MINISTRY OF WORKS AND TRANSPORT (MOWT)
THE REPUBLIC OF UGANDA

THE PROJECT FOR RURAL ROAD NETWORK PLANNING IN NORTHERN UGANDA

FINAL REPORT

VOLUME 2: MAIN REPORT

FEBRUARY 2012

JAPAN INTERNATIONAL COOPERATION AGENCY

ORIENTAL CONSULTANTS CO., LTD.
EIGHT-JAPAN ENGINEERING CONSULTANTS INC.
INTERNATIONAL DEVELOPMENT CENTER OF JAPAN

EID
JR
12-009

MINISTRY OF WORKS AND TRANSPORT (MOWT)
THE REPUBLIC OF UGANDA

THE PROJECT FOR RURAL ROAD NETWORK PLANNING IN NORTHERN UGANDA

FINAL REPORT

VOLUME 2: MAIN REPORT

FEBRUARY 2012

JAPAN INTERNATIONAL COOPERATION AGENCY

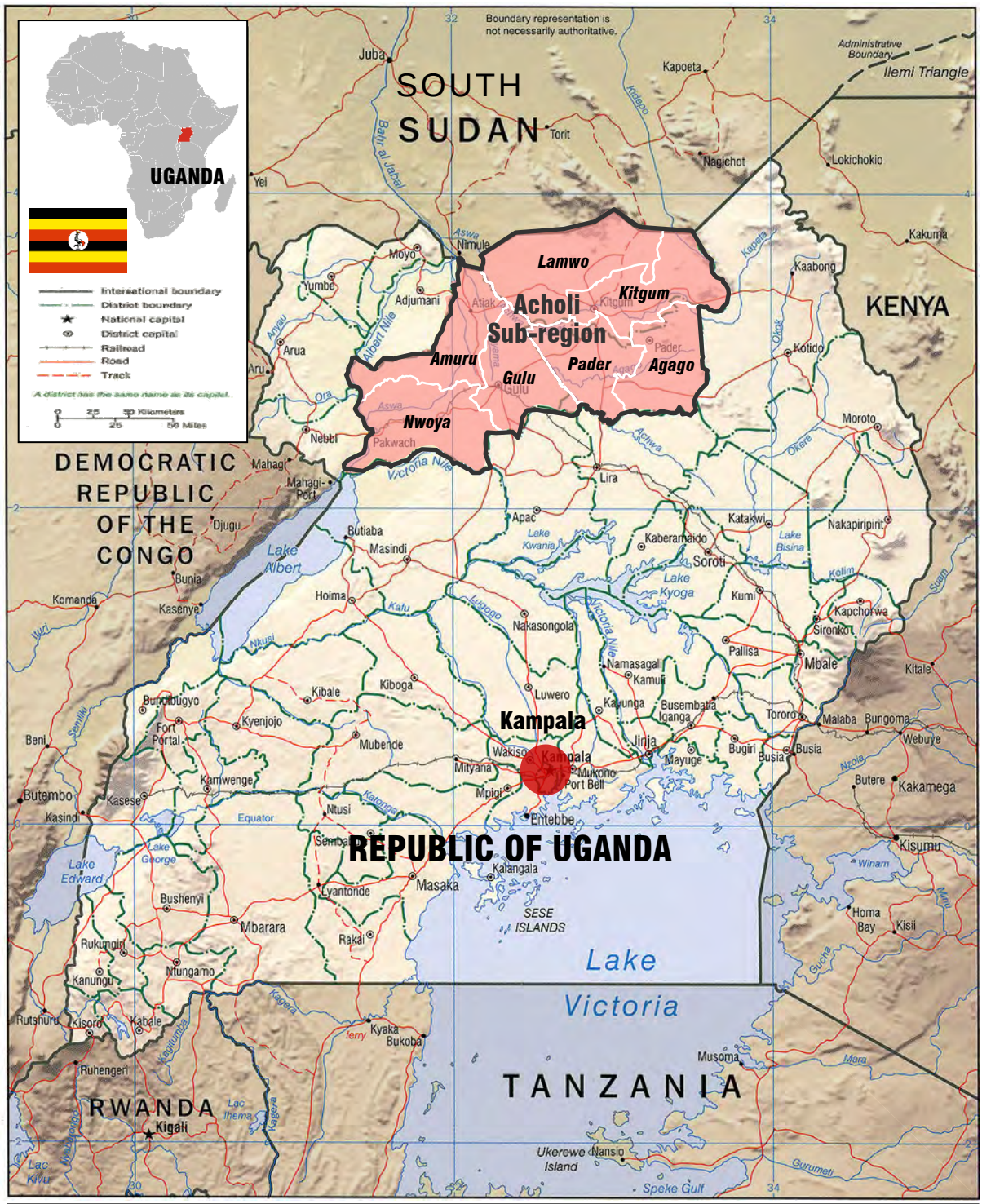
ORIENTAL CONSULTANTS CO., LTD.
EIGHT-JAPAN ENGINEERING CONSULTANTS INC.
INTERNATIONAL DEVELOPMENT CENTER OF JAPAN

The exchange rates applied in this Study are:

US$ 1.00 = Ushs.* 1,947.9 = Japanese Yen 96.27

(Average exchange rate between October 2009 and March 2010)

* Ushs.: Uganda Shillings



■Area	241 thousand km^2	■GNI per capita	US$ 460 (2009, WB)
■Population	32.7 million (2009,WB)	■Economic Growth	7.0% (2009, WB)
■Capital	Kampala (with a population of 1.2 million in 2002)	■Major Economic Sectors	[Agriculture] Fish, Coffee, Tea, Cotton [Mining] Copper, Mineral Phosphate, Tungsten [Industry] Textiles, Tobacco, Cement
■Ethnic Groups	Buganda, Langi, Acholi etc.		
■Language	English, Swahili, Luganda, etc		
■Religion	Christian (60%), Traditional Belief (30%), Muslim (10%)		
■Currency	Uganda Shilling (UGX)		

Location Map of Study Area

Outline of the Project

1. Country: Republic of Uganda

2. Project Name: Project for Rural Road Network Planning in Northern Uganda

3. Execution Agency: Ministry of Works and Transport (MoWT)

4. Study Objective : The overall goal of the Study is to accelerate the IDPs' return and resettlement process through establishing the Master Plan of rural road network with the target year of 2018; hence enhancing the regional development in Northern Uganda.

5. Study Contents :

1) Present Social Situation Survey

To comprehend rural development issues through SWOT analysis based on a social situation survey and socio-economic framework of Amuru and Nwoya districts.

2) Current Road Condition Survey

To comprehend road operation and maintenance issues and future traffic demands in Acholi Sub-region through traffic and road inventory surveys.

3) Establishing Rural Road Network Master Plan

To propose a Road Network Plan for Amuru and Nwoya districts using functional classifications based on various aspects of needs and roles of the rural roads. To select priority projects and to estimate the project costs considering budget restrictions of the Ugandan side.

4) Implementation of Pilot Project

To construct two bridges on the Aswa river by which the study area is divided into north and south parts. To monitor the effect of the project on the IDP return and resettlement process.

5) Planning and Preparation of Urgent Projects

To select and prepare for urgent projects in Acholi Sub-region under the scheme of Japanese Grant Aid for Peace Building.

6) Technical Transfer

To implement technical transfer of Road Network Master Planning and Road Operation and Maintenance Planning to district engineers. To implement technical transfer of GIS to district and MoWT engineers in order to enhance sustainability of Road Network Master Planning.

6. Study Results and Recommendations

(1) Study Results

1) Priority Projects were selected based on weight parameters for "cost efficiency oriented evaluation" and "social impact oriented evaluation" among the rural road sections in Amuru and Nwoya districts.

2) Considering budget restrictions for improvement of national and district roads, high priority projects, which have both cost efficiency and social impact, are selected from priority projects.

3) Considering the difference of maintenance cost between before and after road improvement, options of intervention for road improvement are proposed with those annual disbursements.

4) The full improvement of high priority projects can not be economically feasible with the estimated future traffic demands, however there are various unquantifiable social impacts generated from the project.

5) IDPs' return process was accelerated because closure of IDP camps was politically promoted during the construction stage of the Pilot Project. Therefore, it was difficult to confirm the effect of IDP return by the bridges.

6) A total of 6 projects are selected as the urgent projects in Acholi Sub-region based on the effect of IDP return and resettlement, urgency and necessity, benefits and existence of land issues.

(2) Recommendations

1) Although the proposed methodology of network planning can be applicable to the whole Acholi Sub-region, the detailed procedures of the proposed method shall be properly modified when it is applied for the wider area.

2) Although the effect of Pilot Project will be monitored for just one year after the bridge completion (it will be in the rainy season), it is recommended to monitor in the dry season also in order to comprehend the seasonal variation of traffic passing the bridges.

3) Although the IDPs' returning process was accelerated by the closure of IDP camps, it is recommended to study continuous implementation of urgent projects because the necessity of improvement of social infrastructure and its access roads in rural areas is increasing after the returnees' resettlement.

EXECUTIVE SUMMARY

1. INTRODUCTION

The overall goal of the Study is to accelerate the IDPs' return process and to improve the livelihood of people who will/have return(ed) to their original home areas; hence enhancing the regional development in Northern Uganda. In order to achieve this, the Master Plan of the rural road network in Amuru and Nwoya Districts, with the target year of 2018, shall be established, in full consideration of the socio-economic conditions, development potential and traffic demand in the region. This Master Plan is expected to provide mid-term guidance for the road maintenance, rehabilitation and upgrading plans in Amuru and Nwoya Districts. Although the focus of the Study is limited to these districts, the method and techniques explored in this Study will be extended to the wider Acholi Sub-region in Northern Uganda.

The project for Rural Road Network Planning in Northern Uganda has the following three components:

- Part 1: Rural Road Master Planning in Amuru and Nwoya Districts
- Part 2: Preparation and Implementation of a Pilot Project
- Part 3: Planning and Preparation of Urgent Projects in Acholi Sub-Region

PART 1: RURAL ROAD MASTER PLANNING IN AMURU AND NWOYA DISTRICTS

2. REGIONAL CONTEXT: NORTHERN UGANDA AND ACHOLI SUB-REGION

During the insurgency in Northern Uganda, 120 IDP camps were created in Acholi Sub-region i.e. in Amuru District (including Nwoya District), Gulu District, Kitgum District (including Lamwo District) and Pader District (including Agago District) which accommodated 1.3 million IDPs .

In accordance with the monitoring done by UNHCR, the population of IDPs who still remained in the IDP camps was about 76,800 in May 2010. This means that 94% of the 2006 registered population of IDPs had moved out of the IDP camps in Acholi Sub-region by May, 2010. The population movement of IDP camps in Acholi Sub-region is shown in Table 2.1.

Table 2.1 Population Movement in IDP Camps in Acholi Sub-region

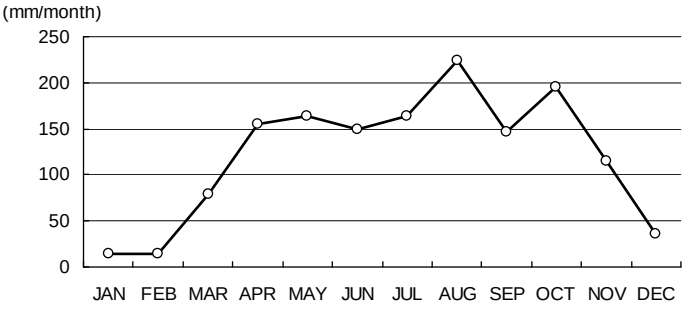
District	Number of IDP Camps Aug. 2009	Population in IDP Camps Dec. 2005	Registered Population in IDP Camps 2006	Population in IDP Camps Aug. 2009 (% of 2006 Registered Population in IDP Camps)	Population in IDP Camps May 2010 (% of 2006 Registered Population in IDP Camps)
Amuru Nwoya	33	204,000	368,228	73,494 (20%)	36,404 (10%)
Gulu	31	257,000	320,232	22,699 (7%)	14,029 (4%)
Kitgum Lamwo	25	310,000	319.936	48,534 (15%)	15,509 (5%)
Pader Agago	31	339,000	339,000	39,472 (12%)	10,894 (3%)
Total	120	1,110,000	1,347,396	184,199 (14%)	76,836 (6%)

Source: UNHCR

There were 33 IDP camps and 99 transit sites in Amuru and Nwoya Districts as of August 2009. By July 2010, all of these IDP camps in Amuru and Nwoya Districts were officially closed down.

3. PRESENT SITUATION OF AMURU AND NWOYA DISTRICT

In Acholi sub-region, the altitude ranges between 600 – 1,200 m above sea level. The altitude of the Western Rift Valley, including the western part of Amuru and Nwoya districts is relatively low and ranges between 600 – 800 m above sea level. In these areas, many wild animals live along the Albert Nile and the Victoria Nile. The climate of Amuru and Nwoya Districts is characterized by dry and rainy seasons as shown in Figure 3.1.



Source: Department of Meteorology, Ministry of Water and Environment

Figure 3.1 Average Rainfall in Gulu 1980-2008

In Uganda, the Local government, including Amuru and Nwoya Districts, is made up of five levels of hierarchy from LC5 to LC1; District (LC5), County (LC4), Sub-county (LC3), Parish (LC2) and Village (LC1) levels. The District Council is the highest decision-making body with fully-fledged legislative and executive powers. The District Chairperson, who is elected through universal adult suffrage, is the political head of the District. The Chief Administrative Officer (CAO), who is appointed by the District Service Commission (DSC), is the administrative head of the District, and is the chief accounting officer for the district.

Agriculture is the backbone of the district economy in Amuru and Nwoya Districts. The major source of household incomes is sale of crops. In Amuru and Nwoya Districts, about 85% of income is from the sale of crops, about 7% is from wages of casual labour and 5% is from sale of forest products. Returnees to home villages depend on the sale of crops more than people in transit sites and IDP camps. People in IDP camps and transit sites depend on wages of casual labour more than returnees to home villages.

4. REVIEW OF EXISTING DEVELOPMENT PLANS

For the development of Uganda and Northern Uganda, three national development plans were established and have been implemented, with the target of reducing poverty and regional disparity, enhancing human development and accelerating economic growth.

- **Poverty Eradication Action Plan (PEAP),** 2004/5-2007/8

  The PEAP is the government's national framework for all actors in the country aiming at achievement of a number of key objectives in order to enable Uganda to meet its Millennium Development Goals and economic growth objectives. It has been revised and implemented on a 3-year cycle, matching the medium-expenditure frameworks. The PEAP 2004/5-2007/8 put greater emphasis on government functions and effort in economic development than previous PEAPs, as well as on security and governance.

Although the third revision process of the PEAP was started in 2008, it was taken over by the preparation of the 5-year National Development Plan (2010-2015).

- **Peace, Recovery and Development Plan for Northern Uganda (PRDP)**, 2007-2010

  In 2006, the National Peace Recovery and Development Plan (PRDP) for Northern Uganda was drafted as a commitment by the Government of Uganda as a national program with the overarching goal to stabilise the North. Forty districts of Northern Uganda, covering the sub-regions of West Nile, Lango, Acholi, Karamoja, Elgon and Teso, are beneficiaries of the PRDP. In 2007, PRDP was launched as an official national program; however, the actual funding was not started until 2009.

- **5-year National Development Plan for Uganda (NDP)**, 2010-2015

  The NDP of 2010-2015 intended to set Uganda on the path to becoming a middle-income economy. It replaces the PEAP and outlines the government's intention to improve road and rail networks, create employment opportunities, improve labour force distribution and use the private sector as the "engine of growth and development".

In the transition period from the humanitarian phase to recovery and development, the donor funding for humanitarian response is expected to gradually decrease. In addition, larger roles should be played by the national and district governments. In this situation, a variety of projects have been implemented with donor assistance, including the following:

World Bank: Northern Uganda Social Action Fund (NUSAF), 2003-2008

World Bank and DFID: Northern Uganda Social Action Fund (NUSAF 2)

EU: Northern Uganda Rehabilitation Programme (NUREP)

USAID: Northern Uganda Transition Initiatives (NUTI), 2008-2011

Stability, Peace and Reconciliation in Northern Uganda (SPRING), 2008-2011

Northern Uganda Development of Enhanced Local Governance Infrastructure and Livelihoods (NUDEIL)

UNDP: District Development Programme III

5. DEVELOPMENT POTENTIAL AND ISSUES OF AMURU AND NWOYA DISTRICTS

Development potential, Development issues, Opportunities and Threats observed in Amuru and Nwoya Districts are as follows:

Development Potential

1. Large Agricultural Potential
2. Good Inter-Regional Road Connections
3. Geographical Proximity to Market for Agricultural Produce
4. Effective Commercial Network for Agricultural Produce
5. Existence of Bases of Social Infrastructure and Services
6. Proximity to a Regional Centre, Gulu, where Universities and Hospitals are Located
7. Tourism Potential
8. Existence of Old Railways

Development Issues

1. Lack of Provision of Social Infrastructure and Services
2. High Transport Costs
3. Erratic rainfall pattern
4. Lack of Labour Force for Agriculture

5. Land Disputes
6. Promotion of Commercial Farming
7. Weak Tourism Development
8. Lack of Economic Infrastructure
9. Lack of Human Resources at the District Offices
10. Dependency Syndrome
11. Weak Solidarity among the People

Opportunities

1. More Assistance for Development
2. Continuity of Stability and Economic Infrastructure Development
3. Promotion of Tourism Industry

Threats

1. Erratic rainfall
2. Rise of food prices partly due to erratic rainfall and partly due to increase in demand for food crops from Southern Sudan
3. Insufficient developmental assistance
4. Return of LRA
5. Possibility of insufficient supply of electricity in Gulu which hinders urban development of the town
6. Possibility of delay of road development in Gulu which makes roads inside Gulu bottlenecks of the region

6. SOCIOECONOMIC FRAMEWORK OF AMURU AND NWOYA DISTRICTS

The following table tabulates the population projections in Amuru and Nwoya Districts.

Table 6.1 Summary of Population Projections in Amuru and Nwoya Districts

District/Year	Sub-county	Pop. in Villages	Pop. in Transit Sites	Pop. in Camps	Total Pop. in Sub county	Growth Rate
Amuru/2009	Atiak	21,492	1,836	10,965	34,293	
	Pabbo	17,988	7,360	16,463	41,811	
	Lamogi	42,558	2,180	14,382	59,120	
	Amuru	34,291	5,329	12,455	52,075	
Nwoya/2009	Alero	19,820	6,332	510	26,662	
	Anaka	12,482	1,343	8,670	22,495	
	Koch Goma	18,349	1,818	2,384	22,551	
	Purongo	7,142	1,197	5,757	14,096	
Total		**174,122**	**27,395**	**71,586**	**273,103**	
Amuru/2018	Atiak	41,300	500	2,300	44,100	2.8%
	Pabbo	48,400	2,000	3,400	53,800	2.8%
	Lamogi	72,300	600	3,000	75,900	2.8%
	Amuru	62,700	1,400	2,600	66,700	2.8%
Nwoya/2018	Alero	32,300	1,700	100	34,100	2.8%
	Anaka	27,000	400	1,800	29,200	3.0%
	Koch Goma	28,200	500	500	29,200	2.9%
	Purongo	17,100	300	1,200	18,600	3.1%
Total		**329,300**	**7,400**	**14,900**	**351,600**	

Source: JICA Study Team

7. REGIONAL DEVELOPMENT AND RURAL ROAD DEVELOPMENT IN AMURU AND NWOYA DISTRICTS

In order to improve the socioeconomic environment in home villages, improvement of social and economic infrastructures is the highest priority of the districts. Roads themselves are basic social and economic infrastructures. Roads can connect people in home villages with various places, such as health centres, trading centres and schools. Particularly, it is critical for people to have access to major trading centres to which people go to sell agricultural produce, or for middlemen to come to home villages to buy agricultural produce, because selling agricultural produce is the major and only source of incomes for most people in Amuru and Nwoya Districts.

In addition, roads are able to promote improvement of other social infrastructures and services, such as water points, health units and schools. It is necessary to bring heavy construction equipment and materials by motor vehicles to the exact sites of construction, rehabilitation, and upgrading of water points, health units or schools. These pieces of heavy construction equipment and materials require roads which are wide enough and bridges which can bear certain weights. Therefore, if there are no such roads, it is very difficult to have social service facilities.

8. PRESENT SYSTEM OF ROAD ADMINISTRATION AND ROAD MAINTENANCE

Development and maintenance of national roads is under the jurisdiction of the recently established UNRA. That of district roads is under the jurisdiction of district local governments. The development and maintenance of urban roads is under the jurisdiction of urban councils while community access roads are under that of sub-counties.

In May 2009, the Uganda Road Fund Board was established. The state budget of 2009/2010 did not feature any special budgetary allocation for the Uganda Road Fund. However, Table 8.1 shows that no substantial increase was made to the total budget for the Works and Transport Sector after the establishment of the Road Fund budgets.

Table 8.1 Shares of Works and Transport Sector in State Budgets of Uganda

Unit=Billion Ushs.

	2008/2009	2009/2010	2010/2011
MOWT (1)	169	138	124
UNRA (2)	949	904	614
Uganda Road Fund (3)	0	0	284
Total of Works and Transport Sector Budget	1,118	1,042	1,022
% of Works and Transport Sector Budget out of Total State Budget	18.2%	14.2%	13.5%
Total of State Budget (4)	6,143	7,334	7,552
	100.0%	100.0%	100.0%

Source: (1), (2) and (3): Ministerial Budget Policy Statements
(4): Budget Speech by Minister of Finance, Planning and Economic Development

The investment level for national roads has drastically increased in the last three years or so. The investment level in the early part of the last decade was around 80 million USD per year. However, the current investment level for national roads is 150-200 million USD per year, in accordance with the budget policies of MoWT.

On the other hand, the investment level for district roads was around 5-10 million USD per year during the last decade. The current level of investment for district roads is still very limited at about 18-21 million USD per year, which is very low compared to that for national roads.

9. REVIEW OF NATIONAL TRANSPORT MASTER PLAN AND ROAD MAINTENANCE PLANS

There are various levels (from national, district to sub-county levels) of master plans and development plans concerning the road sub-sector including improvement and maintenance. In this chapter, the following six plans are reviewed:

- Road Sector Development Program (RSDP) and Road Sector Development Program 2 (RSDP2)
- National Transport Master Plan including a Transport Master Plan for the Greater Kampala Metropolitan Area (NTMP/GKMA) 2008-2023 (May 2009)
- The Ten-Year District, Urban and Community Access Roads Investment Plan (DUCARIP), Final Draft (February 2008)
- Road Programmes in the District Development Plan of Former Amuru District 2009/10-2011/12
- Road Programmes in Sub-county Development Plans (8 Sub-counties in Former Amuru District) 2009/10-2011/1

In accordance with DUCARIP, a total of 9,787 million Ushs is to be allocated to former Amuru District from the programme. The annual budgetary plan is shown in Table 9.1.

Table 9.1 DUCARIP Budget for Districts in Acholi Sub-region (Proposed in Final Draft)

Unit: Millions Ushs.

District	District Roads (km)	% District Roads	2008 / 09	09 / 10	10 / 11	11 / 12	12 / 13	13 / 14	14 / 15	15 / 16	16 / 17	17 / 18	Total
Former Amuru	168	0.6	414	1,073	1,074	1,063	1,051	1,041	1,031	1,022	1,013	1,005	9,787
Gulu	323	1.2	1,330	1,331	1,330	1,306	1,281	1,257	1,235	1,215	1,195	1,176	12,656
Former Kitgum	306	1.1	1,302	1,303	1,302	1,279	1,256	1,234	1,213	1,194	1,175	1,158	12,416
Former Pader	376	1.4	1,417	1,418	1,417	1,388	1,359	1,330	1,304	1,280	1,256	1,234	13,403
Acholi Total	27,422	100	4,463	5,125	5,123	5,036	4,947	4,862	4,783	4,711	4,639	4,573	48,262

Source: Final Draft, DUCARIP, March 2008

10. PRESENT SITUATION OF ROAD TRAFFIC AND TRANSPORT IN AMURU AND NWOYA DISTRICTS

During this Study, a Traffic Survey was conducted to grasp the baseline traffic information, e.g., traffic volume and OD (origin and destination) along the main trunk road and district roads in Acholi Sub-region, in order to understand the current traffic flow and examine the demand forecast analysis. As for Amuru and Nwoya Districts, a Traffic Survey and Household Interview Survey were conducted to reveal the traffic and travel characteristics of the residents. The present situation of road traffic and transport in Amuru and Nwoya Districts is summarized below:

- A great deal of traffic is observed along the national roads; the north-south corridor between Gulu – Sudanese border and the east-west corridor along Arua Road. However, the number of vehicles observed in former Amuru District is very low, showing a maximum traffic volume of only 2,040 PCU per day along Arua Road. There seem to be no capacity constraints in former Amuru District.
- The motorcycle is the dominant mode of transport in the region, consisting of 51% of the vehicles observed on the national roads and 59% on the districts roads.
- The interviewees in former Amuru District have almost no private transport mode, showing that only 1% of sampled households in former Amuru own motorbikes and only 24% own bicycles. Access to the public transport is the key towards enhancing the mobility of the residents in former Amuru.
- Agriculture is the dominant economic activity in former Amuru District. A total of 95% of the workers interviewed in former Amuru are farmers/livestock keepers. A total of 89% of the interviewed households in former Amuru are involved in agricultural activities; mostly crop cultivation works.

11. PRESENT SITUATION AND ISSUES OF THE ROAD NETWORK AND CONDITIONS IN AMURU AND NWOYA DISTRICTS

After reclassification of district roads to national roads in January 2009, Amuru and Nwoya Districts have 9 routes that are national roads and 13 routes that are district roads.

The road from Karuma to Pakwach via Olwiyo is paved and connects Kampala and Western Nile. The road from Gulu town to Nimule which penetrates the north-west area of the districts plays an important role as a trade route between Uganda and South Sudan. This road from Gulu (Kati Kati in Amuru District) to Nimule in South Sudan will be upgraded to an asphalt road under loan agreements with the WB and the Japanese Government. Other national roads traverse to connect the above 2 major national roads with the main trading centres and other district centres.

In Amuru and Nwoya Districts, it seems that the road network covers the entire district adequately. However, many road links are broken up by bottlenecks which hinder vehicle traffic. There are more than 60 bottlenecks caused by bushes and over 40 points by rivers. Wooden bridges which are constructed by the local government or NGOs enable pedestrians and bicycles to cross rivers or streams; however, they do not have adequate structural strength to enable passage of motor vehicles.

12. TRAFFIC DEMAND FORECAST

The objective of the traffic demand forecast in this study is to estimate the future traffic volume and to provide an input for selection of priority projects proposed in the road master plan in Amuru and Nwoya Districts. The future traffic volume will also be utilized to test the economic feasibility of selected priority projects. Intermediate and target years for the demand forecast are set as 2018 and 2030, respectively. Since the traffic observed in Amuru and Nwoya Districts flows internationally and inter-regionally, the study area of the traffic demand forecast is not limited to Amuru and Nwoya Districts but extends to Acholi sub-region.

The findings from this traffic assignment in Amuru and Nwoya Districts are summarized below:

- The north-south corridor, passing through Pabbo and Gulu towards Kampala, remains an international trunk road, connecting Kampala and northern Uganda and extending to

Sudan. The traffic volume is projected to significantly increase from 1400 pcu/day in 2009 to 3000 pcu/day in 2030.

- The traffic volume along the road section between Gulu-Koch Goma-Olwiyo is relatively large compared to other national and district roads in Amuru and Nwoya Districts and is projected to reach 40-130 pcu/day in 2009 to 20-120 pcu/day in 2030.
- The new road section connecting Ceri and Amuru (Otwee) is expected to accommodate both diverted traffic from the national roads and regional traffic within Amuru and Nwoya Districts: the future traffic volume is estimated to fall between 140 and 490 pcu/day in 2030.

13. OBJECTIVES AND BASIC STRATEGIES FOR RURAL ROAD IMPROVEMENT AND MAINTENANCE

The following two pillars are goals of development to be sought by rural road development and maintenance in Amuru and Nwoya Districts:

- To improve the socioeconomic environment for stabilizing and enhancing the livelihood of returnees in Amuru and Nwoya Districts:
- To promote agricultural development in areas with agricultural potential by providing road access

The primary objectives for rural road improvement and maintenance aim to attain the two identified goals and reverse the effects that have resulted from the underdevelopment that has taken place over the last 10 years, as follows:

- Vehicle roads should be improved by doing the following in a sustainable manner.
  - Expanding the total length of vehicle roads
  - Upgrading or improvement of service levels of vehicle roads
  - Improving the network of vehicle roads
- Vehicle roads should be maintained by locally appropriate technology and management methods.
- Roads passable by bicycles and motorbikes should also be expanded and improved, in conjunction with vehicle road improvement and maintenance.

The following three basic strategies are proposed:

- Basic Strategy A: Basic Strategy following Appropriately Set Functional Road Classes
- Basic Strategy B: Basic Strategy on Rural Road Maintenance
- Basic Strategy C: Basic Strategy for Community Development

14. RURAL ROAD NETWORK PLANNING

There are two systems of functional road classification in Uganda. One is that prepared by MoWT for rural trunk roads (national roads), and the other is for rural feeder roads (district roads) in Uganda. For rural road network planning for a particular district, it is necessary to utilize both classification systems.

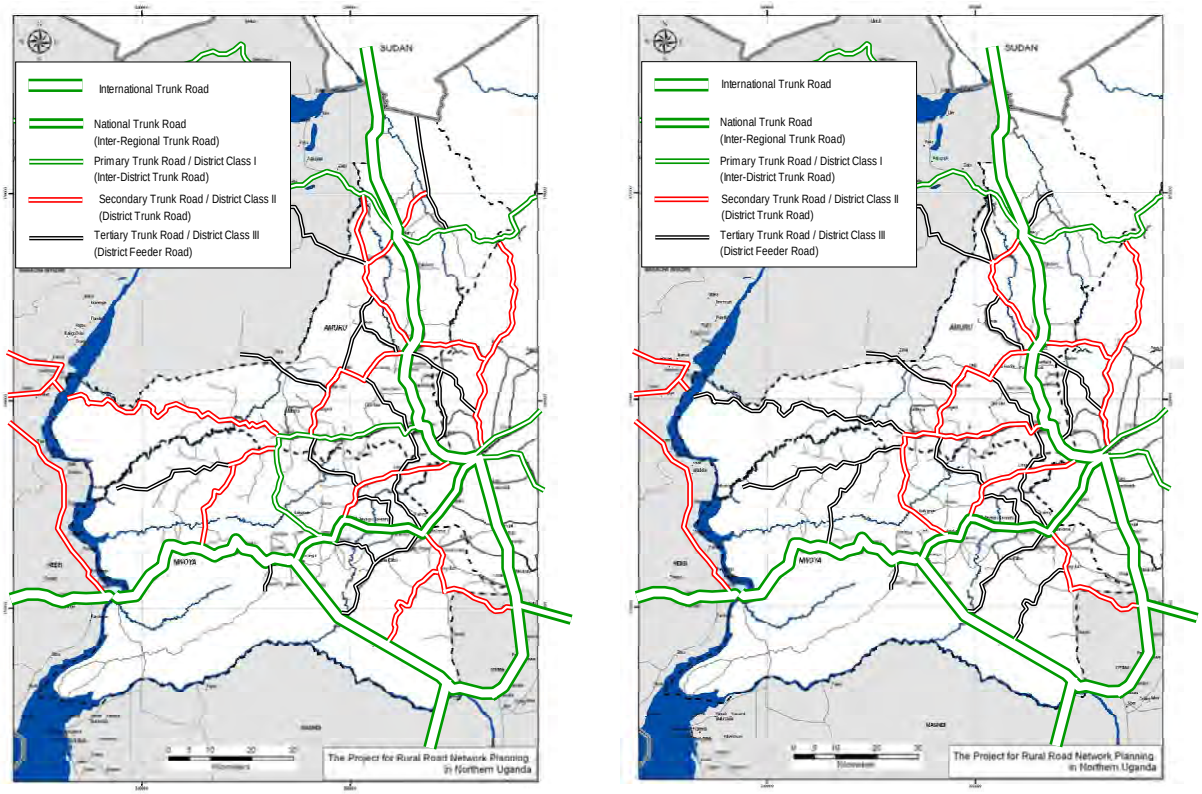
Since the system of functional road classification is concerned with the traffic function of the roads, but not about the administrative status of the roads, it is necessary to examine the genuine function of all roads in the district by initially disregarding the administrative status of the roads. At this step, we are faced with the difficulty of using two different classification systems. It is necessary to have an integrated system of functional road classification or a method of utilizing the two functional road classification systems in an integrated manner for rural road network planning as shown in Table 14.1.

Table 14.1 Proposed Method of Using Existing Two Systems of Functional Road Classification in an Integrated Manner

	Integrated Method of Using Existing Two Systems of Functional Road Classification	Functional Classification for Rural Roads	Functional Classification for District Roads
A	International Trunk Road	International Trunk Road [A]	
B	Inter-regional Trunk Road	National Trunk Road [B]	
C	Inter-district Road	Primary Road [C]	District Class I Road
D	District-level Arterial Road	Secondary Road [D]	District Class II Road
E	District-level Collector Road	Minor Road [E]	District Class III Road
F	Important Community Access Road		(Important Community Access Roads)
G	Other Community Access Road		(Other Community Access Roads)

Source: JICA Study Team

By using the proposed method of using the two existing systems of functional road classification, and by considering the new district spatial patterns, the JICA Study Team proposed two road network plans for Amuru and Nwoya Districts. One is for the long term (2030) and the other is for the mid term (2018) as shown in Figure 14.1.



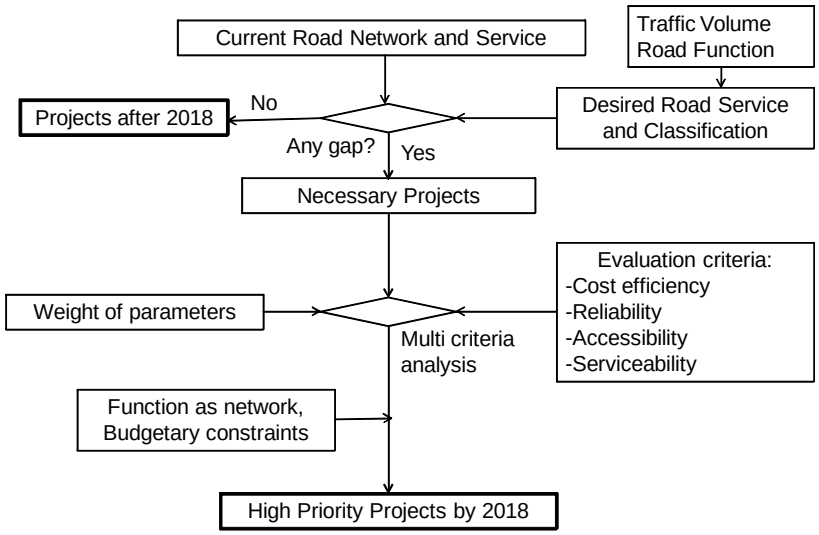
Long -term (Year 2030) **Mid-term (Year 2018)**

Source: JICA Study Team

Figure 14.1 Road Network Plan with Functional Road Classes

15. SELECTION OF HIGH PRIORITY PROJECTS

This Study proposes that the road improvement master plan in Amuru/Nwoya Districts is to be formulated by the procedures shown in Figure 15.1.

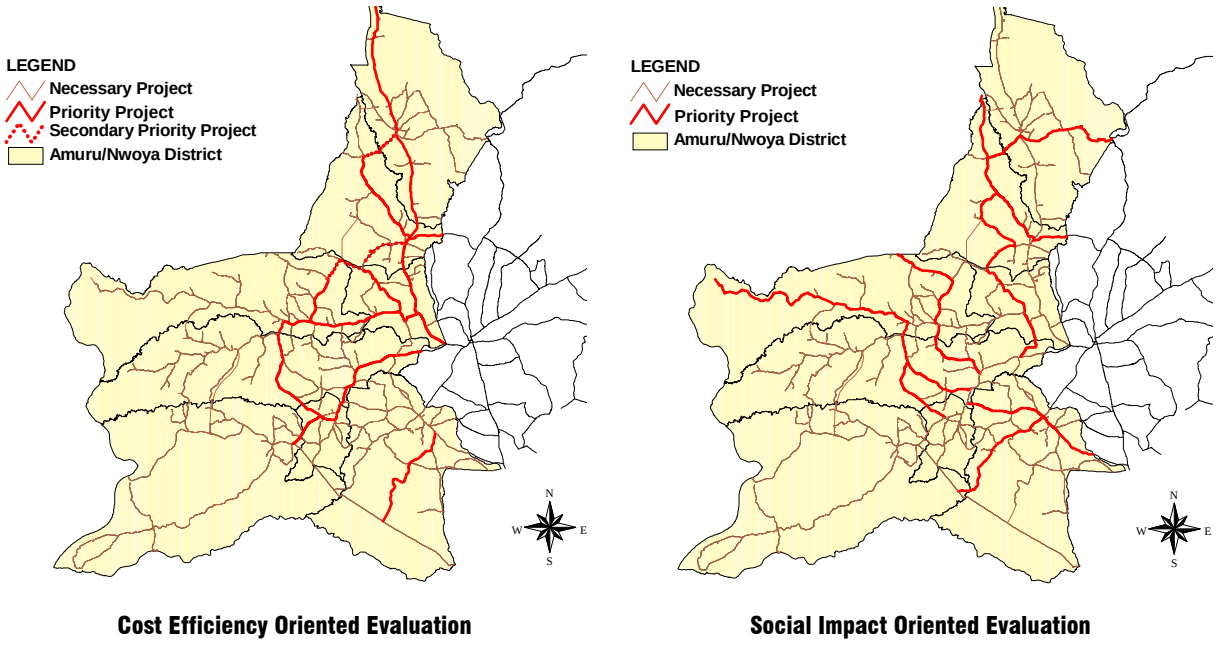


Source: JICA Study Team

Figure 15.1 Procedure for Project Selection

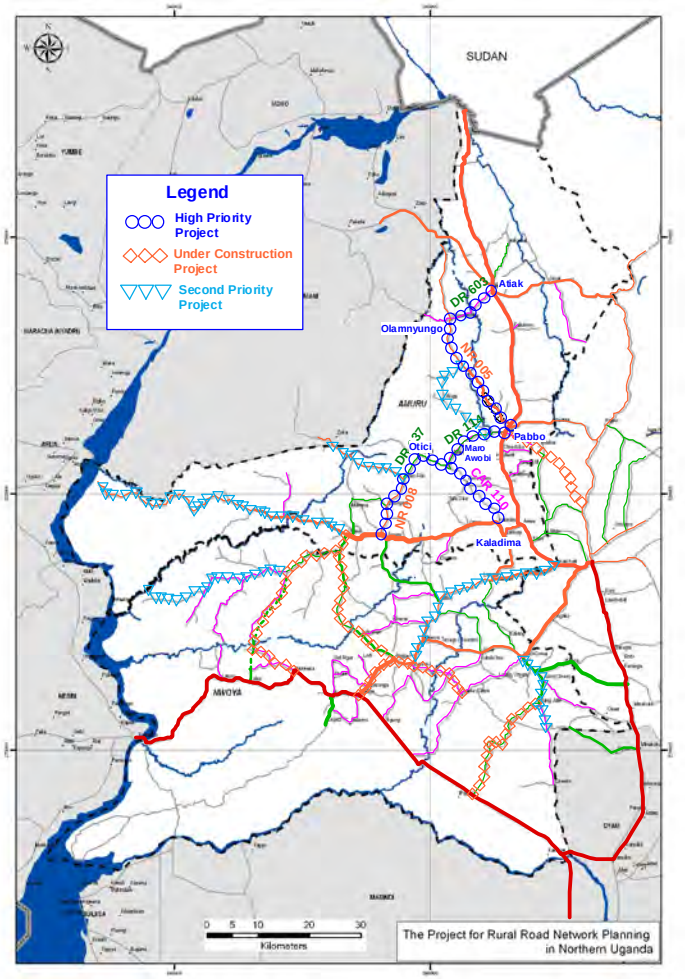
Two sets of weights allocated to the different evaluation criteria have been prepared to aid the decision making process These two sets of weights are namely; Cost efficiency oriented weights and social impact oriented weights.

Considering budgetary constraints, two different sets of priority projects are suggested by the two different weighting systems as shown in Figure 15.2. Defining the over lapping priority projects by both weights of evaluation parameters as the high priority projects, 117.9 km of road sections are considered as the high priority projects as shown in Figure 15.3. The total project cost for these high priority projects is estimated at 17.5 million USD up to 2018. It should be noted that the high priority projects will be modified, omitting on-going road and bridge projects while adding some road sections to secure continuity of the road network.



Source: JICA Study Team

Figure 15.2 Priority Projects



Source: JICA Study Team

Figure 15.3 Location Map of High Priority Projects and Second Priority Projects

16. RURAL ROAD MAINTENANCE PLANNING

According to the government policy, the road maintenance system for the national and district roads shall be implemented by the following method shown in Table 16.1.

Table 16.1 Method and Responsible Organizations for road maintenance

Road type	Responsible organization	Type of road intervention	Method of delivery
District & Urban	District & Urban (LGs)	Routine	Force Account by utilizing Road Gangs and light equipment provided by the Government.
		Periodic and Rehabilitation	Supervised by the district utilizing the machinery and procured material from the Zonal Mechanical Workshop.
National	UNRA	Routine	Contract basis, however partially by force account.
		Periodic and Rehabilitation	Contract basis.

Source: JICA Study Team

To execute the above required tasks, a private consultant and mechanical staff shall be hired in each district and the district shall take responsibility in the following “three principal areas”.

- Update and maintenance of the road inventory system
- Development of a road maintenance plan
- Instruction, supervision and evaluation of the private consultant’s activity

The capacities required for the district officer to manage the above "three principal areas" are as shown in Table 16.2.

Table 16.2 Capacity required of district officer

Area	Required Capacity
a) Update and maintenance of the road inventory system	• Understanding the theory of RAMPS • Practical operational skill to utilize RAMPS • Understanding the technical evaluation skills regarding defects such as defect type, cause of defect and countermeasures.
b) Development of road maintenance plan	• Road condition evaluation skill by utilizing output of RAMPS. • Road planning skills, utilizing labour based technology in particular.
c) Instruction, supervision and evaluation of private consultants	• Basic knowledge of road design and cost estimation. • Basic knowledge of road construction.

Source: JICA Study Team

17. RURAL ROAD IMPROVEMENT AND MAINTENANCE PLAN BY 2018

There is very little investment for improvement of national roads or district roads in Amuru and Nwoya Districts. Now, the question is how to improve the road network in these two districts using local and external funding. To estimate the costs required for improvement, six levels of intervention; minimum-level, near minimum-level, low-level, medium-level, high-level and highest-level, are prepared for helping decision making. Table 17.1 shows a summary of the project cost and annual disbursement by type of intervention.

Table 17.1 Project Cost and Annual Disbursement Required by Type of Intervention

(Unit: thousand USD)

Level of Intervention	Minimum-level	Near Minimum-level	Low-level	Medium-level	High-level	Highest-level
National Road						
Project Cost	5,008	5,008	5,008	15,530	15,530	20,743
Annual Disbursement	626	626	626	1,941	1,941	2,593
District Road/CARs						
Project Cost	102	957	1,886	1,886	6,946	10,086
Annual Disbursement	13	120	236	236	868	1,261
Expected Funding Source						
National Road	Local Funding			External Funding		
District Road/CARs	Local Funding			External Funding		

Source: JICA Study Team

The cost estimated for the six options of the interventions reveals that external funding is necessary for improvement of both national and district roads.

18. PROJECT EVALUATION FOR SELECTED HIGH PRIORITY PROJECTS

Although the proposed necessary projects and high priority projects are NOT economically feasible, there is a high probability that these high priority projects can turn into economically viable projects. Assuming only 10% of the whole road section of high priority projects requires urgent upgrade works, the project's economic viability is further substantiated with a B/C Ratio of 0.06-1.28 and some priority projects, i.e., CAR110, show ample positive NPV.

In addition to these quantifiable economic benefits, there are various unquantifiable impacts generated from the project, including decrease in traffic accidents, reduction of energy consumption, income generation, stimulation of the regional economy and for the particular case of Amuru and Nwoya Districts; acceleration of the IDPs' return and resettlement process by enhancing social infrastructure development in the home/return villages.

19. TECHNICAL TRANSFER TO AMURU AND NWOYA DISTRICTS

In order to enhance the sustainability of rural road network planning in former Amuru District, technical transfer programs related to rural road network planning, maintenance planning, traffic demand forecasts and utilization of GIS maps were conducted for Amuru and Nwoya district's engineers

20. TECHNICAL TRANSFER TO MOWT

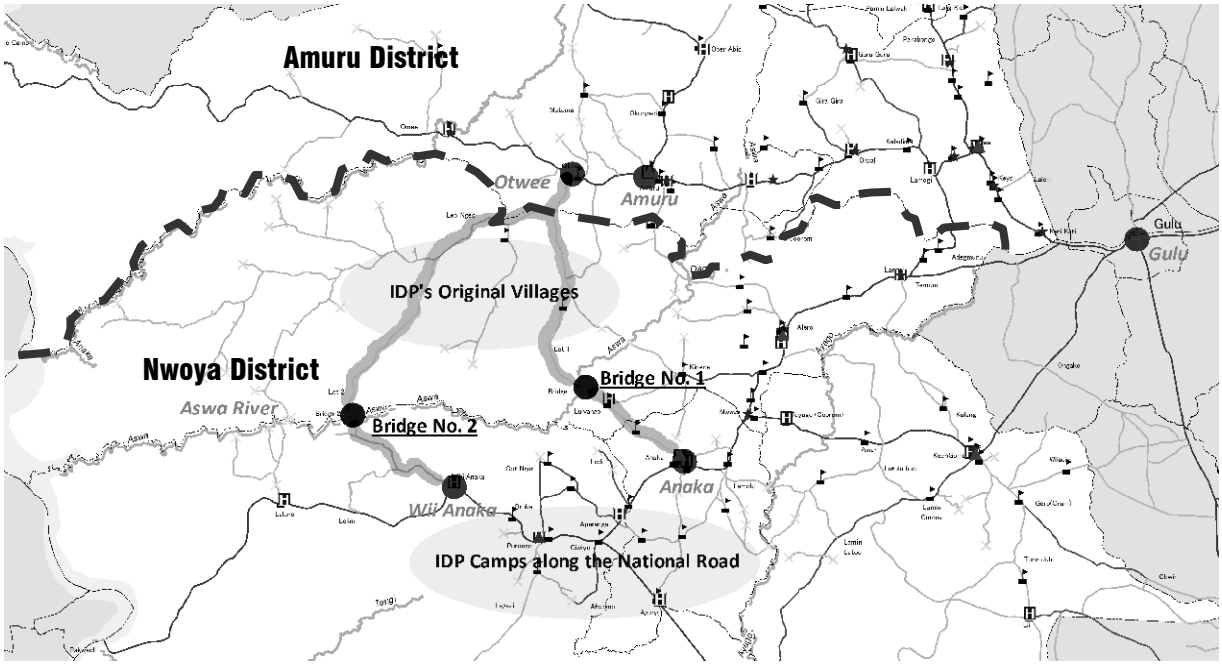
Technical transfer programs related to establishment of a GIS database was conducted for MoWT engineers.

PART 2: PREPARATION AND IMPLEMENTATION OF PILOT PROJECT

21. OBJECTIVE AND SCOPE OF THE PILOT PROJECT

At the initial stage of the Study, the pilot project, bridge construction and road improvement/maintenance works, were implemented in order to examine their impact on the IDPs return process and to feedback the findings to the formulation of the Master Plan of the rural road network. Two bridge sites for the pilot project were selected out of the various bridge requests by the local personnel, because they were located on Aswa River which divides the northern original village area and southern IDP camps along the national road.

Location of the pilot project is shown in Figure 21.1. Both bridges are on the district feeder roads just upgraded from community access roads in June 2009. Bridge No.1 is along the Otwee-Anaka road and Bridge No.2 is along the Otwee-Wii Anaka road.



Source: JICA Study Team

Figure 21.1 Location of the Pilot Project

The pilot project is divided into 2 lots for procurement of the contractor. The general scopes of these lots are as follows:

- **Lot 1 (Otwee – Anaka Road)**: Road improvement for a gravel road section of 6.20km (including construction of a reinforced concrete bridge of 35m length, 3 box culverts and 1 pipe culvert) and maintenance of a gravel road of 21.31km.
- **Lot 2 (Otwee Wii Anaka Road):** Road improvement for a gravel road section of 0.66km (including construction of a reinforced concrete bridge of 45m length) and maintenance of a gravel road of 44.00km.

22. BASIC PLAN

The Pilot Project roads are split into sections requiring improvement and sections requiring maintenance with due consideration of the need for prevention of future conflict between the road administrators and land owners given that most of the sections of the existing roads pass through private plots.

Basic plans for the two lots are as follows.

1) Bridge on Otwee - Anaka Road (Bridge No.1)

- Bridge Length: 35.00 m
- Span arrangement: A three simple span arrangement, which is comprised of 10.00m + 15.00m +10.00m spans for a total bridge length of 35.00 m, was adopted. P1 Pier is located at the right bank and P2 Pier is located at the left bank.

2) Bridge on Otwee – Wii Anaka Road (Bridge No.2)

- Bridge Length: 45.00 m
- Span arrangement: A four simple span arrangement, which is comprised of 10.00m + 15.00m +10.00m + 10.00m spans for a total bridge length of 45.00 m was adopted. P1 Pier is located at the right bank side while the P2 and P3 Piers are located at the left bank side.

23. BID CONDITIONS AND RESULT OF BIDDING

The MoWT recommended 10 Ugandan contractors who had experience in concrete bridge work. These were further assessed by the Study Team. According to the assessment by the Study, the contractors of classes B or lower were disqualified as being ineligible, therefore, a class A or A+ classification for a contractor was set as a pre-requisite criterion for eligibility.

After the Preliminary Examination of the submitted bids, the evaluations were carried out step by step and the bids without sufficient submissions and/or qualifications were removed at subsequent stages. The bids that passed through all the stages advanced to the final evaluation (Financial Aspect). In the final evaluation, the price comparison among the remaining bids was carried out and the bid which offered the most reasonable price was selected as the recommendable bid.

24. IMPLEMENTATION PLAN

A provisional construction schedule for the pilot project was estimated on the basis of the quantities of construction works, local conditions, etc. The construction schedules for the two routes of the pilot project are as shown in Figure 24.1.

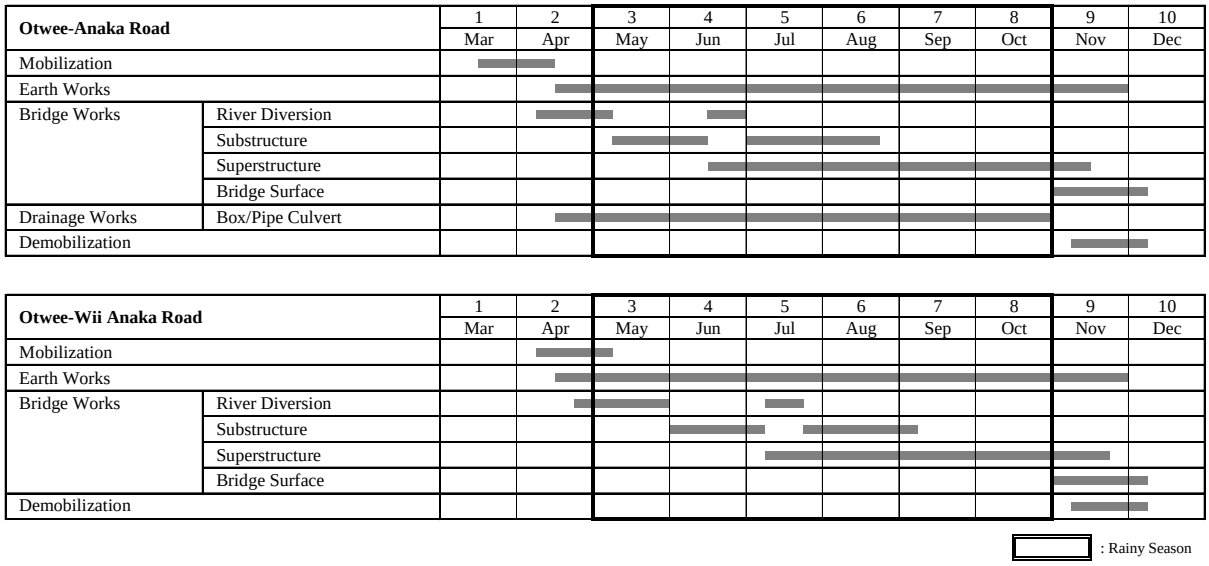


Figure 24.1 Provisional Construction Schedules for Pilot Project

25. BASELINE SURVEY

In order to evaluate the outcome and impact of the pilot project, an Origin-Destination (OD) survey and community interview survey were conducted prior to the commencement of the construction (March 2010).

Origin-Destination (OD) survey

The OD survey was carried out by the local staff at the locations of Lot 1 and Lot 2. The first survey for before construction was conducted at the beginning of March 2010. The summary of survey results are follows.

(Lot 1)

Number of by-passers: 128 people for both directions
Transportation type: 4 motorbikes, 44 bicycles, 75 pedestrians for both directions
Main trip purpose: Private 18, Hospital 17, School 13 for both directions
Commodity type: Convey nothing 63 (to go to hospital or school and come home), Fuel 17, Vegetation 16
Origin-Destination: The largest number of trips was between Lacic and Lulyango at 33 trips

(Lot 2)

Number of by-passers: 91 people for both directions
Transportation type: 19 vehicles, 14 motorbikes, 20 bicycles, 11 pedestrians for both directions
Main trip purpose: Work 38, Private 6 for both directions
Commodity type: Food 63, Vegetation 12
Origin-Destination: The largest number of trips was between Lbengec and Latoro at 35 trips

Community Interview survey

It is expected that the pilot project will bring a change to the lives of the people who live near the bridges, in particular, regarding aspects concerning accessibility. Therefore, in addition to the origin-destination survey, interview surveys at several communities along the roads were conducted. The summary of survey results are follows.

(Lot 1) Villages located on the northern side of the bridge

Population of Original Village: Lungulu Sub-village; Returnees 320, transit site 80, Lacic Sub-village; Returnees 400, Transit site 200

Access to Anaka by car: Lungulu Sub-village; 1.5 hrs, Lacic Sub-village; 2.0 hurs
Name of cash crop: Rice, Groundnuts
Marketing: Sell to middlemen from Gulu or Anaka

(Lot 2) Villages located on the northern side of the bridge

Population of Original Village: Denga Sub-village; Returnees 450, Transit site 30, Abongo Luduku Sub-village; Returnees 400, Transit site 200
Access to Purongo by car: Denga Sub-village; 4.0 hrs, Abongo Luduku Sub-village; 2.0 hurs
Name of cash crop: Rice, Groundnuts
Marketing: Sell to middlemen from Gulu, Amuru or Pakwach

26. EVALUATION OF PILOT PROJECT

The second survey for after construction was conducted in the end of October 2011. The summary of survey results are follows. The numbers in ( ) show the results of the previous survey.

Origin-Destination (OD) survey

(Lot 1)

Number of by-passers: 193 (128) people for both directions
Transportation type: 15 (0) vehicles, 21 (4) motorbikes, 64 (44) bicycles, 17 (75) pedestrians for both directions
Main trip purpose: Work 27 (13), Private 22 (18), Business 20 (10), Hospital 9 (17), School 6 (13) for both directions
Commodity type: Convey nothing 56 (63), Food 34 (2), Fuel 1(17), Vegetation 4 (16)
Origin-Destination: The largest number of trips was between Lukai and Anaka at 30 trips (Lacic and Lulyango at 33 trips)

(Lot 2)

Number of by-passers: 46 (91) people for both directions
Transportation type: 4 (19) vehicles, 6 (14) motorbikes, 1 (20) bicycles, 6 (11) pedestrians for both directions
Main trip purpose: Work 10 (38), Private 2 (6), Business 3 (0) for both directions
Commodity type: Food 3 (63), Vegetation 1 (12)
Origin-Destination: The largest number of trips was between Prongo and Latoro at 8 trips (Lbengec and Latoro at 35 trips)

Community Interview survey

(Lot 1) Villages located on the northern side of the bridge

Population of Original Village (on the northern side of the bridge): Lacic Sub-village; Returnees 510, Transit site 0 (Returnees 400, Transit site 200)

Access to Anaka by car: Lungulu Sub-village; 20 min (1.5 hrs), Lacic Sub-village; 30 min (2.0 hrs)

Name of cash crop: Rice, Groundnuts (Rice, Groundnuts)

Marketing: Sell to middlemen at trading centre (Gulu, Anaka, Panyimur, Amuru), Sell to middlemen from Gulu or Anaka

(Lot 2) Villages located on the northern side of the bridge

Population of Original Village (on the northern side of the bridge): Abongo Luduku Sub-village; Returnees 672, Transit site 0 (Returnees 300, Transit site 200)
Access to Purongo by car: Abongo Luduku Sub-village 40 min (2.0 hrs)
Name of cash crop: Rice, Groundnuts (Rice, Groundnuts)

Marketing: Sell to middlemen at trading centre (Gulu), Sell to middlemen from Gulu, Amuru or Pakwach

Comparing the survey results implemented before and after construction of the bridges, the following impacts are observed.

(Lot 1)

After the bridge was constructed, vehicles could cross in all season. It seems that the working and business opportunities for the people in the surrounding area were increased by improvement of the access road. For example, the village people can choose to sell their products in trading centres such as Gulu and Anaka by themselves using private trucks (a kind of shared-taxi), which now comes in to the village on this road after completion of the bridge, instead of waiting for a middle man at their home villages. These impacts will contribute to resettlement for the returnees in their original villages from an IDP camp.

Before construction of Bridge No.1, the number of IDP returnees of Lucic Sub-Village, located in the northern Area of the bridge, was around 400 and the number of IDP that lived in transit sites were around 200 (the rate of returnees was 67%). After completion of Bridge No.1, the number of IDP returnees of Lucic Sub-Village was around 510, and the number of IDP that lived in transit sites were zero (the rate of returnees was 100%). The main reason that all the IDP had already returned at the time of bridge completion can be that the Government had issued a closure policy for IDP camps by July 2010. In addition to this, the reopening of a school in this area and improved access to Anaka town with a detour during the bridge construction stage might accelerate IDP return and resettlement to their original villages.

The amount of traffic passing Bridge No.1 is still small at this moment and there were only 15 vehicles and 21 motorbikes per day according to the survey. However, it is expected that this number will increase soon as investment starts in this area. Thus, an additional survey after a year to monitor shall be necessary to find the true impact of the construction.

(Lot 2)

This bridge is used for business purposes, especially for transporting agricultural products and the farm workers. The number of by-passers after completion of the bridge was only 46 per 12 hours. This number is 45 people less compared with before the construction. It seems that these traffic demands vary depending on planting and harvesting season of the products. In northern Uganda, the usual planting season is in the beginning of the rainy season (March to July) and crops are harvested at the end of the rainy season and then transported to markets during the dry season.

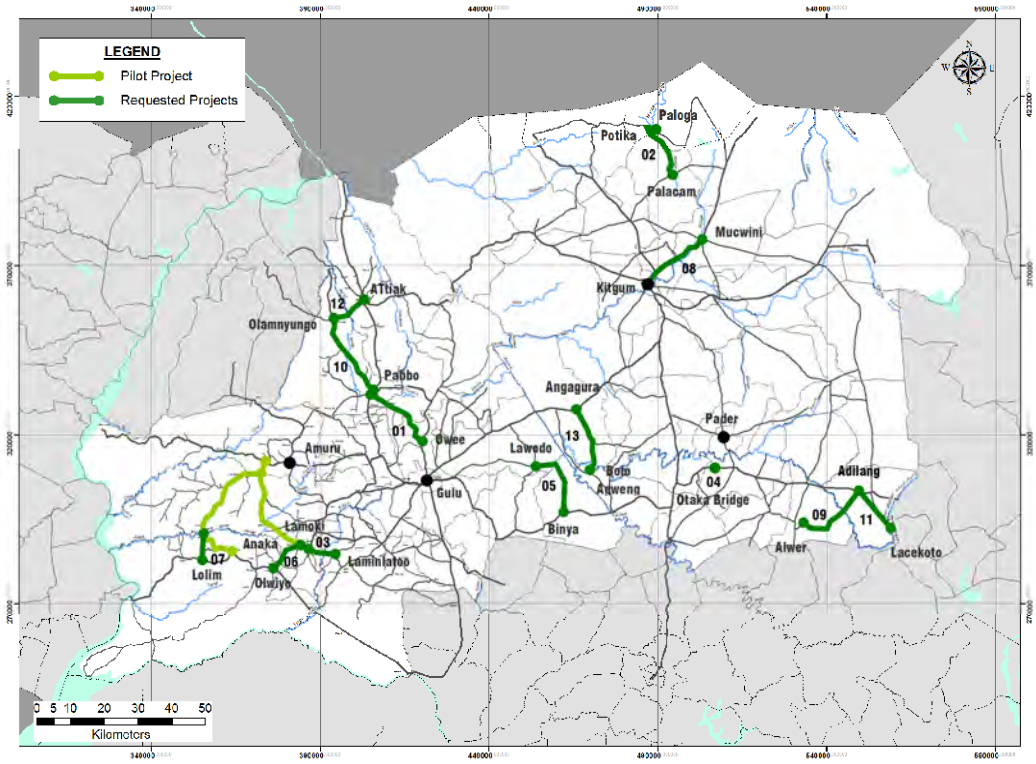
A total of 19 vehicles crossed No.2 Bridge at the time of the baseline survey before the bridge construction was conducted in March, 2010 (end of the dry season). On the other hand, only 4 vehicles crossed No.2 Bridge at the time of the survey after completion of the bridge conducted in October, 2011 (end of the rainy season). The reason for the decrease in traffic after completion of the bridge will be attributed to this seasonal variation.

In Lot-2, the impact of the bridge was not found clearly. However, considering the potential it has for the land, it is expected that the bridge shall contribute to the growth of the economy in the long term. It is recommended to monitor the traffic of this bridge for each season to comprehend the exact impacts of the bridge.

PART 3: PLANNING AND PREPARATION OF URGENT PROJECTS IN ACHOLI SUB-REGION

27. BACKGROUND OF THE URGENT PROJECTS

Acholi Sub-region was impoverished by the 20 year-conflict. Since the cease-fire agreement concluded between LRA and the Government of Uganda in August 2006, construction of hospitals, schools and wells have been implemented by humanitarian assistance organizations. However these facilities are not accessible enough and this could be considered as one of the reasons why the IDPs (Internally Displaced Persons) have been unable to return to their home villages. Consequently, the Ugandan side requested 13 projects to be undertaken by the Japanese side and these projects consisted of improvement of National Roads, District Roads and Community Access Roads (CARs) as shown in Figure 27.1.



Source: JICA Study Team

Figure 27.1 Locations of the Requested Bridges

28. CONTENTS OF THE PROJECTS

Selection of the projects was carried out based on the following criteria; “High degree of contribution to the return and resettlement of IDPs”, “High degree of urgency”, “Significant benefit” and “Low social environmental issues”.

As a result, six urgent projects (No. 01 to No. 06 in Figure 27.1) were selected based on the evaluation. Table 28.1 shows the specifications of the selected urgent projects.

Table 28.1 Specifications of the Proposed Roads and Bridges

Section No.	No.1	No.2	No.3	No.4	No.5	No.6
Location (District)	Gulu – Amuru	Lamwo	Nwoya	Agago	Gulu	Nwoya
Road Class	CA. Road	District Road	CA. Road	National Road	District Road	National Road
Road Width (m)	6.0	6.0	3.0	9.0	6.0	9.0
Carriageway lanes	2	2	1	2	2	2
Pavement	Gravel	Gravel	Gravel	DBST	Gravel	DBST
Total Road Length (km)	22.8	19.8	7.9	0.6	23.0	11.0
Improvement (km)	2.7	0.7	0.8	0.6	5.9	11.0
Maintenance*(km)	20.1	19.1	7.1	-	17.1	-
Bridge Name	Atiabar Br.	Arainga Br.	Ayago Br.	Otaka Br.	Chome Br. Dawa Br.	-
Span Length (Number of Spans)	15.0 m (1)	15.0 m (1)	15 m (1)	15 m (3) total 45m	15.0 m (1) 15.0 m (1)	-
Superstructure Type	RC Simple girder	RC Simple girder	RC Simple girder	RC continuous girder	RC Simple girder	-
Live Load Type	BS:HA JPN: A type	BS:HA JPN: A type	BS:HA JPN: A type	BS:HB JPN: B type	BS:HA JPN: A type	-
Bridge Width (m)	6.0 m	6.0 m	6.0 m	9.0 m	6.0 m	-

Source: JICA Study Team

The responsible organization is the Office of the Prime Minister (OPM) and the execution Agency is the Ministry of Works and Transport (MoWT) for this project.

29. PROJECT EVALUATION AND RECOMMENDATIONS

The traffic demand in Acholi Sub-region is forecast based on the current traffic demand estimated by the results of roadside traffic counts and driver interview surveys and population projections by UBOS and UNHCR. A cost/benefit analysis, comparing cost and benefit generated from the urgent projects determines the economic validity of the projects. With that result, costs and benefits were analyzed, concluding that three indicators of the economic evaluation slightly substantiated the economic viability of the project investment, with EIRR of 12.7 %, B/C Ratio of 1.07 and ample positive NPV of 4,095,000 USD.

THE PROJECT
FOR
RURAL ROAD NETWORK PLANNING
IN
NORTHERN UGANDA

FINAL REPORT

VOL. 2: MAIN REPORT

LOCATION MAP OF STUDY AREA

OUTLINE OF THE PROJECT

EXECUTIVE SUMMARY

TABLE OF CONTENTS

LIST OF FIGURES AND TABLES

ABBREVIATIONS

- TABLE OF CONTENTS -

SECTION 4: TECHNICAL TRANSFER

PART 2: PREPARATION AND IMPLEMENTATION OF PILOT PROJECT

SECTION 5: PREPARATION OF PILOT PROJECT

SECTION 6: IMPLEMENTATION OF PILOT PROJECT

SECTION 7: EVALUATION OF PILOT PROJECT

PART 3: PLANNING AND PREPARATION OF URGENT PROJECT IN ACHOLI SUB-REGION

SECTION 8: BACKGROUND AND CONTENTS OF THE URGENT PROJECT

SECTION 9: PROJECT EVALUATION AND RECOMMENDATIONS

APPENDICES (Vol.3)

- LIST OF TABLES -

- LIST OF FIGURES -

- ABBREVIATIONS -

A	AASHTO	American Association of State Highway and Transportation Official
	ACF	Action Against Hunger
	ACTED	Agency for Technical Cooperation and Development
	ADRICS	Annual District Road Inventory and Conditions Survey
	AIDS	Acquired Immune Deficiency Syndrome
	AMREF	African Medical and Research Foundation
	ARC	America Refuges Committee
	ARF	Areal Reduction Factor
B	B/C	Cost Benefit Ratio
	BH	Borehole
	BOQ	Bills of Quantities
	BS	British Standards
C	CAA	Civil Aviation Authority
	CAD	Computer Aided Design
	CAO	Chief Administrative Officer
	CAP	Community Action Plan
	CAR	Community Access Road
	CBMS	Community Based Maintenance System
	CCT	Coordinating Centre Tutor
	CDI	Community Driven Initiatives
	CIF	Cost, Insurance and Freight
	CPAR	Canadian Physicians for Aid and Relief
	CPI	Consumer Price Index
	CRCM	Community Reconciliation and Conflict Management
D	DANIDA	Danish International Development Agency
	DBST	Double Bituminous Surface Treatment
	DDMC	District Disaster Management Committee
	DDP	District Development Plan
	DED	German Development Service
	DFID	Department for International Development
	DIT	Dar es Salaam Institute of Technology
	DLGE	District Local Government Engineer
	DR	District Road
	DRC	Democratic Republic of Congo
	DSC	District Service Commission
	DUCAR	District, Urban and Community Access Roads
	DUCARIP	The 10-year District, Urban and Community Access Roads Investment Plan
E	EAC	East Africa Community
	EC	European Commission
	ECD	Early Childhood Development
	EIA	Environmental Impact Assessment
	EIR	Environmental Impact Review
	EIRR	Economic Internal Rate of Return
	EIS	Environmental Impact Study
	EL	Elevation
	E/N	Exchange of Notes
	ESSAPR	Education and Sports Sector Annual Performance Report
	EU	Europe Union
	EVI	Extremely Vulnerable Individual
F	FAO	Food and Agriculture Organization

	FOB	Free on Board
	F.W.L	Flood Water Level
G	GDP	Gross Domestic Product
	GIS	Geographic Information System
	GKMA	The Greater Kampala Metropolitan Area
	GOU	Government of Uganda
	GPS	Global Positioning System
H	HC	Health Centre
	HDI	Human Development Index
	HIV	Human Immunodeficiency Virus
	HMIS	Health Management Information System
	HPI	Human Poverty Index
	H.W.L	High Water Level
I	IATC	Inter-Agency Technical Committee
	IC	Importance Classification
	ICRC	International Committee of the Red Cross
	ID	Institutional Development
	IDP	Internally Displaced Person
	IEE	Initial Environmental Examination
J	JCT	Junction
	JICA	Japan International Cooperation Agency
	JICS	Japan International Cooperation System
	JST	JICA Study Team
K	KEL	Knife Edge Load
	KTC	Kisii Training Centre
L	LAMS	Land Acquisition Management System
	LBT	Labour Based Technology
	LCS	Low Cost Sealing
	LGBFP	Local Government Budget Frame Work Paper
	LRA	Lord's Resistance Army
	LRFD	Lord and Resistance Factor Design
M	MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
	MELTC	Mt. Elgon Labour-based Training Centre
	MoFPED	Ministry of Finance, Planning and Economic Development
	MoH	Ministry of Health
	MoLG	Ministry of Local Government
	MoWE	Ministry of Water and Environment
	MoWHC	Ministry of Works, Housing and Communications
	MoWT	Ministry of Works and Transport
	MPa	Mega Pascal
N	NAADS	National Agricultural Advisory Services Programme
	NDP	5-year National Development Plan for Uganda
	NEMA	National Environment Management Authority
	NFA	National Forest Authority
	NGO	Non-Governmental Organizations
	NPV	Net Present Value
	NR	National Road
	NTMP	National Transport Master Plan
	NUDC	Northern Uganda Data Centre
	NUDEIL	Northern Uganda Development of Enhanced Local Governance Infrastructure and Livelihoods
	NUMAT	Northern Uganda Malaria AIDS Tuberculosis Programme
	NUREP	Northern Uganda Rehabilitation Programme
	NUSAF	Northern Uganda Social Action Fund

	NUTI	Northern Uganda Transition Initiative
O	OD	Origin and Destination
	OPD	Out-Patient Department
	OPM	Office of Prime Minister
	O&M	Operation and Maintenance
P	p.a.	Per annum
	PAX	Number of Passengers
	PCU	Passenger Car Unit
	PEAP	Poverty Eradication Action Plan
	PPDA	Public Procurement and Disposal Act
	PRDP	Peace, Recovery and Development Plan for Northern Uganda
	PTA	Parent-Teacher Association
Q	QPRS	Quarterly Progress Reporting System
R	RAFU	Road Authority Formulation Unit
	RAMPS	Rehabilitation and Maintenance Planning System
	RC	Reinforced Concrete
	ROW	Right of Way
	RSDP	Road Sector Development Programme
	RVR	Rift Valley Railways
S	SADC	Southern Africa Development Community
	SATCC	Southern Africa Transport and Communications Commission
	SBD	Standard Bidding Documents
	SCF	Standard Conversion Factor
	SPC	Seismic Performance Category
	SPRING	Stability, Peace and Reconciliation in Northern Uganda
	SPT	Standard Penetration Test
	STRADA	System for Traffic Demand Analysis
	SWOT	Strengths, Weaknesses, Opportunities and Threats
T	TDMS	Teacher Development and Management System
	TRRL	Transport and Road Research Laboratory
	TTC	Travel Time Cost
U	UBOS	Uganda Bureau of Statistics
	UDL	Uniformly Distributed Load
	UDSM	University of Dar es Salaam
	UGX	Uganda Shillings
	UN	United Nations
	UNDP	United Nations Development Programme
	UNHCR	United Nations High Commissioner for Refugees
	UNICEF	United Nations Children's Fund
	UNOCHA	United Nations, Office for the Coordination of Humanitarian Affairs
	UNRA	Uganda National Road Authority
	UPE	Universal Primary Education
	URF	Uganda Road Fund
	USAID	United States Agency for International Development
	USD	United States Dollar
	USE	Universal Secondary Education
	Ushs.	Uganda Shillings
	UWA	Uganda Wildlife Agency
	UXO	Unexploded Ordnance
V	VGS	Vulnerable Groups Support
	VOC	Vehicle Operating Costs
W	WB	World Bank
	WFP	United Nations World Food Programme
	WHO	World Health Organization

1. INTRODUCTION

1.1 Background of the Study

Northern Uganda has the largest proportion of people living in poverty in the country, estimated at 61 % of the region's population, or almost twice the national level, despite having rich arable land suitable for rice, beans, millet, maize and cotton production. This high level of poverty can be attributed to the Lord's Resistance Army (LRA) insurgency. During the 20 year-conflict that began in the 1980s, much of the basic social infrastructure was destroyed or abandoned, and the local government became non-functional in the region. In particular, 90 % of the population were displaced (IDP: Internally Displaced Persons) from the Acholi Sub-region. Since the cease-fire agreement concluded between LRA and the Government of Uganda in August 2006, the Government of Uganda has emphasized and facilitated the return process of IDPs. However, the process faces many challenges since houses and social infrastructure such as roads, water wells and health centres were destroyed significantly during the conflict: with the situation further aggravated by a high unemployment rate.

The National Peace, Recovery and Development Plan (PRDP) was established in October, 2007 in order to guide the IDPs return, resettlement and rehabilitation. PRDP and the District Development Plans (DDPs) in Northern Uganda recognize the importance of, and give priority to, road improvement. However, the priority projects suggested in PRDP and DDPs lack due regard to the budget constraints. Although some of the road and bridge projects in Acholi Sub-region have been implemented by donors such as the World Bank and the EU, it is difficult to gain information on the details of the projects since the information is not well-organized.

1.2 Rationale and Objectives of the Study

1.2.1 Study Rationale

As mentioned above, basic infrastructure, especially road infrastructure, deteriorated due to the 20 year-conflict and requires considerable rehabilitation and construction works in Northern Uganda. Furthermore, the local governments, based on the interviews during the preliminary study, call for road improvement as one of the top priority projects in the districts of Northern Uganda. Improvement of the road network and condition is expected to greatly contribute to IDPs return process and by extension, the post-war rehabilitation in Northern Uganda. However, the following constraints hamper the effective improvement of road infrastructure.

- The PRDP (Peace Recovery and Development Plan for Northern Uganda), prepared in 2007, is the sole comprehensive development plan for Northern Uganda. It is a three-year rolling development plan. The District Development Plans, prepared by the district local councils, are also three-year rolling development plans, composed of wish-lists from the sub-counties. The mid or long-term development plan is not attainable by the local government in Northern Uganda.

- The District Development Plan tends to propose a long-list of projects without adequate consideration of their validity and priority based on numerical analysis. Some development projects listed in the District Development Plan are not implemented because of the budgetary constraints. The budget actually disbursed to the local government is limited and used mostly for recurrent purposes and not for development purposes.
- Although some district roads are to be upgraded to national roads, the rehabilitation and construction of which comes under jurisdiction of the UNRA, more than 200 km of roads in Amuru and Nwoya District still remain as district roads. However, the capacity of the local government in terms of financial resources and man-power and their technical skills in Northern Uganda is still limited[1]. Also, the President disclosed the policy to manage the local roads by force account implemented by the local government. However, it is still early to judge the effectiveness of this approach. Capacity issues arise on how the local governments, which are not well equipped for road maintenance and rehabilitation works, will manage their roads.

In this regard, the Master Plan of rural road network is required to effectively address these constraints, providing mid or long-term development guidance in a numerical manner. This Study, accordingly, formulates the Master Plan of rural road network and targets Amuru and Nwoya Districts as the focus area due to the following reasons.

- IDPs return process in former Amuru District (current Amuru and Nwoya District) lags behind that in other districts in Acholi Sub-region. One of the reasons identified during the preliminary study is that the former Amuru District cannot be regionally integrated since this area is divided into two areas by the Aswa River.
- The former Amuru District was geographically the disadvantageous area. Amuru Sub-county, where the administrative centre is placed, is located in an isolated area and is accessible only by one district road connecting it to Gulu. People in the southern Amuru District were forced to divert their transport through Gulu or walk (or use bicycles) using the local path.
- Amuru District, once being part of Gulu District, was newly established in July 2006. Furthermore, Nwoya District was separated from the Amuru District in July 2010. As mentioned, management of district roads may be transferred from a contract-out basis to force account implementation by the local government. Apparently, the administrative capacity of Amuru and Nwoya Districts is lacking in terms of finance and human resources.

Although the focus of the Study is limited to Amuru and Nwoya Districts, the method and techniques explored in this Study will not only be tested on these districts (for the Master Plan) but will be extended to the wider Acholi Sub-region in Northern Uganda.

1.2.2 Objectives of the Study

The overall goal of the Study is to accelerate IDPs return process and to improve the livelihood of people who will/have return(ed) to the original place and hence enhance regional development in Northern Uganda. In order to achieve this, the following three pillars of the Study shall be accomplished: Master Plan of rural road network, Capacity development, and a Pilot project in Amuru and Nwoya Districts.

[1] Amuru District was divided into two districts in July 2010. The other districts in Acholi sub-region, Kitgum and Pader, were also divided into two districts in January and July 2010 respectively. The effect of district segmentation on the Master Planning is studied in Section 1 of this report.

- The Master Plan of rural road network in Amuru and Nwoya Districts, with the target year of 2018, shall be established, in full consideration of the socio-economic conditions, development potential and traffic demand in the region. This Master Plan is expected to provide the mid-term guidance for the road maintenance, rehabilitation and upgrading plans in Amuru and Nwoya Districts.
- In line with the Master Plan of rural road network in Amuru and Nwoya District, capacity of road operation and maintenance in these districts shall be developed in order to ensure the proposed Master Plan is implemented as planned. This capacity development will be achieved through assessment of the "Capacity Gap", formulation of a "Capacity Development Plan" and provision of "Counterpart Training" throughout the study period.[2]
- At the initial stage of the Study, the pilot project, rehabilitation/ construction of two bridges and approach roads between Amuru and Nwoya Districts, will be implemented in order to examine its impact on the IDPs return process and provide feedback on the findings of the project to the formulation of the Master Plan of rural road network. Both bridges are selected because of their locations on Aswa River which divides the northern original village area and the southern IDP camp area along the national road.

1.2.3 Output of the Study

Amuru and Nwoya Districts (Formulation of Master Plan of Rural Road Network)

- Situational analysis and GIS mapping of public utilities, social services and existing social infrastructures (such as schools, health centres and water resources);
- Situational analysis and GIS mapping of present road network;
- Formulation of master plan for rural road development and maintenance
- Preparation and implementation of pilot projects in Amuru and Nwoya Districts
- Sharing study results of Amuru and Nwoya Districts with other districts by visualizing the results

Acholi Sub-region (prioritization of urgent projects in road sector)

- Preparation of road inventory for the national highway and the main district road;
- Identification of urgent projects;
- Formulation of implementation plans for urgent projects
- GIS Mapping of road-related information

1.3 Structure of the Report

The project for Rural Road Network Planning in Northern Uganda has the following three components:

- Part 1: Rural Road Master Planning in Amuru and Nwoya Districts,
- Part 2: Preparation and Implementation of Pilot Project

[2] "Capacity Gap" assessment for rural road maintenance was done targeting former Amuru District and is stated in Chapter 11. After segmentation of Amuru district, the "Capacity Gap" for new Amuru and Nwoya Districts must be worse, but degrees of the gaps are currently not clear because the organization and staffing of those two districts were not yet established in August 2010.

- Part 3: Planning and Preparation of Urgent Projects in Acholi Sub-Region

Part 1 of the Rural Road Master Plan consists of four sections as follows:

- Section 1: Northern Uganda and Acholi Sub-Region
- Section 2: Regional Development for Amuru and Nwoya Districts
- Section 3: Rural Road Improvement and Maintenance Planning for Amuru and Nwoya Districts
- Section 4: Technical Transfer

Prior to planning of road improvement and maintenance in Section 3, Section 1 provides a regional context for Amuru and Nwoya Districts, and Section 2 discusses the goals of rural road improvement and maintenance in regional development.

Part 2 on the Pilot Project consists of three sections as follows:

- Section 5: Preparation of Pilot Project
- Section 6: Implementation of Pilot Project
- Section 7: Evaluation of Pilot Project

Part 3 on Urgent Projects consists of two sections as follows:

- Section 8: Background and Contents of the Urgent Projects
- Section 9: Project Evaluation and Recommendations

Relevant information and materials are compiled in the Appendices (Vol.3).

PART 1: RURAL ROAD MASTER PLANNING IN AMURU AND NWOYA DISTRICTS

SECTION 1: NORTHERN UGANDA AND ACHOLI SUB-REGION

2. REGIONAL CONTEXT: NORTHERN UGANDA AND ACHOLI SUB-REGION

2.1 Northern Region of Uganda

(1) Four Sub-regions in Northern Region of Uganda

The Northern Region occupies the northern part of Uganda. Its area accounts for 35% of the total area of Uganda. The Northern Region is composed of four sub-regions, namely Acholi, West Nile, Karamoja and Lango.

Acholi Sub-region is bordered by South Sudan and located in the central part of northern Uganda. To the west of it, the West Nile Sub-region is located across the Albert Nile. To the east lies Karamoja Sub-region. Lango Sub-region is located to the south of Acholi Sub-region.

Acholi Sub-region is traditionally called Acholiland, because it has been inhabited by the ethnic Acholi and many chiefdoms had been formed by the Acholi. Acholi people also live north of the Sudan border (Magwe County of Southern Sudan).

Karamoja Sub-region is mostly semi-arid land with low annual rainfall. The Karimojong ethnic group lives there. Their main livelihood is livestock.

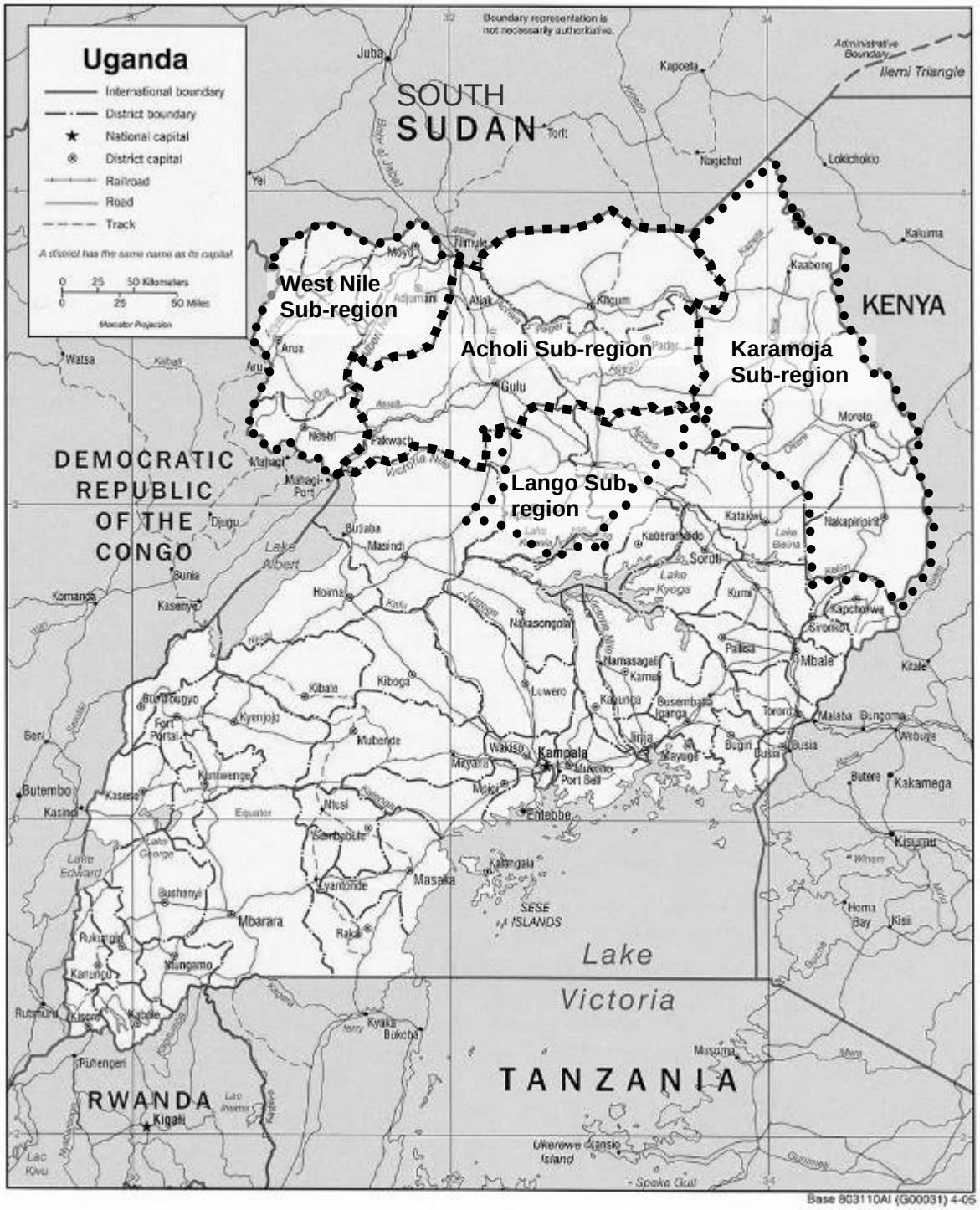
On the other hand, the people in West Nile Sub-region live on similar types of agriculture to Acholi Sub-region. Tobacco used to be a leading cash crop in the West Nile; however, honey has steadily replaced it in prominence. In the Lango Sub-region lives the Lango ethnic group of people.

(2) Populations and Population Densities in Northern Uganda

The population of Northern Uganda was estimated to be 6.8 million in 2009. It accounts for about 22% of the total population of Uganda.

The West Nile Sub-region had a population of 2.7 million as of 2009. Lango Sub-region had a population of 1.8 million in 2009. Acholi and Karamoja Sub-regions had populations of 1.2 million and 1.1 million respectively in 2009.

West Nile is among those sub-regions with relatively high population densities in Uganda. The population density of Lango Sub-regions, as well as West Nile Sub-region, is much higher than that of Acholi and Karamoja Sub-regions.



Source: JICA Study Team

Figure 2.1.1 Acholi Sub-region in Northern Uganda

Table 2.1.1 Area and Population by Region

	Area (km^2)	Population			
		1980	1991	2002	2008
Central Region, including Kampala	61,403	3,582,434	4,843,594	6,575,425	7,750,600
Eastern Region	39,479	3,237,436	4,128,469	6,204,915	7,692,500
Northern Region	85,392	2,424,242	3,151,955	5,363,669	6,652,300
Western Region	55,277	3,392,067	4,547,687	6,298,075	7,497,300
Uganda	241,551	12,638,159	16,673,696	24,444,086	29,594,708

Source: Population Census 1980, 1991 and 2002
Population Estimate 2008 by UBOS

Table 2.1.2 Population Density by Region in Uganda

Region/Uganda	Population Densities			
	1980	1991	2002	2008*
Central Region	58	79	107	126
Eastern Region	82	105	157	195
Northern Region	28	37	63	78
Western Region	61	82	114	136
Uganda	52	69	101	123

Source: Population Census 1980, 1991, 2002
The populations in 2008 are UBOS's projections.

Table 2.1.3 Annual Population Growth Rates by Region in Uganda

Region/Uganda	1980-1991	1991-2002
Central Region, including Kampala	2.8%	2.7%
Kampala	4.9%	3.7%
Eastern Region	2.2%	3.6%
Northern Region	2.4%	4.7%
Western Region	2.7%	2.8%
Uganda	2.6%	3.3%

Source: Population Census 1980, 1991, 2002

Table 2.1.4 Areas, Populations and Population Densities of Sub-regions in Northern Uganda

Sub-region	Area (km^2)	Population			Population Density (persons/km^2)
		1991*	2002**	2009**	2009
West Nile Sub-region	15,774.1	1,130,452	1,918,140	2,691,700	171
Acholi Sub-region	28,279.2	695,611	1,083,973	1,226,967	43
Karamoja Sub-region	27,596.6	370,423	721,536	1,087,200	39
Lango Sub-region	13,741.9	955,469	1,425,233	1,807,200	132
Northern Region Total	85,391.8	3,151,955	5,148,882	6,813,067	80

Source: *: Population Census 1991
**: Population Census 2002
***: The populations of Acholi Sub-region are from UNHCR monitoring data as of August 2009. Other district populations are projected populations by UBOS for mid-year 2009.

Table 2.1.5 Annual Population Growth Rates of Sub-regions in Northern Uganda

	1980-1991	1991-2002
West Nile Sub-region	3.1%	4.6%
Acholi Sub-region	1.7%	3.9%
Karamoja Sub-region	0.5%	5.9%
Lango Sub-region	3.1%	3.5%
Northern Region	2.4%	4.3%
Uganda	2.6%	3.3%

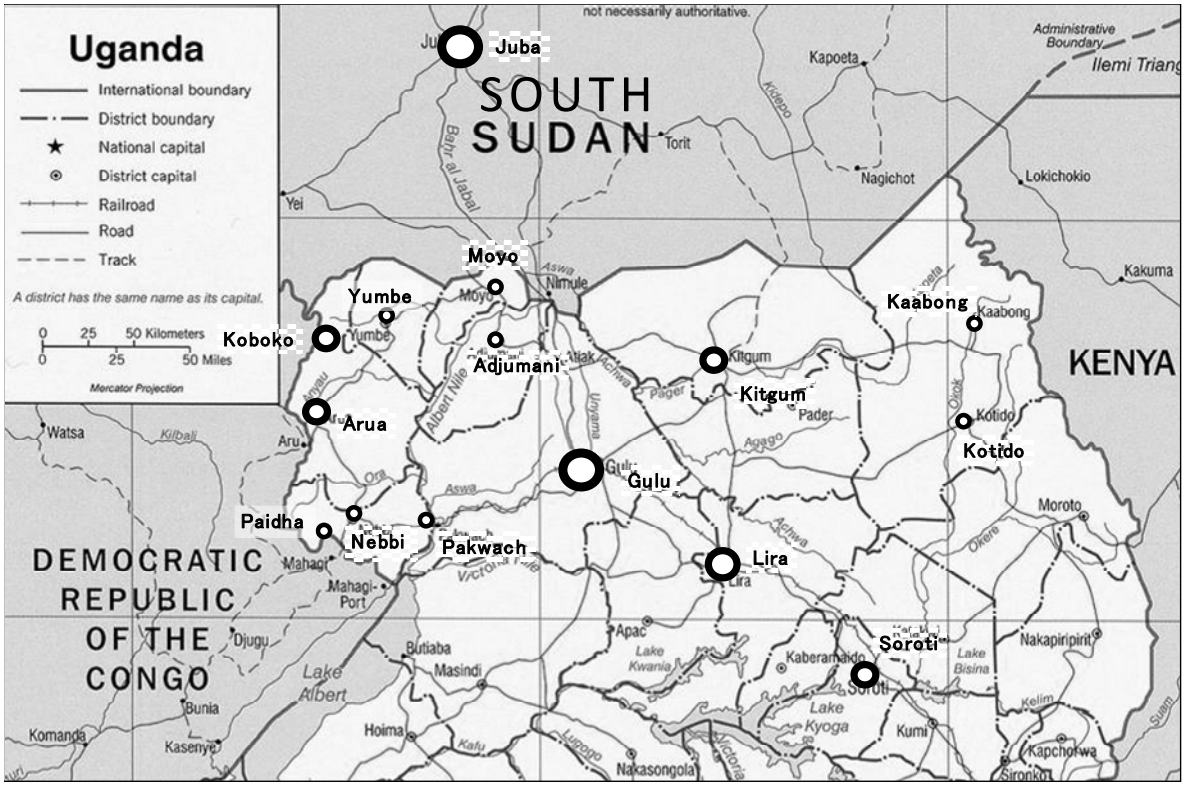
Source: Population Census 1980, 1991, 2002

(3) Urban Centres and Urban Economy in Northern Uganda

In 2009, there were 24 urban centres (municipalities and town councils) in northern Uganda. The total urban population in northern Uganda was about 720,000 in 2009. West Nile Sub-region has 9 urban centres, whose urban populations totalled 264,000 in 2009. Acholi Sub-region has 5 urban centres, whose urban populations totalled about 230,000 in 2009. There are 5 urban centres in Lango Sub-region. Their total urban population was 160,000 in 2009. In Karamoja, urban centres and the economy have not developed much yet. Their total urban population was only 70,000 in 2009.

In northern Uganda, Gulu Municipality is the largest urban centre: it had population of 146,000 in 2009. Lira Municipality is the next largest urban centre. Lira had an urban population of about 100,000 in 2009.

Arua Municipality (West Nile), Kitgum (Acholi), and Koboko (West Nile) follow Gulu and Lira in terms of size of urban population.



Source: JICA Study Team

Figure 2.1.2 Major Urban Centres in Acholi Sub-region and Northern Uganda

Table 2.1.6 Urban Centres and Populations in Northern Uganda

Sub-region	No.	Municipality/Town Council	2002	2009
West Nile Sub-region	1	Arua Municipality	43,929	55,800
	2	Koboko Town Council	29,727	45,700
	3	Adjumani Town Council	19,876	30,700
	4	Paidha Town Council	24,079	29,100
	5	Nebbi Town Council	22,714	27,500
	6	Yumbe Town Council	15,401	26,500
	7	Pakwach Town Council	17,625	21,300
	8	Moyo Town Council	12,074	20,500
	9	Nyadri Town Council	N/A	7,100
	Sub-total		185,425	264,200
Acholi Sub-region	1	Gulu Municipality	119,430	146,600
	2	Kitgum Town Council	41,821	55,400
	3	Kalongo Town Council	N/A	13,700
	4	Pader Town Council	8,678	12,200
	5	Amuru Town Council	N/A	no data
	Sub-total		169,929	227,900
Karamoja Sub-region	1	Kaabong Town Council	30,728	20,900
	2	Kotido Town Council	13,694	20,300
	3	Abim Town Council	N/A	15,700
	4	Moroto Town Council	7,380	11,000
	5	Nakapiripirit Town Council	N/A	2,400
	Sub-total		51,802	70,300
Lango Sub-region	1	Lira Municipality	80,879	102,200
	2	Dokoro Town Council	N/A	16,900
	3	Amolatar Town Council	N/A	14,000
	4	Oyam Town Council	N/A	13,600
	5	Apac Town Council	10,137	12,900
	Sub-total		91,016	159,600
Northern Region Total			498,172	722,000

Source: 2002 Population Census
2009 Statistical Abstract of Uganda, UBOS
Note: N/A.: not applicable. Town councils had not been established.

2.2 Acholi Sub-region

(1) Colonial Rule

The British colonial administration was established in Acholiland around 1912, reigning over the area covering the present Amuru, Nwoya, Gulu, Pader, Agago, Kitgum and Lamwo Districts. Gulu was its administrative centre.

The colonial administrative structure was designed and used for controlling cotton production. A railroad was constructed connecting Pakwach, Gulu and Lira to Mombasa Port in Kenya for transporting cotton.

In the last decade, cotton became an unpopular crop for farmers due to low prices in the international market.

(2) Government Administration in Acholi Sub-region

In the 1970s, the former Acholi Province was divided into Gulu and Kitgum Districts.

In 2001, two counties of Kitgum District were broken off and a new district, Pader District, was made out of them. In July 2006, Kilak and Nwoya Counties of Gulu District were carved out and became Amuru District.

Furthermore, Lamwo County of Kitgum District was upgraded to a new district in early 2010. Nwoya County of Amuru District and Agago County of Pader District were also upgraded to new districts in July 2010. As a result, at present, Acholi Sub-region is composed of seven districts.

The table below shows the number of sub-counties, town councils and municipal divisions for the five districts.

Gulu District consists of 11 sub-counties under 2 counties and 4 municipal divisions under Gulu Municipality. Kitgum District is composed of 9 sub-counties under 1 county and 1 town council. Lamwo District is composed of 9 sub-counties. Pader District and Agago District have 8 and 9 sub-counties respectively. Both Amuru District and Nwoya District have 4 sub-counties each.

Table 2.2.1 Number of Lower Local Governments by District

District	Sub-county	Town Council/ Municipal Division
Gulu	11	4
Kitgum	9	1
Lamwo	9	0
Pader	8	1
Agago	9	1
Amuru	4	1
Nwoya	4	0

Source: JICA Study Team

(3) Areas and Populations of Acholi Sub-region

The area of Acholi Sub-region is 28,279 square km, which accounts for 12% of the total area of Uganda. In August 2009, the population of Acholi Sub-region was about 1,227,000, which accounted for 4% of the total population of Uganda.

In 1980, the population of Acholi Sub-region was about 579,000. The average annual growth rates of the population were 1.7%, 4.1% and 1.8% respectively in the periods of 1980-1991, 1991-2002 and 2002-2009. Acholi Sub-region showed a higher population growth rate than the national average between 1991 and 2002. However, in the period between 2002 and 2009, its population growth rate decreased heavily.

Table2.2.2 Average Annual Population Growth Rates of Acholi Sub-region, Northern Region and Uganda

	1980-1991	1991-2002	2002-2009
Acholi Sub-region	1.7%	4.1%	2.1%
Northern Region	2.4%	5.0%	-
Uganda	2.6%	3.5%	-

Source: UBOS Population Census 1980, 1991, 2002 and UNHCR Monitoring 2009

Table 2.2.3 Area, Population and Population Density by District in Acholi Sub-region

District	Area (km^2)	% of Total Area of Acholi Sub-region	Population Sep. 2002	Population Aug. 2009	% of Total Population of Acholi Sub-region Aug.2009	Average Annual Population Growth Rate, 2002-2009	Population Density Aug. 2009 (persons/ km^2)
Gulu District	2,694	9.5%	298,527	236,762	19.3%	-3.8%	88
Kitgum District	9,635	34.1%	282,375	327,086	26.7%	2.5%	34
Lamwo District							
Pader District	6,929	24.5%	326,338	387,680	31.6%	2.9%	56
Agago District							
Amuru District	9,022	31.9%	176,733	275,439	22.4%	6.5%	31
Nwoya District							
Acholi Sub-region	28,279	100.0%	1,083,973	1,226,967	100.0%	2.1%	43

Source: UBOS and UNHCR

(4) IDPs and Returnees

Acholi Sub-region developed 120 IDP camps in Gulu, Kitgum, Lamwo, Pader, Agago, Amuru and Nwoya Districts and accommodated over 1.3 million IDPs in those camps. The distribution of IDP camps in Acholi Sub-region is shown in Figure 2.2.1.

About 184,000 people still lived in 120 IDP camps in Acholi Sub-region in August, 2009. However, compared to the original population of IDP camps in 2005, 86% of the people who used to live in IDP camps had already moved out of the IDP camps to return to their home villages or move to transit sites. Examining the IDP return rates in the districts, it is apparent that Gulu District has the highest percentage of people who have moved out of the camps already. On the other hand, 80% of the people who lived in the camps moved out of them in Amuru and Nwoya Districts.

In accordance with the monitoring done by UNHCR, the population of IDPs who still remained in the IDP camps were about 76,800 in May 2010. This means that 94% of 2006 registered population of IDPs moved out from the IDP camps in Acholi Sub-region by May, 2010.

Table 2.2.4 Population Movement in IDP Camps in Acholi Sub-region

District	Number of IDP Camps Aug. 2009	Population in IDP Camps Dec. 2005	Registered Population in IDP Camps 2006	Population in IDP Camps Aug. 2009 (% of 2006 Registered Population in IDP Camps)	Population in IDP Camps May 2010 (% of 2006 Registered Population in IDP Camps)
Amuru	33	204,000	368,228	73,494 (20%)	36,404 (10%)
Nwoya					
Gulu	31	257,000	320,232	22,699 (7%)	14,029 (4%)
Kitgum	25	310,000	319.936	48,534 (15%)	15,509 (5%)
Lamwo					
Pader	31	339,000	339,000	39,472 (12%)	10,894 (3%)
Agago					
Total	120	1,110,000	1,347,396	184,199 (14%)	76,836 (6%)

Source: UNHCR

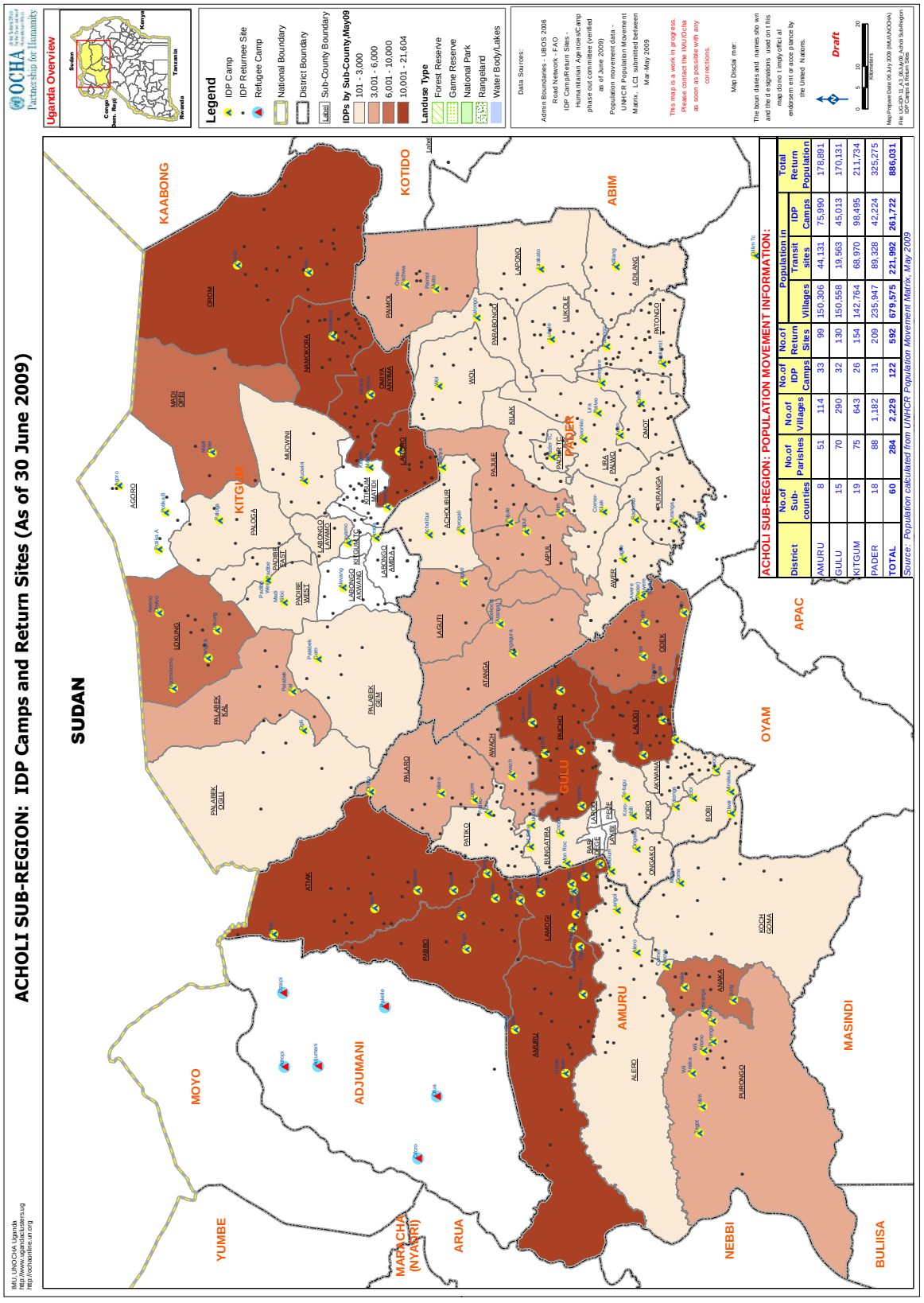
Table 2.2.5 shows the population of IDP camps, transit sites and home villages in seven districts in Acholi Sub-region. In Acholi, 15% of the population lived in the camps, 17% in transit sites and 68% in home villages in August 2009. Among the districts, 27% of the population lived in camps in Amuru and Nwoya Districts, while 10% of the population lived in camps in Gulu, Pader and Agago Districts. On the other hand, 81% of the population lived in home villages in Gulu District, while only 59% of the population lived in home villages in Amuru and Nwoya Districts. Compared to other districts, Kitgum and Lamwo District had more people living in transit sites.

Table2.2.5 Population of IDP Camps, Transit Sites, and Home Villages, August 2009

District	Total Population in District (Counted)	Number of IDP Camps Aug, 2009	Population in IDP Camps (% in IDP Camps) Aug. 2009	Number of Transit Sites Aug. 2009	Population in Transit Sites (% in Transit Sites) Aug. 2009	Population in Home Villages (% in Home Villages) Aug. 2009
Amuru	275,439	33	73,494 (27%)	58	38,350 (14%)	163,595 (59%)
Nwoya						
Gulu	234,762	31	22,699 (10%)	84	21,063 (9%)	191,000 (81%)
Kitgum	328,819	25	48,534 (15%)	66	83,209 (25%)	197,076 (60%)
Lamwo						
Pader	397,416	31	39,472 (10%)	183	73,162 (18%)	284,782 (72%)
Agago						
Total	1,236,436	120	184,199 (15%)	391	215,784 (17%)	836,453 (68%)

Source: UNHCR

In July 2010, it was officially announced that all the IDP camps were closed in Acholi Sub-region. In December 2011, almost all the people who lived in the IDP camps and transit sits seemed to have returned to their original villages as stated in Chapter 26.



Source: UNHCR

Figure 2.2.1 Distribution of IDP Camps and Transit Sites in Acholi Sub-region

(5) Economy in Acholi Sub-Region

The dominant economic activity in Acholi Sub-region is agriculture. Most of the people living in the sub-region are engaged in agriculture. Small scale subsistence farming is widespread and animal husbandry follows it in prominence. Fisheries, which are located along small rivers and streams, are not so prominent in Acholi Sub-region. Apiculture was recently introduced in some areas. Basically, lands in the sub-region are fertile. However, most of them are not utilised as a consequence of the prolonged conflict. People have started to go back to their home villages and restart farming.

The districts have basically the same characteristics of crop farming but with some characteristics unique to each district. In Gulu District, cassava, groundnuts, simsim, sweet potatoes, maize, millet and beans are produced. Production of rice, groundnuts, simsim and millet has increased recently. There are only a few grinding mills and rice hullers which form the agro-processing industry of the sub-region.

Table2.2.6 Crop Production by District in Acholi Sub-region

Unit: ton

Crops	Gulu District	Kitgum and Lamwo Districts	Pader and Agago Districts	Amuru and Nwoya Districts	Total of Acholi Sub-region
Cassava	18,502	27,562	24,712	18,989	89,765
Sorghum	5,902	10,449	22,302	7,728	46,381
Groundnuts	7,745	3,720	13,430	9,037	33,448
Simsim (Sesame)	5,438	7,329	10,834	5,011	28,612
Maize	4,537	1,468	2,316	4,549	12,870
Millet	2,682	1,617	2,291	2,794	9,384
Sweet Potato	5,065	1,430	700	881	8,076
Beans	1,336	735	2,727	2,596	7,394
Pigeon Peas	532	1,756	2,935	1,477	6,700
Sunflower	29	2,677	2,765	80	5,551
Greengrams	139	3,236	1,953	0	5,328
Rice	301	84	491	3,064	3,940
Cotton	0	1,373	1,936	0	3,309
Soybeans	54	199	150	293	696
Cowpeas	41	9	0	4	54
Tobacco	0	0	0	0	0
Total of Crop Production	**52,303**	**63,160**	**89,542**	**56,503**	**261,508**

Source: DED-Refugee/IDP Programme (February 2009), Second Season 2008 Land Use and Crop Yield Assessment Report

Farmers in Kitgum and Lamwo Districts produce mainly cassava, sorghum, simsim, greengrams, sunflower, pigeon peas, millet, maize, sweat potato, and cotton. There are only small scale maize, rice and cassava mills. In addition, there is a cotton ginnery in Kitgum Town.

In Pader and Agago Districts, major food crops are cassava, sorghum, groundnuts, simsim, pigeon peas, sunflower, beans, maize, millet, greengrams and cotton. Major cash crops from the district are groundnuts, simsim, pigeon peas and sunflowers. Recently, there has been an expansion into production of other new crops such as vanilla, coffee, bananas, pineapples and citrus fruits.

In Amuru and Nwoya Districts, major crops grown are cassava, groundnuts, sorghum, simsim, maize, rice, millet, beans and pigeon peas. These crops are produced both as food and cash crops. Some fruits such as citrus, mangoes, pineapples and bananas are also grown there. There aren't any large factories but only a few grinding mills and rice hullers.

Some of the people live on employment income. In particular, some portion of the population in Gulu lives on employment income. Most of them are government employees or work for parastatal bodies. Some of them work for NGOs.

With the exception of Gulu Town, electricity is very limited, which affects development of various industries in Acholi Sub-region. People use diesel and petrol generators. Alternative sources of power such as solar power are also utilised. Telephone networks are widely spread across the sub-region and major telephone companies are very active in business.

Due to the long war, tourism was unable to develop for a long time. However, since the security situation in Acholi Sub-region has improved significantly, tourism could be vitalised in the near future.

(6) Social Profile

Selected social indicators for seven districts in Acholi Sub-region are shown in Table 2.2.7. Since the years of each figure are different, it is difficult to compare the figures in an exact sense. Yet, these figures indicate situations of these districts approximately. Compared to the Ugandan average, the figures for the districts are not so bad. Among them, pit latrine coverages are far below the national average. Also, pupil-teacher ratios and pupil-classroom ratios are not as good as the Ugandan average, which means that the number of teachers and classrooms is inadequate. Gross intake rates and gross enrolment rates for secondary education are also worse, which indicates that only a small portion of children enjoy schooling at secondary level. On the other hand, most of the immunization rates are better than the national average. Gross intake rates and gross enrolment rates for primary education are also better than the national average, which indicates that most of the school-age children have great opportunities to go to primary schools.

Human Development Index (HDI) and Human Poverty Index (HPI) of each district for the year 2005 are shown in Table 2.2.8. HDI measures overall human progress in a more holistic manner with special emphasis on living a decent life and HPI measures deprivations in the three basic dimensions of the HDI, which are "a long and healthy life", "knowledge", and "a decent standard of living"[1]. HDIs and HPIs are the same for Gulu District and Amuru District (including Nwoya District) because they were the same district in 2005. Considering the situations of these three districts, both HDI and HPI for Gulu District would be much better if calculations were done singly for each of the 3 districts.

Looking at these indices, HDIs for the four districts in Acholi are worse than the national averages. Comparing ranks of HDIs and HPIs among all available districts, it can be said that HPIs are relatively better than HDIs. The big difference between HDI and HPI is whether the indices have indicators on GDP per capita. Overall however, both HDIs and HPIs for the four districts are not appropriate and there is need for improvement.

[1] HDI is better if it is close to 1 and HPI is better if it is close to 0.

Table 2.2.7 Selected Social Indicators of Four Districts in Acholi Sub-region

	Gulu District	Kitgum and Lamwo Districts	Pader and Agago Districts	Amuru and Nwoya Districts	**Uganda**
Average household size	5.1	N/A	N/A	4.5	**4.7**
Annual population growth rate 2002**	2.9%	4.1%	5.0%	2.9%	**3.2%**
Sex Ratio**	97	98	98	97	**95**
Life expectancy	N/A	47	42	43.7	**50.4**
Infant mortality rate	172/1000	165/1000	165/1000	N/A	**83/1000**
% of Water Served People**	63.5%	49.0%	48.5%	N/A	**58.5%**
Fertility rate	N/A	6.9	N/A	7.4	**6.7**
Pit latrine coverage**	42	19	38	34	**63**
Immunization rate for BCG**	101	72	69	91	**86**
Immunization rate for measles**	111	79	85	87	**77**
Immunization rate for OPV3**	96	77	79	87	**79**
Immunization coverage for DPT3**	96	75	81	112	**79**
Gross intake rate (primary)**	122	135	155	141	**128**
Gross enrolment rate (primary)**	130	134	145	118	**108**
Pupil-teacher ratio (primary)**	68	86	98	87	**57**
Pupil-classroom ratio (primary)**	76	88	129	91	**72**
Gross intake rate (secondary)**	36.1	26.4	14.8	16.5	**33.4**
Gross enrolment rate (secondary)**	23.8	15.7	8.3	13.6	**25.0**
Student-teacher ratio (primary)**	22	32	25	30	**21**
Student-classroom ratio (primary)**	36	61	33	39	**36**

Source: ** from UBOS[2], others from each district's DDP

Note: Years for each indicator are different although the indicators are supposed to be the latest. Therefore, it is difficult to compare the figures exactly.

Table 2.2.8 Human Development Index (HDI) and Human Poverty Index (HPI) for Four Districts in Acholi Sub-region (2005)

District	HDI	HDI Rank (out of 76 districts)	HPI	HPI Rank (out of 65 districts)
Gulu	0.430	70	32.2	41
Kitgum and Lamwo	0.439	69	30.7	35
Pader and Agago	0.469	66	32.9	45
Amuru and Nwoya	0.430	70	32.2	41
North	0.499	-	-	-
Urban	0.663	-	-	-
Rural	0.549	-	-	-
Uganda	0.581	-	25.21	-

Source: UNDP Uganda[3]

[2] 2009 Statistical Abstract, Uganda Bureau of Statistics, June 2009

[3] Uganda Human Development Report – Rediscovering Agriculture for Human Development, United Nations Development Programme (UNDP) Uganda