Fuelwood Shortage in South Sudan: A Case Study of Renk County, Upper Nile State

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ABSTRACT

The paper tried to analyze the causes of fuel wood shortage in South Sudan: A case study of Renk County. The aims of this paper are to investigate the background of the fuel wood, causes, the impacts of fuel wood shortage in Renk County and suggest the solutions to fuel wood shortage in the County. This study used a personal interview and questionnaire method for the purposes of data collection from Shamadi Payam as a concern area of the study in Renk County. Nevertheless, this study also used secondary data sources such as text books, published scientific papers, organizational records, and previous studies. In analysis of the data collected, descriptive statistical method was employed for the aim of finding the background of fuel wood, the causes and purposing budget for planting trees in the households as well as introducing agroforestry programs to the community in Renk County using frequencies, percentages distribution tables. The finding include the budget table, as well as implementation time table. Also, the study found that 35% of the problems of fuel wood shortage in the County due to pilling of tress for construction or houses building in the area. Moreover, the study found 40% of people cutting down the tress for cultivation and settlement processes in Renk County. The study recommended that the shortage of fuel wood in Renk County, Shamadi payam and Boma should be solved by planting in households and introducing agro-forestry programs to the community. The communities must use cow dunk as alternative for cooking and heating in the area. In addition, World Bank should provide helpful hand to South Sudan to set successful projects establishment the sources of energy such as solar system as well as permanent electric in the Country in general and Renk County in particular.

KEY WORDS:- *Fuel wood, shortage, Renk County and Upper Nile, South Sudan.*

1. INTRODUCTION

Wood energy has been used widely for thousands years Worldwide for cooking, heating as well as building; and it remains as the primary source of energy throughout much of the world. Fuel wood is obtained from the trunk, branches, shrubs and other parts of trees. Fuel wood far is an important source of biomass energy as it is the primary source for more than three (3) million inhabitants in Renk County, upper Nile State (FAO, 1989).

Access to safe energy supplies is acknowledged as a critical foundation for sustainable development. Moreover, admittance to clean and affordable energy has been listed precondition for achievement of the millennium Development Goals, which focus on alleviating world poverty and improving the well-being of poorer sectors of society. As such, the links between energy policies and those addressing poverty are indisputable (Arnold, 2003).

Fuelwood is the dominant energy form throughout the developing world. Despite widespread predictions in the 1970s and earlyb1980s of impending energy crisis related to fuelwood shortages, usage has not diminished in many parts of the world, and the specter of extensive environmental degradation caused by growing fuelwood demand has not been realized by the communities in same parts of the developing Countries. Nonetheless, the promotion of electricity as a relatively clean, multipurpose and efficient energy source is seen by many countries as a solution to fuelwood shortage the most concerns around poverty, health and the environment that permeate the fuelwood debates in the developing countries (Shackleton, 2007).

2. STATEMENT OF THE PROBLEM

The study concentrated on the background of fuel wood, the causes of fuel wood shortage in Renk County, the impacts and suggested solutions to fuel wood shortage in the County.

The fuel wood shortage in the County due this reasons:

2.1. Increase in population contributed to high demand for land for agriculture, charcoal as source of income and settlement in the County.

2.2. Population pressure for fuel wood for cooking and heating.

2.3. Clearance of trees and damage of forest by domestic animals or illegal loggers.

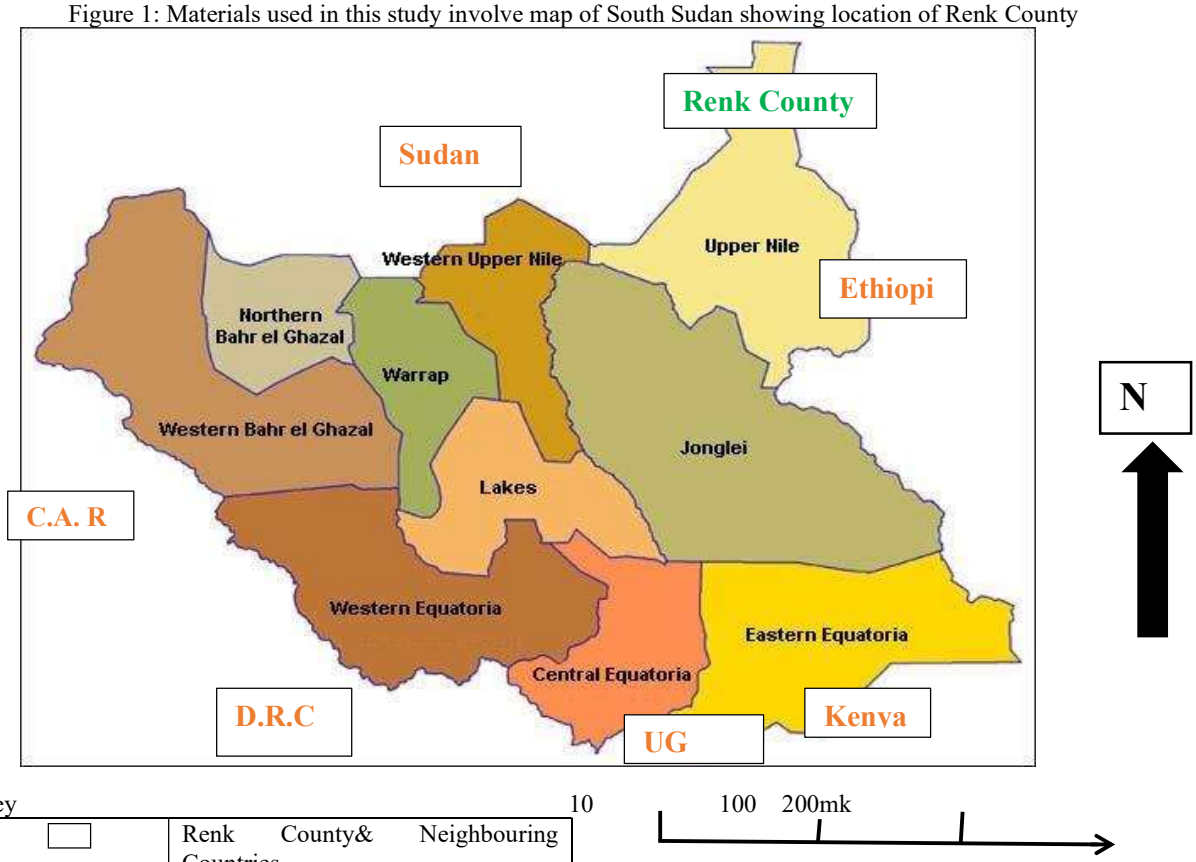
3. OBJECTIVES OF THE STUDY

The objectives of this study involve the following:

3.1. To discuss the background of fuel wood.
3.2. To examine the causes of fuel wood shortage in Renk County.
3.3. To explore the impacts of fuel wood shortage in the County.
3.4. To improve wood production by initiating agroforestry and afforestation programs.
3.5. To teach households to use alternative fuel such as cow dunk for cooking, heating and kerosene for lighting in the area.
3.6. Encourage environmental awareness by initiating tree planting in households.
3.7. To propose the solutions to causes of fuel wood shortage in Renk County

4. MATERIALS

Figure 1: Materials used in this study involve map of South Sudan showing location of Renk County



5. AREA OF THE STUDY

Renk County occupies an area of 32.000 km2 and is located in the northern part of Upper Nile State. The County is laying at Latitude 12.15˚ N and longitude 9.13˚ E of the White Nile. The County surrounding areas include Gaiger in the north of the County, Gelhak and Melut in the South, Shamadi in the southeast as well as Manyo County in the south west of the County. The major ethnic groups or population of Renk County involve Binka Bielang, Shilluk(Collo), Burun, Nuer, Maban and other tribes such as Funj and Arab Selaim (Mohammed ElFadal, 2008).

6. PHYSICAL FEATURES

Physical features consist of the following:

6.1. CLIMATE

Renk County falls in the semi-arid tropical climate of central plains of South Sudan, with an average annual precipitation ranging from 500 mm to 600 mm. The county basically has two distinct seasons which are the wet or rainy season in June and October; and the dry season from November to May. The average temperature is 34c in the day (Malakal Meteorological official, 2007).

6.2. SOILS

Soils of Renk County are dark grayish brown, very fine texture, dark cracking clay cotton soil type with much surface moisture. These soils are generally fertile. The main limiting factor is nitrogen on the

irrigated schemes and other lands that receive sufficient rainfall (Director General for Ministry of Agriculture in Renk, 2009).

6.3. VEGETATION

Vegetation types are characterized by scattered trees of Acacia species that used to be very dense (Samuel John, official in the department of forestry and range office in Renk, 2010).

7. ECONOMIC ACTIVITES

Traditional large scale farming operations are the dominant economic activities in the County. Farmers grow maize, sorghum, sesame, beside other activities such as charcoal production and collection of Gum Africa as well as fishing activity. Women often cultivate small home gardens with a variety of crops such as sesame, okra and cassava for home consumption. Pastoralists keep animals like cows, goats as the source for meat, milk and as a kind of insurance in case of dowry. The meat and milk are sold for cash. Animals are sold when money is needed, and slaughtered on special occasions (Sheik Aban in Renk County, 2008).

8. METHODS

Methods used in this study for data collection include:

8.1. Primary Data Collection

This study used a personal interview method for the purposes of data collection from Shamadi payam, households, Shamadi School, and Renk County. Data was collected usually from residents in the selected households and Bomas of the County in the four areas after giving them a brief description of the purposes and procedures of the study and ensuring that they had properly understood, before beginning of an interview.

8.2. Secondary Data Collection

Secondary data vary and included: information from references, public records, organizational records, census data, previous studies, friends & colleagues, surveys.

8.3. Ethical Considerations

This study used a primary data analysis of survey. In order to protect the anonymity and confidentiality of the information regarding respondents, names and house numbers were not identified in the Questionnaire and in the data set. Permission to carry out the study was obtained from the local stakeholders of the Payams.

8.4. Data Analysis Methods

In analysis of data sets, descriptive statistical method was employed for the purpose of getting the background characteristics of the migrants' households in Renk County, using frequencies, percentages and distribution Tables.

9. **DISCUSSION AND RESULTS**

The discussion and results of this study are:

Table 1: Budget for planting trees in households and Schools in Renk County

No	Item	Quantity	Unit (amount)	Total Amount
1.	**Trees**:			
	Teak	50.000	2 ssp	100.000 ssp
	Mango	50.000	2 ssp	100.000 ssp
	Lemon	50.000	2 ssp	100.000 ssp
				300. 000 ssp
2.	**Tools & implementation:** Oxen			
	Ox plough	10	1500 ssp	15.000 ssp
	Barrel	5	500 ssp	2.500 ssp
	Pangas	2000	300 ssp	600.000 ssp
	Water cane	2000	10 ssp	20.000 ssp
		2000	500 ssp	10.000 ssp
				917500 ssp
3.	**Fertilizers**	2000	10 ssp	20.000 ssp
4.	**Man power:**			
	Engineers	20	300 ssp	6000 ssp
	Surveyors	20	300 ssp	6000 ssp
	Labourers	20	300 ssp	6000 ssp
	Forest surveyor	20	300 ssp	6000 ssp
	Soil specialist extension	20	300 ssp	6000 ssp
				30.000 ssp
5.	**Training:**			
	Extension workers	20	300 ssp	6000 ssp
	Ox plough drivers	20	300 ssp	6000 ssp
				12.000 ssp
6.	**Meetings**	30	500 ssp	15.000 ssp
7.	**Site visits**	30	500 ssp	15.000 ssp
8.	**Grant total**			**1.309.500 ssp**

Budget for planting trees in Renk County involve planting teak, mango and lemon. The total amount used for planting trees in households in the County were thirty thousands (**300.000) ssp**. This indicated that planting trees in households in Renk County require great support from the government as well as NGOs operating in Upper Nile state in particular and South Sudan in general.

In term of tools and implementation, the budget allocated for purchasing oxen, ox plough, barrels and pangas, beside water cane. The total amount for buying the all tools were nine hundred seventeenth thousands and five hundred **(917500) ssp**, South Sudanese pounds. In addition, the fertilizers used in this plantation were cheap due to cheapness of the price in the market. While, man power include Engineers, Surveyors, Labours and Forest specialist extension for accurate plantation planning. The total amount used in the process of planting were thirty thousands **(30.000) ssp,** South Sudanese Pounds. Whereas, training process covered the extension workers and ox plough drivers, the most significant groups in households planting trees in the county. The total amount given to them were twelve thousands **(12.000)** ssp. Moreover, the meetings and site visits were given amount of thirty thousands ssp to bring the total mount granted for all programs to One million three hundred nine thousand and five hundred **(1.309.500**) ssp.

Table 2: Implementation Timetable for planting trees Households and Schools in Renk County.

Months	Implementation	Purpose	Responsibility
May 7	First meeting with Boma leaders	Address the need for reforestation	Planning teacher John Joseph
May 14	First meeting with payam leaders	Address the need for reforestation	Land evaluation specialist Samuel Daniel
May 21	First meeting with County leaders	Discuss the initiating trees in the households	Forest extension officer Aban William

The implementation began by meeting with Boma, Payam and County leaders to address the need for reforestation by planting trees in households, Schools, Boma and Payam as well as County areas. Materials and trees were distributed according to household's numbers. Each family got six (6) hoes and received two (2) barrels, eight (8) watering canes and eight (8) pangas for process of planting trees. The families were registered to provide the accurate number of trees based on their numbers. Trees was planted in depths 5 cm and distance 3 meters between one trees to another. The planted trees gets water for irrigating from the White Nile and water tanks in the County.

Table 3: Monitoring and evaluation time table sample

Months	Site visit	Number of trees planted	No. of trees Survived	No. of trees dead	No. of trees % survived	No. of trees % dead
3 months	.Shamadi payam.	1000	750	250	750	250
	.Shamadi primary School.	1000	800	200	800	200
	.Renk County office.	1000	820	280	820	280
6 months	.Shamadi payam.	1000	600	400	600	400
	.Shamadi primary School.	1000	790	210	790	210
	.Renk County office.	1000	765	235	765	235
9 months	.Shamadi payam.	1000	600	400	600	400
	.Shamadi primary School.	1000	750	250	750	250
	.Renk County office.	1000	750	250	750	250
12 months	.Shamadi payam.	1000	550	450	550	450
	.Shamadi primary School.	1000	700	300	700	300
	.Renk County office.	1000	700	300	700	300

The trees were planted at three sites of Shamadi payam, primary Schools and Renk County. The planted were monitored every three months. At the end of the third month, the number of trees survived and dead were counted and recorded on a data table. The percent of survived and dead were calculated. The causes of death of the planted tress due to removal of the trees from origin planted area. Nonetheless, the death of planted trees due to lack of monitoring as well as watering system in time, beside infertility of soil. Also the death due to lack of skills from the people in charge in the planted areas.

Table 4: Causes of fuel wood shortage in Renk County

Response	No.of Respondents	Percentages
High demand for land for agriculture, charcoal as source of income and settlement in the County.	35	35%
Population pressure for fuel wood for cooking and heating.	40	40%
Damage of forest by domestic animals or illegal loggers	25	25%
Total	**100**	**100%**

The study found that the causes of fuel wood shortage in Renk due to Reasons. 35% of respondents affirmed that the caused due to high demand for land for agriculture, charcoal as source of income and settlement in the County. Whereas, 40% of them started the caused due to Population pressure for fuel wood for cooking and heating. Moreover, 25% of respondents said the causes to damage of forest by domestic animals or illegal loggers.

Table 5: alternative solutions to prevent forest from clearance

Response	No. of Respondents	Percentages
Use cow dunk for Cooking and heating.	30	30%
Kerosene for lighting.		30
Encouraging of private sector to employ the local people.		40%
Total	**100**	**100%**

Table 5: show the alternative solutions the causes of clearance of trees in Renk County.

In this junction, 30% of respondents affirmed the use of cow dunk for cooking and heating as the alternative step to stop the exploitation of trees in the County. While, 30% of them affirmed the use of kerosene for lighting in the households. In addition, 40% of respondents said the encouragement of private sector to employ the local people to provide the income to them.

10. CONCLUSION

Forest is a crucial resource for rural people in Renk County, dependence upon wood energy for cooking and heating. This is unlike in other countries and this study reveals that current fuel wood extraction is high can led to loss of the forest cover and degradation of slowing vegetation in the County

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