) or 15-25 cows (better-off). Annual household income is two to three times greater than the poor's income.

The better-off support larger households (8-10 members compared to 5-6 members in poor households). Middle-income and better-off households comprise about 50% of households in the zone. Due to larger household sizes, wealthier groups are an estimated 61% of the total population (19% are from better-off households and 42% are from middle-income households).

The wealth characteristics of the population in the Nile-Sobat Livelihood Zone are shown in the following table:

Table 7-1: Wealth Group Characteristics for the Nile-Sobat Livelihood Zone

| Wealth Group Characteristics | | | | | |
|------------------------------|--|---------|----------------------|--|---|
| Wealth Group | Proportion of population belonging to Wealth Group | HH Size | Land Area Cultivated | Crops Cultivated | Livestock/Asset Holding |
| Very Poor | 23% | 4-6 | 0.5-1 feddan | Maize, sorghum, cowpeas, sesame, pumpkin, okra | 1-3 cattle, 1-3 goats, 0-3 sheep, 2-4 hens, 0-1 fishing spear |
| Poor | 27% | 5-7 | 1.01-1.5 feddan | Maize, sorghum, cowpeas, sesame, pumpkin, okra | 3-5 cattle, 3-6 goats, 3-5 sheep, 4-6 hens, 1 fishing spear |
| Middle | 37% | 7-9 | 1.51-2.5 feddan | Maize, sorghum, cowpeas, sesame, pumpkin, okra, tomatoes | 5-15 cattle, 6-12 goats, 5-10 sheep, 6-10 hens, 0.5-1 fishing net, 1-2 fishing spears |
| Better-off | 13% | 8-12 | 2.51-4.5 feddan | Maize, sorghum, cowpeas, sesame, pumpkin, okra, tomatoes | 15-25 cattle, 12-20 goats, 10-15 sheep, 10-18 hens, 1 fishing net, 1-2 fishing spears |

1 feddan = 0.42 hectare

Source: Building Resilience through Asset Creation and Enhancement" ATEP/Impact, 2013

7.4.5 Coping strategies

Households in the Nile-Sobat livelihood zone use a number of strategies to respond to hazards. Their first priority is survival of their animals. Household members migrate with their animals to find grazing land along the Nile and Sobat Rivers in pursuit of better water and pasture. The main strategy for obtaining cash to purchase food is increased livestock sales. Wealthier households are in a better position to use this strategy as they own more livestock.

Households can also reduce non-essential expenditure on items such as tea and clothes in order to spend more money on staple food items. However, expenditure on such items is minimal, so this is a limited strategy. Households consume more wild foods, fish and meat during lean years. Increased consumption of meat happens when animals are weak and likely to die, but are instead are slaughtered for their meat. Finally, poor households increase the sale of charcoal and grass; seek additional work either locally or in towns; and beg better-off kin or neighbors for food and cash.

7.5 EASTERN SEMI-ARID PASTORAL ZONE

This livelihood zone is mainly located in Eastern Equatoria and parts of Jonglei State. It is a large plain extending to the foothills of the mountainous ranges near the Ethiopian border. Vegetation is characterized by dense thickets, bush shrubs and savanna grasslands, which are more suitable for livestock than agriculture. Boma National Park, one of the main tourist attractions of this area, is also located in this zone.

This zone has a unimodal rainfall pattern, with average annual precipitation of about 500-600mm. There are two seasons, the rainy season lasting from around May to November and the dry season from December to April. Average temperatures are 38-40° C, with a minimum of 32° C in December-January and maximum of 42° C in March.

Soils in this area are mainly black cotton clay. Though suitable for crop farming, the semi-arid conditions limit crop production. Average land cultivated per household is only about 0.4 hectares. This zone is sparsely populated and is occupied mainly by the Toposa, Didinga and Murle tribe.

The dominant production system in this zone is pastoralism, with only limited crop production. The main food crops produced are sorghum and on a small scale okra and other vegetables. Livestock include cattle, camels, goats, and sheep and to a lesser extent poultry, and are mainly for household consumption. In the

dry season inhabitants move in search of water and pasture into neighboring Ethiopia and Kenya. The main determinant of wealth in the zone is number and type of livestock owned.

The poor produce approximately two months of their need for staple foods from their own crop production, and the better-off group slightly more. All households depend on market purchases of staple foods, supplemented by milk, meat and animal blood, especially during the rainy season. Milk is consumed throughout the year, although the quantity consumed are higher during the rainy season.

However, most livestock products consumed by the poor are obtained through in-kind labor payment (herding livestock) for the better-off group. There is also hunting small animals, and wild foods and honey are also collected, although these do not contribute much to the annual diet.

Sales of livestock are the most important source of cash income for the poor and better-off group. The better off group also obtain income from the sale of milk and milk products and gold mining. Much of the milk is sold during seasonal movements in search of water and pasture. The poor group obtains income from the sale of livestock, and is also engaged in charcoal making, firewood sales, and wild food sales as a supplementary source of income. Both wealth groups engage in gold extraction to complement their income.

External traders also travel to sell maize, grain and vegetables locally and trade livestock to Ethiopia and Uganda. Households also exchange livestock for grain and other household items with Murle cultivators in neighboring areas with whom they have strong economic links.

Hazards include drought, livestock diseases and periodic conflicts with other pastoral groups. The heavy dependence of livelihoods on livestock and trade for staple foods makes these vulnerable to interruptions in market access, particularly during seasonal livestock movement, when there is less milk and animal blood for consumption for people who do not move with the animals and in drought years to falling livestock prices. The zone experiences frequent food shortages.

The poor purchase sorghum from October until July the following year. These purchases also cover the lean months (January to April), when the only source of income is sale of charcoal. This is the only cash income used to purchase sorghum during the lean months. Other priority expenditure includes health care (especially during the rainy season, due to malaria) and school fees, paid at the beginning of the school year between the months of March and April.

7.6 HIGHLAND FOREST LIVELIHOOD ZONE

This zone is located along the mountain ranges of the Greater Equatorial region and the border with Ethiopia. The topography is characterized by highlands and foothills with a mixture of forest, bush shrubs and grasslands.

The zone has a unimodal rainfall pattern, with average precipitation of about 900-1,100mm per annum. There are two distinct seasons; a rainy season from April to November and a short dry season from December to March. Average temperatures in this area reach a maximum of 42° C in February and minimum of 30° C in December and January.

Soils include sandy soils, clays and loam, and are relatively fertile compared to neighboring zones, especially the Eastern Semi-Arid Pastoral zone. The area also has wild honey and shea butternut trees.

The population density in this zone is medium. The average area cultivated per household is about 1.25 hectares. The inhabitants are mainly Murle and Kachipo, the former being mainly cultivators and pastoralists, especially the hill Murle living in parts of the highlands. The Kachipo have strong economic relationship with cattlekeeper Murle's in the Eastern Semi-Arid Pastoral zone, including areas such as Pibor, Ikotos and Pochalla. The Badingilo National Park is also located in this zone, although the animal population has been largely depleted during the civil war.

Reliable rainfall and fertile soils support rainfed crop farming with sedentary cultivation and lower reliance on livestock. The main food crops are maize, grown mainly in the eastern parts of the zone, short and long-term varieties of sorghum, millet, sesame, cow peas/green grass. Other crops grown on a smaller scale include sweet potatoes and cassava and groundnut.

The livestock owned are mainly goats, few sheep and poultry with relatively few cattle mainly owned by the better-off group.

In a typical year, all wealth groups depend mainly on their own crop production supplemented by wild foods, dry fish and for the poor, by market purchases. The better-off hire labor and cultivate more land and can produce a surplus production for sale.

A wide variety of wild food plants are available in the hills and mountains, which include roots, fruits, berries and leafy vegetables gathered by all groups to supplement household food.

For the better-off group, the main source of income is from the sale of maize, followed by sorghum and millet. Some income is also from retail sales and the sale of timber outside the zone. The poor group mainly depend on their own labor and sale of natural products such as charcoal and bamboo. Other activities include hunting and seasonal fishing along the Oboth, Pibor and Gilo rivers, which are tributaries of the Sobat River along the border to Ethiopia. There is also some artisanal gold mining, although only at a low level because of the lack of tools and equipment.

Due to its favorable climate, this zone usually has a good harvest, but lacks access to markets and reliable trade linkages with neighboring livelihood zones. The main markets for the sale of local products, including labor, include Pochalla, Boma and Pibor in the eastern part of the country. In the central parts of the zone there is reliable access to regional markets in Juba and Torit. In the eastern part of the zone there is cross-border trade with Ethiopia. The trade with Ethiopia increases during the dry season. Household incomes are limited by a lack of roads, hilly and mountainous terrain and poor road conditions, which limits access to markets.

The rainy season starts in April and ends in November. Rains are normally adequate for crop production. The main staple crops are sorghum and maize, with maize more common in the eastern part of the zone. The lean season is usually from June to August, when green crops are still not ready for consumption. Agricultural work starts with land preparation during January to March, followed by sowing or planting from April to mid-June. Weeding starts at the peak of the rainy season in June to July. Harvesting of all crops, including green consumption starts in August and continues until December when long maturing sorghum is harvested.

Lambing, kidding and calving take place in the dry season from November to February the following year. Peak milk production is during rainy season. There is no seasonal livestock movement in this zone.

The most serious hazards in this zone are droughts and dry spells, landslides and floods that damage or even The main hazards in this zone are droughts and dry spells, mudslides and floods that cause crop failure.

The poor purchase sorghum during the lean months (April to August). Sorghum and maize are bought from March and April until August, when the new harvest is ready. In the lean season main sources of income are sale of labor and livestock and gold mining, especially goats and sheep. The main expenditure is health care during the rainy season when malaria is prevalent, and school fees in March and April.

The main hazards in this zone are droughts and dry spells, mudslides and floods that can damage or even cause the complete crop to fail.

7.7 CHARACTERISTICS OF LIVELIHOOD ZONES

The following table presents a number of characteristics of livelihood zones in South Sudan:

Table 7-2: Characteristics of Livelihood Zones in South Sudan

| Characteristics Agro-ecological Zones | % of areas to the national total | % of population to the national total | Population density ¹ (persons/km ²) | Average precipitation (mm/year) | Average elevation (m) | Land use (% to each Agro-ecological Zone total area) | | | | Road development status ² | | |
|--|----------------------------------|---------------------------------------|---|------------------------------------|--------------------------|---|-----------|------------|-------------------|---|---|----------------------|
| | | | | | | Agriculture land | Grassland | Shrub land | Trees/forest land | Road density by population (Km/1000 persons) | Road density by area (Km/100 km ²) | % of all season road |
| Eastern Flood Plains | 21% | 17% | 10.51 | 788 | 399 | 4% | 31% | 52% | 12% | 1.40 | 1.47 | 30% |
| Greenbelt | 12% | 14% | 15.00 | 1,353 | 677 | 5% | 11% | 32% | 52% | 1.62 | 2.43 | 60% |
| Hills and Mountains | 9% | 12% | 16.88 | 937 | 697 | 2% | 16% | 61% | 21% | 1.44 | 2.43 | 62% |
| Ironstone Plateau | 23% | 8% | 4.47 | 1,075 | 553 | 1% | 10% | 18% | 71% | 4.72 | 2.11 | 41% |
| Nile-Sobat Rivers | 9% | 14% | 19.67 | 837 | 393 | 4% | 35% | 47% | 12% | 2.24 | 4.41 | 14% |
| Pastoral | 11% | 5% | 5.60 | 778 | 489 | 0% | 35% | 52% | 13% | 2.85 | 1.60 | 20% |
| Western Flood Plains | 14% | 29% | 26.00 | 899 | 412 | 8% | 27% | 41% | 23% | 1.26 | 3.26 | 48% |
| All Agro-ecological Zones | 100% | 100% | 12.96 | 955 | 506 | 4% | 23% | 40% | 33% | 1.82 | 2.36 | 39% |

Note: 1) Population densities are calculated with 2008 census population. 1) Road density is for the total length of primary, secondary, and tertiary all-season and dry season-only roads. "The percentage of all season road" also indicates the portion of all season road to the total of primary, secondary and tertiary roads. The roads data is assembled from 2013 data from WFP.

Source: NBS, National Baseline Household survey, NBS and CAMP TT

The above table shows that the main livelihood zones in the basin, i.e. the Eastern Flood Plains, Nile-Sobat Rivers, Pastoral and Hills and Mountains, contain some 48% of the country's population. The Nile-Sobat and Hills and Mountains zones are the most densely populated zones, but still have a relatively low density of 19.67 and 16.88% persons/km² respectively, especially when compared to the significantly higher population densities found in the Ethiopian part of the basin.

A striking feature in the table is the extremely low area in all zones that is cultivated and the very low road density. Also, the Nile-Sobat zone has a very low percentage (14%) of all-weather roads. This further reinforces that there is a high potential for agricultural development in the basin in South Sudan, but also underscores the fact that the poor road network will be a serious constraint on efforts to develop agriculture in this part of the basin.

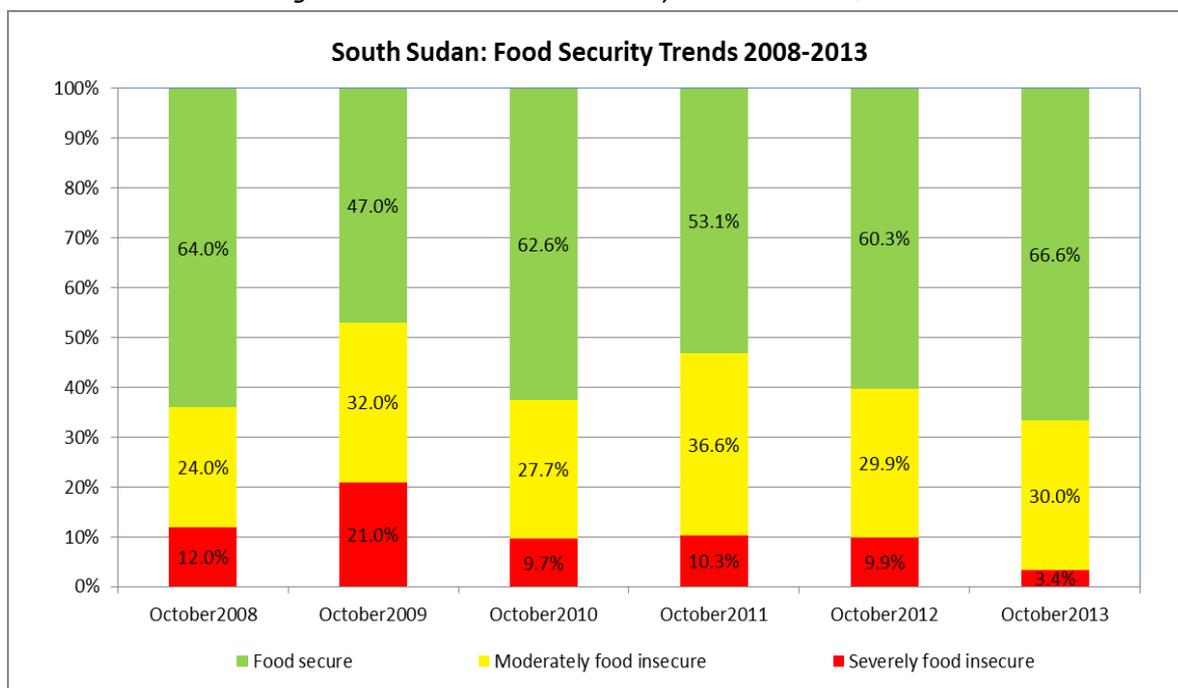
8. FOOD SECURITY

STATUS

There were 3.9 million South Sudanese (about one-third of the country's population) experiencing severe food insecurity and 3.6 million who were considered to be 'stressed', in September 2015. This is an 80% increase compared to the same period in 2014. If the present conflict continues, food availability and access will deteriorate and

increase the risk of food emergencies or in the worst case, famine. In addition, some 304,000 refugees in South Sudan are expected to need food assistance during 2016. The following figure shows trends in food security during a five-year period.

Figure 8-1: Trends in Food Security at harvest time, 2008-2013

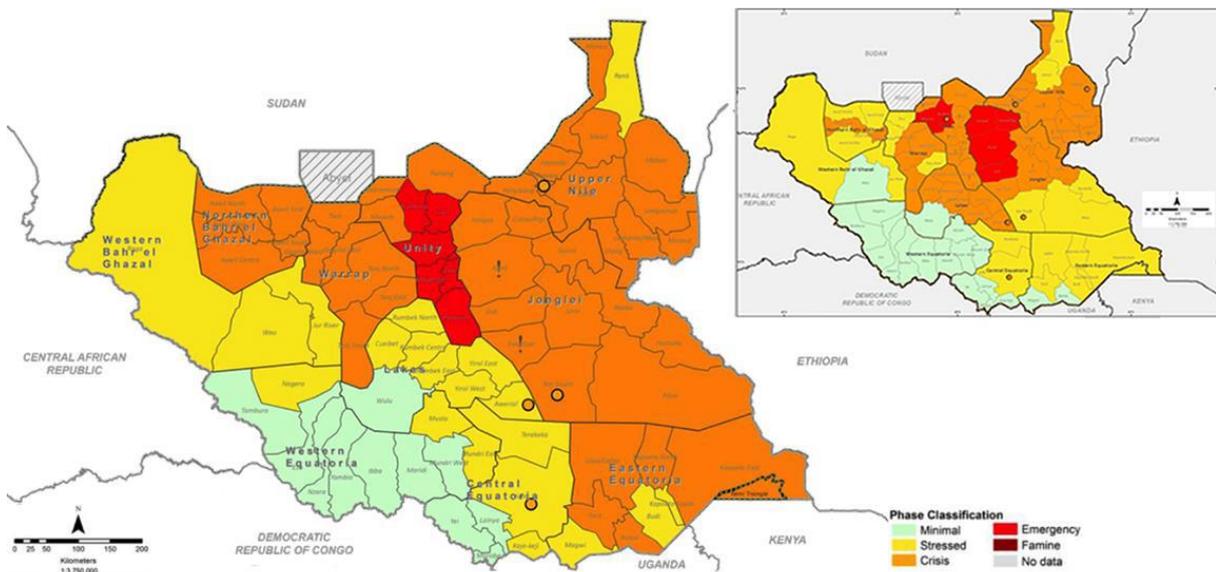


Source: Food Security Assessment, FAO/WFP, 2014

As can be seen from the above figure, the proportion of moderately food insecure population has remained largely constant during the five-year period, while the proportion of severely food insecure population has declined at national level. It should be noted that concentrations of severely food insecure people can still exist in specific areas which need to be addressed as an urgent priority. It should also be noted that these figures are very sensitive to climate and rainfall and can therefore fluctuate from year to year.

In March 2016, there were some 2,800,000 people who need food assistance in South Sudan. This represents about 28% of the total population of the country. The following map shows the projected food security situation in South Sudan during the period January-March 2016.

Figure 8-2: Food Security Situation - South Sudan



Source FAO, 2016

The above map shows that almost all the basin area in South Sudan is classified as being in a state of “crisis”, where the map in the insert from a year earlier (February 2015) shows that the southern part of the basin in Jonglei and Eastern Equatoria states were classified as being in a “stressed” state. A crisis state means that farmers and herders are extremely vulnerable to the potentially devastating and cumulative effects of conflicts, climatic shocks and economic disruption.

Drivers of food insecurity in the basin include the occurrence of various shocks (socio-economic shocks, high food prices, illnesses, drought, insecurity), inter-communal and inter-ethnic conflicts; extensive flooding; remoteness and poor road networks; expensive fuel and food prices; unfavourable exchange rate and taxes (both official and unofficial); and pressure from refugees and IDPs.

Various illnesses are also prevalent, while drought and insecurity continue to be major constraints to development in the basin. Among socio-economic shocks, high food prices are the most important issue for households, and are consistently ranked highest among shocks across all states. Food prices spiked in June 2012, due to the poor harvest in 2011 and the disruption of trade flows with Sudan.

Inter-communal and inter-ethnic conflicts have caused important but localized impacts on the food security of households. The incidence of internal conflicts (mostly inter-communal) tends to increase after relatively quieter periods. Most traditional conflicts revolve around cattle raiding and tends to peak during the dry season. Jonglei has consistently been a hot spot of conflict, with major displacements of population, especially in Pibor Country. Major conflicts from December 2013 and recent military conflicts have had a major impact on the food security status of many households in the basin in South Sudan.

Extensive flooding, mostly occurring before the harvest of the first crops, has also impacted crop yields, whereas late maturing varieties and waterlogging resistant crops benefit from the increased soil moisture. Floods in Jonglei State in 2013 and again in September 2015 led to the displacement of a large number of people.



Flooding in Jonglei State in 2015

9. POVERTY IN SOUTH SUDAN

INTRODUCTION

The recent Poverty Assessment (World Bank, 2105) in Ethiopia revealed that an agricultural growth drove reductions in poverty, bolstered by pro-poor spending on basic services and effective rural safety nets in Ethiopia. Even though this finding applied to Ethiopia, it can also equally well be applied to South Sudan.

In South Sudan households whose monthly consumption expenditure falls below 74 South Sudanese pounds, are considered to be living in absolute poverty. According to this measure, half of the country's population is considered to be extremely poor. Table 9-1 below shows the national poverty indices for country with a poverty line at 74 Sudanese pounds. (Abebe and Verdire-Chouchane, 2012).

Table 9-1: Poverty Characteristics in South Sudan

| Unit/Area | Poverty Dimension | | |
|-------------------------|-------------------|-------|----------|
| | Incidence | Depth | Severity |
| Male-headed household | 48% | 23% | 14% |
| Female-headed household | 57% | 27% | 16% |
| Urban areas | 24% | 9% | 5% |
| Rural areas | 55% | 26% | 16% |
| South Sudan | 51% | 24% | 14% |

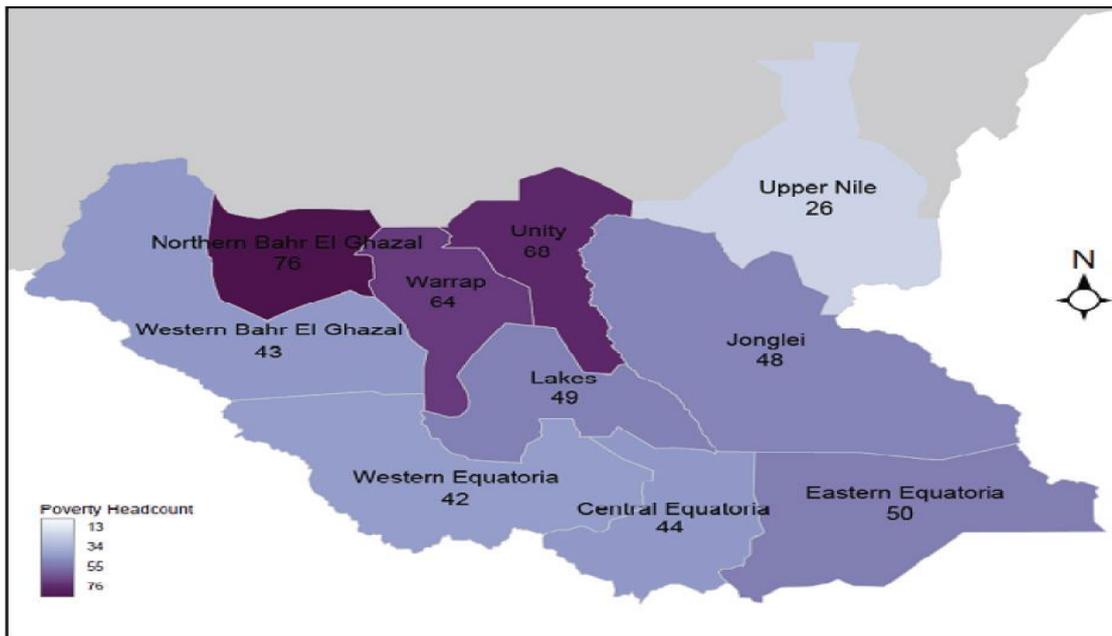
Sources: Abebe and Verdire-Chouchane, 2012.

South Sudan's per capita GDP has doubled during the last decade following the discovery of oil in the country. GDP growth, however, has had little impact on reducing poverty. Not only is poverty widespread in the country, it is also so deeply rooted that the average per capita monthly consumption expenditure of the poor is 48% lower than the official poverty line. This suggests that most poor people are still extremely deprived (Abebe and Verdire-Chouchane, 2012).

As can be seen from above table, female-headed households have a poverty incidence that is 9% higher than male-headed households, and in all income groups females earn lower income than their male counterparts. Moreover, poverty is exacerbated in areas where there are large numbers of displaced persons, refugees and returnees.

Poverty affects the geographic regions of South Sudan unevenly. The poverty headcount ranges from 26% in Upper Nile to 76% in Northern Bahr Al Ghazal. South Sudan also has a skewed income distribution. According to estimates from NBHS data, the Gini-coefficient is 45.5% (urban, 41.85% and rural 44.13%) in South Sudan, which is slightly higher than the Sub-Saharan Africa average (42% in 2009) (Abebe and Verdire-Chouchane, 2012).

Figure 9-1: Poverty Incidence by State (2010)



Source: Poverty in Southern Sudan: Estimates from NBHS (2010)

The large majority of poverty in South Sudan can be attributed to conditions in rural areas (the vagaries of subsistence agriculture, low access to health care, education, safe drinking water and other basic services as well as weak infrastructure).

There is a large variation in the incidence of poverty among the basin states, with the incidence of poverty in Eastern Equatoria and Jonglei states being almost twice as high as in Upper Nile State. Reasons for this large difference need to be the subject of further study, but can be at least partly due to the presence of oil in Upper Nile State.

The above figures suggest that increasing farm productivity and education should be high priorities for the future development of the basin in South Sudan. (Abebe and Verdire-Chouchane, 2012).

10. AGRICULTURAL POTENTIAL AND MARKETS

10.1 INTRODUCTION

Agriculture is the main source of livelihood for people in the basin (Ethiopia and South Sudan). Rainfed and irrigated cropping are the two main types of farming systems across the basin. Rainfed agriculture is the most common traditional system of farming for small-scale subsistence to large-scale semi-mechanized and mechanized farming¹. The traditional highland rain-fed farming system in Ethiopia consists of cereals and *enset* production. *Enset* root-based production is common among the Mocha (*sheka*) people and a co-stable crop with cereals and tubers. This practice is also found in the Sudanese highlands and rainforests. Root crops, yam, taro and sweet potato, pulses, vegetables, spices, *teff*, rice, cassava, maize, sorghum, cowpeas, groundnuts and sesame are major crops grown in the sub-basin¹.

In South Sudan, seasonal food insecurity is common among farmers and pastoralists characterized by chronic and transitory food insecurity². A significant proportion of the population is extremely vulnerable to food insecurity due to direct and indirect impact of conflicts, disruption of livelihoods, high dependence on markets and exposure to food price volatility. According to the Food Security Monitoring System conducted between October 2013 to October 2014, Jonglei and Upper Nile states faced the highest degree of food insecurity, with an average of above 20%, while the lowest rates of food insecurity for the same period was 16%⁴. A significant proportion of the same population live below the poverty line³. (BAS Appraisal Report, 2012).

10.2 AGRICULTURAL POTENTIAL

According to the Comprehensive Agriculture Master Plan (CAMP)⁷, over 95% of the total area of South Sudan is considered suitable for agriculture, 50% of which is prime agricultural land where soil and climatic conditions allow for production of a wide range of agricultural products, including annual crops such as grains, vegetables, tree crops such as coffee, tea, and fruits, livestock, fishery and various forest products. Despite of this potential, only 4% of the total land is under cultivation most of which are rain fed while the largest part of the country is still under trees and shrubs (62.6%). This fact holds true for states in the BAS basin, i.e. Jonglei, Upper Nile and Eastern Equatoria.

The Eastern Flood Plains encompassing Upper Nile and parts of Jonglei states and the green belt encompassing part of western and central equatorial are the two major crop producing regions in South Sudan, accounting for 17.6% and 26.2% of national cropland respectively². Part of Upper Nile state has medium agricultural potential with low population density, while the northern part of the State has low agricultural potential and low population density. The same is true for Jonglei State, where most of its area (except the northern part) are areas of medium agricultural potential with low population density. Eastern Equatoria State has high agricultural potential with low population density².

10.3 MARKETS IN UPPER NILE, JONGLEI AND EASTERN EQUATORIA STATES

Food and livestock markets in South Sudan and the basin in particular tend to be highly inefficient and fragmented as a consequence of the poorly developed road network, transport and storage facilities. The problem is even more serious during the rainy season when road conditions deteriorate resulting in increased transportation costs as small loads are transported over long distances. With the exception of the Juba market, which can rely on regular supplies of locally produced and imported commodities, food and livestock prices experience high volatility. High taxation, time spent at customs, check points and road blocks also contribute to increases in the prices of goods and services⁷.

⁷ Ministry of Agriculture, Forestry, Cooperatives and Rural Development, Government of South Sudan, 2015

Market prices are subject to frequent change and fluctuations. For instance, the retail price of sorghum dropped at the end of 2013 and abruptly increased in January 2014 due to the onset of commercialized farming that increased production, and conflicts respectively. Similarly, the price of wheat shows seasonal variations based on the prevailing situation. Market prices are very sensitive in conflict-affected areas like Upper Nile due to the destruction of infrastructure, looting of stores and stock and reduction in number of traders⁷.

Markets in Upper Nile, Jonglei and Eastern Equatoria states consist of temporary and permanent stores where wholesalers tend to have permanent stores while retailers operate from temporary stores. While most goods are imported, there are some locally processed products like maize, cassava and wheat flour. Merchants are typically from local areas and neighboring countries as shown below²

Table 10-1: Merchants and Markets in Basin States in South Sudan

| State | Markets | Merchants |
|--------------------|-----------------|---|
| Eastern Equatorial | Magwi and Torit | The majority of merchants at Torit Main Market are Ugandans and Kenyans. |
| Jonglei | Bor | The majority of merchants at the main market in Bor are Sudanese retailers. However, there are significant proportions of foreign retailers such as Ugandan, Ethiopians, Kenyans, and Eritrean retailers. |
| Upper Nile | Malakal Renk | Majority of merchants of Malakal Main market and a main market in Renk are Sudanese retailers. |

The agricultural input market in South Sudan is at an early stage due to the limited development of commercial and mechanized farming. Labor is the largest agricultural input expenditure, which suggests that there is a growing demand from larger, commercial farms². Agricultural input markets can be considered in relatively fertile areas like the Eastern Flood Plains and Nile-Sobat river zones. The Greenbelt is another possible target area due to its high agricultural potential².

Agricultural products are often imported from neighboring countries. Locally produced crops like maize, cassava and groundnuts are sold in local markets. Vegetables having high demand normally sell at higher prices than cereals. Farmers recognize the importance of vegetable cultivation and marketing, which should be promoted and supported and has a high potential for future development.

Market routes and linkages in the states of South Sudan in the basin are similar throughout the year, with the exception of in Upper Nile State during the rainy season. In the dry season, many traders bring agricultural products from Sudan and Ethiopia by road. In the rainy season, traders use boats to bring agricultural products from Juba. The frequency of supply decreases in the dry season, and the cost of transportation is higher in the rainy season. Distribution channels in the basin states is summarized below².

Table 10-2: Distribution Channels for Main Crops in Basin States in South Sudan

| State | Local crops | Products and trade routes |
|-------------------|--|--|
| Eastern Equatoria | Maize, sorghum, cassava, sesame, cowpea, Jew's mallow, eggplant, okra, amaranthus | Many products such as maize, cassava, groundnuts and sesame are brought from Magwi County. Cassava, Jew's mallow, eggplant, cowpeas, okra and amaranths are grown and sold within the state. |
| Jonglei | Sorghum, groundnuts, cowpea, maize, sesame, okra, pumpkin, onion, rocket | Most agricultural products are grown locally and brought to local markets. Some agricultural products are brought from other parts of the country. |
| Upper Nile | sorghum, finger millet, maize, sesame, onion, tomato, okra, cotton, rocket, Jew's mallow | Many agricultural products are grown and brought to local markets |

10.4 THE JUBA MARKET

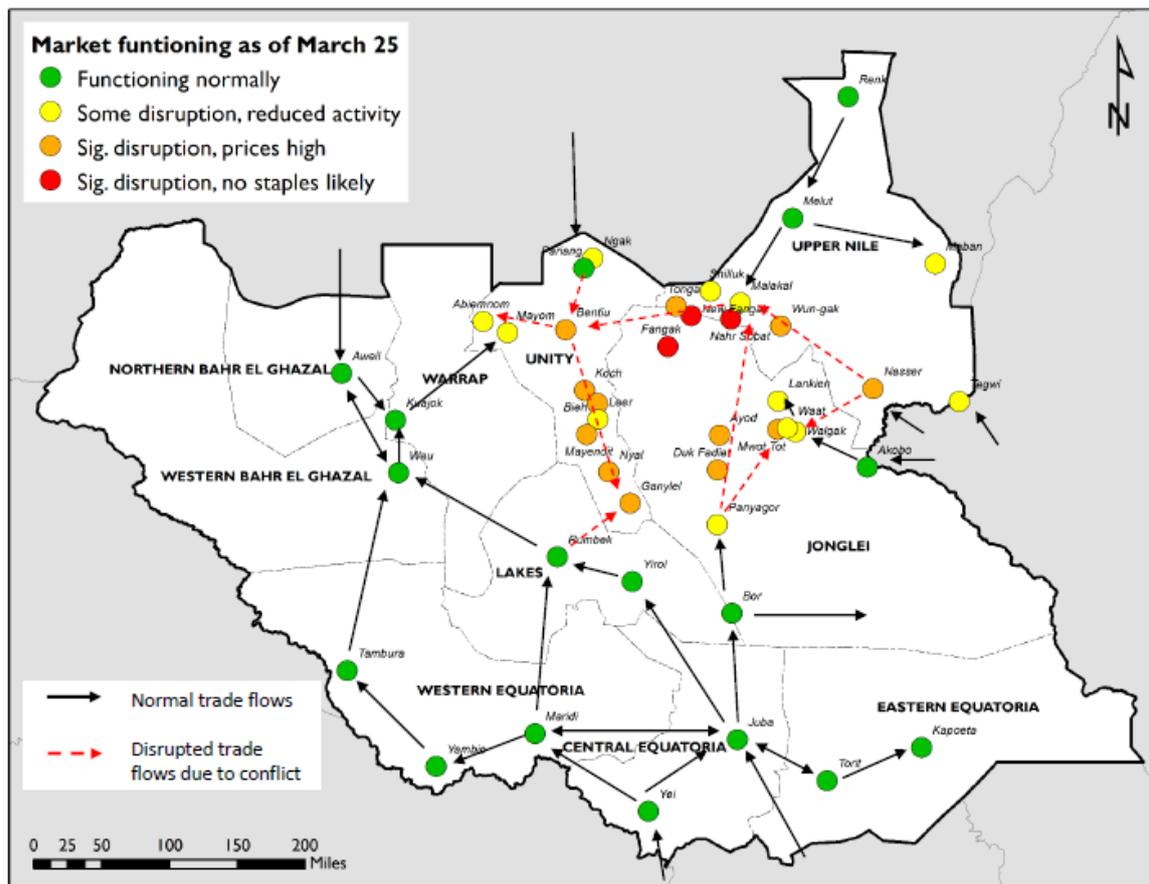
The Juba market is a strategically important market for products from the basin. It receives imported consumer goods from neighboring countries and distributes them to smaller markets throughout South Sudan. A large volume of agricultural products from Uganda reaches the Juba market. Large-scale traders are the major actors in the cross-border trade and purchase goods in larger quantities to reduce the transaction and transportation costs due to the long distance to Juba².

In the Juba market, traders are predominantly non-South Sudanese, and include a high proportion of Ugandan nationals. The participation of South Sudanese women in agricultural marketing is relatively low; they are active mainly in small-scale trade of non-agricultural goods. The use of rented shops or storage space is common, and sharing of shop space among several traders is also practiced.

The Juba market is relatively well organized and regulated. Payment is in most cases immediate; mainly within a day and in cash with almost no payments by cheque or other forms of payment.

The following map shows the location of normal and disrupted trade flows in South Sudan during the month of March 2015.

Figure 10-1: Status of Trade Routes in South Sudan (March 2016)



It can be seen from the above map that the majority of trade and market disruptions during the period shown are located in the northeast part of the country, in the triangle formed by Jonglei, Upper Nile and Unity states. The most serious of these disruptions result in increased business risks, scarcity, higher prices and in the worst case total cutoff and non-availability of goods and produce. It should be noted that trade and market disruptions are subject to frequent changes according to the location and intensity of incidents.

10.5 MARKET CONSTRAINTS FOR LOCAL PRODUCE FROM THE BASIN

Imported agricultural commodities are dominant in the larger markets such as Juba. There is also local produce including sorghum, groundnuts, okra and other local vegetables, while most of the other commodities are imported. Markets in Juba respond to seasonal patterns and variations in transaction costs, which are highest in the wet season and low in the dry season. Domestic production does not respond well or in a timely fashion to market signals due to dependence on fragmented inputs such as labor, fertilizer and transportation, which constrain the ability of small-scale local producers to respond².

The domestic supply of agricultural produce is at a significant disadvantage due to poor roads, high administrative costs to collect domestic produce and multiple taxes. Taxation is the second highest business expense after transportation, and can account for anywhere between 15-50% of marketing costs.

10.6 AGRICULTURAL MECHANIZATION

BASELINE SITUATION

Mechanized agriculture in South Sudan is mostly rain-fed cultivation that includes (1) demarcated, large-scale farmers in Upper Nile State with multiple aggregations of 500 *feddans* (about 200 ha) known as *mushroor*, in Upper Nile State from Renk to Malakal, (2) undemarcated traditional farms in units up to 50 *feddans* (about 20 ha) alongside large-scale farmers and hiring their tractors and equipment. Inputs not available locally are obtained from Kosti in Sudan. Access to credit for purchasing inputs is limited².

The Renk Irrigation Scheme, in Upper Nile State was operated by the Sudanese government before independence of South Sudan. There are 23 sub-schemes in the scheme, and recently nine sub-schemes are operated by the government and the rest by private farmers. There is no operational irrigation in the scheme due to breakdown of pumps and insufficient funds for operation provided by the government. Farmers mainly grow sorghum, sesame, millet and groundnuts. However, farmer-traders in Kosti receive loans from a Khartoum-based bank. These farmer-traders are moving to conflict free areas to avoid risks².

On large-scale farms, harvesting is opportunistic. The farmer will assess which parts of the crop to harvest and which parts to abandon, is any, taking into consideration the cost of harvesting. If the cost of harvesting is higher than the estimated income from the yield at the prevailing market prices, the crop is abandoned. Production in the mechanized agricultural sector in Upper Nile State in 2014 is shown in the following table.

Table 10-3: Characteristics of Mechanized Agriculture in Upper Nile State (2014)

| Scale | Area cultivated (ha) | Area harvested (ha) 50% of cultivated area | Yield (tons/ha) |
|-------|----------------------|--|-----------------|
| Large | 87,423 | 43,711 | 0.58 |
| Small | 56,000 | 38,000 | 0.65 |

AGRICULTURAL POTENTIAL IN SOUTH SUDAN

South Sudan's diverse ecology provides a growing season ranging from 280-300 days in the southwestern parts (known as the Greenbelt) to 130-150 days per annum in the northern states due to bimodal and unimodal rainfall regimes. The bimodal areas cover much of the Greater Equatoria (Western, Central and parts of Eastern Equatoria), while the rest of the country has a unimodal regime. Agricultural performance consequently varies markedly depending primarily on latitude, with the possibility of two and even three harvests per annum from the same plots in the Greenbelt in the Greater Equatoria, and a single harvest in the unimodal areas further north.

With almost all agricultural production being rainfed, rainfall variability in terms of quantity and distribution is the major factor in determining crop performance. Usually, rainfall increases in a north-easterly to south-westerly *direction* culminating in the Greenbelt along the border with the Central African Republic, the

Democratic Republic of Congo and Uganda; but there are considerable variations in rainfall from year to year and from location to location within the same year in all areas. In lowland areas, flooding/water-logging is a common occurrence, while many areas, especially those towards the northern border with the Sudan and southeast corner of the country, are susceptible to prolonged dry periods. Hence, good soil and water management are keys to increased crop yields.

Crop production is mostly conducted on small, hand-cultivated plots farmed by women-headed households, with a membership of five to seven persons that belong to larger family aggregations, reflecting the polygamous nature of most communities. Notwithstanding an abundant availability of land throughout the country, the area cultivated by households has, hitherto, been limited by a combination of (a) the size of the household labour force and/or the ability of households to provide in-kind payment (essentially food/beer) for the mobilization of traditional working groups (*nafeer*) and (b) security of access.

In recent years, average farm sizes have increased with stead-based farm areas merging with faraway-fields where farmers use animal traction; and, with the emergence of commercially-orientated farmers cultivating larger areas in cereals, groundnuts and cassava for sale using combinations of tractor services, labor gangs and oxen, depending on location.

During the past 20 years, animal traction has been promoted by FAO and NGOs in Eastern Equatoria State to increase the area cultivated by households. However, lack of spare parts, skills to maintain mould-board ploughs, raw materials for local blacksmiths and low levels of operator skills still limit expansion; as does lack of resources to capitalize on the increased area through improved weeding, transportation and marketing.

During 2015, secure access to land throughout the season was the defining characteristic of farmed areas in Upper Nile State and bordering counties where large numbers of IDPs sought refuge. Access was denied in many counties in Upper Nile and Jonglei states where communities fled their homes. Even if they remained, they were often too traumatized and frightened to farm. However, in states not directly affected by conflicts, planting expanded in both numbers of households and cultivated areas for all crops.

Rainfed mechanized cereal production is normally practiced on a large scale in the Upper Nile counties of Renk, Manyo, Melut, Baiet, Fashoda and Malakal following patterns of land occupancy and use established before independence by traders/farmers from Sudan. Elsewhere, limited numbers of both private and GRSS tractors provide ploughing services to individuals and farmer-groups at prices ranging from SSP 50 (GRSS subsidized) to SSP 350 per *feddan* for a single pass. Mechanization applies only to one pass preparation and sowing on a second pass with a seed drill positioned over the disc harrows. Other operations to harvesting are done manually.

Major problems are unreliable and expensive supply of fuel and spare parts, operator skills and maintenance, and repair capabilities, severely limiting the efficiency of the tractor service. Pilot programs to introduce and support the use of two-wheeled walking tractors offer a financially sustainable alternative to the distribution of large four-wheeled tractors that are become prematurely out of service due to inadequate maintenance.

Three planting assessments were conducted from March to July 2014 as part of the CFSAM Roadmap. They confirmed that sorghum is the main crop cultivated by the traditional sector, comprising some 70% of the area sown in cereals. Regarding sorghum, preferred seeds are the many local landraces with lengths to maturity fitting agro-ecological niches³ ranging from short-season (<90 days) to very long-season (>220 days).

There are also several improved, short-term varieties of sorghum from the Sudan that have become well-established in the northern states of the country in both large-scale mechanized farms in Upper Nile State and hand-cultivated farming areas with cross-border access to the Sudan located from Renk to Abyei to Aweil.

Maize is estimated to be planted in about 27% of the cereal area. However, this percentage breakdown is not universally applicable to product availability due to regional differences. Maize is the most popular cereal in the Greenbelt, where Longi varieties are grown in series in two crops per year on the same land. Maize is also the main cereal grown along the Sobat River in Upper Nile State and in the eastern Jonglei counties

near the Ethiopian border, where mixed *Longi* and local landraces and Ethiopian releases are noted. Elsewhere, maize is only cultivated in very limited areas close to homesteads, where it is consumed green with the first early sorghums in August-September.

The crops of most importance to food security include cassava and groundnuts, sweet potato and yams. Groundnut areas range from 5 to 15% according to location. Groundnut is usually cultivated on sandier soils and, after cereals, makes the most important contribution to household diets throughout the northern states, where it is also the main cash crop.

Okra, cowpea, green-gram, pumpkin, Bambara nut and tobacco are also widely grown around homesteads in the basin. Vegetables such as onions or tomatoes are not commonly grown in rural areas, but are increasingly cultivated near cities to supply urban markets.

With the exception of farmers near the Sudan or Uganda border and vulnerable households receiving food aid, almost all farmers use their own seed from the previous year's harvest or seeds purchased from local markets or borrowed from relatives.

11. DEVELOPMENT OBJECTIVES AND ISSUES

11.1 OBJECTIVES

The foregoing description of the baseline situation in the BAS basin supports the conclusion that ongoing and planned development interventions in the basin should:

- ▶ Contribute to peace and security in the basin as a precondition for sustainable development
- ▶ Reduce inter-ethnic conflicts and competition over natural resources
- ▶ Promote transition from reliance on emergency assistance to development
- ▶ Increase food production, storage and marketing
- ▶ Increase access to basic services (e.g. safe drinking water supply to small towns, market centers and rural villages)
- ▶ Increase access to health services and prevent malaria and other debilitating diseases
- ▶ Increase technical and vocational education, also for girls and women
- ▶ Increase labor and agricultural productivity (e.g. larger farms and mechanization)
- ▶ Improve rural access, transportation and efficiency of markets

11.2 DEVELOPMENT ISSUES

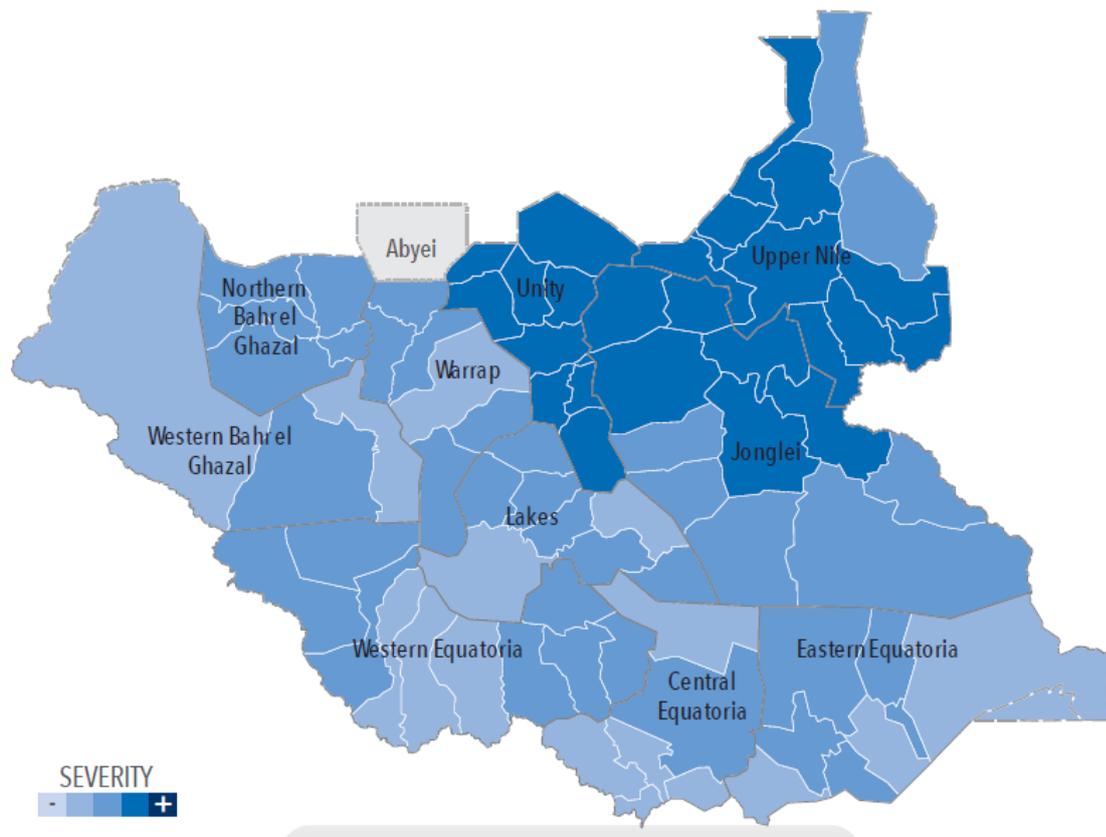
WATER SCARCITY IN SEMI-ARID PASTORALIST AREAS

Shortage of water is considered one of the main reasons for conflicts in pastoral areas. Conflicts arise due to competition for scarce water resources. Such conflicts could be addressed by providing adequate water points at strategic locations. The locations for water points must be identified in consultation with community members to ensure that the intervention meets the needs of the competing groups. Providing incentives to gradually shift from a pastoralist lifestyle to sedentary farming could be a long-term goal. .

11.3 SEVERITY OF NEED IN SOUTH SUDAN

The following map compares the severity of humanitarian needs in each county using a composite set of indicators such as mortality, morbidity and vulnerability, including: the number of displaced people, food insecurity and malnutrition rates, number of hazards, violent incidents and casualties, functioning health facilities, disease outbreaks, vaccination coverage and number of schools destroyed or closed.

Figure 11-1: Severity of needs in South Sudan (2015)



For details see: <http://bit.ly/1OpSKry>

Source: OCHA and humanitarian partners, 2015

The above map shows that the most severe need for development interventions in the basin states are Upper Nile State and northern Jonglei State.

11.4 DEVELOPMENT PRIORITIES

The information presented in this chapter can be used to identify a number of issues and derive a set of priority interventions, among which are:

- ▶ Conflict resolution, stability and security, including food security.
- ▶ Development plans should be made in close consultation with the indigenous people
- ▶ There is a need to transform the agriculture sector by promoting medium and large-scale farming through mechanisation.
- ▶ Supply adequate water points at locations in major grazing areas and along migration routes will help resolve conflicts between communities.
- ▶ Promote settlement and shift from a pastoralist life style to a mixed farming system can improve the livelihoods of people.
- ▶ Small-scale irrigation using surface or ground water can also improve the livelihood of people.
- ▶ Water shortage is common in rural towns. Boreholes with solar pumps can be a solution, but training local technicians in operation and maintenance is necessary.
- ▶ Another constraint for development is the lack of and poor condition of infrastructure. Road access to and within rural areas is a crucial problem. Road density is very low. During the rainy season most rural roads are impassable.

- ▶ The number of internally displaced people as a result of the ongoing political conflict leads to unplanned land acquisition and expansion of settlements, putting increasing pressure on water, forest and land resources and infrastructure. People lacking alternative sources of energy cut wood for firewood and construction, which worsens the problem of deforestation.

COMPLEMENT: PHASES OF FOOD INSECURITY

| | Phase 1 Minimal | Phase 2 Stressed | Phase 3 Crisis | Phase 4 Emergency | Phase 5 Famine |
|----------------------------|--|--|--|---|--|
| Phase Name and Description | More than four in five households (HHs) are able to meet essential food and non-food needs without engaging in atypical, unsustainable strategies to access food and income, including any reliance on humanitarian assistance | Even with any humanitarian assistance at least one in five HHs in the area have the following or worse: Minimally adequate food consumption but are unable to afford some essential non food expenditures without engaging in irreversible coping strategies. | Even with any humanitarian assistance at least one in five HHs in the area have the following or worse: Food consumption gaps with high or above usual acute malnutrition OR Are marginally able to meet minimum food needs only with accelerated depletion of livelihood assets that will lead to food consumption gaps. | Even with any humanitarian assistance at least one in five HHs in the area have the following or worse: Large food consumption gaps resulting in very high acute malnutrition and excess mortality OR Extreme loss of livelihood assets that will lead to food consumption gaps in the short term. | Even with any humanitarian assistance at least one in five HHs in the area have an extreme lack of food and other basic needs where starvation, death, and destitution are evident. (Evidence for all three criteria of food consumption, wasting, and CDR is required to classify Famine.) |

Source: FAO, 2013