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SUDAN TRANSITIONAL ENVIRONMENT PROGRAM

REPORT ON THE PROCEEDINGS OF
THE 2ND TRAINING WORKSHOP



AUGUST 2006

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COVER PHOTO

Group Photograph of Participants to the 2nd STEP Training Course in EIA/ESD held in Bros Camp, Rumbek, Southern Sudan from 22nd -26th May 2006.

SUDAN TRANSITIONAL ENVIRONMENT PROGRAM

REPORT ON THE PROCEEDINGS OF
THE 2ND TRAINING WORKSHOP

**ENVIRONMENTAL ASSESSMENT AND ENVIRONMENTALLY SOUND
DESIGN FOR SMALL-SCALE ACTIVITIES**

**BROS COMPOUND, RUMBEK, SOUTHERN SUDAN
22ND – 26TH MAY, 2006**



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ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
CAR	Central African Republic
CWEC	Christian Women Empowerment Center
DRC	Democratic Republic of Congo
EA	Environmental Assessment
EIA	Environmental Impact Assessment
ENCAP	Environmental Assessment and Management Capacity Building Project
ERF	Environmental Review Form
GNU	Government of National Unity
GoS	Government of Sudan
GoSS	Government of Southern Sudan
HIV	Human Immuno-deficiency Virus
IDP	Internally Displaced Persons
IEE	Initial Environmental Examination
IRG	International Resources Group
NGO	Non Governmental Organization
PEA	Programmatic Environmental Assessment
PERSUAP	Pesticide Evaluation and Safer Use Action Plan
REDSO/ESA	Regional Economic Development Services Office for East and Southern Africa (USAID)
SEA	Strategic Environmental Assessment
SFO	Sudan Field Office
STEP	Sudan Transitional Environment Program
USAID	United States Agency for International Development

INTRODUCTION

This was the 2nd EIA training Course funded by USAID/Sudan Transitional Environment Program (STEP). The training was targeted at the personnel involved in the implementation of development activities in Southern Sudan during the various stages of the project cycle (Planning and Design, Implementation, monitoring and evaluation). Participants were drawn from both Government and Non Governmental Organizations (NGOs), CBOs and a few from state governments. Arrival date was Sunday the 21st May 2006, and the course commenced on the 22nd May at 8.00 A.M. and ran for a period of five days up to Friday the 26th of May.

OPENING SESSIONS

The participants were welcomed to the training course by the STEP EIA specialist Ms. Jane Kahata who thanked them for the interest and initiative that they had taken in attending the course. Mr. Tom Catterson, the STEP Team Leader also welcomed the participants and briefly explained to them the objectives and activities of the STEP. He then invited the Guest of Honor, The County Commissioner for Rumbek Central County, Mr. Abraham Makoi to address the participants and officially open the course.

Mr. Makoi welcomed the participants to Rumbek and urged them to pay attention during the course so that they can gain the much needed knowledge in the reconstruction of Southern Sudan. He also thanked USAID for supporting capacity building initiatives for Southern Sudan professional, after which he officially opened the course.

PARTICIPANTS INTRODUCTIONS AND EXPECTATIONS

Facilitated by Moses Kur Kuch

Participants and facilitators introductions were conducted by Moses who asked each of them to give their names, the organizations they work for, their positions/designation and their expectations about the course. The following were given as the participants' expectations:

- Learn more about environmental issues in Southern Sudan and how to manage it;
- Learn about Environmental Impact Assessment;
- Share and learn from others about the environment in Sudan;
- Understand the environmental problems in Southern Sudan;
- Know how to conserve natural resources;
- Learn how to design environmentally sound projects;
- Enhance knowledge base and skills.

PRESENTATION OF COURSE OBJECTIVES

By Ms. Fiesta Warinwa

Course objectives were presented by Ms. Fiesta Warinwa who noted that the goal of the course is to assist USAID Missions and Partners (Contractors, PVOs, NGOs & host Governments) to use simple environmental assessment tools to better design and implement environmentally sound activities. To achieve this goal, the course is designed to help participants to:

- Develop a deeper understanding of how environmental issues can affect the sustainability of development programs and activities;
- Understand the basic Environmental Impact Assessment (EIA) process,
- Build skills to identify and assess reasonably foreseeable environmental impacts;
- Design mitigation and monitoring measures to avoid adverse environmental impacts.

The course was therefore focused on developing the participants' capability to (a) prepare an environmental assessments or environmental review reports as well as provide relevant supporting materials, and (b) design mitigation, monitoring and evaluation plans for activity components with potential negative impacts.

COURSE TRAINERS/FACILITATORS

Jane Kahata, EIA Specialist, International Resources Group (IRG)

David Kinyua , USAID/REDSO/ESA

Fiesta Warinwa, NRM Specialist, African Wildlife Foundation (AWF)

Moses Kur Kuch, Ministry of Commerce, Trade and Supply

Lulu Hayanga, Hayanga & Co. Advocates

Simon Gatheru; Principal Curator, National Museums of Kenya

[Contact details are in Annex 4]

MODULE PRESENTATIONS

The course was based on the ENCAP EIA training materials and PowerPoint presentations, some of which have been adapted to reflect Southern Sudanese environmental issues. However, this section only focuses on:

- Issues/discussions arising from the modules that had opportunities for practical group exercises;
- Key issues raised and discussed after presentation of the two national papers;
- Presentations on the environmental review reports and mitigation and monitoring plans developed after the field case study visits and issues raised/and or discussed.

WHAT IS THE ENVIRONMENT?

The participants were asked to write on a piece of paper what their understanding of the word environment is. They were also to give three or more “things” that they considered as being part of the environment. The following is the feedback received from them.

- Physical (surroundings) in which the individual lives;
- All biotic (living), abiotic and social surroundings of human beings;
- Surroundings - air, soil and interactions that exist;
- Land, air, sea, rivers and their improvements/protection;
- Surroundings – good or bad – where I live;
- Biophysical, social and man-made;
- Physical and biophysical interactions with man;
- Existing situation per given time where creatures live;
- Atmospheric conditions (air);
- All things that affect our community (physical or biophysical);
- Surroundings of living and non living things including man- made;
- Interrelationships thereof and how they affect man.

COMPONENTS CONSIDERED AS PART OF THE ENVIRONMENT

- Weather. land;
- Biotic (animals/plants) and resources;
- Abiotic (climate);
- Social (religion, culture civilization);
- Air, water, soils, wastes and forests and animals;
- Trees, water bodies, air and land;

- Gases and liquids;
- Rivers, lakes and mountains;
- Time effect on the social, political , economic and biological environments;
- Ecosystems, animals and resources;
- Pollution from the things we do.

The session was wrapped up by Mr. Gatheru who emphasized interactions among and between the different components of the environments.

CONSTRUCTION OF A HISTORICAL TIMELINE FOR SOUTH SUDAN

Facilitated By: Fiesta Warinwa

Participants were divided into four groups as follows: Group 1: 1955-1967; Group 2: from 1968 - 1980; Group 3: 1981 - 1994; Group 4: from 1995- 2006. They were then taken through the briefing notes on how to construct a historical timeline, after which they split to their respective groups. The following is the consolidated historical timeline from the four groups.

1955:	Migration of Southern Sudanese to the neighboring countries, Uganda, Zaire and Kenya.
1956:	Independence of Sudan, some stability and a few people return to Southern Sudan.
1958:	Military Coup.
1962:	Flooding leading to loss of homes, farms, shortage of food and death. An abundance of fish, water hyacinth spreads preventing steamers from docking. Water transport and navigation becomes difficult on the River Nile between Kosti and Juba where the river narrowed.
1964:	Expulsion of missionaries. Shari el Katim Khalifa became the Prime Minister of Sudan. Massacre in Khartoum and many Southerners killed. Ebon Mundi transported all the Southerners back to the South due to the massacre.
1965:	Juba Massacre as Southerners are rounded up at a wedding party and killed. Second migration of the Southerners to the neighboring countries.
1965-1967:	Congolese from Sudan introduced the charcoal industry that led to deforestation.
1968:	Rejection of Friday in schools. Movement of people to Juba from different villages which resulted in expansion of Juba Town. All the missionary schools in Southern Sudan closed down by Government and Arabic Language introduced. Tribal and local people killed, e.g. William Deng Yeil.
1969-1971:	Numeiri took over and initiated the North-South Agreement.
1972:	Signing of Addis Ababa Agreement with Abel Alier as President of High Executive Council (H.E.C.) Return of refugees into the Southern Sudan
1973:	Celebrations in the entire South marking the Addis Ababa Agreement. Merging of the Southern and Northern troops into one force. This lasted for three (3) years. Declaration of both Arabic and English patterns of education. Survey of mechanized schemes in Upper Nile State for agricultural department.
1974:	Construction of Juba and Jur River bridges and town roads started. Excavation in all of Southern Sudan arising from the development of infrastructure.
1975:	Severe flooding in Upper Nile and Bar El Ghazal which lead to serious damages and famine. Juba University opened.
1976:	Ebola disease outbreak. Demonstration against construction of Jonglei Canal and random arrest of politicians and student leaders. Opening of Juba and River Jur bridges.

1977:	Secondary schools in Upper Nile State changed from Arabic to English medium of instruction and vice versa several times and finally to Arabic
1978:	Influx of refugees from Uganda and refugees camps constructed. Tribal fighting among Dinka tribes all over the Southern Sudan led to closure of senior secondary schools.
1979:	Re-division and regionalization.
1982:	Collapse of Addis Ababa Agreement
1983:	Re-division of the South into three regions and tribal conflicts started. Introduction of Islamic Law (Sharia Law) that had cultural, economic and political impacts Formation of SPLM/A and commencement of war and agricultural activities neglected leading to hunger and mass displacements.
1984:	Revolution and attempt on Turbi's life.
1985:	Overthrow of President Numeiri, political instability and intensification of war.
1986:	Sadiq El Mahdi becomes Prime Minister. Initiation of peace negotiations. Tribal conflicts in Wau. Displacement of people to Khartoum, famine and deaths.
1988:	Famine in Juba leading to mass deaths & displacements. Koka Dam agreement brought about hope for peace. Floods in Khartoum leading to further displacements, hunger and diseases.
1989:	Overthrow of Sadiq El Mahdi, political instability, loss of hope for peace as Islamic Government takes over. Jebaliu massacre (Shilluks) and Juba University transferred to Khartoum.
1990:	Earthquake destroys houses in Juba. The split of SPLM/A into two factions. Bor Massacre, tribal conflicts, famine, displacement/migration. Closure of secondary schools in Sudan and students migrated to Uganda. Invasion of Juba by SPLA -Juba massacre, environmental pollution, deforestation of Juba, destruction of infrastructure, inflation, mass migration to Khartoum. Khartoum Peace Agreement. Chakudum SPLA Convention. Decentralization of system of government leading to displacement of people, exploitation of resources, loss of homes and destruction of property. Formation of South Sudan Coordination Council and eventual closing of White House. Poisoning of River Nile leading to loss of marine biodiversity, loss and threat to human life. Wau incident leading to loss of life, property and displacement of people.
2000:	Machakos Protocols and road map to permanent ceasefire is made.
2004:	Naivasha Protocol that led to the eventual signing of the CPA
2005:	Comprehensive Peace Agreement signed. Death of Dr. John Garang and unity of Southern Sudan challenged, riots and loss of life and property in several towns in Juba and Khartoum. Salva Kiir becomes President of Southern Sudan Explosion of ammunition dumps, loss of lives, property and environmental pollution. Cholera epidemic leading to loss of lives and manpower.

KEY HIGHLIGHTS ON THE HISTORICAL TIMELINE

1955: Torit mutiny led to the displacement and resettlement of people in other areas leading to cutting down of trees;

- 1962:** Flooding of the River Nile leading to loss of homes, property, food shortages and death. A positive impact of the flooding is that fish became abundant in all the flooded areas and wetlands;
- 1965:** Charcoal burning is introduced to parts of Southern Sudan bordering DRC Congo and Uganda by Congolese refugees in Sudan;
- 1972:** Signing of the Addis Ababa Agreement and the peace that followed saw the return of refugees to Sudan which led to deforestation due to clearing of land for cultivation and construction
- 1978-1979:** Refugees influx from Uganda leading to deforestation, land conflicts and importation of better agricultural practices from neighboring countries into Sudan.
- 1991:** Tribal conflicts that culminated in the Bor massacre. This led to massive displacement of people and their subsequent migration and resettlement elsewhere and famine;
- 1992:** Juba Massacre arising from the invasion of the town by SPLA. The fighting that ensued led to environmental pollution, destruction of infrastructure, inflation and mass migration to Khartoum. The town and adjacent villages got deforested as the people concentrated within the town and they could not go very far to collect firewood
- 1994-1996:** Decentralization of system of government led to displacement of people, exploitation of resources, destruction of homes and property
- 1997/98:** Poisoning of River Nile leading to loss of biodiversity and to loss and threat to human life

In summary, construction of the historical timeline was able to bring to the fore the social political, economic and environmental events and changes that have occurred in Southern Sudan. It also brought out some of the adverse impacts of conflicts in neighboring countries of DRC and Uganda, and how these have affected the environment in Southern Sudan.

DISCUSSIONS/OBSERVATIONS ON THE BIOPHYSICAL AND SOCIO-ECONOMIC PAPERS

Moderated by: F. Warinwa and Moses Kur Kuch

These two presentations always elicit a lot of enthusiasm among the participants, providing an opportunity to discuss at an in-depth level a country's socio-economic and biophysical environmental issues. The following were the major issues that came up from these two presentations:

- Land use conflicts in certain parts of Southern Sudan such as in Mundri need to be resolved and a permanent solution found to avoid inter ethnic conflicts.
- Displacements and resettlements of IDPs have led to the problem of overgrazing in certain parts of the country. There was therefore a need for a speedy resolution of the IDPs problems so that people can be able to return to their communal lands and ease pressure on the land. Some basic infrastructure such as portable water, schools and hospitals should be provided in areas earmarked for the resettlement of IDPs if the exercise is to be successful; otherwise they may decide to just go back to their previous camps.
- The CPA indicates that land belongs to the customary land owners and therefore their permission must be sought by developers interested in investing in Southern Sudan. Some participants felt that this was a major impediment to the implementation of development projects that are urgently needed since the process is complex and takes long to conclude. They felt the government needs to clarify the land ownership question faster so as to encourage investors in the various sectors of the economy.
- The question of who owns wildlife also came up. Is it the state or the customary land owners on whose land it is found? It was also noted that the country ought to take seriously the issues of cross border wildlife resources by having joint management arrangements with the neighboring countries of DRC and Uganda;
- Customary land owners in oil producing regions should be the greatest beneficiaries of oil revenues, and companies exploiting such resources should take the land on lease from the local communities and pay them adequately, some of the participants noted;
- There was need for the GoSS to give incentives to Southern Sudanese in the Diaspora to come back and invest. Some of the participants felt that the returnees were getting discouraged by the heavy taxes imposed on them;
- Some participants observed that there was kind of a double taxation system i.e. at the State and the GoSS levels, which may discourage investment in the country. As such, there is an urgent need to clarify roles and responsibilities of the State governments and the GoSS i.e. centralization versus decentralization;
- For Southern Sudan to develop, there was need to initiate inter ethnic dialogue to address pertinent issues such as land for national development projects;
- Is the Government exempt from EIA requirements? The participants were informed that EIA regulations apply to anyone who proposes to undertake a project. This should be done before commencement of such projects.
- The other question raised is who pays for the cost of EIA studies and what is the cost? The participants were informed it was the person or institution proposing to undertake the proposed project, and in general, the cost of doing the EIA study is usually about 1% of the total project cost.

PRESENTATION OF ENVIRONMENTAL REVIEW REPORTS BASED ON THE FIELD CASE STUDY STUDIES

CASE STUDY I: REVIEW OF ENVIRONMENTAL IMPACTS OF RURAL ROADS REHABILITATION PROJECTS

INTRODUCTION

This case study is based on a segment of the Rumbek-Akot road that has been recently rehabilitated with funding from USAID and other donors, and implemented under the auspices of the UN-World Food Program (WFP). These road rehabilitation activities together with others that are on going are a first level activities aimed at improving access by road in Southern Sudan for purposes of transporting goods, especially relief food. The roads are also expected to play a critical role in stimulating commercial activity and self sufficiency. Much more durable road rehabilitation/construction activities will be undertaken at a later stage.

Environmental Review Report on Rural Roads Rehabilitation Projects

Environmental Components	Physical Environment							Biological Environment							Social Environment										
	Agricultural lands	Soil erosion/stability	Soil Quality	Surface H2O Quality	Surface H2O Quantity	Ground H2O Quantity	Air Quality	Noise	Natural forest	Protected Areas	Biodiversity	Aquatic Ecosystem	Wetlands	Migratory species	Disease Vectors	Public Health	Physical hazards	Cultural Values	Employment	Gender Relationship	Equity	Indigenous Peoples	Resettlements	Cultural resources	Community Stability
Planning & Designing																									
Consultative meetings																						L - 3			
Survey	L - 1	L - 1						L - 1	L + 1										L + 1			L + 2			
Designing		H - 3	M - 2	L - 1	L - 1			L - 1	L - 1	L - 1	L - 1	L - 1							L + 1						
Construction																									
Clearing the site	L - 1	L - 1	L - 1	L - 1				L - 0	L - 2	L - 1	L - 1	L - 1	L - 1				L - 0		L + 3			L - 1			
Cutting and filling		L - 1					L - 0	L - 1									L - 0		L + 1						
Excavation	L - 1	H - 2	H - 2	M - 1	H + 2			L - 0	L - 0	L - 0	L - 0				H - 3	M - 2	M - 1		L + 0						
Drainage	L + 1	M - 1	L - 0	M - 1	M - 2														M + 1						

Environmental Components	Physical Environment							Biological Environment						Social Environment											
	Agricultural lands	Soil erosion/stability	Soil Quality	Surface H2O Quality	Surface H2O Quantity	Ground H2O Quantity	Air Quality	Noise	Natural forest	Protected Areas	Biodiversity	Aquatic Ecosystem	Wetlands	Migratory species	Disease Vectors	Public Health	Physical hazards	Cultural Values	Employment	Gender Relationship	Equity	Indigenous Peoples	Resettlements	Cultural resources	Community Stability
Fuel and lubricant			L - 0	L 0																					
Operation																									
Formation of road management committee																		H -3							
Decommissioning																									
Excavation sites	L + 3	L + 3	L + 3	L + 1	L + 2		L + 2	L + 2	L + 2						L + 3	L + 3	L + 3		L + 1			L + 2	L + 0		
Road camps																						L + 3			

KEY

L – Low risk

H- High risk

1 – Significant

3- Highly significant

M- Moderate risk

0 – Not significant

2 – Moderately Significant

ISSUES/OBSERVATIONS FROM CASE STUDY I

- The participants were informed that the planning and design phase hardly has any significant impacts. This phase also employed very few people; therefore scores of medium and high significance were inappropriate;
- Road rehabilitation projects do not lead to a lot of land clearance activities as they, to a large extent, follow existing road alignment. As such, the rehabilitation activities were not expected to impact much on any natural forests and protected areas as the group handling this case study had indicated;
- This group missed out on some of the key impacts of road rehabilitation projects, such as improved access which allows people to easily move from place to place to get social and commercial services. Improved access may also make the communities vulnerable to communicable diseases such as HIV/AIDs. Other impacts missed out were the physical hazards posed by the borrow pits that had not been decommissioned and an increased number of road accidents as vehicles move faster on the improved roads that do not have road signage and speed bumps.

CASE STUDY 2: ENVIRONMENTAL IMPACTS OF WATER SUPPLY AND SANITATION PROJECTS IN RUMBOK TOWN

Water supply projects in the Rumbek County have been undertaken by the Sudan government and organizations such as UNICEF, OXFAM and PACT among others. Almost the entire town supply and the adjacent neighborhoods have water from boreholes, the oldest being those done by the Sudan government about 20 years ago. The town has 74 boreholes spread in various villages and much more recently, the town market area has been served with piped water, which has 15 water points. The piped water supply has been distributed to some institutions in town. This case study focuses on the environmental impacts of water and sanitation projects in Rumbek town

Environmental Review Report of Water and Sanitation Projects in Rumbek Town

Environmental Components Project Components	Physical Environment							Biological Environment						Social Environment											
	Agricultural lands	Soil erosion/stability	Soil Quality	Surface H2O Quality	Surface H2O Quantity	Ground H2O Quantity	Air Quality	Noise	Natural forest	Protected Areas	Biodiversity	Aquatic Ecosystems	Wetlands	Migratory species	Disease Vectors	Public Health	Physical hazards	Cultural Values	Employment	Gender Relationship	Equity	Indigenous Peoples	Resettlements	Cultural resources	Community Stability
Planning & Designing																									
Needs identification																				++					
Community mobilization																				++	++				
Preliminary meeting																				+					
Formation of committee																				+					
Survey		+	+				+		+																
Proposal																									
Construction Phase																									
Clearing the site																									
Community participation																									
Drilling							+	++					+			+									
Test pumping																									
Sample testing																									
Operation Phase																									
Training															***		***								
Soak away pits														++											
Commissioning of the borehole																									***
Fetching water for consumption						++									++										
Decommissioning Phase																									
Dismantling borehole																							+		++
Rehabilitation/ shifting																								+	

KEY

+ Adverse impacts, low risk

High positive impacts

++

Adverse impacts, medium risk

ISSUES/COMMENTS FROM THE WATER AND SANITATION CASE STUDY

- The planning and design phase should not have any impacts as indicated by the group
- Lack of properly constructed and maintained soak away pits would increase breeding grounds for mosquitoes and other disease vectors. There was also the risk of contamination of the water from the stagnant pools around the boreholes.

CASE STUDY 3: ENVIRONMENTAL REVIEW OF SMALL SCALE BRICK MAKING ACTIVITIES IN RUMBEEK TOWN

Small-scale brick making activities are common now in many urban centres in Southern Sudan as the demand for reconstruction materials increases. This case study is about 2 km from Rumbek town on the Rumbek-Akot road. Brickmaking activities in the two case study sites started in the year 2005. This case study looks at the environmental impacts of small scale brickmaking activities and the table presents the impacts as identified by the group.

Environmental Review Report of Small Scale Brick Making Activities

Environmental Components	Physical Environment						Biological Environment			Social Environment				
	Agricultural lands	Soil erosion/stability	Soil Quality	Air Quality	Noise	Natural forest	Migratory Species	Biodiversity	Disease Vectors	Public Health	Physical hazards	Employment	Gender Relationship	Community Stability
Planning Phase														
Meeting stakeholders														
Identifying sites														
Mobilizing resources														
Identify water sources														
Construction														
Clearing the site			- LR 1		- LR 1	_ LR 1		_ LR 1	- LR 1	_ LR 1		+ LR 3		
Excavation of soil		- LR 3	- LR 3						+ HR 3	- LR 1	_ LR 1			
Brick molding											_ LR 1	+ HR 1		
Building kiln			_ LR 1								_ LR 1	+ LR 3		
Operation														
Collection of fuel						_ HR 1					_ LR 1	+ LR 1		
Firing				_ MR 2						_ LR 1	_ LR 1	+ LR 1		
Assembling bricks											_ LR 1	+ LR 3		
Assembling Wastages	_ LR 1		_ LR 1											
Decommissioning														
Filling of Borrowes			_ LR 1						+ LR 3	+ LR 3				+ LR 3
Planting fruit trees of local varieties		+ LR 3	+ LR 3				+ LR 3			+ LR 3				+ LR 3
Ground leveling		+ LR 3							+ LR 1		_ LR 1			+ LR 1

Key

- + Positive Impact
- Negative Impact

- LR Low Risk
- HR High Risk
- MR Medium Risk

1, 2, 3 Significance scores
with 1 being lowest & 3 being highest

ISSUES RAISED/DISCUSSED FROM THIS CASE STUDY

- Small scale brickmaking projects/activities may not have significant adverse impacts on the environment, however, the cumulative impacts of many small scale brickmaking activities may. Some of the adverse impacts are: loss of productive agricultural land as the landscape is altered, increase in the prevalence of malaria and other water-borne diseases arising from rain water accumulated in the borrow pits and physical hazards to the people and livestock. It was, however, argued that the Rumbek County is subject to flooding which creates many stagnant pools of water, and those created by the borrow pits would not have much significance in term of increasing stagnant pools of water.
- The soils used for brickmaking in the two case study sites were not the best as they had high amounts of sand. This resulted in wastage from broken bricks that were left lying on site. Proper site identification would minimize the losses if such activities were located in areas with the best soils for this particular activity.
- Small scale brickmaking activities are located in various places within the town which is influenced by ease of transportation of the finished products. The participants suggested that Rumbek and other towns be zoned indicating what activities should be undertaken in each zone in order to minimize land use conflicts.
- High significance scores were indicated for several of the impacts in this report. The participants were reminded about the criterion that is used in scoring for significance. This particular case study should not have any impacts that are of high significance.

CASE STUDY 4: IMPACTS OF SMALL SCALE AGRICULTURAL DEVELOPMENT ACTIVITIES

This case study is based on a small scale agricultural development project on a farm with an area of about 0.75hectares, located about 5km from Rumbek town, off the Rumbek Wau Road. The project is a private sector partnership between the Afex Camp, Rumbek and the propriety of the land. The objective of the project is to provide green vegetable supplies to the Afex Camp that is currently sourcing most of their vegetables from Kenya.

Environmental Review Report of Small Scale Agricultural Development Project

Env. Components Project Components	Physical Environment							Biological Environment							Social Environment										
	Agricultural lands	Soil erosion/stability	Soil Quality	Surface H2O Quality	Surface H2O Quantity	Ground H2O Quantity	Air Quality	Noise	Natural forest	Protected Areas	Biodiversity	Aquatic Ecosystem	Wetlands	Migratory species	Disease Vectors	Public Health	Physical hazards	Cultural Values	Employment	Gender Relationship	Equity	Indigenous Peoples	Resettlements	Cultural resources	Community Stability
Planning & Designing																									
Survey and consultant																									
Budgeting																									
Species selection			L+																						
Res. Mobilization																			L+	L+	L-	L-			
Construction																									
Land Clearing and fencing			M-	L-	L-			L-	L-			L-	L-		L+									L+	
Drilling of bore well			L-	L-	L+		M-	M-	L-															L-	
Instant solar energy																								L+	
Install water tank																								L+	
Operation																									
Ploughing	M+	M-	M-	M+	M+		-	-	-	-									M+	L+				L+	
Planting/ transport	M+	M+																	L+	M+				L+	
Weeding	M+														M+				M+	M+				L+	
Fertilization	M+					M+									M-				M+	M+				L+	
Harvesting											M-								M+	M+				L+	
Sorting/ Grading																									
Transportation/ Marketing																									
Decommissioning																									
Removal of plants	M-	M-	M-	M-	M-										M+		M+		M+	M+					
Removal of solar	M+																M+		M+					M+	
Removal of tank																	L-		L+					L+	
Land leveling	L+	L+	L-	L-	L-		L-		L-	L-							L-		L+					L+	

Key

- + Positive Impact
- Negative Impact
- L Low Impact
- M Medium Impact

ISSUES/COMMENTS ARISING FROM THE SMALL SCALE AGRICULTURAL DEVELOPMENT CASE STUDY

- The group was cautioned about the use of the terminology *indigenous people* for *local people*. Indigenous peoples were ethnic minorities in the world whose numbers were very low and they needed special consideration.
- This environmental review report indicated impacts against activities where none were anticipated. There was also a problem of scoring for significance.

PRESENTATIONS ON MITIGATION AND MONITORING/ ENVIRONMENTAL MANAGEMENT PLANS

After the presentations of the environmental review reports were concluded, each of the groups was asked to pick two or three of the impacts they considered most significant and prepare mitigation and monitoring plans for them. The following are the group presentations on the mitigation and monitoring plans

MITIGATION AND MONITORING PLAN (EMP) FOR CASE STUDY I ON RURAL ROADS REHABILITATION PROJECTS

Phase Activity	MITIGATION				MONITORING				
	Significant Impacts	Mitigation Measures	Responsibility	Budget	Indicator	Stage in cycle	Method	Responsibility	Budget
Excavation of borrow pits	Soil erosion	Soil conservation measures e.g. planting fast growing trees & grass	Contractor	M	Successful growing of trees and grass	Monthly	Direct field observation	WFP/ country engineer	Low
	Breeding sites for disease vector	Filling of the borrow pits	Contractor	L	No stagnant H2O	Monthly	Field observation	WFP/ country engineer	Low

ISSUES RAISED ON MITIGATION AND MONITORING PLANS FOR RURAL ROADS REHABILITATION

- The group gave successful growing of trees and grass as the indicator for the mitigation measure for soil erosion. The moderator told the participants that the number of trees that had been established and were growing, or the area under tree or grass cover would be a better indicator for the soil conservation efforts through afforestation.
- The other debate was on who should monitor implementation of the mitigation measures? Is it the local community or the County authorities? In this particular case, the client was the WFP who then had the responsibility for ensuring that mitigation measures were implemented. In many other instances, the client for road rehabilitation and construction projects may be the GoSS or the state governments and they would have the responsibility of ensuring that mitigation measures were implemented. However, if these are not specified in the construction contracts and budgeted for, they will never be implemented.

MITIGATION AND MONITORING PLAN (EMP) FOR CASE STUDY 2 ON THE WATER AND SANITATION PROJECTS

Phase Activity	MITIGATION				MONITORING					
	Significant Impacts	Mitigation measurement	Responsibility	Budget	Indicator	Stage in cycle	Method	Responsibility	Budget	Total budget
Planning & Design										
Community mobilization	Gender inequality	Awareness	Community	LA	Equity	Meeting occasionally	Attendance	Org. committee	L	L
Construction Drilling	Noise	Ear mask	Contractor	LA	Workers wearing mask	Work time	Direct observation	Management	L	L
Operation Soak away pits	Disease vectors	Constructing a soak-away pit Mosquito nets	Company Private Public	LA	Reduced mosquito vectors Functioning soak away	Monthly Monthly Records	Direct observation Hospital records	Hygiene promoters Malaria control department	L	L
Decommissioning Dismantling borehole	Community instability	Alternative source of water	Water department	H	Adequate water	Daily	Daily monitoring	Water committee	L	H

ISSUES RAISED ON THE MITIGATION AND MONITORING PLANS FOR THE WATER AND SANITATION CASE STUDY

- The significant impacts of stagnant pools of water is the incidence of diseases such as malaria and other water-borne diseases and not disease vectors as the group had indicated. This could be monitored by regularly analyzing hospital records for reported cases of the expected diseases.
- The group was also cautioned that when the borehole gets decommissioned eventually, it would be important to test water for both quality and quantity. Quality should especially be tested for every new water supply and regular bacteriological analysis should be done to test for possible contamination of the water. The water yields in the case of boreholes would be a good indicator of the quantity.

MITIGATION AND MONITORING PLAN FOR CASE STUDY 3 ON SMALL SCALE BRICK MAKING

Mitigation					Monitoring				
Phases	Significant Impacts	Mitigation Measures	Responsibility	Budget	Indicator	Stage in Cycle	Method	Responsibility	Budget
Construction Phase Excavation	Soil Erosion	Planting trees/vegetation	Project proponent	Low	Vegetation planted	Monthly	Direct observation	Project proponent	Low
Operation Collecting firewood for firing bricks	Deforestation Health Hazards	Planting trees Wearing protective clothing	Project proponent Project Proponent	M H	# of trees planted and/ or acreage rehabilitated Workers wearing protective clothing	Monthly Daily	Direct observation Direct observation	Project proponent Project proponent	M M

ISSUES RAISED ON THE MITIGATION AND MONITORING PLANS ON SMALL SCALE BRICKMAKING ACTIVITIES

- The participants debated about who had the responsibility for rehabilitating the borrow pits. The group had noted in their mitigation and monitoring plans that this was the responsibility of the Forest Department since it had the mandate over forest resources in Southern Sudan. The participants were cautioned that this mandate would be with the implementer of the project and not the forest department or anyone else. They were further guided that whoever owns and controls the resources has the responsibility for ensuring that the land is rehabilitated. Government agencies such as the FD should only monitor compliance, but they would have a direct responsibility in areas within their jurisdiction;
- The importance of decommissioning used borrow pits was emphasized and it was noted that some of the spoilt bricks could be useful in filling the pits;
- It was also noted that some organizations lacked the capacity to supervise implementation of projects that they had license as well as other compliance issues;
- It was important that efficient ways of making bricks be developed to avoid the kind of wastage that was witnessed. This would begin with the identification of the most ideal sites for the activity and every other subsequent step in the process.

MITIGATION AND MONITORING PLAN FOR CASE STUDY 4 ON SMALL SCALE AGRICULTURAL DEVELOPMENT PROJECTS

Mitigation					Monitoring				
Phases & Actions	Significant Impacts	Mitigation Measures	Responsibility	Budget	Indicators	Stage in Cycle	Method	Responsibility	Budget
Construction Phase Drilling	Noise	Provision of ear masks	Contractor	Low	Ear masks put on while drilling	Throughout the drilling operation	Direct observation	Contractors supervisors	Low
Operation Phase Ploughing & cropping	Loss of soil quality	Application of manure crop rotation	Farm Manager	Low	Health of the crops planted and rate of growth	Weekly	Direct Observation	Farm Manager	Low

ISSUES RAISED ON THE MITIGATION AND MONITORING PLAN FOR SMALL SCALE AGRICULTURAL DEVELOPMENT PROJECTS

- The first level of monitoring on farms should be the health of the crops. If the crops are not healthy, then a soil test is done to check what the problem is.
- The participants were also cautioned against use of indicators that are difficult to measure such as the rate of growth of the crops. As much as possible, simple indicators that are easy to measure should be used.

CLOSING DOWN CEREMONIES AND PRESENTATION OF CERTIFICATES

The participants were briefed by the STEP Team Leader about the South Sudan National Environment Association (SSNEA) which was formed by people who had attended past EIA training courses funded by USAID since 2004. They were informed that they, too, should join the association which was basically a forum for networking, exchange of information and ideas for those with an interest on environment. SSNEA had held its first meeting in January 2006 in Boma and the second one was scheduled at the end of June 2006 at the same venue. The STEP Team Leader then invited the County Executive Director to issue certificates to participants and then officially close the course.

CONCLUSIONS, RECOMMENDATIONS AND WAY FORWARD

The training course in EIA/ESD was well received by the participants who recommended that more of such courses be given to Southern Sudanese professionals. Many of them acknowledged that the course had helped increase their awareness of environmental issues in Southern Sudan. They noted that the new knowledge gained would be utilized during the design and implementation of development programs and activities in their places of work.

The EIA course provides an excellent forum for Southern Sudanese professionals of diverse backgrounds and from different regions to come together and discuss not only environmental matters, but other critical issues affecting Southern Sudan. Some of the major issues discussed were land ownership/use; conflicts in land use among the different ethnic groups and the CPA. As an add on to the EIA course, participants were taken through the CPA by one of them, which was quite interesting.

RECOMMENDATIONS

The following are the recommendations from this workshop:

- An environmental association should be formed and its representation should go up to the Payam level in each of the ten states so as to help raise environmental awareness in Southern Sudan. Environmental awareness campaigns should also be undertaken through the mass media;
- Participants to the EIA training course should be drawn from all of the 10 states. They should be drawn from the state governments, nongovernmental organizations and CBOs working in each state;
- In order to safeguard the environmental resources of Southern Sudan, it was important that environmental laws and regulations be integrated into the laws of Southern Sudan;
- The EIA training workshops should be conducted in all the states and some of the senior ranking officials of the state governments should be targeted. An environmental awareness training program should be developed for the Members of Parliament in each state;
- There is need to improve on the communications process when sending invitations. Logistics for future training courses should be improved and better coordinated. Where possible, direct communications with the participants should be done instead of through the Ministry;
- The Government of Southern Sudan should form an Environmental Protection Commission to handle all environmental matters. The Commission should be independent of the Ministry of Environment, Wildlife Conservation and Tourism;
- The current EIA training course of five days is not sufficient for imparting the requisite EIA skills among the participants. A slightly longer course lasting for about three weeks should be developed;
- USAID should facilitate study tours/exposure trips for the participants to other parts of the region so as to enhance their knowledge base with regard to the management of the environment;

- Publications and any other relevant information on EIA should be disseminated to the participants;
- In the future, USAID should consider translating the EIA training manuals into Arabic to enable participants from an Arabic-based academic background to work with participants from English-based backgrounds.

ANNEX I: COURSE EVALUATION RESULTS

USAID/SUDAN TRANSITIONAL ENVIRONMENT PROGRAM (STEP) 2nd STEP EIA/ESD Course Evaluation Results, Rumbek, May 2006

Issue/Item	Average Score on scale of 1-5 (1 is lowest; 5 is highest)
1. How would you assess the overall quality of the course content?	4.3
2. The extent to which the course improved your understanding of environmental assessment & management	4.3
3. The extent to which you now feel prepared to undertake or assist in the preparation of a Preliminary Assessment	4.2
4. Course scheduling and organization	3.9
5. Course logistics and venue	4.2
6. Content of Participants' Source book	4.5
7. Content of Environmental Guidelines for Small Scale activities	4.4
8. Facilitation	4.5
Average Score	4.3

COMMENTS FROM THE PARTICIPANTS' EVALUATION FORMS ABOUT EACH OF THE 8 QUESTIONS

1. HOW WOULD YOU RATE THE OVERALL QUALITY OF THE COURSE?

- I am new to the content and I found it excellent.
- Fine, well presented and participatory.
- Perfect and relevant.
- Good and very well organized.
- A good course except that the duration is too short.
- The training is good but not specific.
- Rich in basic knowledge.
- It was scientific and technical.
- There was not enough time to answer burning issues about Southern Sudan.

2. EXTENT TO WHICH THE COURSE HAS IMPROVED YOUR UNDERSTANDING OF ENVIRONMENTAL ASSESSMENT AND MANAGEMENT

- Medium because I am not a student of science. Some terminologies are new to me.
- The course really improved my knowledge.
- I was ignorant about environmental issues but now I have the ABC of it.

- It has made people aware of EIA but not in a specific field.
- It really improved my existing knowledge of environmental assessment and management.
- Updated my professional knowledge.
- Very good and looking forward for more.
- Gave me a different perspective about the environment.
- It has raised my awareness of the adverse environmental impacts that may occur in Southern Sudan.

3. THE EXTENT TO WHICH YOU NOW FEEL PREPARED TO UNDERTAKE A PRELIMINARY ASSESSMENT?

- Practical field activities not enough.
- Motivated.
- Feel equipped.
- It has greatly empowered me with the necessary tools for environmental assessment.

4. COURSE SCHEDULING AND ORGANIZATION

- Everything was moving smoothly as planned, excellent.
- The period was short.
- Very good but intensive.
- Short but intensive.
- The lectures are continuous and it becomes boring.
- Refreshments time not sufficient.
- Quite good and timely.
- Systematic.

5. COURSE LOGISTICS AND VENUE

- The logistics was good except the accommodation at PACT where there were many mosquitoes.
- All needs were provided.
- The coordination in Juba was poor.

6. CONTENTS OF PARTICIPANTS SOURCE BOOK

- Comprehensive.
- Well organized and understandable.
- Very clear and understandable.
- Excellent.

7. CONTENTS OF EIA GUIDELINES

- Up-to-date.
- Comprehensive.
- Well organized and understandable.

- Latest scientific proofs are missing.
- Excellent.
- They would be useful for reference.

FACILITATION

- Participatory in nature.
- Language is technical.
- Facilitators had a good relationship with the participants.
- Facilitators are highly skilled.
- This kind of course should not be the last one but more should be held so as to continue upgrading our knowledge.
- The training is intensive which made the facilitators move very fast.
- Language comprehension tough.
- A bit of confusion in terms of guidance.

ADDITIONAL COMMENTS

- Special consideration should be given to local NGOs in Western Bahr el Ghazal (Wau).
- This was an eye opener, there are so many things that we take for granted. I am a better informed advocator of environmental issues now. Time management was excellent.
- Hope you encourage the South Sudan National Environmental Association (SSNEA) to follow up on the implementation of environmental issues.
- I am very glad about this course and will use the knowledge in my life.
- A CD on EIA Guidelines for Small Scale Activities must be given to the participants.
- The training should be targeted at different specializations so that the participants can take EIA according to their field of specialization.
- There should be a resting period of at least 30 mins between lectures in a day as the mind has limits on how much it can absorb.
- It would be better to make a direct connection with the nominees next time for invitation to attend the workshop.
- Incentives for the participants must be included in the course program.
- The overall course construction and operation was okay only that in the decommissioning phase, there is no motivation for the participants such as pocket money.
- The EIA course is a good topic for South Sudan officials who have the responsibility to safeguard the environment on behalf of future generations.

ANNEX II: TRAINING COURSE

CASE STUDIES

2nd STEP ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT TRAINING COURSE CASE STUDIES, RUMBOK MAY 22ND – 26TH

CASE STUDY I: ENVIRONMENTAL IMPACTS OF RURAL ROADS REHABILITATION PROJECTS

INTRODUCTION

This case study is based on a segment of the Rumbek -Akot road that has been recently rehabilitated with funding from USAID and other donors, being implemented under the auspices of the UN-World Food Program (WFP). These road rehabilitation activities, together with others that are on going, are first-level activities aimed at improving access by road in Southern Sudan for purposes of transporting goods, especially relief food. The roads are also expected to play a critical role in stimulating commercial activity and self sufficiency. Much more durable road rehabilitation/construction activities will be undertaken at a later stage.

The major activities undertaken in a road rehabilitation/reconstruction project include: assessment, survey and re-design of the road; setting up construction camps for the workers; bush clearing and in some places cutting down trees to reclaim road width and drains; excavating borrow pits for the provision of road construction materials; grading the existing road surface and excavating to create side and mitre drains; and filling and compacting to make the road surface even.

Sound road engineering principles demand that the road surface is slightly raised above the land level, cambered and adequate drainage structures for removing water from the road are provided so as to ensure sustainability.

On the road segment that is being used as the case study, drainage structures such as side and mitre drains can be seen, as well as sumps that are being used for purposes of drainage. A final layer of crushed gravel has been added to the road surface and compacted. The land terrain in the County and other parts of Southern Sudan is so flat that it makes it difficult to know the direction in which water flows and drains, and this has necessitated the use of sumps for holding surface water run off from the road. Borrow pits excavated to provide road construction materials have not been decommissioned and can readily be seen from the road.

The purpose of this case study is to illustrate to the course participant examples of environmental impacts caused by road rehabilitation/construction activities, and also how these adverse impacts could be prevented, minimized or mitigated. The environmental review exercise will include both physical impacts (e.g. loss of biodiversity, soil erosion occurrence, etc.) and socio-economic impacts (e.g. creation of employment opportunities, transportation of goods, health and safety hazards, access to health centers and schools, etc.).

CASE STUDY SITE BACKGROUND NOTES

Note: These case studies have been generated based on information that is sometimes conflicting or incomplete. If any participant has information that adds, corrects or presents another picture of the situation, please inform the course facilitators and the case study working group as soon as possible.

Caution: During the discussions with stakeholders, please avoid to raise any expectations (or fears) that the activities described in the case study will be implemented or otherwise.

PURPOSE OF USAID/UN-WFP ROADS REHABILITATION PROGRAM IN SOUTHERN SUDAN

- To improve road access, reducing the cost of access to food and food production itself;
- To facilitate the movement of Internally Displaced Peoples (IDPs) and other returnees;
- To stimulate commercial activity and self sufficiency;
- Showing the dividends of peace; and
- Reducing the transport cost of the massive amounts of humanitarian operations and assistance flowing into the country.

Sustainability of the rehabilitated roads will depend on the training of local road rehabilitation and maintenance technicians and the establishment of a road monitoring and maintenance program for ensuring timely rehabilitation and maintenance of roads (especially after the rains).

ENVIRONMENTAL IMPACTS/ISSUES WITH ROADS REHABILITATION PROJECTS

- Erosion due to failure to keep off water from the road surface and poor alignment of the road;
- Loss of scenic quality in places that have been excavated to create borrow pits. The borrow pits excavated to provide the raw materials for rehabilitating this road have not been rehabilitated, and they pose a health and safety hazard to the local people and their stocks. They are also just next to the road and this makes them an eye sore;
- Dust is a problem during the rehabilitation/construction stage and also in the operation phase, especially during the dry season.
- Improper solid and liquid waste disposal at the construction camps may lead to adverse environmental impacts such as contamination of water resources. Proper management of oils, lubricants and fuels is needed to avoid and/or minimize oil spills and to dispose of used oils and lubricants appropriately in order to avoid soil and water pollution;
- There is an increased number of vehicular traffic as a result of the road improvement program, and this raises the issue of safety of the people and livestock;
- Some of the residents whose land borders the road have cultivated on the road reserve. There is a need to sensitize them to leave the road reserve free.

GENERAL INFORMATION

LOCATION AND DESCRIPTION OF AREA

This case study is in Rumbek town, Rumbek County. The area of the County is estimated to be 2,000 square miles. It has 6 Payams and 32 Bomas, and this gives on the average an area of 350 square miles per Payam and about 70 square miles per Boma. The County is in the southern part of the Western Floodplain Zone.

CLIMATE

The climate in most of the Western Floodplains Zone can be described as tropical sub humid with very high temperatures of over 25 degrees Celsius reaching to highs of over 40 degrees in the hottest month of February. The area has one long wet season that starts in May and ends in October. Rainfall varies from 700-1300mm per annum in this region.

VEGETATION, NATURAL RESOURCES, AND BIODIVERSITY

Natural forests and woodlands cover 85% of the County. The Neem tree which is exotic to Sudan is spreading fast. Other species that are present include Mahogany and the Shea Butter tree which is indigenous to Sudan among others. The area is also thought to have minerals but prospecting has not been done in the

County; however the local people talk of the existence of minerals such as oil, diamonds, iron ore, gas and gold. Few wildlife species are found in the area and their numbers have been greatly reduced through poaching or migration to the neighboring countries.

TOPOGRAPHY, SOILS AND DRAINAGE

Like its neighbor Cueibet, the County has three types of soils, namely loam, clay to sandy and cotton soils which are very conducive for agricultural production (Rumbek County Strategic Plan). The County is in the Western floodplain Zone and as the name implies, the area gets flooded during the rainy season. This is due to the very flat terrain that is poorly drained with significant parts of it containing soils with very high clay content.

POPULATION AND DEMOGRAPHY

The County is estimated to have a population of 487,316 persons. Women account for approximately 62% of the population, while males account for 38%. The population may be described as young since a large proportion of it is composed of youth (80% of the total population). IDPs and Returnees are estimated at between 15-20% of the total population — about 100,000 people (Rumbek County Strategic Plan, 2003). This is one of the most densely populated areas in Southern Sudan and Rumbek hosts a significant part of this population. The Dinka groups who are predominantly pastoralist occupy the County, but the town has a larger mix of people from other ethnic groups who congregated here during the war.

LAND USE

Pastoralism is the dominant land use activity in most of the County. The traditional economy is based on cattle, which are an integral part of the social and economic system, representing a household's physical wealth and social standing. Livestock also play an important role in the nutritional status of pastoralist communities providing milk and meat, as well as a means of accessing grain through exchange. Livestock husbandry practices in the County and most of Southern Sudan are traditional; therefore the output from the animals is quite low. Livestock diseases are also very common due to lack of veterinary services.

The County has fertile soils which are conducive for agricultural development. Over the years, more and more people have started undertaking crop production to reduce vulnerability which may arise from the loss of stocks from raids by other communities. The acreage under crop is small for most of the homesteads, however, since they are not exposed to modern methods of cultivation. The ox plough has recently been introduced by some NGOs to improve agricultural production and productivity. The main growing season in this zone normally begins in May/June and ends in September/October and crops grown are sorghum, groundnuts, simsim, okra, and maize among others.

Fishing is another major livelihood activity and plays a critical role in providing for the nutritional requirements of the local population, especially during periods of drought and crop failure. It is favoured by the seasonal flooding, which occurs in most of this zone usually between May and June up to October.

CASE STUDY REPORT PREPARATION

The course participants will do the following:

- Conduct a detailed survey of the existing environmental conditions (baseline) in the project area, noting those environmental parameters that are likely to be impacted by road rehabilitation activities (e.g. creation of borrow pits, surface run off);
- Identify stakeholders to be consulted during the process of carrying out an environmental review of the project;
- Identify both positive and negative impacts of the road construction and rehabilitation activities during the following stages of the project cycle (i) planning and design (ii) construction (iii) operation (iv) decommissioning phase;

- Note which of the adverse impacts identified are significant, indicating reason for considering them significant;
- Prepare, an environmental review report for road construction and rehabilitation project activities using a Leopold Matrix format to be presented to the rest of the group;
- Pick on three potential adverse impacts that the group considers to be most significant and prepare an environmental monitoring and mitigation plan that is appropriate for the type and level of the potential adverse environmental impacts identified (Sample formats for the Leopold Matrix and the Environmental Mitigation and Monitoring plan will be provided to the participants).

FACILITATORS:

David Kinyua - USAID/REDSO/ESA

Jane Kahata - International Resources Group

CASE STUDY 2: ENVIRONMENTAL IMPACTS OF WATER SUPPLY AND SANITATION PROJECTS IN RUMBEK TOWN

INTRODUCTION

Water supply projects in Rumbek County have been undertaken by the Sudan government and organizations such as UNICEF, OXFAM and PACT among others. Almost the entire town supply and the adjacent neighborhoods have water from boreholes, the oldest being those done by the Sudan government about 20 years ago. The County has 174 boreholes with 74 of them being located in town, 12 streams, 1 river and a lake.

The ground water table is high in most of the County and water has been struck at depths of 15 metres. Most of the boreholes have good yields at a depth of between 70-80 metres. The water quality is good; however, it has high levels of iron. Much more recently, the town market area has been served with piped water, which has 15 water points, and the same water has been distributed to some institutions within the town. UNICEF funded this project and the water source is a borehole. Although the town and the surroundings have a high number of boreholes, the rapid population growth rate fueled by rural urban migration and the concentration of people in relatively safer areas during the years of the war, has made the water supply inadequate, and this has in some instances led to conflicts over the scarce resource.

The Dinkas, who are pastoralists, are the predominant population in town and the water supply systems has not adequately provided for watering of their animals; they are forced especially during periods of drought to water their animals at the same water collection points for domestic purposes.

The water in most of the cases is not treated, and this increases the prevalence of water-borne diseases in the town. Water resources are also not protected, thus leading to pollution and inefficient utilization which reduces availability, especially in the dry season.

SUMMARY OF EXISTING WATER POINTS IN RUMBEK COUNTY.

Town/Payam	Functioning Deep Drilling	Non Functional Deep Drilling	Hand Dug Wells Protection	Non Functional Hand Dug
Akot	40	9	46	4
Pacons	46	2	21	9
Rumbek Payam	19	3	11	5
Rumbek Town	46		19	-
Maliek Payam	20	1	12	-
Mapier Payam	16	2	-	-

Source: Rumbek County Strategic Development Plan 2003-2008

Some of the water supply projects in the County have a sanitation component, especially those implemented much more recently by UNICEF. The focus of the sanitation component has been to promote use of latrines; provide the local communities with resources for making latrine slabs; and formation and training of water management committees. The main duty of these committees is to keep the water points clean and discourage the watering of livestock at the domestic water supply sites.

This case study has five sites all located within Rumbek town in the following sites: (I) Malakia 1, (ii) Malakia 2, (iii) Malual Akon, (iv) Comboni Primary School (v) and the Rumbek Market Centre. These water points have community water management committees and a cost sharing program that goes towards the rehabilitation and maintenance of the boreholes.

The purpose of this case study is to demonstrate to the course participants examples of environmental impacts of water supply and sanitation projects. The environmental review will include both physical impacts

(e.g. soil erosion) and socio-economic impacts (e.g. creation of employment opportunities, reduction of water-borne diseases, etc.).

CASE STUDY SITE BACKGROUND NOTES

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Caution: During the discussions with stakeholders, avoid raising any expectations (or fears) that the activities described in the case study will be implemented or otherwise.

PURPOSE OF WATER SUPPLY AND SANITATION PROJECTS

Water supply project activities are meant to increase access to safe and clean water for domestic use to the people of Rumbek town and the adjacent areas. The population of the town has been growing rapidly, there is therefore a need to improve and increase the water supply so as to meet the ever-rising demand. The following are the main reasons of water supply and sanitation projects:

- To help improve the general hygiene and sanitation of the people;
- To reduce the incidence of water-borne and other diseases that impact adversely on the health of the people and also lead to high mortality rates, especially among children who are most affected;
- To reduce the time spent doing daily chores of fetching water. This affects women and children most as they are the ones who are engaged in this activity;
- Sanitation projects not only improve the general hygiene of the people, but they also help reduce the incidence of water resources (both ground and surface) contamination with fecal matter containing disease-causing pathogens.

ENVIRONMENTAL IMPACTS AND ISSUES OF WATER AND SANITATION PROJECTS

If not properly implemented, water supply and sanitation projects can lead to environmental problems such as:

- Contamination of ground water if the toilets are located upstream of water resources and/or too close to the water source. The same will also happen if the latrines and the boreholes/hand dug wells are on the same water table level;
- High incidence of water-borne diseases arising from contamination with disease pathogens due to poor sanitation, which can often lead to death, especially among children;
- Environmental degradation near the water points arising from trampling by livestock;
- Conflicts over water resources;
- Over abstraction, especially in urban centers, may lead to aquifer depletion and ground subsidence. Surface water resources can also get depleted due to over abstraction;
- Ecosystem degradation.

GENERAL INFORMATION

LOCATIONS AND DESCRIPTION OF AREA

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CLIMATE

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LAND USE

Pastoralism is the dominant land use activity in most of the County. The traditional economy is based on cattle, which are an integral part of the social and economic system, representing a household's physical wealth and social standing. Livestock also play an important role in the nutritional status of pastoralist communities providing milk and meat, as well as a means of accessing grain through exchange. Livestock husbandry practices in the County and most of Southern Sudan are traditional; therefore the output from the animals is quite low. Livestock diseases are also very common due to lack of veterinary services.

The County has fertile soils, which are conducive for agricultural development. Over the years, more and more people have started undertaking crop production to reduce vulnerability, which may arise from the loss of stocks from raids by other communities. The acreage under crop is small for most of the homesteads, however, since they are not exposed to modern methods of cultivation. The ox plough has recently been introduced by some NGOs to improve agricultural production and productivity. The main growing season in this zone normally begins in May/June and ends in September/October and crops grown are sorghum, groundnuts, simsim, okra, and maize among others.

Fishing is another major livelihood activity and plays a critical role in providing for the nutritional requirements of the local population especially during periods of drought and crop failure. It is favoured by the seasonal flooding, which occurs in most of this zone usually between May and June up to October.

CASE STUDY REPORT PREPARATION

The course participants will do the following:

- Conduct a detailed survey of the existing environmental conditions (baseline) in the project area, noting those environmental parameters that are likely to be impacted on by water supply and sanitation projects.

- Identify stakeholders to be consulted during the process of conducting an environmental review of the water supply and sanitation project activities;
- Identify both positive and negative impacts of the implementation and rehabilitation of water supply and sanitation projects activities during the following stages of the project cycle (i) Planning and design, (ii) construction, (iii) operation, (iv) de-commissioning phase;
- Note which of the adverse impacts identified are significant, indicating reason for considering them significant;
- Prepare, an environmental review report for water supply and sanitation project activities using a Leopold Matrix format to be presented to the rest of the group;
- Pick on three potential adverse impacts that the group considers to be most significant and prepare an environmental monitoring and mitigation plan that is appropriate for the type and level of the potential adverse environmental impacts identified (Sample formats for the Leopold Matrix and the Environmental Mitigation and Monitoring plan will be provided to the participants).

FACILITATORS:

Simon Gatheru & Lulu Hayanga

CASE STUDY 3: ENVIRONMENTAL IMPACTS OF SMALL SCALE BRICK MAKING PROJECTS

INTRODUCTION

There is a heightened level of activity in the building construction sector as the people of Southern Sudan embark on the rehabilitation of buildings damaged during the war. New buildings are also being constructed to provide office space, business premises, residential houses and social facilities such as schools and hospitals. These activities will continue to increase as more and more refugees and Internally Displaced Persons (IDPs) continue to return. Building construction activities creates a demand for construction materials such as bricks, timber, sand and cement among others. Small-scale brickmaking activities are one of the offshoots of the construction industry in Rumbek town.

The case study sites are about 2 km from Rumbek town on the Rumbek-Akot road. Brickmaking activities in the two case study sites started in the year 2005 and in one of them, about a million bricks were ready for firing during the time of this case study preparation in early April, 2006.

Brickmaking starts with the identification of an appropriate site (must have the right type of soils i.e. clay soils, and there must be a water source nearby). In this particular case, the water is sourced from a community hand pump located within the site. Once the process commences and soils are extracted, the borrow pits created hold rainwater which is used, substituting that from the hand pump. The clay is mixed with water to form a nice mixture that is nicely molded into shape and then left to dry in the sun for some days until they harden. Once enough numbers have accumulated, they are then arranged nicely into kilns for firing. The firing process lasts for about six days during which time, a steady supply of firewood must be available. In this particular case study, the Neem tree is used as the source of firewood.

The purpose of this case study is to illustrate to the course participants examples of environmental impacts that are caused by small-scale brickmaking activities. Of importance in this case study are the cumulative impacts of small-scale brickmaking activities. The environmental review should include both the biophysical impacts (e.g. soil erosion, loss of biodiversity, etc.), and socio-economic impacts (e.g. creation of employment opportunities, generation of revenue, breeding opportunities for disease vectors, and better housing facilities etc.).

CASE STUDY SITE BACKGROUND NOTES

Note: These case studies have been generated based on information that is sometimes conflicting or incomplete. If any participant has information that adds, corrects or presents another picture of the case study situation, please inform the course facilitators and the case study working group as soon as possible.

Caution: During the discussions with stakeholders, please avoid raising any expectations (or fears) that the activities described in the case study will be supported or otherwise.

PURPOSE OF SMALL SCALE BRICK MAKING PROJECTS AND ASSOCIATED ACTIVITIES

- To meet the increasing demand for building construction materials for the construction of new houses, office space, business premises and other social amenities in the town;
- Rehabilitation of old buildings in town destroyed during the war;
- Provide opportunities for income generation and employment by small scale entrepreneurs.

Sustainability of the small-scale building construction activities will mainly depend on the continued demand for more office space, residential buildings, business premises and social amenities such as schools and hospitals; availability of a steady and sustainable supply of the raw materials used in the building construction industry and the socio economic well being of the local people, including those who are returning from other parts of Southern Sudan and from the neighboring countries.

ENVIRONMENTAL IMPACTS/ISSUES OF SMALL SCALE BRICKMAKING ACTIVITIES

- Creation of borrow pits due to extraction of clay, which is the raw material for brick making. The borrow pits lead to the establishment of suitable conditions for the breeding of mosquitoes and other disease vectors and they are also a safety hazard;
- Bricks are usually fired for a period of seven days, within which period a steady supply of fuelwood is needed. This may lead to deforestation and the resultant secondary impacts such as soil erosion. Inefficient methods of firing bricks leads to more utilization of fuelwood, compounding the problem further;
- Removal of the top soil during the extraction of clay may make land that was previously good for agricultural use unsuitable;
- Exposure to dust during the process of clay extraction and handling the bricks after firing may cause respiratory tract diseases and Silicosis, which may be fatal in the long term. Similarly, this may affect people living too close to where brickmaking activities are going on;
- Air pollution from the firing process;
- Disposal of wastes from brick making is a problem. The amount of wastes depends on the efficiency of the entire process from the sourcing of materials, arrangement of brick and how well the firing process is implemented.

BACKGROUND INFORMATION

LOCATION AND DESCRIPTION OF AREA

This case study is in Rumbek town, Rumbek County. The area of the County is estimated to be 2,000 square miles. It has 6 Payams and 32 Bomas, and this gives on the average an area of 350 square miles per Payam and about 70 square miles per Boma. The County is in the southern part of the Western Floodplain Zone.

CLIMATE

The climate in most of the Western Floodplains Zone can be described as tropical sub humid with very high temperatures of over 30 degrees Celsius reaching to highs of almost 50 degrees in the hottest month of February. The area has one long wet season starting in May to October.

VEGETATION, NATURAL RESOURCES, AND BIODIVERSITY

Natural forests and woodlands cover 85% of the County. The Neem tree which is exotic to Sudan is spreading fast in the town and the neighboring areas. Other species found in the County include the Mahogany and the Shea Butter tree that is indigenous to Sudan, among others. The area is also thought to have minerals but prospecting has not been done in the County; however the local people talk of the existence of minerals such as oil, diamonds, iron ore, gas and gold. Few wildlife species are found in the area and their numbers have been greatly reduced through poaching or migration to the neighboring countries.

TOPOGRAPHY, SOILS AND DRAINAGE

Like its neighbor Cueibet, the County has three types of soils namely loam, clay to sandy and cotton soils which are very conducive for agricultural production (Rumbek County Strategic Plan). The County is in the Western floodplain Zone and as the name implies, the area gets flooded during the rainy season. This is due to the very flat terrain that is poorly drained with significant parts of it having soils with very high clay content.

POPULATION AND DEMOGRAPHY

The County is estimated to have a population of 487,316 persons. Women account for approximately 62% of the population, while males account for 38%. The population may be described as young since a large proportion of it is composed of youth (80% of the total population). IDPs and Returnees are estimated at

between 15-20% of the total population — about 100,000 people (Rumbek County Strategic Plan, 2003). This is one of the most densely populated areas in Southern Sudan and Rumbek hosts a significant part of this population. The Dinka groups who are predominantly pastoralist occupy the County, but the town has a larger mix of people from other ethnic groups who congregated here during the war.

LAND USE

Pastoralism is the dominant land use activity in most of the County. The traditional economy is based on cattle, which are an integral part of the social and economic system, representing a household's physical wealth and social standing. Livestock also play an important role in the nutritional status of pastoralist communities providing milk and meat, as well as a means of accessing grain through exchange. Livestock husbandry practices in the County and most of Southern Sudan are traditional; therefore the output from the animals is quite low. Livestock diseases are also very common due to lack of veterinary services.

The County has fertile soils, which are conducive for agricultural development. Over the years, more and more people have started undertaking crop production to reduce vulnerability, which may arise from the loss of stocks from raids by other communities. The acreage under crop is however small for most of the homesteads since they are not exposed to modern methods of cultivation. The ox plough has recently been introduced by some NGOs to improve agricultural production and productivity. The main growing season in this zone normally begins in May/June and ends in September/October and crops grown are sorghum, groundnuts, simsim, okra, and maize among others.

Fishing is another major livelihood activity and plays a critical role in providing for the nutritional requirements of the local population especially during periods of drought and crop failure. It is favoured by the seasonal flooding, which occurs in most of this zone usually between May and June up to October.

CASE STUDY REPORT PREPARATION

The course participants will do the following:

- Conduct a detailed survey of the existing environmental conditions (baseline situation) in the project area, noting those environmental parameters that are likely to be impacted on by small scale building construction and ancillary activities;
- Identify stakeholders to be consulted during the process of carrying out an environmental review of the small scale building construction projects and associated activities;
- Identify both positive and negative impacts of small scale building construction and associated activities during the following stages of the project cycle (i) planning and design (ii) construction (iii) operation (iv) decommissioning phase;
- Note which of the adverse impacts identified are significant, indicating reason for considering them significant;
- Prepare, an environmental review report for building construction projects and associated activities using a Leopold Matrix format to be presented to the rest of the group;
- Pick on three potential adverse impacts that the group considers to be most significant and prepare an environmental monitoring and mitigation plan that is appropriate for the type and level of the potential adverse environmental impacts identified (Sample formats for the Leopold Matrix and the Environmental Mitigation and Monitoring plan will be provided to the participants).

FACILITATOR:

Fiesta Warinwa, African Wildlife Foundation

CASE STUDY 4: IMPACTS OF SMALL SCALE AGRICULTURAL DEVELOPMENT ACTIVITIES

INTRODUCTION

Agriculture is the mainstay of many African economies, supporting up to more than 80% of rural communities' livelihoods. Sustainable agricultural development can therefore help generate incomes for rural communities, and reduce food insecurity. This is especially important for South Sudan that has been dependant on relief food for many years. As people settle down with the signing of the Comprehensive Peace Agreement (CPA), more small and large scale agricultural activities will be initiated in most of Southern Sudan.

Agriculture is not well developed in the Rumbek County due to the fact that the major community is pastoralist and secondly, the civil war that has just ended hampered implementation of the necessary interventions in the sector. A few of the households are growing sorghum which is the main staple on small plots round their homesteads, but much more recently, some people have started experimenting with modern agricultural practices although on a very limited scale. The purpose of this new initiative is to satisfy a growing demand for green vegetables in the town.

The project on which this case study is based is on a farm measuring about 0.75hectares, located about 5km from Rumbek town, off the Rumbek – Wau road. This project is a private sector partnership between the Afex Camp, Rumbek and the propriety of the land. The objective of the project is to provide green vegetable supplies to the Afex Camp that is currently sourcing most of their vegetables from Kenya. Crops growing on the farm at the time of the site visit were tomatoes, okra, maize, green pepper, and kales. Other types of vegetable will be planted in due course, but this will be geared towards the demand for them.

Crops grown will be irrigated using water from a borehole that is being pumped using a solar submersible pump which has already been installed at a cost of about \$18,000.00. The local community has also benefited from this water project as they use it for domestic and other purposes such as brick making. It is anticipated that at full development, the project will employ about 10 people.

The purpose of this case study is to illustrate to the course participants examples of environmental impacts of small-scale agricultural development activities. The environmental review will include both physical impacts (e.g. soil erosion, and socio-economic impacts (e.g. creation of employment opportunities, improved food security, poverty eradication etc.).

CASE STUDY SITE BACKGROUND NOTES

Note: These case studies have been generated based on information that is sometimes conflicting or incomplete. If any participant has information that adds, corrects or presents another picture of the case study situation, please inform the course facilitators and the case study working group as soon as possible.

Caution: During the discussions with stakeholders, please do not raise any expectations (or fears) that the activities described in the case study will be implemented or otherwise. The purpose of the case studies is NOT to critique how the activities are being implemented, but to learn from the exercise.

PURPOSE OF SMALL SCALE AGRICULTURAL DEVELOPMENT PROJECTS

- Increase food productivity and the variety of foodstuffs available in the market
- Improve and ensure food security
- Improve social economic status of rural populations by providing incomes from sale of crops and employment, which would in turn help alleviate/eradicate poverty.

Benefits that accrue from the implementation of small-scale agricultural development projects can only be realized if sustainability of such projects is assured through appropriate land husbandry practices that do not lead to a reduction of soil fertility, productivity and environmental degradation.

ENVIRONMENTAL IMPACTS OF SMALL SCALE AGRICULTURE AND IRRIGATION PROJECTS

Although agricultural development projects confer many benefits to rural communities in Africa, they have the potential to cause adverse environmental impacts if not implemented in a sustainable manner. Some of the common problems associated with agricultural development activities include:

- Deforestation and biodiversity loss. In many instances, forests and bushlands are cleared for agricultural production giving way to fewer cultivated crops that may be exotic.
- Loss of soil fertility that in turn leads to reduced productivity arises from over utilization of the land without replenishing the nutrients either from organic manure or fertilizers.
- Soil erosion often caused by use of unsustainable agricultural practices such as cultivation on slopes and deforestation. The silt from the farmland may affect local water resources adversely.
- Depletion of water resources (surface and ground) through inefficient use of scarce water resources, especially in the arid and semi arid regions
- Increased soil salinity especially for irrigated agriculture in arid and semi arid regions.

These factors especially soil erosion and loss of soil fertility affect production, leading to a reduction of the benefits that accrue from agriculture, thereby threatening rural livelihoods and economies.

GENERAL INFORMATION

LOCATION AND DESCRIPTION OF AREA

This case study is in Rumbek town, Rumbek County. The area of the County is estimated to be 2,000 square miles. It has 6 Payams and 32 Bomas, and this gives on the average an area of 350 square miles per Payam and about 70 square miles per Boma. The County is in the southern part of the Western Floodplain Zone.

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this population. The Dinka groups who are predominantly pastoralist occupy the County, but the town has a larger mix of people from other ethnic groups who congregated here during the war.

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Fishing is another major livelihood activity and plays a critical role in providing for the nutritional requirements of the local population especially during periods of drought and crop failure. It is favoured by the seasonal flooding, which occurs in most of this zone usually between May and June up to October.

CASE STUDY REPORT PREPARATION

The course participants will do the following:

- Conduct a detailed survey of the existing environmental conditions (baseline) in the project area, noting those environmental parameters that are likely to be impacted on by small scale agricultural development projects;
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- Note which of the adverse impacts identified are significant, indicating reason for considering them significant;
- Prepare, an environmental review report for small scale agricultural development project activities using a Leopold Matrix format to be presented to the rest of the group;
- Pick on three potential adverse impacts that the group considers to be most significant and prepare an environmental monitoring and mitigation plan that is appropriate for the type and level of the potential adverse environmental impacts identified (Sample formats for the Leopold Matrix and the Environmental Mitigation and Monitoring plan will be provided to the participants).

FACILITATOR:

Moses Kur, Ministry of Commerce, Trade and Supply.

ANNEX III:AGENDA

USAID/Sudan Environmental Capacity Building Course Venue: Bros Compound, Rumbek Town Southern Sudan 22nd – 26th May 2006

Time	Event or Module	Materials
3.00-6:00	Arrival, Registration and Logistical Arrangements	All Participants
DAY 1: Introduction to Environmentally Sound Design		
08:30 - 09:30	Opening Statements Welcoming speech Opening Speech by Guest of Honour	D. Kinyua & Jane Kahata County Chairman
09:30-10: 30	1. Presentation of Course Agenda, Participant's Introductions, and solicitation of Group Goals	Fiesta Warinwa & Moses Kur
10:30-10:45	<i>Coffee Break</i>	
10:45-12:45	2a) What is Environment? 2b) An Introduction to Environmentally Sound Design	Simon Gatheru ESD overheads(PPT 2596KB "Env. Sound Design" (From new Draft Small Scale Guidelines) (PDF, 349K) Jane Kahata
12:45-1:00	2d. Principles and practice of Environmentally Sound Design in key sectors (with opportunity for discussion of participants experiences	New draft Environmental Guidelines for small scale activities (see resources pages) D. Kinyua
13:00- 14:00	<i>Lunch break</i>	
14:00 -16:00	2c. Constructing a Historical Timeline for Southern Sudan & Discussions	Briefing notes By Fiesta Warinwa
16:00-16:15	<i>Coffee Break</i>	
16:15 – 17:15	3a. Basic Concepts for Assessing Environmental Impacts	EIA basic concepts overheads (828 KB) By Simon Gatheru EIA Topic Briefing (Section 1) (PDF, 513K)
17:15 - 18:00	3b. Transect Walk through the CWEC	Transect Walk Briefing By Jane Kahata
18.00- 18:30	Facilitators meeting	All Facilitators
DAY 2: An introduction to Screening Procedures (USAID & Nuba Mts, World Bank		
07:00-08:00	<i>Breakfast</i>	
08:00-08:30	Review of Day 1	By. Moses Kur
08:30-10:00	5. An introduction to USAID, Nuba Mts & World Bank Screening Procedures Workgroup exercise: Classifying activities using USAID environmental procedures: Classifying projects using Reg 216	Overheads PPT 318 KB By D. Kinyua & Jane Kahata EGSSAA: Chapter 6 Screening activities
10:00-10:15	<i>Coffee Break</i>	
10:15 – 10:45	Work group exercises Cont.	By D. Kinyua

Time	Event or Module	Materials
10:45 – 11:30	Biophysical environment, environmental policy, information sources in S. Sudan Sources of Information and methods for conducting EIA in the local context	Overheads PPT and paper on the same By F. Warinwa
11:30 – 12:30	Information Requirements & Tools for Preliminary Assessment	Overheads PPT (328 KB) By Jane Kahata EIA Topic Briefing Section 3 PDF 513K
12:30 – 13:00	Writing the Preliminary Assessment (ERR)	Overheads PPT (388 KB) By D. Kinyua
13:00-14:00	<i>Lunch</i>	
14:00 – 15:00	The national context: social and cultural conditions, context and policy in S. Sudan	PPT & Full paper on same By: F. Moses Kur
15:00 – 16:00	Sources of information and methods for conducting social assessment in the local Context Plenary Discussions on the two papers	
16:00-16:15	<i>Coffee Break</i>	
16:15-17:00	Introduction to Environmental Mitigation and Monitoring	Mit & Mon overheads (PPT 1922K) EIA Topic Briefing (Section 4) By Simon Gatheru (PDF, 513K)
17:00-17:30	Field trip briefings (case study project sectors in the local context: (Working groups)	Country specific case site briefs prepared by course organizer (samples available in the participants manual). By: Jane kahata & D. Kinyua
18:00- 18:30	Facilitators meeting	All Facilitators
18:45-	<i>Dinner</i>	
Day 3: Case study field trips		
07:00-08:00	<i>Breakfast</i>	
Departure 07:30-08:30	Field trips to case study sites. (Working groups of 5-8 participants travel to separate sites; conduct initial assessments in the field.	All Facilitators
18:00-18:30	Facilitators' Meeting	All Facilitators
DAY 4: Producing Environmental Reviews and Monitoring and Evaluation Plans based on the field trips		
07:00-08:00	<i>Breakfast</i>	
08:00-08:30	Brief reactions to Field Trips	F. Warinwa
08:30-11:30	Working Groups: Drafting Environmental Reviews for Case Studies (includes break)	All facilitators
11:30-12:30	Presentation and discussion of Draft Environmental Assessment or Environmental Review Outlines	Moderated By J. Kahata
12:45-14:00	<i>Lunch</i>	
14:00 - 15:00	Cont'd (presentation and discussion of draft environmental review	Moderated By J. Kahata
15:00 - 16:00	Wrap up sessions on best practices for each of the case studies	D. Kinyua
16:00-16:15	<i>Coffee Break</i>	
16:15-16:45	Environmental Mitigation and Monitoring: More on Issues and Methods	Mit & Mon overheads (PPT 1922K). By Simon Gatheru EIA Topic Briefing (Section 4) (PDF, 513K)

Time	Event or Module	Materials
16:45 - 18:00	Working Groups: Developing Plans for Monitoring and Mitigation for Case Studies	All Facilitators
18:00-18:30	Facilitators' Meeting	All facilitators
18:00-	Dinner	
DAY 5: Mitigation and Monitoring Plans, EIA Tools, and Synthesis		
07:00-08:00	Breakfast	
08:30-10:00	Presentation and Discussion of Draft Mitigation and Monitoring Plans	Moderated By Simon Gatheru
10:00-10:15	Coffee Break	
10:15 – 11:45	What if I have to go Beyond the Preliminary Assessment	Overheads (PPT 270KB) D. Kinyua
	Shared natural resources, the case of the Nile	Overheads (PPT) By Lulu Hayanga
11:45 -12:30	Special topics: Environmental Impacts of Pesticides Other special topics	Overheads (PPT 211KB) By Jane Kahata
12:30 – 13:00	Discussions on deferred topics	All facilitators
12:45-14:00	Lunch	
14:00-14:30	17. Course Evaluation, Synthesis, and Recommendations for Follow-up Activities	Moses Kuch
14:30-15:30	18. Closing	By a County Official
15:00- 17:00	Facilitators available for Individual Consultations	All Facilitators
DAY 6: Departure		
07:00-08:30	Breakfast	
	Departure	

ANNEX IV: LIST OF PARTICIPANTS

List of Participants to the 2nd STEP EIA Training Course, held in Rumbek from 22nd – 26th May 2006, Southern Sudan

Name of Participant	Gender	Organization	Position/Designation	Telephone	Email Address
Scopas Nkuto Lokiden	M	Ministry of Local Government	Ag. Director of Plan. & Training	+249912969026; 0811822327	moseskuch@yahoo.com
Nhial Mial Gout	M	Ministry of Water Resources & Irrigation		+249911120115	nial60@yahoo.co.uk
Joseph Amuda	M	Ministry of Water Resources & Irrigation		811822407	amuzuug@yahoo.com
Jack Silver Tiberio	M	Ministry of Agric. & Forestry	Director General Agriculture	+249911390076	kapuki_tongun@yahoo.com
Victor Mabrouk Clement	M	Amadi Rural Dvpmt. Institute	Principal	823355; +249915103835	vlotombe@yahoo.com;
Rose Asuka Jonathan	F	World Vision South Sudan	Emergency Relief Distrib Monitor	+254 20 4441777; 4441507	roseajonathan@yahoo.com
Charity Iye	F	Sudan Women in Devpmt & Peace (SWIDAP)	Community Development Officer	+254720825995; +254722650213	swidap@nbi.ispkenya.com
Luka Kiwanuka Edward	M	Min. of Ed., Science & Tech.		+249 0912 587 983/ 0811 820584	modiyang@yahoo.co.uk;
Akoon Kon Lual	M	Ministry of Education, Science & Technology	Sudan	0811 820514	modiyang@yahoo.co.uk kapuki_tongun@yahoo.com
Silver Nyasuk Ladu	M	Ministry of Health	D/Director Preventative Medicine	0811 820134; 0811 821668	moseskuch@yahoo.com
Liliace Araba	F	Sudan Women Association in Nairobi	Association member	+254 721720665	liliace_araba@yahoo.com
Ampelia Gabriel Mungo	F	Women Development Group (WDG)	Chairperson - WDG	122201884	salma.gaetano@wfp.org; amina.thabo@wfp.org
Leek Phillip Thon	M	Kenyatta University	Environmental Science Student	+254 721253507	leekmajur@yahoo.com
Peter Lasu Lado	M	ERADA	Director	254722621823	lasuda@yahoo.com
Suzan K. A. Voga	F	Sudan Evangelical Mission	Program Officer	+254725938982	nyavoga@yahoo.com
Severino Akileo Lado	M	MERLIN	Nurse Supervisor	+873764547217	luhurelado@yahoo.com
Gabriel Modi Remijo Marcello	M	Min. of Env., Wildlife & Toursim	Inspector of Env. & Ecology	820221	modiyang@yahoo.co.uk
Victoria Cornelius Bepo	F	Min. of Agric, Animal Wealth & Forestry	Asst. Inspector, Forest Cons.	+249 0912 587 983/ 0811 820584	victoriajggi@yahoo.co.uk

Name of Participant	Gender	Organization	Position/Designation	Telephone	Email Address
Aida Kadymatimba	F	Medical Care Development International	Technical Officer		mcdi_sudan@yahoo.com
Voha Osman	F	Ruya Association		+249631821017	ruyabaladia@yahoo.com
Kapuki Tongun Lado	F	Min. Env. Wildlife Con. & Tourism	Information Centre Officer	823310	kapuki_tongun@yahoo.com
Diacon Ricardo Ugali Udo	M	Min. Of Agric, Animal Resources WBG State	Inspector of Planning	084182597; 084123143	olyfodo2005@yahoo.com
Oliver Marco Remego Abakar	M	Min. of Physical Infra. & Urban Const.	D/Director of Lands	0841-822092; 0841823143	olyfodo2005@yahoo.com
Pons Filberto Mussa	M	Min. of Social Welfare	Director, Adm. & Finance	22697	olyfodo2005@yahoo.com
Phoebe Egbalia Manza	F	Oxfam GB	Community Development Officer	C/O Sophie Hicking 2820000	phoebemanza@yahoo.com
Linda Ferdinand Hussein	F	Women Training Promotion (WOTAP)	Director	0841821091; 084122465	C/o amina.thabo@wfp.org
Cisela Asha Alex	F	East Bank Women Agency (EBWA)	Volunteer - Finance & Adm.	+254 722719852	cisalexis@yahoo.com
Joseph Kulang Akec	M	Ministry of Agriculture & Forestry	Forest conservator	820835	
Samuel Justin Luate	M	Min. of Agric. Bahr el Jebel State	Asst. Inspector of Agric.	+249 911260047	
Margaret Michael Modi	F	Directorate of Community Development	Inspector - Community Devpmt	821068	
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