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LIMITATIONS IN APPLICATION OF TRANSPORTATION PLAN-NING METHODS IN TROPICAL AFRICA: ACASE STUDY OF RURAL TRAVEL IN KIRINYAGA DISTRICT, KENYA.

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February, 1980

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DIMINATIONS IN AFFITEATION OF TRANSPORMATION FRAM-WING METUDE IN PROPECTS AFBIGAL AGASE SIUPY OF RURAL TRAVEL IN MIRINTAGA CICIRIOT; KENYA:

> LIMITATIONS IN APPLICATION OF TRANSPORTATION PLAN-NING METHODS IN TROPICAL AFRICA: ACASE STUDY OF RURAL TRAVEL IN KIRINYAGA DISTRICT, KENYA.

> > Ву

Charles K. Kaira

ABSTRACT

BEVELOPMENT STUDIE

The paper discusses transportation research and planning in developing countries with emphasis on tropical Africa. It is suggested that research into transport modes used in rural areas should receive the proper attention and encouragement from the international lending institutions (IBRD, IDA etc). as well as the individual governments in order to plan for better transport programmes in the rural areas. Therefore, it is proposed to conduct a case study of transport modes in Kirinyaga District with special emphasis on the potential and use of intermediate technology modes. The outcome of the proposed field survey will help in the design of a rural transport programme that is within the means of the inhabitants, that compared with the level of technological development of the country and that is adaptable to the cultural regimen.

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1. INTRODUCTION

Transportation planning and research in the developing countries has been done mainly in the area of highway transportation with emphasis in providing better highway facilities through better construction and maintenance methods as well as opening up of rural areas to encourage development of economic activities in the less developed regions through the construction of feeder roads. Although in some countries intermediate transportation modes like cycling, cycle rickshaws, donkey carts, etc. are used, little effort has been put into research aimed at improving the exisiting intermediate technology transport modes through programs that encourage the use of these modes and at the same time improving the technological application of these modes to suit the conditions of the developing countries.

In recent years a series of studies conducted by the World Bank and ILO have been concentrating in the areas of construction and maintenance of rural roads using labour-intensive methods as compared to equipment-intensive ones (6,7,12). Furthermore, the Bank has embarked on a long-term program of research into the socio-economic impact of roads and other infrastructure investments as well as operational study program of simple selection and screening procedures (3,6), Therefore, the Bank is changing from its traditional 'road user benefits' evaluation method of road projects to the 'producer surplus' one. While the former method favours the selection of transportation projects mainly in urban areas and inter-urban roads, the latter provides a basis for more reliable estimation of economic change, helps to show which complementary investments are most important and, above all, yields insights on how to ensure local level 'grass roots' involvement in project activities needed to achieve sustained social development.

Consideration of economic changes in the 'area of influence' of a road, especially of a feeder road, is a step towards the concentration on the Wananchi² as a beneficiary of road development projects instead of

^{1.} For a detailed discussion of this analysis see, Carnemark, Biderman, Bovet "The Economic Analysis Of Rural Road Projects" Bank Staff Working Paper No. 241, 1976, World Bank, Washington D.C.

^{2.} Wananchi refers to the majority of peasants.

the 'well to do' who is the focal point of the 'road user benefits' method. The 'area of influence' of a road in tropical Africa can be practically considered as the maximum distance of 16 km. from the road in any direction the person can travel by walking. Obviously, this falls short of the distance quoted in 'World Road Statistics 1976's ranging from 20km. to 100km. (Table 1.1). Therefore, it should be noted that provision of a feeder road in only a partial solution to the transport dilema the 'Wananchi' experience.

The author would like to argue that more attention should be paid to solving the transportation problems in the deep rural areas in order to realise full benefits from the transport investments put into the provision of feeder roads. In otherworlds improvement of communication accessibility should also be made at the lower level in order to arguement those at the national level.

Taking into consideration the level of income, education and technical development of the population within and around the 'area of influence' of a feeder road, the application of self-reliant strategy is advised in favour of imported technological solutions which, with advanced technology and capital intensive characteristics, reduce employment opportunities and remove decisionmaking powers from the village level. Appropriate technology covers a wide range of transport solutions such as packframes, human and animal propelled carts, bicycles and other pedal driven vehicles, motor cycles, 'basic' vehicles' light trucks and agricultural transport implements to mention a few.

The empirical research work to be covered in this paper, will concentrate on a sub-location in the Mount Kenya Region an area that has been an object of several previous studies. While one village in the study area is a market center with easy access to transport facilities the other is an isolated community located 8km. away from the market center and has no direct access to transport facilities. The aim of the

^{3.} These are devices other than motorised vehicles.

^{4.} This area was chosen to enable the comparison of the present study with previous studies.

study is to compare and contrast the travel behaviour, needs and use of the different transport modes by the two villages through the study of the travel anatomy of functional groups.(e.g. traders, farmers, craftsmen, etc.) in relation to their use of available transport modes and needs for appropriate technology transport modes.

Table 1.1: Road statistics for selected tropical African countries

Country	Change in length of road network 1950-75 (per cent)*		Road Spacing	GNP per capita
Angola	sector in devoir	tanianaut o	adt 1134 ACT) a	370
Kenya	0.36 bm ₅₀ dans) Mcc	-	'j	220
Malawi	edt el 70 misla ecom n	avo 14 tanw	(0 21 SY SWIT	130
_	40 va io nolidos	Isal ed as	40	180
Nigeria	the 140 select to a	17 2	ona netruotan	340
Sierra Leone	130 at anderes must be are	<u></u>	20	200
	70 conte estraturos bagole			230
Upper Volta	harmhastunsm se fairfey	9	100	110
Zambia	140	11	43	420

Source: UNIDO: International Forum On Industrial Technology: Working Group No.12, New Delhi/Anand, India, 20-30 November, 1978.

(a) : swollol ha shart two nevin eved STV L-1781 boltrey rasy Leosit

2 TRENDS IN RURAL TRANSPORT

Although numerous studies involving planning and improvements of transport at the national level and in urban areas in developing countries have been carried out, studies at the village (community) level are non-existent. This negligence which existed during the rule of the colonial masters has been continued by the indigenous leaders who tend to have the same developmental priorities as those of the former colonial masters. As a rule the transport development pattern has been dictated by the need to transport raw materials, cash crops and minerals to harbours for eventual shipment to industrial countries, and the need to govern the countries efficiently through the provision of all -weather roads for purposes of collecting taxes, conducting political campaigns, social services, and 20th century 'development' prestige.

^{*} These figures must be treated with caution since some of the changes are due to alternation in the classification of what is a 'road'.

Until recently, almost nobody has been concerned with the transport needs of the Wananchi in isolated rural areas or on the farm as such. It seems to be taken for granted that the motor vehicle is the only and best solution for rural transport development. This is evident from the projects financed by the World Bank and other lending institutions (6) Since the second world war, 45.6% of the cumulative loans of the International Bank For Reconstruction And Development (IBRD) and 52% of the cumulative loans of the International Development Association (IDA) in the transport sector in developing countries has been in the area of highways followed by 31.2% (IBRD) and 34.0% (IDA) in the area of railways (10). What is even more alarming is the fact that all the loans are for appraisal and selection of road projects as well as design, construction and maintenance of roads. No attention, whatsoever, has been given to the design of vehicles that are supposed to use these Consequently, the road design standards used are, in most cases equivalent to those used in the developed countries since the vehicles are imported from there. Even the vehicles manufactured or assembled in the developing countries are replicas of those manufactured in the developed world. Thus it can be said that there is no vehicle basically designed for use in tropical African conditions.

Furthermore, in the area of transport research in developing countries, the World Bank and collaborating institutions during the fiscal year period 1971-1978 have given out funds as follows: (6)

a)	Highway design and maintenance standards	31.5%	
b)	Rural roads	8.7%	
c)	Substitution of labour and equipment in civil construction	54.3%	T
d)	Ports Ports	1.5%	
e)	Railways	4.0%	

^{5.} Probably, the first such study is by the World Bank: "An Investigative Survey Of Appropriate Rural Transport For Small Farmers In Kenya", 1977.

^{6.} U.K. Transport and Road Research Laboratory 1971-75.

^{2. .} Central Road Research Institute, New Delhi.

^{3.} Swiss Federal Services Of Technical Cooperation And The Federal Institute Of Technology (Zurish).

^{4.} Swedish International Development Agency and others.

Considering the fact that most civil construction mentioned in item 3 is related to highways, it can be said that 94.5% of research funds were used for highway related transport research.

Looking at the planned public sector investments in Table 2.1 and the distribution of public sector transport investments in Table 2.2, the proportion of public investments committed to the transport sector is high for all the six countries ranging from 21.3% to 40.6%. Here, again the portion allocated to roads is quite high ranging between 37.2% to 87.5% of which only 2.6% to 8.4% is allocated to minor (feeder) roads. Thus the trend is in agreement with the transport planning philosophy of the World Bank and other international lending institutions, namely, solving rural transport problems through the provision of highways and motor vehicles.

7. As works done by ILO show:

- a) Roads and Redistribution: Social Costs and Benefits of "Labour-intensive Road Construction in Iran, G.W. Irvin et-al ILO.
- b) Men and Machines: Study of Labour-Capital Substitution in Road construction in the Phillipines, Deepack Lal et-al. ILO, 1974.
- c) Equipment Verses Employment: A Social-benefit Analysis of Alternative Techniques of Feeder Road Construction in Thailand, W.A. McCleary, et-al. ILO, 1976.
- d) Implementation of Appropriate Road Construction Technology in Kenya, Ministry of Works/ILO/NORAD Project, Geneva, November, 1976.

Table 2.1: Planned public sector investments

F med in 1 benefit) (<u>r</u>	er cer	ıt)	viro 78	om Jant	ros? oid	puimeois:
nemtr in Table 2.1	Botswana* 1973-78	Kenya* 1974-78	Nigeria 1975-80	Sierra Leone 1973-78	Tanzania 1969–74	Uganda 1971–75	of for a color of the color of
Agricul ture.	7.7	22.2	6.5	25.6	10.5	22.2	brahorered
Natural Resources	4,2	1.8	rp. st	o road	berne	Lis not	mog sift a.
.sbecr (rebest) ronk Min.U.g	to m	el, spol	7.0	3.8	0.1	lno dolid	87.5% of
Industry	5.6	do the	L9.0	7.2	13.4	11.1	World Der
Commerce	oluive	3.0	dguod	0.7	1.3	1.7	ving rura
Tourism		2.9		0.9	4.4	1.6	Tolldan ao
TRANSPORT	26.2	40.6	27.5	21.3	28.9	. 28.2	
Power		1		12.5 -	7.,8		
Water			5.0	1.7	4.1	5.2	
Housing	35.4	5,9		2,5	6.8	1.2	
Construction	s simo	2,2	2 aar	0.4	iben bo	a abaoa	(a
Education	9.4	3,2	7.5	4.9	7.0	8.1	
Heal th		4.9	2,0	5.4	1.5	6.0	(a
Social Services	3.9	algidl	ria Phi	6.9	2.9	3.4	
Pub,ic Administration	7.8	5.8	15.0	3.0	2.9	9.8	(0)
Economic Services	040 0u	5.8	ol zó	3.2	tve Ted	Al terms	
Urban Development	187		-0 9 KV	BULOVE	7 - 1 - 1	17.00 mg 20.00 mg 20.00	
Rural Development	d'agro0	e Road	ralige	iggā io	noltat nkolu	Implement in Kenya	(6)
Other		2.7	10.5		8.4	2.6	

^{*} Government Ministries only.

Sources: UNIDO: International Forum On Appropriate Industrial Technology: Working Group No. 12, New Delhi/Anand, India 20-30 November, 1978.

Table 2.2 : Distribution of public sector transport investment,

(Per Cent).

.bente	4	ne mu	877-971	Leone	. palin	W 0 10.11%	States to the manager
eleated countries developing elembrie ice. Einee the	Botswana* 1973-78	Kenya* 1974–78	Nigeria 1975-80	Sierra L 1973-78	Tanzania 1969-74	Uganda 1971–75	ent in our Leciria lecionat : Lecir the rungl train Lecir had routh
inotogrado abom suo	genbad	anoa.	dadt	neton	ed LI	ew or	not exhaustive.
Roads:Main	60.5		76 5		29.9	20.6	ton ere Iti e idaf
Secondary Minor	23.6 3.3	7.3 8.4			7.7	2.6	erefore, Lite e
Winor Urban	2.3	8.4	t Page	a hasta	0.3	1.7	country and not str
Other			: 76.50	d Presi	6.1	0.3	ri ningir umat .
Sub-Total	87.5	37.2	73.1	51.2	46.7	37.4	
Road Transport	109 3472	2.000.0		7 7			or market a
Railways		25.0	12.1	estes for	r Nisen	19.1	androgene antique
Ports		7.1	4.4	13,0		12 000	tter is, profilers
Shipping			1.7	1.2	0.6	cus A	atronques acte
Other Water Fr a nsport		Spres	1.3	180 11	og et si	IDI T	nging from 10 to
Civil Aviation	5.1	10.1	6.5	6.1	5.2	13.1	- and ex series out
lirlines	negin t	TERMILE	0.7	0.2	9,48%	13.8	asin to since one
ther Transport	e out la	6.0		SJTUE	4.0	4.4	was a self-rich works
Posts And Telecommunications	7.4	14.7	4,12,531	14.8	3.6	12.2	the Toal Ston Sne

Sources: UNIDO: International Forum On Appropriate Industrial Technology: Working Group No. 12, New Delhi/Anand, India 20-30 November 1978.

rebilinis on various is saide a keps's the potential of the land and and all der

3. MODES OF TRANSPORT USED IN RURAL AREAS.

In recent years effort has been made by different researchers to gather information on different transport modes used in rural areas in developing countries (1,2,8,9,10). Although some of the modes •onsist of simple vehicles which could be made cheaply and used almost anywhere their use has been limited to only a few developing countries. The obvious reason for such a limited use lies in the fact that su•h modes of transport are unknown in these parts of the world or have not been introduced or even encouraged by the governments concerned.

Rural transport modes are shown for a few selected countries in tropical Africa in Table 3:1 while Table 3:a, for developing •ountries shows the rural transport modes and their characteristics. Since the author has not personally visited all those countries cited, Table 3:1 is not exhaustive. It will be noted that some transport mode characteristics in Table 3:2 are not given due to lack of reliable data or no data at all,. Therefore, it is one of the sims of this research to obtain the missing data for the transport mode characteristics. The transport modes given in Table 3:2 are briefly discussed below:

By far the transport mode most widely used in rural areas is walking, Walking can be sub-divided in two types: namely Walking without carrying or moving a load and walking when carrying or moving a load. The latter is, furthermore, sub-divided into headload, shoulder load backload and strongback load. A normal person practically walks a maximum distance ranging from 16 to 33 km for purposes of travelling depending on the terrain and weather conditions. It is difficult to put a precise figure on the range of human porterage involving walking when carrying or moving a load. This depends on the importance that is attached to carrying or moving the load and the willingness of the individual to undertake the ordous work involved in addition to such factors as the terrain and the magnitude of the load. The loads are usually limited to about 40 per cent of body weight though this decreases as the distance of travel increases or if the terrain is a difficult one (10) However, normally the load carried is greater than that the carrier (person) can lift unaided onto his head.

Shoulder loading is widely used in Asia but it not common in tropical Africa. By definition strangback loading is related to shoulder loading whereby a pole is carried by two or more people with the load

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	,	Dsol tuodtiW	1 .	16-	-9	J	1	1	X	ı
MODE		CHARACTER- ISTICS OF TRANSPORT MODE	Load (Capacity) in kg.	Distance in	m Speed	ith of track	Purchase Price in US. \$	Maintenance Costs in US \$	B K	hrs. * Second hand

suspended between them. Backpack is normally used in hilly and rocky terrain and/or can be pushed or pulled on good terrain by provision of wheels.

A Wheelbarrow is a single wheeled load carrier pushed under normal circumstances by one person while a hand cart is a two-wheeled load carrier pushed and/or pulled by one or more people and normally requires a wider path than that required by the wheelbarrow. Wheelbarrows and hand-carts are not suitable for use on steep gradients since the weight of the cargo then has got to be supported by the operator and this rather than reinstance to motion determines the maximum load (10). Push-carts, a forum of hand-carts are operated by up to four men and can be used to more loads slowly over short distances and at great effort in urban areas. Their use is evident around Nairobi markets. In the rural areas in tropical african countries there is evidence of attempts to use wheel-barrows for rural transport.

Bicycles are commonly used in several parts of tropical Africa for both personal and goods transport in rural areas. The speed of a bicycle with only a rider ranges from 15km/to 20Km/hr droping to a range from 10km/hr to 15km/hr with rider or rload/trailer. Although the bicycle has been used for a long time in tropical Africa/bicycles with trailer combination has not been in use until recently. One interesting application of bicycle trailers which has been identified in designs evolved in Nigeria and Malawi is as rural ambulance (1). It is a case of an unknown technology rather than a case of an inappropriate technology that bicycle-trailers are not widely used in tropical Africa. The disadvantage of the conventional two wheeled trailers is that it limits the type of route over which the bicycle can be operated since the trailer is usually too wide for operation on such narrow foot-paths. Therefore, there seems to be potential for a single wheel trailer with the same two-dimensional characteristics as the bicycle.

The tricycle, modification of the bicycle is already widely used in Asian Cities as a passenger carrier commonly known as a cycle Sickshaw or trishaw. This type of vehicle is virtually unknown in tropical Africa. In Bangladesh the cycle rickshaw has became an important means of rural transport being operated on a hire basis as in the cities, for carrying passengers as well as cargo. Tricycles are only suitable for use on relatively flat terrain.

In many developing parts of the world animals are used to pull carts and sometimes used as pack or saddle animals. The load varies according to the route conditions and distance, the lower figure in Table 3.2 being indicative of that which can be carried continuously for a full day. In India the Indian Institute of Management in Bangalore has estimated that at present over 60 per cent of all goods carried from farm to market are moved by bullock-carts (10). These carts can operate on very muddy tracks though they cause damage to surfaced roads because of the high contact pressure at the rim. However, the use of animal-carts is less widely spread in tropical Africa, even in areas where animals are used for cultivation. In recent years efforts to develop improved animal-cart designs have been made in a number of tropical African Countries including Nigeria, Malawi, Tanzania and Senegal (10).

In order to be used in rural areas, the motor-cycle must be rugged, simple, easy to manufacture and maintain locally, suitable for continuous use on rough tracks and capable of being used as a cargo carrier, rather than simply as a means of personal transport. Unfortunately no motor-cycle has yet been designed specifically to meet the needs of developing countries. This is something the industries should think about if they are to increase the use of motor-cycles in developing countries. Therefore the major need, if the potential of the use of motor-cycle is to be exploited is for the development of designs suited to the requirements of and to small-scale manufacture in the developing countries. In Saigon (Asia), the Honda is used with a small two wheeled trailer which can carry both passengers and freight (five adults and 200 Kg.of produce (8). No such vehicle has been introduced in tropical Africa and yet it is cheap to operate and its cost is not too high compared to average population income.

Field Study Strategy

After discussions with various members of IDS staff and personal visits to the Mount Kenya area Districts. Kutus and the area South of the Sagana/Embu Road has been selected as the study area. This area is quite flat and seems to have a good number of the rural transport modes which are a subject of this study. The study area will be devided into two parts: 1) area adjacent to the main road and 2) area located more than 4 km from the main road (see attached map).

A Sample households in the study area will respond to Questionnaire 1. In addition, the traders and shopkeepers will respond to sub modules respectively. Table 4.1 shows the schedule of household sample for each part of the study area.

For purposes of public transport interviews, passangers embarking and, disembarking will be randomly asked to respond to Questionnaire ll at Bus/Matatu Stops bordering the study area (Kagio), Kutus, Samson's Corner, Kimbimbi and Kandongu Works Camp). Furthermore, the Bus/Matatu Operators will respond to Questionnaire III regarding their operation (regularity, reliability, adaptation of the public to transport mode etc).

Although the questionnaires are written in English, the interviews will be conducted in the Local Language of the area. Therefore the interviewers will have a good command of both languages so as to interprete correctly the respondents answers.

Schedule of household (HH) sample. (Table 4.1)

Functional Group:		
1. Traders (whole sale, produce etc)	.A.M	All
2. Shopkeepers	$N \cdot A$	All
3. Street-vendor	N.A.	All
4. Craftsmen	N.A.	All
5. Fieldworkers (Agricultural extension, community, health, vetenary, administration, etc.)	N.A.	Piclaworge All
6. Farmers)	a) b) 2;000	troque 300 leave
7. Employees (those not included in (5) - teachers are in this category):	a) Over 50° F b) Under 50	H 50

Questionnaire Analysis.

After the field survey, the analysis of the questionnaires will consist of three parts;

1) Travel anatomy of different groups with regard to transport mode, frequency, load moved/carried, distance, transport cost and conditions of route for each trip purpose. Trip purposes for each different group are given in Table 5.1

- 11) For each transport operation and maintenance costs, and average transport costs per tonne -km will be compiled.
- lll) Analysis of titudes, aspirations and adaptation to different transport modes by the rural population.

rappond to	at he was a few hard and fire antifraducation and antifraduce
dy area (tagio),	Transport of cash crops to collecting points, depots or buying centers.
up). Furthermore	2) Transport of surplus food products to collection points depots, markets or cooling centers.
Farmers and/or all Households	3) Transport of farm inputs from buying centers or stores
	4) Trips to major towns for special goods or services
	5) On farm transport of inputs and produce of products.
the area.Therefor	6) Gathering and Collection of fuel and water
	l) Transport connected with buying from factories, depots and selling of goods to retail shops.
Traders (WholeSale) Producebuyer)	2) Transport connected with buying of produce from farmers at farm-gate or produce stores and selling it to Produce Boards and Processing Plants.
Shopkeepers (Retail)	Transport connected with buying stock for the shop.
Craftsmen	Transport connected with business transactions.
Fieldworkers	Transport connected with work trips.

Rural Transport Programme.

Based on the results of the field Survey, a rural transport programme consisting of appropriate technology will be designed. The recommended modes will be those that serve the majority of the rural population, that are within the means of the inhabitants, that compare with the level of technological development of the country and that are adaptable to the cultural regimen.

cost and conditions of route for each trip purpose. This purposes for each different group are given in Table j.l.

REFERENCES

- 1. Barwell I.J. The Design of Cycle Trailer Information Paper I Transport Panel. ITD Group Ltd. London.
- 2. Barwell I J., Notes On Simple Transport In some Developing Countries Information Paper 2 ITD Groups Ltd. London.
- 3. Carnemark, Binderman, and Bovet, The Economic Analysis of Rural Road Projects. World Bank Staff Working Paper No.241 August, 1976.
- 4. Edmonds, G.A. and Allal, M.A., Manual on The Planning of Labour Intensive Road Construction. ILO, Geneva, 1977.
- 5. Freedman, D. and Mueller E. A Multipurpose Household Questionnaire:
 Basic Economic And Demographic Modules. World Bank and
 U.S. I.A.D.
- 6. Harral C.G. Transport Research In the World Bank: An Overview, The World Bank, Washington, D.C. 1978.
- 7. ILO/SIDAEADB, Roads And Resources: A Background Paper Prepared For The ILO/SIDA/ADB Seminar On The Application of Appropriate Technology In Road Construction And Maintenance. May 16-26, 1977 Manila.
- 8. Meier, A.K. Intermediate Transport In South East Asian Cities. Three Case Studies. ITD Group Ltd. London.
- 9. Plumbe, A.J. Implications of Feeder Road Usage By the community of South-East Thailand. TRRL. PTRC Meeting 1978.
- 10. UNIDO, International Forum On Appropriate Industrial Technology
 New Delhi/Anand, India 20th-30th Nov. 1978. Working Group
 No.12: Appropriate Technology For Rural Transport: Background
 Paper.
- 11. World Bank, An Investigative Survey of Appropriate Rural Transport For Small Farmers In Kenya. Transportation Department October, 1977.
- 12. The Kenya Rural Access Roads Programme Report of the Joint Donors Review And Evaluation. Geneva August, 1979.ILO.

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	/ (*)	-

RURAL TRANSFORTATION SURVEY 1980

I Questionnaire For Households

Interview	Nr.		

The University of Nairobi is carrying out a transport survey in rural areas with the aim of understanding transport problems the WANANCHI are facing. With this survey it is hoped that planners could be guided in their task of solving transport problems in the rural areas. Therefore, your cooperation in furnishing the required information for this survey will be highly appreciated.

Sub	-Location		Nearest TC/M	farket	Village		D	ate
Int	erviewer		Day of Week	, ,	Duration	of Inter	rview	
DAT	A ABOUT HOUSEH	OLD:	8					
Int.	erviewer: The who	following is normally acts			lead of th	ne HH or s	omebody	
Res	pondent.		TYPE OF	DWELLING	Interview	er: Obser	ve and	cross
Numb Numb	er of adults(l er of children er of employee l number of pe	ı (under 18 yr es	s ^. () Traditi	ess combir ent ermanent Lonal	ned: () F () S () T	Permanen Bemi-per Traditio	t nanent
		T. C. St. P.		Homestead	with clus	() a	Permanent Semi-Perr Tradition	nanent
	Interview	er: Ask the r				() F () S () T	Permanent Semi-Perm	nanent
Dwe1	Interview ling has the f			the follo		() F () S () T	Permanent Semi-Perm	nanent
			espondent for	the follo	owing info	() F () S () T	Permanent Semi—Pern Tradition	nanent
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Elec Latr	ling has the f	ollowing:))	espondent for Household 5 () Radio	the follo quipment:	owing info () Sewi () Cloc	() F () S () T Drmation:	Permanent Semi-Perm Tradition	nanent
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Distances to nearest services and amenities

	The weighted the	a Contract			TATATA	BWAST JA (2)	Distance from HH	Facility Amenity
	a) Give information about the livestock on Type Number Quantity of Pro	Do you farm?	orig suc	M. Huo	Wo.Z.	Are any IF YES, Please (Distance from HK to	-
	e infor	farm?	ods dool	and Id	(Name	of who	ontage	us 'oute
percuors end in.	nation	nc Charle		uo ja	of Place		maur s	Bus Stop
	about Number	35			3Ce) To	ily/ex 7 last last	and device or any	"atatu Route
wa con the	Suants	Yes () No Sub-Location.			(Name	family/extended family members living away sthe last visit from a member?the last trip made by the member giving the		Nearcs+
- Lopdon T	the livestock Quantity of Sough Milk, e	-Locati	+ 10	earr war	of Place)	family from a ade by t	JOHELA.	
	k on the Products eggs/day		.0	nn da		family members from a member? de by the memb	on oth	4
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	Transport Self G	001001	doner	old Fa	inerio.		L,Ca? s	Processing Plant
	snort Cos	Sizo		din Trigger	R ()	NO… GO" TO (3) Purpose and indicating		Center
	Cost		0,00	a texto	a ()	TO (3)	bleful upd al	
		in acres.					TROPS Ins. of	Admin. Center
-Find History	Produc [†] F		oricey-	Q .	Frequency made by h	distances whene er known.		Post office
	Price				y en	vhene. s	- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1-	%a+er
	Market and a part of the second	:			cy of visits him/her	er kno∥		60. JE

General Information: (1) Are you informed

(1) Are you informed about the following concerning public transport service in your home area?

Bus so	Bus schedule	Bus fare charges	Matatu fare charges
Yes			
What is it?			
No			

(2) Do you always (et public transport when you want to travel?

Know

(3) Do you think the public ransport service in your home area meets your requirements?

	AND THE PROPERTY OF THE PROPER	A THE PROPERTY OF THE PROPERTY	know	THE PERSON NAMED IN	The same of the sa
Please explain	District	Sub - Location	Don't	ó	YES

What travel mode do you consider as being in your means?

(4)

CONTRACTOR DECEMBER AND TRACTOR DESCRIPTION OF THE PROPERTY OF	THE RESERVE THE RESERVE AND THE PROPERTY OF TH	THE THE PARTY OF T		-		
& OTHER	11/13	Private Car	Matatu	Bus	Sicycle	Walking

the remarks section. Remarks ourposes. If there is any points you feel have not been covered in the questionnaire please feel you that the information you have given us will be treated with the highest secrecy and used only Thank you very much indeed for the trouble you have taken in answering the questionnaire. We would like to assure for research free to say them in

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Personal data about the pessenger:

Respondent Sex

Age Profession Highest level

of School

Embarking

Disem'arking

BURAL TEAMSPORTATION SURVEY 1580

II Questionnaire for Passengers

Interview MR.

The University of Nairobi is carrying out problems the WANANCHI are facing. With the transport problems in the rural areas. survey will be highly appreciated.	in G	reas with the aim of understanding transport anners could be guided in their task of solvi furnishing the required information for this
Sub—Location Interviewer Bus stop	Nearest TC/Manket Day of Week	Village DeteDuration of Int
1. Carrier information: Origin Dest	Destination Soute of Operation Make (Capacity Yr, of Garaged
1 Bus		

Cast of journey	Distance	3 from home	Distance from home to nearest Bus/Taxi stop		Arrival time	e at this stop
Reasons for travelling	Children and a contract			Strategic Strate	Broke and the City of the City	AND THE PERSON NAMED IN COLUMN 2 IS NOT THE PERSON NAMED IN COLUMN
Have you travelled with luggage? () Yes () No	with luggage? ()	Yes () N	Wo If yes estimate weight		Nature	Charge
lease describe you	r journey starting	g from home	Please describe your journey starting from home up to this point as follows:	WS:		
From	To	Distance	Mode of transport	Travel	Cost	Duration of vaiting
(Location name)	(Location name)			time	Fare Others	before obtaining transport mode
HAPALIN			Andreas and the state of the st	A STATE OF THE STA		
电线压力器 电影 电影 经营业股份 人名马克克斯 人名马克克斯 人名马克克斯 人名马克克斯				The second secon	N Lan Carl Ball Spring.	4 P
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to de la companya del companya de la companya de la companya del companya de la companya del la companya de la	A CONTRACTOR OF THE PROPERTY O		NORTH OF THE STREET OF THE STREET, STREET OF THE STREET, STREE		The second of the second of the second	
			3.88			
	THE SECTION		BANDT FEE FILL MANAGES ASSESSED		Sal beriger	
		and a	and Tark Danger	.0		
THE RESIDENCE AND ADDRESS OF THE PARTY OF TH	THE STATE OF THE STATE OF	O LEGISTER OF				

* Other costs include: expences incurred related to travelling e.g. meals, hotel accommodation etc.

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) vou eve		oes the t	THE BAR) you hav		-	F. S. S. S. S. S. A.		AL EDIL		Grop
	Do vou ever experience an them? () NO () YES W	The state of the	Does the transport mode e	VRNEOLY SUCTIO	Do you have any other pieces of	THE RESERVE AND ADDRESS OF THE PERSON OF THE	A CALIFORNIA DE LA CALI	- 10 se.Croperisc	A STATE OF THE STA	Men VI.		Total Quantity Produced last season
	any difficulties in transporting inputs What are they?	Sam Ado	available for						Michigan de Charles de Arian este de	1003		Quantity sold the Last Season
	es in t		your use		Land you farm on?			0110				Farm Gate Price
	cansportin		play	C	_			Park of the state				Transport Node to Market
			any role in	No	() Yes - Whe							Dist. in miles
	e g. seed		productio		Where?							Transport self
	s, fert		n and m									t Cost Crop
	ilizers) f		arketing d			A THE STREET STREET, S		STATISTICS SCIENCES INCIDES	A STANCE OF THE PARTY OF THE PA	Hitter na		Transport Per unit
	or you		ecisio							0		Cost
	(e.g. seeds, fertilizers) for your farm at the time you requix		n production and marketing decisions on your farm? () Yes		Size	A CONTRACTOR OF THE PROPERTY O					AND THE RESIDENCE OF THE PROPERTY OF THE PROPE	Price per Uni+

B)

When you have a crop/livestock ready for transporting, could you explain how you contact a transport

operator or middleman?

Interviewer: The following questions are best answered by the owner of the vehicle when private and by the onerator/ owner when commercial

If respondent is operator @0 o @0 (4)

2 5 List all categories of the vahicle previously and presently owned. Since when have you owned a vehicle? Category New/ Yr. of Accuisition

Cost.

Why at this time?

Means of Accuisition

Duration of Ownership

Auxiliary Parts

Nr. of 0x/ donkey

	Mow would you suggest these difficulties might be overcome?
+)	Do you find that once you have made a contratt for the transport of your crop/livestock you can be absolutely confident that contract will be met? () Yes () No — In what circumstances is the contract not met?
	Weat problem does this create?
	The state of the s
g)	When transporting your crop/ivestock, does the size of the vehicle pose any problems?
	() ND () YES What problems?
	-
(1)	Why?
) The the response and executively and the rest of the
	TRANSFORT VEHICLE SECTION:
	TO ADT 1816 SUA DAME. UTAGOS BY THE ADD ADD 1878 DAME SUBJECT STREET

Origin Stop (Sub-location) (Sub-location)	Please make a record of journeys made during the whole day from time when it was parked in the garage/home again. If you made a (not temporary halts for petrol, meals, refreshments and similar the journey or an intermediate stop. If the vehicle was carryin indicating the amount carried (e.g. ½ full, full, emnty or exact passengers:	5) Information about trips made yesterday: Vehicle	A:	 If you are driving a motor vehicle 	(ONLY FOR MOTORVEHICLE OWNERS/OPERATORS)	What are the advantages	Car M/C Kombi Pick-un
Trio ation) length	a record of journeys made during the t was barked in the garage/home again. ary halts for petrol, meals, refreshme or an intermediate stop. If the vehithe amount carried (e.g. ½ full, full,	made yesterday of week	(JOPERATORS)		OWNERS/OPERATORS	of owning that	n Lorry Heavylorry (
Furpose of L	during the whole day from /home again. If you made as, refreshments and similar If the vehicle was carryifull, full, emnty or exact	: Vehicle Villa	G		s)	particular vehicle	lorry Ox-cart Don
Loaded Nature capacity goods	(2)	O.B.		seats, would you			key-Cart
of Hire Charges	ime the vehicle liberate stops oses),give your e goods, please nt when known).			consider trans		you have chosen?	Tractor Bicycle
Purnose of stop	was out of the usually in corpusate the indicate the for passenger	Year of m		;por†inα people			Hand-cart Wh
Duration of Stop	during the whole day from the time the vehicle was out of the garage/home to the home again. If you made any deliberate stops usually in connection with activities home again. If you made any deliberate stops usually in connection with activities in refreshments and similar purposes), give your reasons or purpose for having made. If the vehicle was carrying some goods, please indicate the nature of goods full, full, emnty or exact amount when known). For passenger vehicle, give number of	Year of manuf		ld you consider transporting people? () YFS/ND ().What are			Wheelbarrow

^{*} For more than one vehicle use supplementary sheet.

BASIC VEHICLE SECTION (Excluding motor vehicles)

Interviewer: The following questions are best answered by the owner/operator of vehicle

The second secon	the second secon			THE REPORT OF PERSONS ASSESSED.	The same of the sa
CLOSE FOR SEED ASSESS.					The state of the s
	THE REPORT OF THE PROPERTY OF	The state of the s	The state of the s		
					The state of the s
	the last department of the control o				
ility Distance from home	Availabili+y	Quantity in 12 months	Cost	Spare part	Tyne of vehicle Spare part

2) Fill in the following information regarding your vehicle:

Workshop

* Self, member of household, Repairmen etc.

Interviewer: In the following section you should ask the indicated individuals and at no time should some other person answer the questions for them.

PERSONAL AUESTION SECTION:

Member	From Sub—Location	To Sub-Location	Trip Length	Transnor ⁺ mode	Activity Purpose	ty	lty Nature of Boad +
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	digital discountry of the shade	Additional in the last of the	And Annual Control	The state of the second second second			ALEST AL SELECTION OF THE SELECTION OF T
- 2 -							
Mother				A. A. M. T. CARLES AND		ou substruction on	
	The second secon					The Part of the Pa	
Son	Parameter and Pa					Total Change of the St.	
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Daughter	Con the second second second second second			A. A. C. A. D. ASSESSMENT PLANS AND ADDRESS.			
	Annual State of the State of th		-	A LEGAL BURN BURN BURN BURN BURN BURN BURN BURN			

iember	Father Mother	Son	Daughter
Age (For son or daughter 10—25 years only)			
Hichast level of schooling			
Profession	And the state of t		
Are you informed ebout the following concerning the public transport service?			
Yes.			
a) What is the bus schedule? b) What is the bus fare? c) What is the taxi fare?			
Do you think the public transport service meets your travel requirements?	To crate fight	1.18.18	bead
Training () Yes amonts: (the last many selections) the partitions and the second selections and the second selections are second selections.	, seem to ced.		
() Don't know		The state of the s	

	- 9 -	IDS/WP 363
that stop you from using a particular transport mode? () Yes. () No. If yes, () Bicycle.	5) What transport mode do you consider as being within your financial means? () Walking () Bicycle () Bus () Texis. () Private Motor vehicle. () Other specify. 6) Are there any societal restrictions	<pre>4) Do you always get public transport on the day you want to travel? () Yes. () No. () Don't know. Why not?</pre>
	financial means? Yes	
	8	Father
	Yes	
	No	iother
	Yes No	er Son
	Yes No	n Daughter

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\$255.00GH		Fathe	e.	Plict.		37	11	. 0	laglifo	
7)	Do you feel at home when using the following transport modes?	Yes	No	Yes	No	Yes	No	Yes	No	
	(Cross Yes/No) () Walking.	C.M. agladia Muran	at Securior	Kalkakou.ska	in an indicate					age of the same
	() Sicycle	CHIDRLEURISCHE	презин	CANCILLACTOR				and markets.	Find the stands	
	Car Cacy	ACIACI, Michigana erizat	SCHOOL SAN	AMPLICATION OF			eL#389900		CONTRACTOR SALES	and the same
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	() Train	- A. S. Millers of D.		durant			COST, NG CE ALIGNA	NOTE THE REST OF THE	THE R. P. LEWIS CO., LANSING, MICH.	200
Louise					and the same		ANUMENT DAY	Caralina de La	SEPONUMENTAL SANDO	PALES.
(8	Do you use a bicycle?	Yes	No	Yes	No	Yes	No	Yes	No	
	Thy do you use a bicycle as a transport mode?	- historian a sec							principality from 1 1879	
	1 Dof. of Mater Article.						A REAL PROPERTY.	a College of the Coll	The second second	
	Taxis,		EN 15	9.00					# 3x ** 4x * 1 + 2 + 2 + 2	
	Can you ride a bicycle? (1) Yes (2) No-		*********		the case for	Marin out and the	1-p- 1-900		and a real of their	
	What is the upper limit of travel time you use a bicycle for?		ar make	A. Maria Carlo		graci t selas			and the state of t	
	Stato in min.	Catalanaeae	NELTHICLEON CO.	or teachers		CHARLES		www.css		Euro
	8) [not runsmort mode do you consider as bring within your Heandis.	t tomer stores	CHAR AND THE	18 1/40		SW. WINDOWS	LA STORES	A.W. Law ber all Williams and A.	LIEURI AUG TURANIA	43394 .
3)	Apart from financial means are there any other factors that stop you		C TORRESON L.	-				estra stroller.		
	from owning a bicycle?			aya miga				200 - 1 1 1		
	() Yes.		FARELANCIANIA	HMARLEJAN.	8-428-3	E-BORDET F-AN	ANALES SESSO	Codellan Joseph	CONTRACTOR CONTRACTOR CONTRACTOR	136
	() No	AND POST OF THE PARTY OF		N. Sprangelier		acousting	AL ILLEGA		on purpose	
	What are the factors?	art consideration to grow the	1 t bes	Me e ne	-	20340		Mark Spring St.	Californi Constitution	a de la constante de la consta
	to the day you want to start ?									

IDS/WP 363 - 11 -10) In what circumstances would you ride a bicycle at night? same road? when sharing the same road? Do you find motor vehicle drivers as sympathetic towards bicycle riders of motor vehicle traffic? Do you feel safe when riding/using a bicycle on roads that have a high colume What type of drivers give due consideration to bicycle riders sharing the Don't know () No.) Car drivers) Larry drivers Father Mother Son Daughter

14. Would do you consider riding a bicycle in town? 15. Are there any occasions/functions on which you feel the bicycle is not the right transport mode for you bo wse? What are they? Why nat?) Don't know) No. Yes Father No , i ther Yes No Yes Son No Daughter Yes 8

IDS/WP 363

Thank you very much indeed for the trouble you have taken in answering the cuestionnaire. We would like to assure you that the information you have given us will be treated with the highest secrecy and used only for research purposes. If there is any points you feel have not been covered in the questionnaire feel free to say them in the remarks section.

Remarks

1. What type of goods do you trade in?

- 13 -IDS/WP 363 6. ω 5 N What transport mode is owned for business purposes? Do you take the goods to your customers or do they come for them? Could you please describe the area of your business influence? Do you receive your goods directly from agencies/farmers? () Yes () No What transport mode do you use/hire for business purposes? Please explain () Yes () No.

Please explain

- 15 -IDS/WP 363 ώ What type of transport mode do you think is suitable for your needs? How wide is the area your shop serves? () No.

SINDSHEET VEHETARS

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CRAFTSMEN SUBIMODULE

Çī,	.4	ω	ů.	ŗ
Please describe the area of your business influence?	Do you have any regular customers? () Yes () No.	What transport mode do you use?	Where do you perform most of your work?	Location of business What kind of services do you offer your customers?
area of your busine	lar customers? ()	do you use?	most of your work?	ness s do you offer your
ess influence?	Yes () No.	ANDRONALISM CHARLES COMPANY OF A CONTRACT OF CALLES COMPANY OF CAL		customers?
	Type of service	A THE PARTY OF THE		
	Frequency			
		A - "A A DEL A CALLA DE LA CALLA DE LA CALLA DE LA CALLA DEL ACADA DE LA CALLA DE LA CALLA DE LA CALLA DEL CALLA DE LA CALLA DE LA CALLA DE LA CALLA DEL CAL		
		T. Barrier	- augustus	Table 1

What type of transport mode to you think is appropriate for your needs?

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RUPAL TRANSFORTATION SUIVEY 1580

III Questionnaire for Bus/Matatu Operators

The University of Nairobi is carrying put a transport survey in rural areas with the aim of understanding transport problems the MANANCHI are facing. With this survey it is hoped that planners could be guided in their task of solving transport problems in the rural areas. Ther fore, your cooperation in furnishing the required information for this survey will be highly appreciated.

			_	1				
	0	SECULIAR DA			٠.	<u>.</u>	Su Da	Ne
Pespondent:	Personal data about the respondent:	Pespondert: () owner () operator () conductor	Matetu	Bus	Oχ	Carrier Information	Sub-Location	me of Intervi
 Sex	a about	auma ()			Origin	rmation		Jews
Age	the res	er () c					Da)	,
Hishest level of School	spandent:	perator ()			Des		TC/Wark of week	
l of School		conduc†or			Destination		TO .	
					Route			Name of Interviewer
					Make			
					Capacity		Duration of	
		A CONTRACTOR OF THE PROPERTY O			Yr. of Manuf.		interview.	
					Garaged at		Duration of interview.	

(1)	Do you have e time schedule on the routes you operate on?
	() Yes () No
3 / ·•·	If yes do you keep the time schedules? () Yes () No
	If no what are your reasons for operating out of the scheduled time?
	and the district of any policy of the best of the best of the second of
	118
	Thank you very much indeed for the trouble you have taken in answering the questionnaine. We would issue to sesure
(2)	When do you carry most passengers?
	Piedas avgidin [type of passengers, trip porpuss, trip langer, see,)
	Why is it at this time? on the conscious to the conscious
5 -	
-	(Sagisfi eros as sait tudde bimialai ton ere bril uay de erepresesed to cucio daine (S)
	What are they?
(3)	When your vehicle breaks down, what alternative transport is given to the passengers to make
	sure that they get to their destinations without too much delay?
	(I) Which is the fare spread with nessengers before or ofter reaching the dactionation?
	() I call for another vehicle of the same company
	() but them on the next available vehicle with no extra charge
	() Passengers who want to use other available means do so at their own expense.
	() Passingers have got to wait until the vehicle is repaired.
	() Passingers get their money back after a specified period from the time of the breakdown. Specify the period

(2) Which group of passengers do you find are not informed about the feres charged?(3) Do you have regular customers? () Yes. () No.Please explain _(type of passengers, trip purpose, trip length etc.)	Information about passengers: (1) When is the fare agreed with passengers before or after reaching the destination? Are there extra charges for deviations from the rouse taken? () Yes. () No What are they?	lf YES, rstima†e †he demand If NO, give your reasons
es charged?	destination?	

If there is any points you feel have not been covered in the questionnaire feel free to say them.