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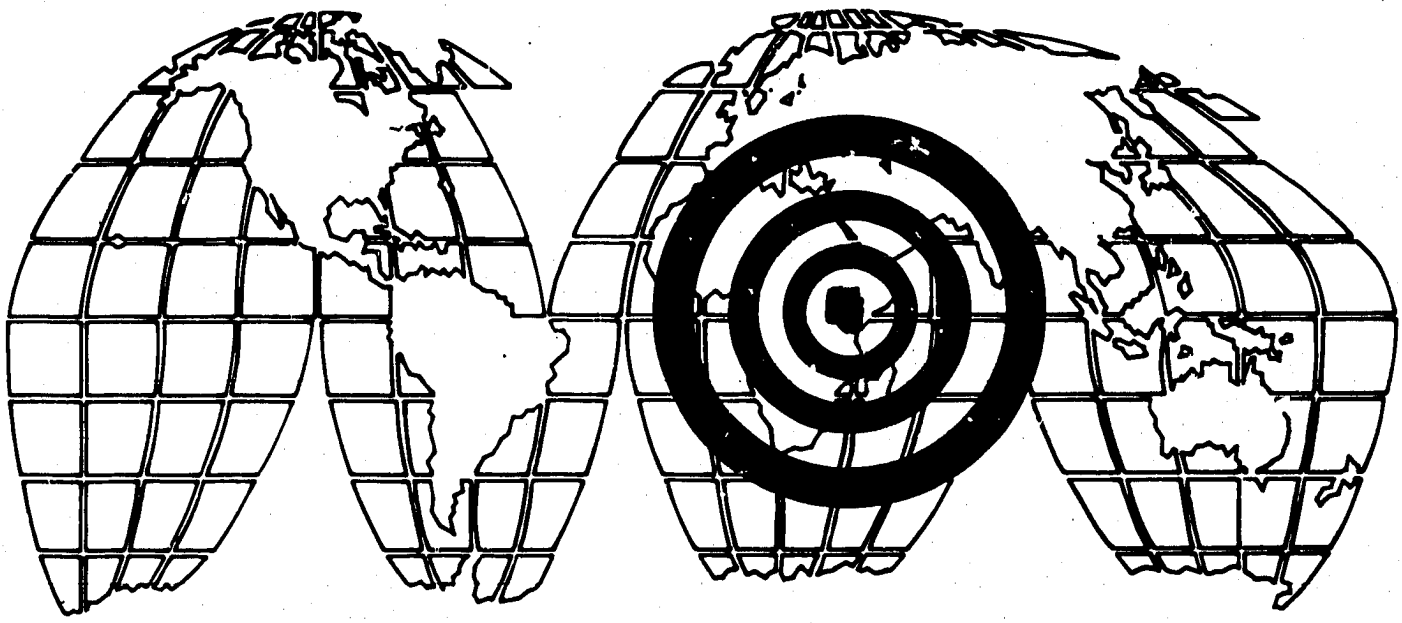
A.I.D. Project Impact Evaluation Report No. 26

Kenya: Rural Roads



January 1982

U.S. Agency for International Development (AID)

PN-A

KENYA: RURAL ROADS

Vihiga -- Special Rural Development Program

Rural Roads Systems Project:

-- Rural Access Roads Program
-- Gravelling, Bridging and Culverting Program

PROJECT IMPACT EVALUATION NO. 26

by

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The views and interpretations expressed in this report are those of the authors and should not be attributed to the Agency for International Development.

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A complete list of reports issued in the A.I.D. Evaluation Publication series is included in the last three pages of this document, together with information for ordering reports.

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FOREWORD

In October 1979, the Administrator of the Agency for International Development initiated an Agency-wide ex-post evaluation system focusing on the impact of AID-funded projects. These impact evaluations are concentrated in particular substantive areas as determined by A.I.D.'s most senior executives. The evaluations are to be performed largely by Agency personnel and result in a series of studies which, by virtue of their comparability in scope, will ensure cumulative findings of use to the Agency and the larger development community. This study of the impact of A.I.D. Kenya Rural Roads was conducted in August 1980 as part of this effort. A final evaluation report will summarize and analyze the results of all the studies in this sector, and relate them to program, policy and design requirements.

PREFACE

This evaluation contains a first in AID's published series. Any team which is cross-disciplinary and independent is bound to find individual disagreements. All previous teams were able to agree both on findings and conclusions. The team which evaluated the important Kenya Rural Roads project agreed on its findings (as would be normal), but disagreed on the significance of these findings. Appendix H, is, in fact, the first dissenting opinion in AID's evaluation series. In a sense, not entirely perverse, I hope it is not the last dissent we publish. Development problems are among the most controversial public policy questions facing citizens and it has been unlikely that evaluations of dynamic and often experimental programs would result in totally unanimous analyses. Dissenting opinions remind us of the difficulty of the questions being analyzed and that healthy debate of findings is useful in searching for the truth.

The Office of Evaluation only regrets that in aiming for a consensus that was not to be, the publication of this report was delayed.

Robert J. Berg
Associate Assistant Administrator
for Evaluation

DEDICATION

"Without roads, we have nothing."

- a Siaya farmer
  August 20, 1980

"President Moi's call on the Ministry of Transport and Communication to build roads in rural areas which are passable during all seasons shows an understanding of daily needs of a common man. I need not mention how the common man benefits when his area is accessible by road . . ."

- Letter to the Editor of
  Daily Nation, from a
  reader in Kisii District
  September 9, 1980

This report, like the Rural Access Roads themselves, is dedicated to the wananchi (people) of Kenya and to the hundreds of men and women in the Ministry of Transport and Communication who work for them.

SUMMARY

Kenya has for many years emphasized roads in its development process. This nation, roughly the size of New Mexico and Nevada combined, with a population of nearly 16 million (86 percent rural), has over 100,000 kilometers (km) of roads. Rural access roads, rural feeder roads, and four-wheel drive tracks comprise 45 percent of all of Kenya's road system. These are the roads of current focus and expansion, for they are designed to provide an access to development for the vast majority of Kenyans.

The Agency for International Development (AID), along with eight other donors, is providing rural road assistance in Kenya. Direct AID road assistance began in the early 1970s as one part of an area-intensive rural development pilot effort in six separate administrative divisions (sub-districts). Along with a wide array of integrated rural development activities in Vihiga (Kakamega District), AID assisted in the construction of 56 km of rural access roads, all but 9 kilometers utilizing an innovative labor-intensive technique. 1/ The subsequent and currently on-going AID assistance to roads consists of the Rural Road Systems Project in western Kenya which comprises regional secondary road upgrading (gravelling, bridging, and culverting) and Rural Access Roads identification, construction, and maintenance. The Rural Access Roads activity, part of Kenya's nationwide target to build an additional 14,000 km by 1985, is entirely labor-intensive in its application, with the exception of the gravelling component which uses tractors and trailors for gravel transport.

The Gravelling, Building, and Culverting Program includes the more traditional, capital-intensive models for more heavily traveled roads. Since all roads in Kenya are classified and scaled to distance and purpose, AID properly continues to stress the importance of a balanced and interlinked network system of roads with their counterparts, the Ministry of Transport and Communication. Other donors have begun to pick up on this theme; donor-assistance in the transportation sector, primarily focused on rural areas, is therefore becoming better coordinated.

The AID/W Impact Evaluation Team spent one month in Kenya (August 17 to September 13, 1980), traveled 3,116 km and intensively studied 31 individual roads (ten AID-funded Rural Access Roads, 14 other donor-funded Rural Access Roads, two capital-intensive Gravelling, Bridging, and Culverting roads, and five Vihiga-Special Rural Development Program roads).

1/ Previous AID road-related assistance began in 1966 with the provision of heavy construction equipment and training to the National Youth Service for tsetse fly bush clearing and construction of airstrips, major access roads, and rural settlement roads. Because there was no direct AID involvement or technical assistance in the planning or implementation of the project, it is considered to be beyond the scope of this evaluation.

The team focused on the socioeconomic impact (intended and actual) of the roads and on the selection, construction, and maintenance system.

In the broad perspective, it was too early to evaluate adequately the long-term socioeconomic impact of the AID-assisted Rural Road System Project, since the oldest roads were completed less than two years ago. The evidence must therefore be treated with caution. Nevertheless, positive perceptions about the roads on the part of officials and rural Kenyans alike, and the roads' potential contribution to rural development were readily apparent. The immediate and as yet generalized lack of direct economic impact, aside from the direct employment provided by the labor-intensive approach, was also striking. There was demonstrated potential and need for more effective utilization of the roads through the coordination of other integrated development activities at both national and local levels. The team believes that identification of basic economic incentives necessary to stimulate development (increased agricultural production, expanded rural incomes, accelerated trade and commerce, etc.) could become the subject of a separate analytical transportation survey. The cost of transportation, both procurement and utilization, is extremely high. Prices of staples and major commodities are fixed, thereby preventing buyers/sellers from recovering any transportation charges and thus serving as a disincentive for private sector development in the poorest and most isolated rural areas, despite their newly acquired "access" by rural roads.

The team also reviewed the ever-present maintenance question. Despite the current success of the labor-intensive maintenance system, the team is concerned about the institution and funding of an adequate post-project maintenance system. The deteriorated, almost unusable Vihiga Special Rural Development Program roads, unmaintained after project completion in 1975, provide an indication of how crucial usable and viable access roads really are.

The impact evaluation team found that the current institutionalized system for participatory selection, and the low-cost, labor-intensive approach to construction and maintenance of rural roads in Kenya, are encouragingly successful. Kenya's standardized system, strongly endorsed and supported by all donors, is being effectively and equitably applied throughout the more populated areas of Kenya. The methodology employed has the enthusiastic support, interest, and understanding of the Government and people of Kenya. This national interest, together with local-level involvement in the selection, construction, and maintenance process; a reasonable wage scheme within the labor-intensive system; an effective ministerial management system; and broad-based, coordinated donor involvement act to make Kenya's rural roads a positive model with a wide potential for replication.

ACKNOWLEDGMENTS

The team is grateful to all those who helped in the preparation of this report. The input of Mr. Satish Shah, Senior Engineer at USAID/Nairobi, was valuable in so many ways, including the continuity he provided as a result of his long association with Kenya Rural Roads Projects. He provided a useful overview as well as giving specific details of each road and each district. He introduced us to Senior MOTC officials, helped with our itinerary, accompanied us on the first leg of our field visits, and answered scores of questions on our return. Other officers and staff, particularly Joe Pastic, the Rural Roads Systems Project Officer, at USAID and REDSO were also supportive, easing our task. The MOTC officials we met were enthusiastic about rural roads, understanding of the need for this assessment, generous with their time and suggestions, and receptive to frank discussions. In the districts we were thoroughly initiated into the day-to-day details of road selection, construction and maintenance, and to problems of labor and supervision by competent and cordial Engineers and District Development Officers, all of whom went out of their way to assist us.

The first draft of this report was typed, under pressure but always in good grace, by Mrs. Surya Shah and Mrs. Rosemary Kinyanjui. The second and final drafts were done with kindness and cheerfulness by Diana Washington, and Jeannie Ritter of ASIA/TR. We also thank the driver of our rented minibus, Mr. Joshua Oluoch, who drove us 3,116 km over some difficult roads for 15 days nonstop with skill, care, and patience.

Finally, we are indebted to the many rural Kenyans who kindly shared their views with us. A list of those who helped is appended.

GLOSSARY

Administrative Units -- Government of Kenya (GOK)

Level	Senior Administrator
Republic (national):	President
Province (eight total):	Provincial Commissioner (PC)
District (52 total):	District Commissioner (DC)

-- Participating Decisions by District Development Committee (DDC)
-- Planning Coordination by District Development Officer (DDO)

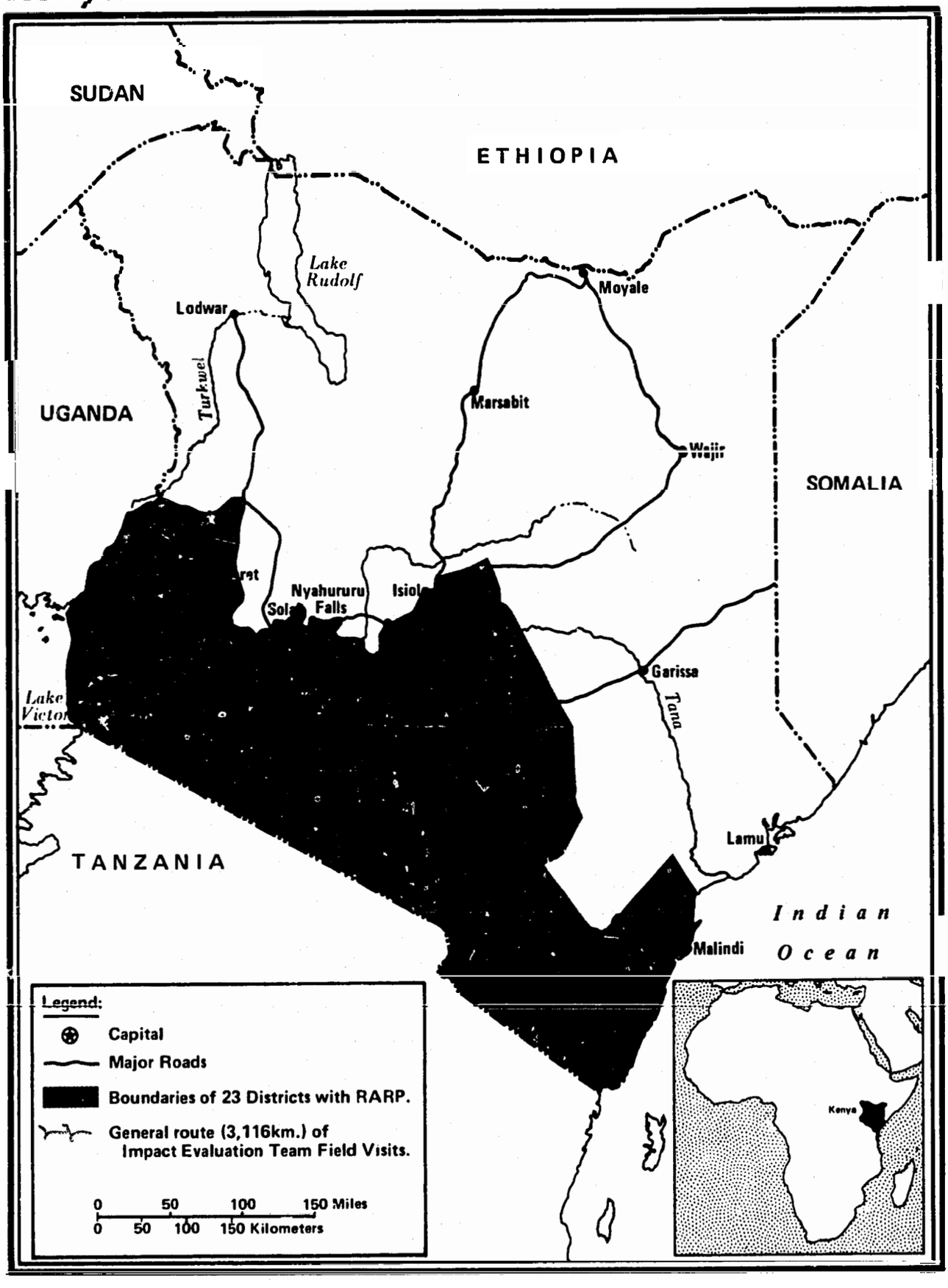
Division:	District Officer (DO)
Location:	Chief
Sub-Location:	Assistant Chief

AEO	Assistant Education Officer
baraza	a local participatory meeting presided over by GOK official(s)
bhang	cannabis
CBS	Central Bureau of Statistics (unit providing monthly and quarterly statistics on seven selected Rural Access Roads)
chang'aa	local illicitly distilled brew
DAO	District Agricultural Officer
DO	District Officer responsible for a Division
DDO	District Development Officer (chief planning officer of District)
DDC	District Development Committee (participatory decision-making meeting in each District. Meetings vary from once every two to three months to once per year.)
debe	a 20-litre container; when filled with maize weighs 15 kg
duka	small rural general store found throughout Kenya

GBC	Ministry of Transport and Communication Gravelling, Bridging and Culvert Program for classified D and E roads. AID is one of several donors to this corollary program.
GOK	Government of Kenya
harambee	national self-help activities (schools, water projects), derived from a Swahili word meaning "let us work together"
hoteli	rural tea shop/coffee house
IRR	internal rate of return
Kenya Pound	K£ = KSH 20 = US $2.74
Kenya Shilling	KSH = US $0.14; US $1.00 = KSH. 7/30 (approximate rates as of September 1, 1980)
KFA	Kenya Farmers Association (cooperative at each District for agricultural inputs--cash and credit)
km	kilometer
matatu	privately owned pickup or minibus to convey passengers and goods (recently licensed by GOK)
MOTC	Ministry of Transportation and Communications. Parent ministry for all highway/road programs. Reorganized from Ministry of Works (MOW) in November 1979.
Marketing Boards	national regulating boards (buying, selling, and enforcing price controls for maize, cotton, coffee, tea, etc.)
MP	Members of Parliament. Location representation is based on population of area.
m'kokoteni	locally-made wheelbarrow, common local farm-to-market transportation
NPV	net present value
NYS	National Youth Service (national CCC-type organization of some 5,000 young men and women; mid-'60s and early '70s recipient of AID equipment procurement)
OIC	Officer in Charge (Divisional Supervisor for several Rural Access Roads; reports to District RAR Engineer or Supervisor)

posho	maize meal
RAR	Rural access road
RARP	Rural Access Roads Program (Government of Kenya Program)
RRSP	Rural Roads Systems Project (AID-supported on-going Roads Sector project)
REDSO-EA	AID East Africa Regional Mission (Regional Economic Development Services Organization)
Scheduled Lands	former white settlements areas
SRDP	Special Rural Development Program (targeted on selected regions of six scattered districts; AID was donor in Vihiga-Hamisi area of Kakamega District. This integrated rural development project included a major rural access road component. The SRD Program was abruptly ended by the GOK in 1976 as being too expensive and inequitable for the rural populace as a whole.)
TA	Technical Assistance
wananchi	"people" in Swahili

Kenya


SUDAN
ETHIOPIA
Lake Rudolf
Moyale
Lodwar
Turkwel
UGANDA
Marsabit
Wajir
SOMALIA
Nyahururu Falls
Isiolo
Garissa
Tana
Lake Victoria
Lamu
TANZANIA
Indian Ocean
Malindi
Legend:
Capital
Major Roads
Boundaries of 23 Districts with RARP.
General route (3,116km.) of Impact Evaluation Team Field Visits.
0 50 100 150 Miles
0 50 100 150 Kilometers
Kenya

PROJECTS DATA SHEET
KENYA RURAL ROADS

Project	Vihiga Rural Development Program (615-0147)	Rural Road Systems Project (615-0168)
Authorization Date/ Completion Date	April 1971/1976	September 1977/1983
Type of Project	One of six national experimental integrated rural development Grants (1971-1976). Located in Vihiga and Hamisi Divisions, Kakamega District, Western Kenya	Multi-Donor Road System Construction and Improvement (Loan/Grant) (a) Gravelling, Bridging, and Culverting Program (GBC) (b) Local cost funding of labor-intensive Rural Access Roads Program (RARP), including construction and maintenance
Activities Conducted	Twelve discrete sub-projects in smallholder credit schemes, coordinated agricultural extension, family planning, adult literacy, rural industry and 58.5 km farm-to-market feeder roads (labor-intensive/ capital intensive contributions)	(a) GBC upgrading of 2000 km of secondary and minor (D&E classified roads) in Western and Nyanza Provinces. (b) RAR construction and on-going maintenance program of 1,000 km of access roads in Western and Nyanza Provinces
Project Costs	$1.9 million - AID (revised) 0.7 million - GOK 1.8 million - other donors. (AID roads: Equipment, LC and TA = $0.4 million)	$13.0 million - AID (Loan) 8.6 million - GBC 4.4 million - RARP 1.8 million - AID (Grant) (TA, evaluation, & monitoring) $ 6.5 million - GOK Other donors: ILO, IBRD, UNDP, UK, Canada, Switzerland Netherlands, Norway, Denmark

I. INTRODUCTION/SETTING

Since the colonial period there has been an emphasis in Kenya on roads, which have always been seen as an essential part of any development effort. Kenya has over 100,000 km of roads (55,000 km of classified roads of which ten percent are trunk roads, 16 percent are primary and 74 percent are secondary, minor, or special purpose roads such as tea and sugar roads). The remaining 45,000 km are rural access roads, feeder roads, and tracks. Roads vary greatly in their quality, traffic density and construction standards. Many areas of Kenya are handicapped by limited road access in terms of economic production and access to social services and employment opportunities.

Kenya's population of 15.8 million is 86 percent rural, with nearly half living below the poverty line. Western and Nyanza Provinces, the area of AID assistance, have higher than average poverty levels, second only to the inhabitants of the arid Northeastern Province. The six districts in which AID is working exhibit a wide range of ecological and social characteristics, but all have common constraints: high population density of up to 750 people per sq. km, and very small landholdings. Seasonal out-migration is high from most of the districts. Rural social stratification is increasing; a significant factor is off-farm income, closely correlated with educational level. Education is a priority and school fees constitute a major source of anxiety. Due to increasing population pressures on existing resources, many rural households regularly experience hunger, particularly in the period prior to harvest. Land values are increasing at substantial rates.

II. PROJECT DESCRIPTIONS

AID has been directly involved in road construction in Kenya for the past ten years in several different projects and project components.

A. Vihiga--Special Rural Development Program (SRDP)

The SRDP started in 1970 in six divisions of Kenya; the Vihiga Division projects were financed by AID. The Vihiga SRDP stressed increasing economic productivity by experimental sub-projects such as growing hybrid maize, extending credit to small farmers, and integrating the program with other development activities, including the construction of rural feeder roads. The roads were meant to be low-cost and labor-intensive, and to help the poorest people. The total AID contribution was $1.9 million, of which $400,000 was allocated to the roads.

The construction of SRDP roads began in June 1973, and by 1976 some 56 km had been completed on nine roads, one of which was built using capital-intensive methods. The greatest problems arose after the roads were completed, for maintenance was not provided and the roads were not adequately integrated with other aspects of SRDP, such as community water

stand-pipes and agricultural extension. Apart from perfunctory pre-election grading, the roads have had no systematic maintenance; most are in such poor condition that they need to be rebuilt from scratch before they will be usable, according to one engineer. Because the Ministry of Transport and Communications was not involved in the actual road construction components, it has thus far not contributed to maintenance, despite a requirement within the project agreement.

B. Rural Roads Systems Project (RRSP)

The main purpose of the relatively new RRSP is to develop a viable and interlinked systems network of secondary, minor and farm-to-market rural access roads that will provide isolated rural areas with all-weather accessibility to public and private factors of production and social services. AID's present road program (RRSP) in Western Kenya stresses overcrowded rural areas, with the objective of alleviating poverty and improving the quality of life, by increasing crop production and improving access to markets and governmental social services.

This project has two AID-assisted loan components: the Rural Access Roads Program (RARP) $4.4 million; and the Gravelling, Bridging and Culverting Program (GBC), $8.6 million. Additionally, AID is providing grants of $1.8 million for technical assistance, evaluation and monitoring costs.

1. RARP

Started in June 1978, this GOK program was designed to build 14,000 km of new roads by 1985. This would constitute an increment of 28 percent to Kenya's classified roads system. By 1982, 7,600 km are expected to be completed, and further donor assistance will be required for the remaining 6,400 km. Nine separate donors are coordinating their support of RARP in 23 districts, with AID financing road construction in all three districts of the Western Province and three of the four districts in Nyanza Province. AID's target is 1,000 km of farm-to-market roads, with an AID contribution of $0.4 million. As of September 1980, 462.5 km have been completed. The six districts cover 2.6 percent of the area of Kenya, but include 24.3 percent (3,645,000) of the total population.

RARP has several unusual features:

-- Roads 5 to 10 km in length are being built using labor-intensive techniques;

-- Much thought has been given to local participation and selection;

-- Roads are being maintained on a labor-intensive resident-contractor system; and

-- An on-going evaluation to measure the impact of the roads was built into the project.

2. GBC

This activity selects existing D and E (lowest) classified roads and upgrades them to an all-weather standard. This is separate from RARP, and uses capital-intensive methods. Two GBC construction units are operational, one in Bungoma, having completed 64 km of its 1980 target of 180 km; the other in Migori, Nyanza. The eventual AID target is to bring 2,000 km of secondary and minor roads to an all-weather standard within the national target of 10,000 km.

C. Project Review and Evaluation

Each year in October all donors meet with GOK officials for a Joint Donor Review and Evaluation. In addition, a complex series of evaluations has been separately carried out by AID, the World Bank, the Central Bureau of Statistics, and the Ministry of Transport and Communications. Since 1974, the GOK alone has published 36 different reports providing baseline information on nearly 500 roads in all 23 districts. In 1978 and 1979, the Donors Review Report reviewed various aspects of the Roads Program and made recommendations to the Government of Kenya. Generally, the donors appear satisfied that the RARP is developing effectively and efficiently. Outstanding concerns (shared by the impact evaluation team) have resulted in these recommendations:

-- A regular Ministry of Transport and Communications quarterly progress report for the entire program should be initiated.

-- Potential labor constraints in certain areas should be clearly recognized as one criterion for road selection.

-- Decentralized management and flexible implementation (local level supervisory responsibility for general labor-intensive road betterment, maintenance program by Ministry of Transport and Communications) is endorsed.

-- Road maintenance procedures continue to be of concern. The donors requested that the Ministry of Transport and Communications establish uniform maintenance standards.

-- While acknowledging the eventual target of 14,000 km of roads under the program, the end-1982 objective is 7,600 km. Continuing donor assistance to the Ministry of Transport and Communications for post-1982 activities will be requested and should be endorsed.

III. Project Impacts: Findings/Analysis

A. Utilization

1. Findings

Most rural access roads (RARs) are quite serviceable and those that

have been gravelled are all-weather. Roads that have not yet been gravelled often become slick and impassable an hour after rain begins, but dry out soon after the rain stops. Without mechanical compaction, the surface of RARs may be rough due to differential settling of the road beds. In other respects, the roads appear to be well-constructed with sufficient drainage and erosion control, and with adequate maintenance should last a long time.

Most RARs generally follow the alignment of existing paths. Although narrow (usually 4 meters of gravelled surface), the roads are sufficiently wide to support light to moderate traffic of less than 30 vehicles per day. Stream crossings consist of box-culverts, drifts (cement fords), or simple bridges that are officially restricted to a maximum length of 5 meters.

Pedestrian traffic predominated on AID roads observed by the evaluation team. The team also observed numerous bicycles and a limited number of matatus. Typically, one or two matatus use the road on non-market days; on market days a temporary flurry of perhaps five vehicles might be observed. Only one or two buses and an occasional truck or pickup were observed on these roads delivering milk or hauling agricultural products.

Matatus are privately owned, usually by local residents who may own one or two vehicles; the owners hire the drivers and conductors. The GOK regulates maximum passenger fares (not freight or produce) on classified roads, but lower fare competition is keen. Fares can be quite high, however, on RARs which are sparsely travelled by vehicles, and often the only way of getting the services of a matutu is to charter the whole vehicle at an exorbitant rate. Regular fares on RARs vary from 2 to 5 Kenya Shillings (KSH) for an 8 km ride (about $0.05 to $0.15 per mile). (See Appendix E for a synopsis of CBS data on RARP.)

2. Analysis

The lack of vehicles results in an overwhelming amount of pedestrian traffic. People living along the RARs usually cannot afford the high prices charged by the matatus when they are available, nor can they afford to wait many hours for the occasional matatu to come by. This road utilization problem exists regionally, particularly in the poorer western provinces which have not had the economic attention of, for example, the Central Province.

On one of the western RARs we encountered a woman headloading a stem of bananas from her farm to the market at the road junction with the classified road 3 km away. A few hours later, we again encountered the woman on the way back after she had sold her bananas, and she mentioned that she had received KSH 6 for them--exactly what a matatu would have charged for the round trip transport, had a vehicle been available.

As there is generally a high demand for vehicular services, which are costly and in limited supply within the roads' zones of influence, the present use of the roads is not representative of their true potential. The demand is satisfied principally by foot travel. Off-farm work-related trips are relatively few, but the numbers of social, school, medical, and

market trips are significant. A variety of public service and official-use vehicles is urgently needed to serve the rural areas and to take advantage of the new accessibility. It is encouraging that the World Bank is considering a major credit program to Kenya to assist financing matatus and other forms of transportation for rural area use, especially for those regions with access roads but limited vehicles.

3. Transport Policy

Roads cannot be properly understood without considering government transport policy. Kenya, like most Third World countries, has suffered from recent oil price increases which have drastically reduced available foreign exchange reserves. Among imports that have had to be curtailed are vehicles and spare parts. The result is that new vehicles are difficult and expensive to obtain, so there is a marked shortage of matatus which are needed if the roads are to be fully used.

B. Institutionalization

1. Sustainability and Attitudes

The Government of Kenya has demonstrated a strong commitment to building rural roads to facilitate other aspects of development. By the early 1970s, construction of labor-intensive rural roads was one of the components of the experimental Special Rural Development Program at Vihiga and other sites. New methods of labor-intensive construction and organization and new tools were tested. Many positive lessons from Vihiga are now being applied to other rural roads in the RAR Program.

Throughout the RARP, there is a significant commitment by both officials and local people to use labor-intensive methods. Difficulties are outweighed by the lower economic cost of using local labor, savings in foreign exchange, and the opportunity to reach relatively isolated areas. The Gravelling, Bridging, and Culverting Program, however, demonstrates that the Ministry of Transport and Communications has not completely abandoned equipment-based construction for major roads. Perhaps the most positive attitude towards the labor-based construction comes from the labor itself. In most places, many more people than can be hired show up on the days on which workers are chosen, and lotteries are held to determine which individuals will work.

2. Selection

While the Ministry of Transport and Communications selects and evaluates the RARs, the initial identification of candidate roads is done at the local level. The process starts with the submission of broad selection criteria by the Ministry of Transport and Communications to the District Development Committee, with requests to identify candidate roads for the RARP. Potential roads totalling 600 to 900 km may be submitted. Proposals made by participating committees at the sub-location, location, and division levels are then screened by the District Development Committee, using the broad criteria provided by the Ministry of Transport and Communications. The District Development Officer then provides demographic and agricultural-potential data for each of the candidate roads. Final selection depends upon established technical and socioeconomic criteria.

The final list of candidate roads is resubmitted by the District Development Committee to the Ministry of Transport and Communications for pre-evaluation and selection. The Planning Unit of the Ministry of Transport and Communications begins by calculating an "accessibility index" for each road.[1/] This index is proportional to the population in the road's impact area, the weighted distance required to travel to health facilities, post offices, and Divisional Headquarters, and the frequency with which these trips are made. Roads believed to have the highest potential travel demand receive construction priority, but the whole road package is submitted to a donor for funding support.

As an example: The Kisumu District Development Committee in Western Kenya submitted a list of 33 roads totalling 215 km in length for evaluation. Eleven roads totalling 61 km were considered high priority and were inspected in August 1977 by a member of the Ministry of Transport and Communications Planning Section staff. Further inspection eliminated four of the roads because they were near existing classified roads maintained by the GOK. A fifth road was found to be already classified and therefore ineligible for the RARP. Twenty-one kilometers of the priority 61 km were technically disapproved by AID.[2/]

3. Construction

Roads are constructed using labor-intensive methods and locally recruited workers, with simple tools and technology especially designed by the RARP. One typical road unit consisted of 60 casual laborers (including several women) with specially designed, yet simple, tools such as shovels, rakes, picks, and axes. The original road consisted of an old track impassable in wet weather. The laborers worked on a piecework basis, usually about six meters of road per laborer per day, and returned to their farms after finishing the day's assignment.

The usual working hours of the laborers are from about 7:00 a.m. to 1:00 p.m. The daily construction wage has recently been increased from KSH 7/90 to KSH 13/=. In good agricultural areas where excess labor is scarce, the wage increase was helpful in recruiting the necessary labor, although the daily wage rates are intended to be less than the agricultural labor equivalent so as not to divert needed agricultural laborers. The shaping of the ditches and camber of the roads is standardized by the use of simple wooden forms and templates. Field Engineers estimate that an average of 2 km of road can be completed each month.

1/ The term "accessibilty index" is a misnomer in that it does not really measure the degree of "access" provided by the road project, but instead indicates the potential demand for passenger travel on the road. Nevertheless, it is a useful tool for ranking the candidate roads.

2/ The length of roads approved by AID in 1979-80 for implementation was not equal from district to district, and varied from the 40 km for Kisumu District to the 142 km for Busia District.

Six months to a year after initial construction, allowing for settling and use-compaction, each RAR is ready for gravelling. On one road gravelling work was done by a sub-unit team of 40 day-laborers, using six tractors and trailers. Before gravelling, some reshaping of the road surface is required because of the differential settling of the earth--a consequence of the indirect compaction methods applied.

The progress of the program in Western Kenya is closely monitored by AID, by MOTC, and the most recent progress report reviewed (March 1979) indicates difficulties only in achieving efficient productivity of the gravelling units. The cost of the RARs is low, $8,400 equivalent per kilometer on average. This cost includes direct wages, housing, tools, equipment repair, fuel, materials, gravelling, and overhead costs for supervisor, officers in charge, overseers, and office and equipment charges. Although above the original $7,200 per kilometer estimates made in 1976-77, it is considerably less than the overall cost of $24,000 per kilometer of the more capital-intensive Gravelling, Bridging, and Culverting components.

4. Maintenance

Most Vihiga Special Rural Development Program roads were, for all practical purposes, not maintained, and thus became impassable in both wet and dry weather. In fact, they have deteriorated so much in the five years since completion that they will require near-total rehabilitation. One immediate positive result of the Impact Evaluation Team's visit was an agreement between AID and the GOK to incorporate the Vihiga Special Rural Development roads into the RARP for the purpose of rehabilitation and maintenance.

Maintenance of RARs is carried out labor-intensively by individual maintenance workers, called contractors, under the direction of the Field Engineers. The contractor is locally recruited, and is usually one of the workers who has performed well during the actual road construction. He is paid the equivalent of 12 days' salary per month at a rate of KSH 15 per day or KSH 180 per month and is responsible for 1 to 2 km of road, the length depending on terrain and difficulty. The system is based on payment by results, and in theory the only supervision required is at the time of the monthly payment.

Field Engineers were generally in favor of having the maintenance done locally by labor-intensive methods, where money expended on maintenance flows directly to the local economy. Although most maintenance contractors do an adequate job, there were some cases where the Field Engineer and his assistants reported spending inordinate amounts of time supervising poor performers, and in finding and training contractors to replace those who were unsatisfactory. In one district, the Field Engineer had to release 50 percent of the maintenance contractors over a year's time, due to their ignorance of the importance of maintenance, lack of initiative, inability to work without close supervision, and lack of community pressure for maintenance.

On most RARs, evidence of appropriate and adequate maintenance was observed. Potholes were filled; drainage ditches were reasonably clear; culverts were clean; both men and women maintenance contractors were observed working on the roads with hoes, shovels and machetes; and small piles of gravel for use in maintenance were observed along most roads. Although it was difficult to judge the long-term quality of maintenance, because many of the roads were less than one year old, no signs of serious deterioration due to lack of maintenance were observed. The Gravelling, Bridging, and Culverting Program roads were also new and the adequacy of their scheduled maintenance by the Ministry of Transport and Communications could not be assessed.

5. Training

The RAR Program requires substantive attention to training and advancement opportunities. Kenya does not have enough engineers. Those within the RARP expressed satisfaction with their responsibilities and accomplishments. Currently, many RAR Engineers are donor-financed expatriates whose numbers will decrease as the program continues. Senior-level project management positions have provided for promotions of previous District RAR Engineers and Regional Coordinators. Officers-in-Charge and overseers must have completed Form IV (approximately the U.S. equivalent of completing high school), but they must also spend two initial months as casual laborers. In Siaya and Embu, where other employment opportunities are limited, there was no shortage of people, but in relatively prosperous Nyeri, few applied. Good overseers are essential to effective road construction, as one Officer-in-Charge told us when he referred disparagingly to what he called "underseers."

The casual day laborers who actually do the clearing, digging, carrying and compacting are trained on the spot, but are under close supervision. Adequacy of training and good supervision are complementary factors in increasing the effectiveness of both construction and maintenance workers. The final test will come after three or four years, as the RARP continues to be measured for socioeconomic impacts.

6. Analysis

The concerns over expatriate versus Kenyan engineers and supervisors has been raised at the Donors' Reviews and by this Report. Engineers and Field Supervisors appeared to be thoughtful and aware individuals, generally committed to their work, and to its labor-intensive methodology. The team believes the Ministry of Transport and Communications and donors are correct to "Kenyanize" the program. We commend AID and the Ministry of Transport and Communications on the long-range planning for rural roads in 1982 for the Arid and Semi-Arid Lands Program and the decision to train ten senior Kenyan engineers for supervisory and management positions in the program.

One of the most serious visible constraints on long-term sustainability is maintenance. In principle, authority for maintenance of RARs is to shift to the Ministry of Transport and Communications Provincial Engineer upon

completion of each District Program. Since the RARs are quickly becoming part of Kenya's network of roads, serving as links and spurs to classified roads, transferring ultimate post-project maintenance responsibility to Provincial Engineers may overburden an already stretched maintenance capacity. The current approach to maintenance is also under discussion. In certain districts (e.g. Nyeri and perhaps Kakamega) it appears that individual contractor maintenance is not succeeding. It also imposes a heavy supervisory requirement on the District RAR staff. A suggested possible alternative form of labor-intensive maintenance is the Brigade System, whereby the construction unit is detailed once or twice yearly to each road for maintenance operations. Another analytical concern relative to road maintenance is the feasibility of small-contractor maintenance should traffic levels exceed 40 vehicles per day. All these concerns are being considered by the Ministry of Transport and Communications and AID.

C. Economic Impacts

1. Agriculture

Kenyan farmers are predominantly smallholders and subsistence farmers. The 1977 Integrated Rural Survey indicates that 33 percent of rural Kenyans own less than one hectare of land and another 42 percent own less than three hectares of land. Maize, followed by millet and sorghum, predominates nationally as the basic subsistence and smallholder food crop. Other crops consumed by the cultivators include: cassava, bananas (home gardens), beans, and legumes and vegetables. Depending upon land availability and ecozones, crops in Kenya include coffee, tea, beans, cotton, maize, sisal, sugarcane, potatoes, pyrethrum, and tobacco.

Access to rural roads has yet to generate any measurable increases in agricultural production, although rural roads could lead to noticeable production changes, particularly shifts from subsistence to cash crops. Roads allow for increases in both maize production and acreages under maize for cash. Although we saw no verifiable changes in yield outputs, roads seem to be assisting some poor families in moving from pure subsistence to subsistence plus. Hybrid maize and chemical fertilizers (to supplement manure) were introduced in the mid-1970s under Vihiga-Hamisi Special Rural Development Program. This maize is still grown as a seasonal rotational crop. In other areas, coffee drying (cooperatives), tea leaf processing (corporations), sugar processing (state and private) and maize milling are also increasing. We saw some examples of private and cooperative use of tractors and trailers. Agricultural input cooperatives exist within each district, but their effectiveness varies.

a. Production Surplus

Do the areas where the rural roads are being built have a potential for a production surplus? All the estimates made by district agricultural and development officials are guardedly optimistic, but it is too early to be certain. However, the team believes (a) that there is a strong likelihood of agricultural production being increased and (b) that this should not be the sole criterion for deciding where roads are to be built--other considerations are also important.

b. Pricing and Marketing

Overregulated pricing and marketing appear to be major constraints in limiting incentives for increased production of major crops, both food and industrial. Fixed market rates are rigidly set and enforced; some black marketing and alleged smuggling (particularly maize and sugar to Uganda) exists, however, Fixed prices and market regulations do not directly apply to rural transportation where prices vary over distances and road conditions. Better roads are witnessing an increasing number of matatus and informal transport (carts, wheelbarrows and sledges) at lower prices. Petrol prices were fixed at KSH 5/40 per liter. Divisional and regional marketplaces exist everywhere, with market days occurring from one to three days per week, and daily in some major towns. Dukas (small general stores) are usually located near marketplaces. Most rural roads begin, pass, or end at such markets.

Despite the expanding access to rural roads, subsistence still predominates as a general consumption pattern. However, if sufficient land, appropriate environments and access to credit or resources are available, Kenyans appear economically motivated (within price and marketing constraints) to produce more for cash cropping. For example, when sugarcane brought high prices several years ago, many poor families switched from general subsistence to sugarcane. Without adequate, nearby processing facilities, however, there was economic disaster. The problem was exacerbated by a neglect of basic food consumption crops, such as maize, which left many people destitute. In 1979-80, many marginal farmers returned to subsistence crops, although drought conditions again caused severe shortages.

c. Landholdings

Landholdings throughout Kenya are generally small, although there are many areas of large holdings, tenant farming, and holdings with absentee landlords. Landholdings in dry areas, particularly those areas suitable for cattle but not crops, are usually larger then lands in the wetter and better soil areas. Two specific areas (near Kitale and near Nyeri) in the former "European Highlands" were previously used for ranching and cattle grazing. These areas have been converted to "scheduled lands" for future land adjudication. Most large landholdings here have been bought cooperatively by major buyers, to be partly reduced to small shareholdings leased or bought by small farmers. Most are trying subsistence farming (maize/cassava/bananas) on relatively impoverished and inadequate land.

There are numerous examples of land values increasing concurrently with the access afforded by roads. Although not widespread, there is some buying and selling of land. Even the poorest small farmers recognize the value and desirability of land and are usually not interested in selling. If they had access to resource capital, they, of course, would like to buy additional land. Land values will continue to rise as population pressures increase and people become more mobile and less tied to communal lands. We saw some examples of encroachment by squatters/settlers on gazetted forestry lands near mountain reserves. Apparently the forest lines are rapidly rising up the mountains as population pressures increase.

d. Livestock

Most smallholders along rural roads have some cattle kept primarily for family milk needs, occasionally for meat, and for social purposes (bride-wealth traditionally includes livestock). Chickens are common, as are sheep and goats. Current prices vary from KSH 400 and up for calves to KSH 90 to 150 for sheep and goats. Due to drought conditions and current food shortages, prices were falling since animal market prices are not fixed.

Veterinary services to rural areas are among the most visible of all Government of Kenya rural services. Cattle dips, started long ago by the British and intensified during Special Rural Development Program activities, seem to be in common use where water is available. People, as individuals or communally as neighbors or friends, are commonly seen herding cattle to location or sub-location dips for weekly tick-resistance dipping. Average prices run from KSH 15 to 25 per cow every six months. Supervision at dips is either communal or provided by the livestock services. Small cattle-holding stations, in which sick animals are kept until the arrival of the veterinary officer, are often seen along rural roads.

e. Labor and Job Opportunities

Farmers with larger holdings hire casual rural labor at rates ranging from KSH 5 to 18 per day. Due to dry conditions, many people in the south-east part of Central Province were reported moving north and west looking for work and food. Opportunity costs of rural labor generally were declining. Aside from a few rural industrial activities (e.g., sugarcane jaggery factories, tea processing centers, coffee units, and maize mills) the roads in Western Kenya have not yet stimulated any influx of other labor opportunities. People seem to use the roads as ingress/egress routes going elsewhere for daily or weekly work in districts or major towns. The transportation sector itself is providing some additional employment opportunities as mechanical and maintenance skills are required in areas where farming is becoming mechanized. To date, however, most employment/labor appears to be either traditional and agrarian or directly dependent upon RAR construction and maintenance.

2. Trade and Commerce

The team observed very little actual development of agro-industrial and commercial enterprises along the Special Rural Development Program roads and the RARs. The Vihiga-Special Rural Development Program project never really "took off" because the roads and other infrastructure were allowed to deteriorate. Neglect on the part of the GOK, especially of these roads, was readily apparent to the local inhabitants, and people were reluctant to commit investment to these enterprises. Evidence of commercialization for the RARs is lacking, simply because there has not been time for these activities to develop. Furthermore, the local population may adopt a "wait-and-see" attitude towards the permanence of the new road infrastructure.

In Siaya District there is some indirect evidence that small sugarcane mills are beginning to expand production. Transport costs have dropped drastically, and with more timely and reliable pick-up the sugar content of the cane will be considerably higher. Furthermore, if jaggery factories lowered their transport charges, cultivation of additional cane would be warranted.

Another factor, the urban-rural bias, might explain the slowness of agro-industry and commercialization to develop. Commerce of most popular consumer products is highly regulated by the Government of Kenya, with fixed wholesale and retail prices. The way in which this hurts small rural enterprises is exemplified by a small duka along one of the deteriorated rural roads in the Vihiga area. This small store is rarely open, but when it is, it sells products including sugar, maize meal, soft drinks, simple medicines, such as malaria pills and aspirin, and cigarettes. This store must compete with a small cluster of dukas located at the junction with the paved road about three km away. Delivery trucks drop off the wholesale supplies for all dukas located along the RAR at the junction, and goods are then carried three km to this isolated duka by wheelbarrow. The transport price for a 90-kilo bag of sugar is KSH 8/=. The regulated price for this sack of sugar is KSH 425 wholesale and KSH 450 retail, leaving a profit before transport costs of KSH 25/= per sack. Thus, wheelbarrow transport absorbs one-third of the duka owner's gross profit, placing him at a severe disadvantage relative to his competitors located at major road junctions.

a. Analysis

The RARP and Gravelling, Bridging, and Culverting Program roads reviewed by the team are either too new to have generated benefits, or never had a chance to generate benefits, such as the deteriorated Special Rural Development Program roads. It is therefore not possible to analyze how benefits were distributed. Some general comments can nevertheless be made.

The labor-intensive nature of the RARP injects much money into the local economy, and casual labor wages go directly to the rural poor. In Kisumu, for example, the casual labor wages expended in constructing the 40 km of roads under the first phase would be just under one million shillings. (The construction cost is assumed at KSH 61, 740 per kilometer, of which 40 percent goes to casual labor.) Since the population estimated to live in the zone of influence of these roads is about 10,000, the direct increase in income per capita amounts to about KSH 100. Because labor is an under-utilized resource in this region, it is appropriate to examine the multiplier effects. Although difficult to estimate, a reasonable value for the multiplier might range between two and three. Thus, the addition in regional income amounts to between KSH 200 and 300 per capita; a significant portion of the estimated KSH 700 annual per capita income of the lower 40 percent income bracket.

It also appears that equity will increase if transportation availability improves. The new roads primarily facilitate pedestrian and bicycle travel, the predominant modes of the poor. The matter of transport services

is of great concern, and must be addressed and monitored by the on-going Ministry of Transport and Communications impact and evaluation studies. It appears that in an attempt to assist equitably all major population areas of Kenya, the RARP was instituted in advance of adequate utilization. This does not mean that some roads are premature, but only that the impacts are not yet fully measurable.

D. Social Impacts

1. Government Services

It was impossible to obtain specific data on government services, partially because most roads were so recent, but also because of the difficulty of separating road impact from other developments. However, some broad trends are discernible. In considering services, we distinguish between people's ability to go out to a clinic, government office or school and officials' ability to come in to the area for their professional purposes.

It is often assumed that improved roads mean improved services, but this is not necessarily the case, especially regarding officials coming in. It should not be assumed that officials have "spare time" which they can easily allocate to visiting newly opened areas, or even that transport is available. However, roads are increasing limited official visits. Even junior officials who walk, not even having a bicycle, told us that a good road facilitated their traveling.

2. Health

Perhaps the greatest perceived benefit of a road is the ability to transport a sick relative to the hospital. Wherever we stopped to ask how local people regarded the rural roads, we were told that "the road helps if someone is sick, in case we need it." (An analogy in our society is the telephone, which provides a comforting sense of being able to communicate in an emergency.) In many areas it is expensive (KSH 50 to 90) to charter a matatu. Nevertheless, people clearly perceive the lessening of isolation and the ability to get help for sick or injured people. This prevalent attitude also emphasizes the general commitment in Kenya to hospitals, even if few people yet follow all prescribed recommendations for health, hygiene and nutrition. Access to health center, clinics, or dispensaries is made easier if there is a road and regular matatu service.

3. Education

Rural roads make life easier and more pleasant for both teachers and students at primary schools. One frequently mentioned benefit is that "the milk scheme" is now more effectively organized. For the past two years, every primary schoolchild has been entitled to 200 ml of milk twice a week when school is in session. The system works well for urban schools, and for those located on all-weather roads close to major centers. Remote and isolated schools often miss milk deliveries because contractors' vehicles cannot reach the schools, or because drivers refuse to drive over poor roads. The construction of RARs is solving these problems.

Teachers attach a high value to being posted to a school with good access. Few schoolteachers have homes in the immediate area and they like to visit their homes frequently, provided that the school has good links with the outside world. Where access is poor, teachers' weekends often stretch from Thursday to Tuesday, and they miss many classes as they must wait long hours on the road or walk considerable distances. The RARs assist in lessening the isolation of such schools.

Another benefit of a road is that schools are more frequently visited by the Assistant Education Officer (AEO) from divisional headquarters, who probably has over 100 primary schools to supervise. Obviously, he or she concentrates on the more accessible schools. The advantage of an official visit by the AEO is that the principal can demonstrate needs for new buildings or repairs, and can show that supplies, equipment and books are urgently needed. Pleas for help are likely to be more effective if made in person than when made in official correspondence.

4. Other Government Departments

Each division in Kenya has large numbers of officials whose duties include regular visits to the people. The departments are many: agricultural extension, veterinary, forestry, community development, adult education, family planning, health visitors, family welfare, and police. Few senior officials have Land Rovers so that most at the "grass-roots level" must walk, use a bicycle, or wait for a matatu. While provision of good rural roads has not led immediately to great increases in official visitors, roads have increased the likelihood of such visits. Some district officials also stressed the security aspects of roads, particularly in the high-crime and smuggling areas near the Uganda border. Roads have always been important for orderly administration, and everyone except smugglers, "thugs", bhang growers and chang'aa brewers is pleased to have access to protection. A glance at the correspondence columns of local daily newspapers confirms this point, as readers constantly appeal to the authorities to protect them against "hooligans."

Harambee projects are an important aspect of rural development. Harambee, derived from a Swahili word meaning "let us work together", enables the construction or repair of facilities for the benefit of the local community, such as teachers' houses, schools, clinics, and cattle dips. Local people contribute cash and sometimes labor to the harambee project, while the government provides additional funds, materials, and skilled workers as necessary. A central feature of a harambee project is a large, public fund-raising event, to which the local people and suitable guests of honor--the latter including M.P.s and/or senior government officials--are invited. The guests of honor launch the fund-raising by making generous cash donations. Potential guests of honor are more likely to accept invitations if they can drive to the fund-raising events without damaging their vehicles. These events are important not only for raising money for projects, but also for establishing community identity.

Roads help to create positive local perceptions toward government services and can strengthen community self-image. Conversely, isolation and neglect

lead to negative views which can permanently hinder socioeconomic development.

5. Analysis

One of the major aims of AID's Rural Roads System Project (RRSP) is to benefit the poorer people in each zone of influence, and to ensure that benefits are evenly distributed. This will be easier in some areas than others. Modern Kenya is marked by wide disparities in wealth. This is noted in publications (especially those of ILO) and is easily confirmed by walking in rural areas. There is a wide variety and range in farm sizes, crops grown, conditions of fields and livestock, status of houses and other buildings, clothing, and general physical appearances. Given this, what effects are rural roads having? The more established farmers are able to take greater advantage of the roads by virtue of their skills, networks, creditworthiness, landholdings, off-farm income, and entrepreneurship. However, all people benefit in varying degrees from improved access to government services.

Without exception, every person with whom we conversed was enthusiastic about rural roads providing, of course, that they are properly maintained. People had no doubt that the roads were improving their lives; perceptions were positive! Besides the expected socioeconomic benefits which we have already examined, there are others of a less tangible nature.

Private vehicles and commercial traffic, if available, significantly improve the quality of rural life. Once there is even one regular matatu or bus, benefits have accumulated; dukas are assured of more supplies, and many begin to sell new items such as bread, milk or newspapers. Shops are less likely to run out of basic items, as happens depressingly often in isolated areas.

Women benefit directly from rural roads when they are employed in construction. One study (Vaidya 1979) reported that women comprised only 8 percent of all rural roads laborers. We found the proportion varied from zero to 40 percent (in Kisii), according to local historical, cultural and socioeconomic circumstances. Many women work simply to get food for their families, for 1980 was a year of poor production. Even in the more fertile areas, population pressures and tiny landholdings have forced many women to seek work, and construction/maintenance offers wages that are attractive compared to the few alternative opportunities. Some women are employed on roads as water carriers; women sometimes bring their small children with them to construction and maintenance.

For the indirect and long-term effects on women, we expect that the CBS detailed surveys, combined with the Ministry of Transport and Communications' intensive studies, will eventually provide useful information. Women are likely to be affected both positively and negatively. The greatest threat is that the furtherance of cash crops at the expense of subsistence crops may strengthen the economic position of males, who will make more of the important decisions regarding disposal of income, while shifts from subsistence to cash crops may increase the burden on women who play major

cultivation roles. This may also cause a negative nutritional impact. On the positive side, women may benefit disproportionately from improved access to, and utilization of, social services.

E. Impacts and Integration with Other Aspects of Development

The goal of the RAR Project is to provide improved accessibility, a necessary condition to having an impact on the farmers' well-being not really an impact itself. The roads facilitate other kinds of changes. In order for roads to contribute and influence the desired development, they must be integrated with projects such as agricultural production or health. Even if a roads project is done by itself, its impact usually depends on how well it is then coordinated with other development activities in the area. The DDCs are responsible for the coordination of development activities as well as for basic RAR identification and planning.

Although all the sites seemed to be good developmental choices, the team did not always see adequate levels of coordination and integration. The impact of a single investment such as a road may be very limited.

Roads have led to an unanticipated negative environmental consequence: deforestation. When there is population pressure on the land, and when roads make forested areas accessible, increased tree-felling has resulted. Forests are cleared for agricultural land and to provide fuelwood. On the other hand, there was tree-planting along some roads in Vihiga (Kakamega) and Kisii, where population pressures had forced people to appreciate the need for a supply of construction timber and fuelwood. The roads have also facilitated distribution of individually grown seedlings. Soil erosion, always a potential hazard associated with road construction, is seldom apparent in Kenya, except as a result of poor maintenance and/or design. Properly maintained rural roads with scour checks and cleared ditches are not contributing to erosion.

IV. Conclusions/Lessons Learned

A. Concepts and Methodology for Kenya

Provision of access to relatively isolated rural areas is of critical importance. The team commends and endorses the effective multi-donor assisted system that the Ministry of Transport and Communications has instituted. Rural access roads are seen by most Kenyans, officials and rural citizens alike, and the evaluation team as being a major priority in opening rural areas to development.

1. Labor-Intensive Participatory Approach

The labor-intensive and participatory aspects of Kenya's Rural Roads Program (selection, construction and maintenance) are highly successful. They provide increased employment, lower the costs and foreign exchange requirements of the roads, and increase locally-held perceptions that the roads do benefit and belong to the wananchi. . . the people.

The evolving selection and implementation methods employed in Kenya should continue to be studied and improved. Effective popular participation in the road selection process is difficult to achieve; often the development committees meet irregularly, or they lack focus. The meetings may also be dominated by officials, from the Assistant Chief at the sub-location level to the District Chief. The team also heard talk of political pressures by MPs, for whom tangible development projects are important at election time. Despite the imperfections of the system, however, we saw no evidence of inappropriate selection decisions. All roads assessed are, in varying degrees, serving their intended purposes.

2. Coordination/Integration

While rural roads are essential and necessary, they may not be sufficient to ensure overall development of the rural areas. Kenya's experience indicates the potential for a variety of interlinkages and developmental integration with roads. These include the possibility of removing economic constraints to general and equitable development (see No. 4 below), and both national and local integration and coordination of roads with other rural development activities to assure maximum socioeconomic impact.

All development is plagued by problems of planning and coordination. The SRDP experiments encountered many difficulties because of the strong vertical integration within Ministries and departments and the weak horizontal integration between Ministries and departments. Linkages with other development activities, including those internal to the Ministry of Transport and Communications for road network systems, do need attention and revitalization. Many rural roads could also profitably intersect district boundaries, thus benefiting the populations of more than one district. The haphazard approach to integration was of concern to the team. The lack of horizontal integration and institutionalized supervisory/administrative capacity hinder effective integration.

There was some disagreement within the team as to the role that AID or any other donor should play in the integration/coordination process. Recommendations ranged from: (a) direct donor-assisted integration of roads with one or more agricultural production activities; to (b) a Mission policy determination that all separate but complementary donor-assisted rural development activities should be concentrated in specific areas; to (c) restricting rural road construction to the provision of access, leaving the integration of other activities to the Districts and to the Government of Kenya.

3. Maintenance

Post-project maintenance (a worldwide problem of rural infrastructure projects) of Kenya's rural roads was of some concern. The present labor-intensive contract system (or the alternative brigade system) seem to be adequate and appropriate for the rural access roads. The simultaneous maintenance of classified Gravelling, Bridging, and Culverting roads has not yet begun, but if the Vihiga-Hamisi Special Rural Development Program roads are any example of regular maintenance, the issue is critical.

Furthermore, as more roads are built within the national network, the maintenance burden becomes even greater.

The impact evaluation team recommends joint donor/Government of Kenya assessment of the planned 14,000-km Rural Access Roads Program with a view toward post-project institutionalization of a maintenance system. Planning for costs and supervision will be of primary importance.

4. Road Utilization, Provision of Access, and Impacts

The differences in utilization and impacts of the rural roads may be explained in socio-cultural, geographical, historical, and political terms. While many of Western Kenya's rural roads may not be justifiable in pure economic terms, they can be justified on the basis of regional equity and the need for access. In the Kenya context, AID, the Government of Kenya, and other donors would argue that these alone, along with the institutionalization process and the participatory labor-intensive benefits provide sufficient justification. The RAR Program is too new to fairly evaluate socio-economic benefits.

In order for development to occur along with rural roads within a reasonable time frame, either other intensive/extensive development activities must be inserted or major economic policy changes must be made to stimulate self-development. Rigid price controls on transportation and staple consumables prevent local initiative and development. Vehicles require foreign exchange outflows, they are therefore heavily taxed and consequently limited in number. Other more traditional forms of transport, whether on all-weather roads or not, are expensive over long distances. Isolated duka owners and farm producers are restricted by price controls from adding transport costs to their prices. Economically speaking, little of major consequence has been stimulated by the construction of rural roads. The team recommends that AID and the Ministry of Transport and Communications undertake an analysis of these problems so the clarification and subsequent resolution of the overall utilization and impact issues may begin.

B. Lessons Learned in Kenya for General Application

The team was generally impressed with Kenya's "system": selection; baseline information packages; standard relevant technological approaches to construction, maintenance and utilization; socioeconomic impact monitoring and evaluation; participatory labor-intensive techniques.

In our opinion, the keys to success are represented by the following:

-- Intensive and high-level interest (and action) in the program by the Government of Kenya.

-- A broad-based awareness of the need for rural access by all the people of Kenya, both rural and urban, with local-level involvement in the selection processes.

-- An effective, reasonable wage system of labor-intensive participation for construction and maintenance.

-- A systematic management approach within the Ministry of Transport and Communications which provides incentives, project interest, and ensures institutionalization.

-- A broad-based and coordinated Donor involvement providing sufficient resources and continuing interest in the program.

AID provided the initial stimulus and advisory assistance to the Government of Kenya in establishing the basic system. The Mission continues to demonstrate interest by its day-to-day counterpart role. Unlike other donors, AID is there. AID's monitoring and follow-up of the project is seen by the team and the Government of Kenya as extremely valuable. AID's positive interest is genuinely appreciated and serves to spur further activity, interest and dedication on the part of all those involved with the roads.

The issue and extent of coordination and integration of rural roads with other development activities is still an unresolved question. Undoubtedly, resolution must come specifically designed in the context of the nation, the region, and the political, geographical, and developmental environment. In Kenya, this may require additional analyses.

Are rural access roads essential to stimulated rural development? Yes, but...

APPENDIX A
IMPACT EVALUATION METHODOLOGY

Team Members:

Our Kenya rural roads impact evaluation team was composed of:

-- John Roberts, Team Leader, a rural development generalist;

-- David Brokensha, an anthropologist with field experience in Kenya;

-- Cynthia Clapp-Wincek, an evaluation specialist;

-- Charles Vandervoort, a transportation economist;

with direct AID Mission assistance from Satish Shah, AID Engineer.

Preparation

The team met in Washington several times in July and early August 1980 discussing guidelines and problems with AID officials, consulting relevant documents, planning an itinerary and deciding on important topics to explore and questions to ask.

Two team members arrived in Nairobi on August 17, 1980 and were able to have preliminary meetings at AID to set up travel arrangements and finalize financial support. The unanticipated high car rental charges (nearly US $150 per day) for a "Combi" type van forced us to use one vehicle rather than two, which restricted mobility. The other team members arrived on August 20, 1980 in time for a series of discussions with AID and GOK officials. The team was cordially received by officials at AID, MOTC, and CBS who offered useful guidance and provided letters of introduction.

Field Visits

From August 23 to September 5, 1980 the team undertook field visits, looking at 31 different roads in ten Districts, covering a distance of 3,116 kms. Of the roads:

-- one was NYS (AID)
-- two were GBC (AID)
-- nine were RARP (AID)
-- five were SRDP (AID)
-- 14 were RARP (different donors -- NORAD, Netherlands, DANIDA, IBRD, UK)

In selecting the roads, the team was guided by different criteria. The final mix included roads in all the provinces of Kenya, with the exception of Coast and Northern-Eastern. Zones of influence varied by eco-zones (elevation, soil, rainfall, vegetation) which determined economic potential; the areas seen were mainly classified as medium to high potential, with a few low potential areas in lower Embu Division. This meant that we saw all the major crops grown by Kenyan smallholders and became aware of basic problems of maize, sorghum, millet, beans, cassava, bananas, tea, coffee, tobacco, wheat, cotton, pyrethrum, and sunflower. Various mixes of livestock were seen--cattle, goats, and sheep, as well as poultry.

Population densities ranged from 75 to 400 per sq. km in the zones of influence. Three CBS Survey Roads were included: the CBS is conducting intensive surveys on seven roads in Western Kenya. The physical condition of the roads varied, learned from first-hand experience on the rain-slick, red-coffee-soil roads, or when carefully negotiating the sticky, black-cotton soils.

We included the oldest roads we could locate--SRDP roads built in 1975, and RARP roads constructed in 1978--as well as newly constructed roads, roads where construction had just begun, and proposed roads. We saw roads in all phases of construction and maintenance.

Availability of labor was another distinguishing factor, with more laborers applying for road work in lower potential areas, for obvious reasons.

Finally, we decided to look at roads which had been financed by donors other than AID, for comparative purposes.

Field Methods

The Kenya Rural Roads Program is extremely well organized in terms of basic statistical, historical and cartographic information. The RARP evaluation reports, prepared by MOTC for each of the 23 districts involved, provided invaluable basic quantitative and qualitative information.

This information was supplemented in our discussions with District Development Officers (DDOs) and RAR Field Supervisors District Engineers with whom advance arrangements to meet had been made. Eventually we met with four DDOs and six Field Supervisors, all of whom were most helpful. In most cases, they accompanied us on our site-visits; sometimes they met us after working hours. Their cooperation, knowledge, insights and general enthusiastic dedication to the Program were highly impressive. Not one single person advocated a wholesale switch to capital-intensive methods.

When visiting roads, we stopped constantly to talk with people--

overseers and laborers, and especially residents in the zone of influence. We met with Government officials--chiefs, agriculture and veterinary staff, schoolteachers; we spoke to countless farmers, men and women, and to their children, to shop keepers, hoteli managers, traders and transporters. In all our conversations, we were concerned with actual and perceived road impacts. We, several times, divided into individual or two-person groups, and walked through zones of influence, speaking with whomever we saw. Throughout the rural areas, our respondents were unfailingly interested in our mission, positive about roads, and thoughtful in replying to our questions. Of course, we were unable to probe in great depth in any area, because of our limited time, but we were convinced at the end that we had received a valid, if broad, general picture.

One team member had had extensive field experience in two of the districts we visited, and was somewhat familiar with the other districts. This provided a good baseline, and enabled us to make comparisons between "before" and "after" road construction.

We also made many observations, on the state of the roads, on fields and homesteads, crops and livestock, traffic--vehicles, animal and human-drawn carts and barrows, bicycles, pedestrians--and on schools, churches, water points, cattle-dips, coffee coops and any other installations. In short, we were able to survey the general state of rural conditions along the selected roads.

We include in Appendix B a list of people who helped us in our enquiries, in Nairobi and in the field.

Report Writing

After our return to Nairobi on September 5, we spent five days (one night) analysing and writing up our field notes, and preparing a draft report. We were again able to consult appropriate documents and staff at USAID, and to collate quantitative information in selected areas. The report was presented and discussed with AID/Nairobi and REDSO (East Africa) officials on September 12, 1980; the team departing shortly thereafter. In September 1980, we briefed the AID Administrator and the Africa Bureau on our findings and conclusions.

APPENDIX B
PERSONS CONTACTED

NAIROBI

USAID

Allison Herrick, Director
William Lefes, Program Officer
Kevin O'Donnell, M & E
Satish Shah, M & E
Joseph Pastic, M & E
Fred Holmes, Agr.
Jack Slattery, PHN

REDSO

Ray Love, Director
Edward Greeley, Anthropologist
Helen Soos, Economist
Lee Ann Ross, Economist
Dennis Light, Engineer
Carolyn Barnes, Anthropologist

GOK

G. P. Wamburu, MOTC Chief Engineer Roads & Aerodromes
Dr. Ayse Kudat, MOTC, Planning Economist
Harvey Herr, CBS
J.M. Kiguru, MOTC, Executive Engineer, Roads
Alf Gower, NYS, Senior Superintendent
Samson Akute, MOTC, Superintending Engineer, (Construction) RARP
G.H. Mwangi, MOTC, RARP coordinator

BUNGOMA DISTRICT

Thomas D. Hutchason, AID/GBC Program
Douglas Whinnery
Mr. Maricho, DDO
Mr. Mwaniki, RAR Engineer
Mr. Wangai, District Maintenance Engineer
Chief Timona Masinde, Kaptola Location
Senior Chief Enock Chongwony, Elgon Location
Mr. Lusenaka, Shopkeeper, Nasusi Trading Centre

TRANS-NZOIA DISTRICT

A. Oyier, District Commissioner
D. O. Mijondo, DDO
Hans Aerts, RAR Engineer
Dismas Wabwire, RAR-OIC

TURBO NATIONAL YOUTH SERVICE (NYS) REGIONAL CAMP

Paul Maina-Kiragu, Section Officer I

KAKAMEGA DISTRICT

Gibson Githaiga, DDO
Bent Thomsen, District RAR Engineer

KAKAMEGA DISTRICT

Vihiga Division

J. M. Kirorei, DO.
Fanuel Kaiga, former Location Chief, S. Maragoli.
Javan Adalo, Local Govt. Admin.
James Nagoso, farmer.
Jafata Miteine, farmer's wife.
Stanley Kasule, farmer.
Johnson Mwanzanga, farmer.
Sammy Ambani, student, Form II.
J. Mangari, farmer.
J. Adago, farmer.
Caleb Ogada, headmaster, Mutsulyu Primary School.
Mrs. Zubeda Avedi, teacher, "
Simeon Lisutsa Agufa, " "
William Buhasho, Veterinary Asst.

KISUMU & SIAYA DISTRICTS

Peter Kayungi, MOTC, Div. Engineer, Western & Nyanza, RARP.
Benno Kreis, District RAR Engineer.
Hudson M. Bigogo, DDO (Siaya)
Shadrach Ayoye, RAR 13, Overseer.

Informants/Translators

John Aput, Messenger (on leave from Brazilian Embassy, Nairobi).
Joseph Aput, school teacher.
Jairo, 90 years old.
Peter Okoch, Student, Form I, Agulu School.
Kennedy Odienoro " Form II, " "
Edwin Ochieng, farmer.

KISII DISTRICT

Michael Nyaundi, farmer.
Bwasi Omonde, donkey transporter.
Edward Otieno-Ondeyo, Donkey transporter.

EMBU DISTRICT

John Murage, District RAR Engineer.
Angelique Haugerud, Economic Anthropologist.
Rueben Kamindi, Upper Embu OIC/RARP.
Seferino Njeru, Overseer, RARP.

NYERI

Aart van der Schans, District RAR Engineer.
Charles Ndungu, farmer and Issac Muchiri, teacher.

APPENDIX C
COLLECTED DATA ON RURAL ACCESS ROADS

Completed Road Lengths in AID Districts as of June 1980

	Earth Roads	Gravelled*
BUNGOMA I	50.3 km	24.3 km
BUNGOMA II	35.8 km	-
BUSIA	67.4 km	16.0 km
KAKAMEGA I	33.7 km	-
KAKAMEGA II	13.0 km	-
KISUMU	54.3 km	21.6 km
SIAYA	59.5 km	-
KISII	62.5 km	42.1 km
	378.5 km	84.0 km

Completed Road Lengths in Other Districts Visited by the Team

EMBU I	65.2	10.2
EMBU II	26.5	3.4
NYERI	156.3	72.0

* Roads are only gravelled where terrain makes it necessary.

Source: MOTC

Utilization Data for All RAR Roads

Some relevant data taken from the June 1980 CBS Survey of seven selected Rural Access Roads in Western Kenya:

Purpose of Travel on RARs

- 32 percent of all trips were taken for school purposes. Average travel distance was 1.5 km.
- 30 percent of all trips were "social". Average travel distance was 3.5 km.
- 24 percent of all trips were market-related, also averaging 3.5 km.
- 10 percent of all trips were work-related, averaging 4.0 km.
- 2 percent of all trips were medical purpose trips, averaging 8.5 km.

Many trips, of course, were multi-purpose, but this was not recorded.

Mode and Type of Travel

For the seven RARs included in the June 1980 CBS Survey, the distance travelled by female-headed households over a nine-month period (3.6 million km) was more than six times greater than the reported total distance travelled by male-headed households (580,000 km).

The CBS Survey also estimated that up to 75 percent of all traffic using Rural Access Roads is pedestrian, five percent being by bicycle and only ten percent by bus or matatu. The vast majority of rural Kenyans making purposeful travel are women and children.

APPENDIX D
COMPARATIVE DATA ON SITES VISITED

The following tables were devised by the Team for comparative analogies of all rural roads/areas visited. The tables represent the chronological order of districts and roads visited, both USAID-assisted and other donors; and provide summary district and national average information.

The sources of information from these tables come from MOTC records and reports, CBS utilization data, district statistics and on-site inspection by the Team. The comparative statistics are represented by the following:

- District and Road Number
- Length (actual)
- Hectares in the Zones of Influence
- Population Density in the Zones of Influence
- Total Population in the Zones of Influence
- Area of the Zones of Influence in Hectares per kilometer of road
- Population per kilometer of road
- Agricultural Crops in order of actual utilization
- Agricultural Crops in order of expected impact utilization
- Average Distances (accessibility) to the hospital, the post office, the Divisional Headquarters, and a health center
- Percentages of land use in each District
- Average per capita income in each District

Table D-1. Selected Data for Roads Visited and District Averages

	Bungoma	Length	Zone of Inf. (Ha)	Pop. Density	Pop. in Zone Inf.	Zone of Influence Ha./Km. Rd.	Pop. per Km./Rd.	Crops in order of Present Utilization	Crops in order of Future Utilization	Average Distance to: (Km) Hosp.	P.O.	Div.	HQ	H.C.	
I.	RAR #10	9 4.4	1400	P/Km. 302	4228	318	961	Maize-Livestock Subsistence- Coffee	Maize- Subsistence Coffee-Livestock	19	12	10	10		
	#13	7.5km.	1010	265	2677	135	357	Livestock- Maize Sugar-Beans	Sugar-Maize- Tea-Potatoes- Livestock	24	15	15	15		
	#20	10	1150	238	2737	115	274	Sugar- Subsistence- Unused land- Dairy Cattle	Subsistence- Sugar-cotton- Dairy Cattle- Tobacco Unused	16	16	16	5		
	#24	7	1650	369	6089	236	870	Subsistence- Maize-coffee- Unused-sunflower Dairy cattle	same	42	11	8	11		
	District Averages	6.3	885	260	2300			32% unused land 26% Subsistence area 43% Cash Crop area 1% livestock		25	17	14	14		Average Per Capita Income: K £ 23
II.	Trans Nzoia RAR #1	5	650	53	345	130	69	Subsistence- Maize-sunflower Dairy & Beef Cattle Sub. Maize	Maize-Subs. Sunflower DC. & BC.	46	46	46	16		
	#2	5	675	53	358	135	72	Sub.-Maize	Subs.-Maize- Sunflower-cattle	45	45	45	15		
	#3	6	600	53	318	100	53	Subsistence	Sub.-Beef Cattle	42	42	47	12		
	#4	4.25	525	53	278	124	65	Subs.-B.Cattle Maize-Sunflower	Dairy c.-Subs. Maize-sunflower	43	43	43	13		
	Trans Nzoia District Averages	7.8	1307	71	941			16% Unused land 29% Subsistence area 44% Cash crop area 12% livestock		29	26	29	18		Average Per Capita Income K £ 51

Table D-1. Selected Data for Roads Visited and District Averages, cont.

	Basin Gishu	Length	Zone of Inf. (Ha)	Pop. Density	Pop. in Zone Inf.	Zone of Influence Ha/Km.Rd.	Pop. per Km./Rd.	Crops in order of Present Utilization	Crops in order of Future Utilization	Average Distance to: (Km) Hosp.	P.O.	Div.	HQ H.C.	
	HYS X-Class Road	4 mls.	NA	NA	NA									
	Basin Gishu District Average	9	1320	92	1215			61% Unused land 7% Subsistence 21% Cash crop area 11% Livestock land		41	32	41	41	
IV.	KAKAMEGA DISTRICT													
	SRDP #1 #3 #4 #5 #6	5.5km 7.6km 5.1km 5.3km 8.0km	NA	NA	NA									
	Kakamega District Average	5.8	1182	754	3003			0% Unused land 43% Subsistence area 44% Cash Crop area 14% Livestock land		34	12	14	11	
V.	Siaya													
	RAR #1	14	1875	P/Km. 258	4838	134	346	Subs.-Livestock Maize-BC-Millet	Subs.-Maize-BC-Cotton-Millet	10	10	20	10	
	RAR #2	12	1675	251	4204	129	323	Livestock-Subs. Maize-Cassava	Subs.-Livestock Maize-cassava	12	12	15	12	
	Siaya District Average	11.2	1762	228	4034			38% Unused Land 38% Subsistence area 20% Cash crop area 5% Livestock land		17	10	16	13	Average Per Capita Income K£7
VI.	Kisii													
	RAR #8	4.5	650	337	2191	144	487	Subs.-Coffee Sugar-Ground nuts Bananas	same	11	22	20	11	
	#9	10	600	437	2622	109	477	Subs.-Coffee-Bananas-Maize-Pyrethrum-Sugar	Subs.-Coffee-Bananas-Maize-Pyrethrum-Sugar	11	17	20	11	
	Kisii District Average	6.9	1115	234	2610			49% Unused land 15% Subsistence area 20% Cash crop area 16% Livestock area		21	33	22	12	Average Per Capita Income K£10
VII.	Kisumu													
	RAR #13	15	2100	477	10,017	140	668	BC.-Subs.-Coffee-Sunflower Livestock	BC.-Coffee-Subs.-Sunflower Livestock	14	8	17	17	
	Kisumu District Average	6.5	867	257	2234			49% Unused land 15% Subsistence area 20% Cash crop area 16% Livestock area						Average Per Capita Income K£11

Table D-1. Selected Data for Roads Visited and District Averages, cont.

VIII. Embu	Length	Zone of Inf. (Ha)	Pop. Density	Pop. in Zone Inf.	Zone of Influence Ha/Km.Rd.	Pop. per Km./Rd.	Crops in order of Present Utilization	Crops in order of Future Utilization	Average Distance to: (Km) Hosp.	P.O.	Div. HQ	H.C.	
RAR #10	4	250	250	625	63	156	Subs.-Tea-Livestock-Maize Coffee-Bananas Beans-Potatoes	Tea-Livestock-Subs.-Coffee-Bananas-Maize-Beans-Potatoes	15	17	12	12	
#11	6	456	318	1400	76	242	Subs.-Maize-Tea-Beans-Livestock-Coffee-Pyreth.	Tea-Subs.-Livestock-Maize Beans-Pyrethrum Coffee	19	13	18	13	
#7	9	538	374	2012	60	224	Coffee-Subs.-Livestock-Maize Beans-Potatoes-Bananas	same	15	12	12	12	
#5	7	944	313	2955	135	422	Maize-Coffee-Subs.-Beans-Potatoes-Bananas-Livest.	Coffee-Maize-Subs.-Sunflower Livestock-Beans Potatoes-Bananas	13	10	10	10	
#3	7	594	504	2994	85	428	Coffee-Subs.-Livestock-Maize Beans	Coffe-Subs.-Livestock-Maize-Beans	4	7½	7½	7½	
#17	12	3450	96	1392	121	116	Subs.-Cotton-Green-Grains	Subs.-Cotton-Green-Grains	35	5	14	12	
#19	10	1200	76	912	120	92	Subs.-Cotton	Subs.-Cotton Beef-Sunflower	38	10	29	10	
Embu District Averages	7.7	903	165	1492			10% Unused land area 45% Subsistence area 36% Cash crop area 9% Livestock area		22	14	12	13	Average Per Capita Income K£35

IX. Nyeri	Length	Zone of Inf. (Ha)	Pop. Density	Pop. in Zone Inf.	Zone of Influence Ha/Km.Rd.	Pop. per Km./Rd.	Crops in order of Present Utilization	Crops in order of Future Utilization	Average Distance to: (Km) Hosp.	P.O.	Div. HQ	H.C.	
RAR #26/28	618	800	100	880	133	147	Livestock-Subs.-Potatoes-Beans-Maize	Subs.-Potatoes-Livestock-Beans-Maize	33	15	15	4	
#29	7.5	1160	110	1276	211	242	Livestock-Subs.-Potatoes-Beans-Maize	Subs.-Potatoes-Livestock-Beans-Maize	40	5	5	10	
#F	4.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.				
#H	6.0												
Nyeri District Averages	5.6	450	245	1104			15% Unused land area 66% Subsistence area 27% Cash crop area 19% Livestock area		16	8	12	10	Average Per Capita Income K£37
NATIONAL AVERAGES	8.3	144	169	1721			27% Unused land area 33% Subsistence area 26% Cash crop area 16% Livestock land		27	19	20	15	Average Per Capita Income K£27

APPENDIX E

SAMPLE OF DATA DEVELOPED AS BASELINE FOR RURAL ACCESS ROADS

This type of data is generated by MOTC to identify the road sites and their zone of influence and justify their accessibility. It is used to some extent in making final decisions on some proposed sites. Sample information included:

1. Cover
2. "Quick Impression"
3. Range of Access Chart
4. Priority Ranking
5. Estimated Costs/Days per road
6. Description of Road No. 20
7. Proposed Road No. 20 Map

E-2

REPUBLIC OF KENYA

MINISTRY OF TRANSPORT AND COMMUNICATIONS

ROADS DEPARTMENT

RURAL ACCESS ROADS PROGRAMME
EVALUATION OF ROADS IN BUNGOMA
PHASE II

MAY 1980

CHIEF ENGINEER (ROADS)
MINISTRY OF TRANSPORT AND COMMUNICATIONS
P.O. BOX 52692
NAIROBI

PERMANENT SECRETARY
MINISTRY OF TRANSPORT AND COMMUNICATIONS
P.O. BOX 52692
NAIROBI

II. A QUICK IMPRESSION

In order to get a quick impression of the 12 roads, Some indicators which are useful for comparison are given in the following Table I.

TABLE I

ROAD NO	LENGTH KM	ZONE OF INFLUENCE Ha	POPULATION DENSITY	POPULATION IN ZONE OF INFLUENCE	ZONE OF INFLUENCE Ha/Km-ROAD	POPULATION PER KM. ROAD 1980
14	9	1350	271	3659	150	407
15	8	1300	253	3289	163	411
16	6	1300	253	3289	217	548
17	11	1900	253	4807	173	437
18	9	1450	241	3495	161	388
19	11	1400	206	2884	127	262
20	10	1150	238	2737	115	274
21	5	750	189	1418	150	284
22	8	1800	141	2538	225	317
23	8	1200	141	1692	150	212
24	7	1650	369	6089	236	870
25	7	2125	218	4633	308	662
TOTAL	99	19500		40530		

RANGE OF ACCESS - INDICATORS

FIGURE I

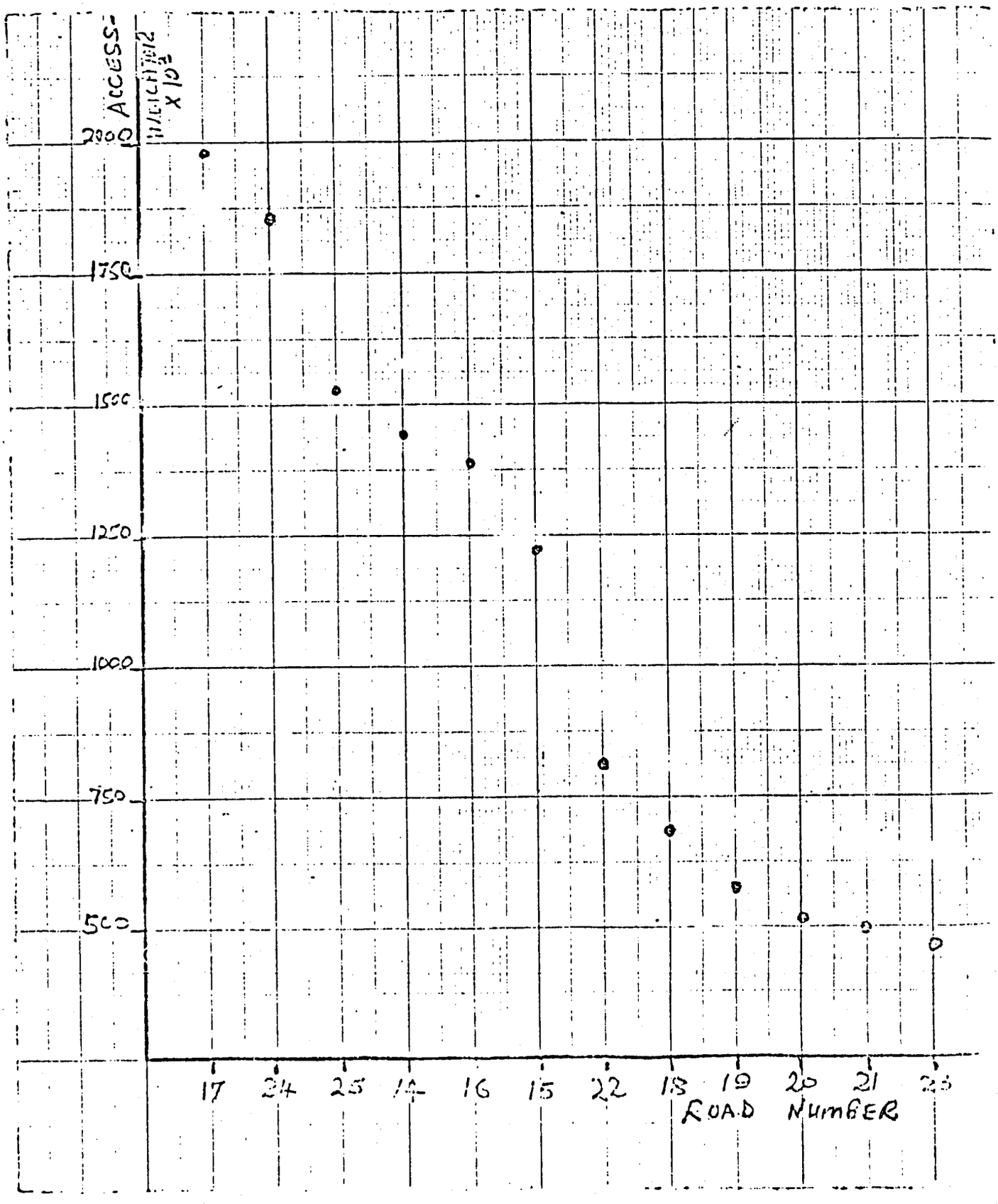


TABLE 2

ROAD NO.	POPULATION IN ZONE OF INFLUENCE I	AVERAGE DISTANCE TO: KM				WEIGHTED DISTANCE TO: KM				TOTAL WEIGHTED DISTANCE II	ACCESS INDICATOR (I x II)	PRIORITY RATING BASED ON ON ACCESS INDICATOR
		H.	P.O.	DIV. Hq.	H.C.	H.	P.O.	DIV. Hq.	H.C.			
14	3659	53	14	18	14	106	70	140	70	386	1,412,374	4
15	3289	42	13	26	15	84	65	150	75	374	1,230,086	6
16	3289	35	6	35	21	70	30	210	105	415	1,364,935	5
17	4807	35	6	31	21	70	30	210	105	415	1,994,905	1
18	3495	9	9	9	9	18	45	90	45	198	692,010	8
19	2884	9	9	9	9	18	45	90	45	198	571,032	9
20	2737	16	16	16	5	32	80	50	25	187	511,819	10
21	1418	23	23	23	13	46	115	130	65	356	504,808	11
22	2538	26	26	26	10	46	130	100	50	326	827,388	7
23	1692	18	18	18	10	36	90	100	50	276	466,992	12
24	6089	42	11	8	11	84	55	110	55	304	1,851,056	2
25	4633	15	15	15	15	30	75	150	75	330	1,528,890	3

H = Hospital

P.O.= Post Office

Div. Hq. = Divisional Headquarters

HC = Health Centre

TABLE 6

ROAD ID	CONSTRUCTION COST KE	MAINTENANCE KE/YEAR	CONSTRUCTION WAGES KE	CASUAL LABOUR MAN-DAYS	MAINTENANCE WAGES KE PER YEAR	MAINTENANCE MAN-DAYS	PERMANENT STAFF WAGES CONSTRUCTION F
1	[illegible]	720	7200	18,230	540	1370	1440
15	16,000	640	6400	16,200	480	1220	1280
16	12,000	480	4800	12,150	360	910	960
17	22,000	880	8800	22,280	660	1670	1760
18	16,000	720	7200	18,230	540	1370	1440
19	22,000	880	8800	22,280	660	1670	1760
20	20,000	800	8000	20,250	600	1520	1600
21	10,000	400	4000	10,130	300	760	800
22	16,000	640	6400	16,200	480	1220	1280
23	16,000	640	6400	16,200	480	1220	1280
24	14,000	560	5600	14,180	420	1060	1120
25	14,000	560	5600	14,180	420	1060	1120

Item No. 20. CHWELE - WABUKHONYI - D 279

This road will start from Chwele market on A1 then proceed through a sugar area to connect to a classified road D279. The first 4 Km. of this road is a narrow track motorable using 4-wheel drive vehicles while the rest of the road has been temporarily graded by the Nzoia Sugar company to facilitate the harvesting of the sugar cane.

The standard to which this road has been improved are not adequate as the term the road an all-weahther road.

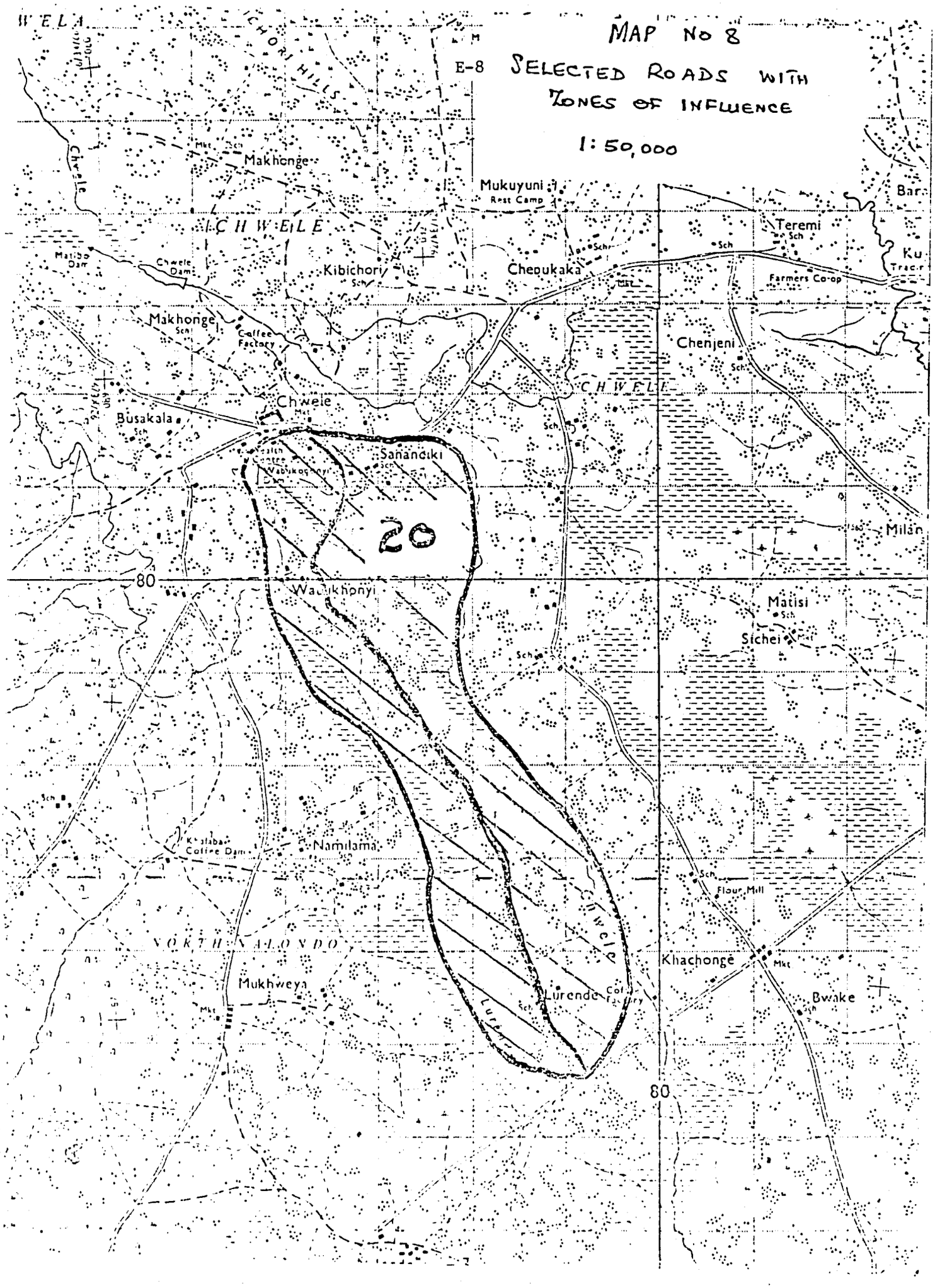
The type of soil found in the area is mainly red coffee soil and murram is abundant.

Together with sugar cane, coffee and sunflower is also grown but to a limited extent due to the lack of transport.

This road serves 3 primary schools and 3 market centres. There is a small river crossing between Chwele market and Webukhonyi school. This is usually dry during the dry seasons and the crossing will require an installation of culverts.

Since the last section has been graded, main construction will be on the first 4Km. and the remaining section should have good drainage provided.

In this area murram is abundant.


MAP No 8
E-8
SELECTED ROADS WITH
ZONES OF INFLUENCE
1: 50,000
20
Makhonge
Mukuyuni
Rest Camp
CHWELE
Teremi
Kibichori
Cheputkaka
Farmers Co-op
Chenjeni
Coffee Factory
Chwele
Busakala
Sananciki
Milan
Wabukhonyi
Matisi
Sichei
Namilama
Flour Mill
Khachonge
Mukhweya
Lurende
Bwake
80
80

APPENDIX F

COMMENTS ON THE PROPOSED MOTC REVISED SELECTION AND EVALUATION PROCEDURES

by

Charles Vandervoort

INTRODUCTION

Concern by the MOTC and donors about the adequacy of the selection and evaluation procedures being applied to the Rural Access Road Program (RARP) led to a memo, prepared by the MOTC and presented to the donors in March 1980, suggesting certain changes. Except for the United Kingdom and the World Bank, the suggested changes were accepted by all the donors.

The UK noted that the new procedures would result in a "once-and-for-all" selection of all roads. Since they believed that the development of selection and evaluation criteria is an evolving process, they argued that not all roads be selected at once. Instead, some roads should be reserved for later selection so that learning from the on-going project would be incorporated.

The IBRD feared that the proposed screening and selection procedures would not guarantee an adequate internal rate of return (IRR) for the roads selected.

On the basis of these comments, the MOTC prepared a new document, "A Review of Selection and Evaluation Procedures, RARP" dated July 1980. (A synopsis this may be found in Page F-5 and F-6). This document presents three options for the methodology to be applied to the evaluation and selection of rural roads, and makes a final recommendation for action by the donors.

PROPOSED OPTIONS FOR THE SELECTION AND EVALUATION METHODOLOGY

As presented in the MOTC report, the three major options are:

-- Option A: GOK simplified criteria to be applied in one stage to all roads and emphasizing size of Impact Area as the Economic Indicator. This is the option preferred by the MOTC.

-- Option B: Application of World Bank standardized criteria using farm models to develop several economic indicators. This option is preferred by the IBRD.

-- Option C: Improvement of present IRR procedures.

Except for a major flaw discussed below, the revision proposed by the MOTC, Option A, has much to recommend it. Especially noteworthy are improved screening criteria that have been added such as that the road must offer a possibility for change by increasing production of cash crops; the road must improve access to social services and other opportunities such as employment; the road must serve small farm areas; the road must be at least 2 km away from other roads and must link to an existing all-weather road; and that labor for construction must be available. In addition, roads in areas that are part of a development program would receive priority, and the road must be, of course, feasible from the engineering point of view.

An important further criteria that was added by the MOTC is that constraints impeding the road from achieving its full potential must be analyzed and that these constraints must be removed before road construction. In our opinion this criteria, though laudable, would be unrealistic. Several of the important constraints that the team noted during their impact evaluation, especially the rigid price controls and inadequate supply of transport, cannot be eliminated easily. Much time would be lost in starting construction of roads that, even with the constraints, would be socially and economically feasible. It would perhaps be better to analyze each constraint to determine to what extent it will effect the social and economic return of the road. Given that the road can still be justified, even with the constraint, the road work could proceed under the assumption that the social and economic return, though perhaps modest initially, would gradually increase as remedial action takes effect.

A major weakness in Option A, in our opinion, is the proposal to use the impact area of the road as an indicator of the economic rate of return. This proposal is based on an extensive multiple regression analysis of a select set of roads that had already been evaluated to determine the significant factors explaining the net present value (NPV) of these roads. Site of impact area was found to be the best explanatory variable.

It is of great interest, of course, that the road's impact area is highly correlated with the NPV; and it is tempting to develop a decision rule from this analysis that gives the minimum impact area required to ensure a positive NPV. With such a simple decision rule most of the selection could be done at the local level. But there appear to be at least three reasons why this decision rule would be wrong. First of all, the NPV as calculated by the MOTC in the past evaluations is derived from the gross agricultural increment in production rather than the net production. Second, the incremental agricultural production appears considerably inflated. For example, for the evaluations done in the Kisumu area, production of cash crops was calculated to increase by a factor of five as a consequence of the road.[1/] Third, the NPV focuses on the benefits of increased agricultural production (the producer surplus approach)

1/ The MOTC attempted to clean up the input data by using only what were considered the most reliable roads and amounting to a sample of 112 out of 469 roads.

and ignores perhaps the more important road user surplus benefits from increased mobility. Appraisal methods that concentrate on agricultural activity alone will yield a distorted view of benefits derived by rural society from improvement of roads.

Because of the poor quality of the data used in the multiple regression analysis, the derived relationships are invalid and the whole analysis must be redone. In principle, this re-work is possible, but would involve a considerable amount of effort, especially if done for each of the 112 roads used in the multiple regression analysis.

Given that so much additional effort will be required to make the MOTC option viable, the following question becomes relevant: Would it not be better to adopt Option B (the IBRD option) to determine the NPV of a proposed road? In essence, their approach suggests using farm models representative of the various road impact areas (categorized by eco-zone, level of agricultural development, dominant crop mix, etc.) in the program to derive standard selection criteria that would assure that each road has a satisfactory rate of return. It should be noted that the IBRD proposes to use the Internal Rate of Return (IRR) as the measure of economic merit, but this indicator is equivalent to the NPV and can be used interchangeably. They are consistent in that if one indicates economic feasibility, the other one will too. The IBRD also proposes to use the NPV (or IRR) as a cut-off selection criteria; i.e., only roads with a favorable NPV would survive to be ranked according to the non-quantifiable criteria representing various side-effects and external benefits. This will be further discussed below.

The farm-model approach must, of course, be supplemented by an analysis of the benefits that can be expected from the increased mobility (user surplus) of the rural population. The road-use surveys being performed by the Central Bureau of Statistics (CBS) may prove to be an invaluable resource for conducting this analysis.

A significant advantage of the IBRD farm-model approach aimed at developing standardized criteria applicable to various categories of road impact areas is that the approach is structural rather than statistical. Thus, it develops a much needed understanding of the processes by which roads improve agricultural production, and even more importantly, it assists in identifying the effects of certain physical and institutional constraints and also constraints imposed by deficiencies in human resources. The statistical approach advocated by the MOTC is not so helpful in that regard.

It is not clear at this time whether the indicator for the economic rate of return should be used as a cut-off criteria (Option B) or should be amalgamated as just one factor, though an important one, within the long list of other criteria. We basically lack information and experience on the feasibility of these two approaches when applied to actual cases. It is perhaps best to apply both approaches during the next year or so, and use the experience gained during this time to make a selection from the two procedures.

RECOMMENDATIONS AND SUMMARY

The topic of appropriate selection criteria and procedures for rural roads as currently being addressed in Kenya is an extremely important one and one that has wide replicability to other third-world countries and regions struggling, unsuccessfully, with the same problem. It is therefore important that USAID become closely involved in structuring the approach, and that the donors not be too concerned with the expenditures of funds and effort required to make the exercise a success. Investments made in perfecting the approach in Kenya will be repaid manyfold when applied to other countries and regions.

We believe that USAID should consider taking the following position with regard to the revised selection and evaluation procedures proposed by the MOTC in their July 1980 report:

-- That Option C (the current procedure of determining the IRR for a "package" of roads but using more detailed data and improved procedures) is the least desirable option.

-- That the indicator for a road's economic return not be based on impact area as proposed by the MOTC. Instead, that the producer-surplus component be based on the farm-model approach suggested by the IBRD under Option B. Furthermore, the economic savings from increased mobility of the rural population should also be included as an important component of the economic return.

-- That this issue of whether the indicator for the economic rate of return be used as a cut-off criterion, or should be amalgamated as just one (though an important one) of the many criteria used in justifying a road be resolved at a later time after more experience is gained with the implementation of the revised methods.

SYNOPSIS

Ministry of Transport and Communications

A Review of Selection and Evaluation Procedures
Kenya Rural Access Roads Program (RARP)
July 1980

A. Current Selection Processes

1. District Development Commissions (DDC) each identify 600 km of possible roads to be constructed with Labor-Intensive technology.

2. Through local participatory methods, these lists are reduced into 150 km by Districts. Submission to MOTC includes data, length, road use, agricultural protential, etc.

3. Mini-IRRs are conducted by MOTC for each district road "package." Standardized road constructed costs (1 Kenya Ł = $2.74): KŁ 2,000 per km ($5,600) and all allocated maintenance budget of KŁ 80 per km per year ($224).

4. Total information, data and analyses for the 150 km District "packages" are then submitted by MOTC to donors for approval/ acceptance.

B. Recognized Problems With Present System

1. No demonstrable utility for undertaking rate of return analyses-- (IBRD insists on IRRs for each road and entire RARP).

2. District data, for calculating IRRs, are often inaccurate, resulting in unrealistically high IRRs which are then meaningless and time consuming.

3. Ultimate final selections of roads for FY construction are left with MOTC (and sometimes donors) which are often unsatisfactory.

C. Revised Procedures, Proposed by MOTC, To Be Decided Upon in October 1980 Donors Meeting

1. Primary factors for road selection consideration will include population (the impact area population density and population per km); road length; percent of land (used/unused/usable) in subsistence, livestock and cash crops; distances to hospitals, health centers, post offices and district offices.

2. Size and population alone of impact areas (Zones of Influence) are to be the primary indicators of economic benefits.

   -- Choose underdeveloped areas with potential for change (transition to cash crops or access to social services and off-farm employment);
   -- Serve small farmer areas;
   -- No other transport alternatives within two km range;
   -- Proposed road must feed or link to existing road networks;
   -- Priority will be given to areas with integrating potentials to other GOK development projects or programs.
   -- Labor (for construction, maintenance, and other employment opportunities) must be available;
   -- Development constraints should be evaluated prior to selection;
   -- Roads sites are unclassified, earth tracks: minimum--5km maximum--10km; and
   -- Proposed alignment avoids ecological and drainage difficulties for construction and maintenance.

3. Districts will initially identify 900 km of potential feeder roads (this is 300 km increase over present 600 km allocation plan for life of project).

4. Districts will establish priority construction Divisions which are to be identified and focused based upon labor availabilities.

5. Selection Changes and Determination to be made:

   -- Option A: (simplified selection criteria emphasizing the zones of influence and generally accepted economic indicators.)

   -- Option B: (World Bank standardization of Farm Model with required 12 percent IRR).

   -- Option C: (Improve procedures and processes for IRR determination.)

Alternative Options include A1, A2 and A3. A1 is a proposal by the UK (ODM) for a two-phased selection process.

MOTC strongly recommends Option A. (Option A1 is administratively burdensome and difficult.) AID is generally supporting of MOTC and Option A.

D. ANNEX I of Report: Some Basic Evaluation Data

A total of 3,393 km of roads for construction under RARP have not been proposed. These include 662,000 ha of impact area (zones of influence) and an impact area population (beneficiaries) of 805,000.

Average populations within zones of influence is 1,716 persons, with a density of 173 persons per sq. km.

Regional road proposals of lengths vary from an average of 10 km in Meru and Siaya to 6 km in Kakamega and Nyeri.

SYNOPSIS

Ministry of Transportation and Communication
Modified Framework for Impact Study
to Monitor and Evaluate Rural Roads

Nairobi, July 1980

GOK and all donors agreed that ongoing evaluation and monitoring by Kenyans was needed for rural access roads and other related rural development activities.

Objective of this impact study will be an evaluative determination of the affects of project activities and to provide explanation of how and why.

Relevant Knowledge - Better Decisions - Better Projects.
In so doing, use of limited resources will yield the highest beneficial impacts at least costs.

Specific purposes of the study: Determine whether rural roads have a direct socio-economic impact on specified target groups (rural poor?)

MOTC hypothesis is that high potential impact roads selected by standardized criteria will in fact result in high levels of beneficial rural development. (Even if hypothesis is only partially correct, evaluation finds will conceivably provide sufficient information to improve the road selection criteria.)

Three basic kinds of monitoring evaluation are being done by MOTC:

1. Engineering
2. Overall Program
3. Economic-Social

Evaluation Scopes:

A. Measurement of agricultural production, marketing, traffic flow, population movements, etc.

B. Comparison of actual results with predicted results... then making changes or refinements to improve accuracy and reliability as planning tools.

Kinds of data being generated:

Zone (Area) of influence--
household surveys, water/sewerage facilities, crop types, agricultural inputs, percent of crops marketed, percent self-consumed production and sales of livestock, food expenditures, major expenditures, crop/inputs price data, hired and family labor, distance to markets and social institutions, transport prices, traffic flow surveys, nutritional/health surveys.

Major Surveys to be Conducted:

Farm (Household) Surveys by Central Bureau Statistics

Traffic Surveys by MOTC

Periodic Surveys by MOTC (duka stores, schools, hospitals, etc.)

Magnitudes:

Districts to be included: Kisumu, Kisii, Kakamega, Nakuru, Nyeri, Machakos, Kilifi. Data to be collected for three years continuously after completion of roads.

Selection to be initially 10 RAR and two Gravelled.

(Actual - they are surveying seven roads in seven districts of Western Kenya, although plans are to expand surveys to 36 roads.

CBS is gathering all baseline data.

APPENDIX G

CONTINUED IMPACT EVALUATION OF RURAL ROADS IN KENYA

by

David Brokensha

"Why evaluate rural roads in Kenya? Surely they have already been over-evaluated?" These questions, addressed to one team member, prompt us to include a brief summary of major past and ongoing evaluations, which differ significantly in scope and purpose. We conclude this appendix with specific recommendations for future evaluations. We interpret "evaluation" broadly, and include some general works. Evaluations have been done by individual scholars, contracting firms, donors and by GOK ministries. We shall consider the following major studies:

SRDP	A.	Martin and Hopcraft	1976	Labor Intensive Construction
RARP	B.	MOTC	1978/1980	- District Evaluation Reports
			1979/1980	- Traffic Counts
	C.	CBS	1979+	- Detailed Surveys
	D.	Devres/AID	1979	Consultant's Report

A. Martin, D. and Hopcraft, P., Labour-Intensive Road Construction and SRDP. (28 pp.) University of Nairobi (IDS, DP229) 1976.

While the SRDP generated numerous reports, reviews, assessments, evaluations and critiques, this paper is the only one concerned specifically with the road component. Labor-intensive techniques are critically examined, with special reference to recruitment, use and supervision of workers; wage scales; local participation in road selection and maintenance; integration of construction and maintenance. Recommendations include use of intermediate technology, phasing of road development according to measured benefits, and extending labor-intensive techniques to other rural projects.

Although parts of the report (on voluntary labor and wage rates) now appear dated, it is a comprehensive and insightful evaluation of the topic.

The report also recommends "a careful monitoring and evaluation of road benefits", but it does not go into details.

B. "RARP Evaluation of Roads in Various Districts," Ministry of Transportation and Communication (before November 1979 known as Ministry of Works), 1976.

These MOTC reports, written before construction starts, are obviously not evaluations, but they are basic documents for any critical examination of RARP. The reports follow a standard format, which includes, for each road that has been selected for RARP, details on location; length extent; population and population density in zone of influence; and present and potential land utilization, by specific crops and livestock. In addition, brief details are given of roads that were proposed but not selected, with reasons.

Several pages are devoted to "The Access Indicator", which is a measure of adequacy of access to the nearest hospital, Post Office, Divisional Headquarters and Health Centre. Each social service has a weight attached, which is multiplied by number of km distance, then the total is multiplied by population in zone of influence to give an access indicator for each road. While this system is rather simplistic and arbitrary, it does provide some measure of comparison between roads.

Other sections include "constraints on development" (natural and resource, and "impact on rural development", including projections on crop potential, gross margins and discounted costs and benefits). Depending largely on the caliber and experience of the DDO, there may be additional notes, and a final section presents maps of the district, showing proposed roads, and detailed (1:50,000) maps of the zones of influence.

These are excellent documents, detailed, accurate and perceptive and they proved to be invaluable field guides, as we referred to them constantly. Not only are they indispensible for any evaluation exercise, as they establish baselines, but they also serve a valuable training function in improving the skills of DDOs and DDCs.

MOTC Traffic Counts

Traffic counts have been made on several roads, using various sets of questions, the most useful of which establishes not only the basic ADT (Average Daily Traffic in number of vehicles), but also records the type of traffic and information on the people--where they come from, where they are going, for what purpose, and so on.

RARP roads are mostly too recent for the traffic counts to be of much value, but with time their cumulative value, allowing comparisons over the years, will be very useful.

C. CBS Detailed Surveys of Selected Zones of Influence, continuing since 1979.

The Central Bureau of Statistics has wide experience in rural development data collection and analysis. With assistance from AID (which is paying 75 percent of the cost of U.S. statistician, Harvey Herr who is attached to CBS), data are being systematically collected from seven road zones of influence, one for each Western district. (The roads are: Kisumu No. 8. South Nyanza No. 7, Kisii No. 9, Siaya No. 1, Kakamega No. 6, Busia No. 4, Bungoma No. 3. We visited three of these roads.)

Basic information is collected in each zone by CBS enumerators from 30 households on a monthly basis, and 90 households on a quarterly basis. Households are arranged in three groups - adjacent to road, less than 0.5 km away, more than 0.5 km. Cross-tabulations cover these areas:

-- Non-farm employment
-- transport costs
-- farm agricultural production
-- farm livestock
-- agricultural input use
-- farm income
-- household food consumption
-- material possessions
-- health status
-- use of social services
-- non-farm income
-- total household income

Household analysis is being done on these created variables:

-- Road number
-- sex of household head
-- distance from road
-- household land-holding
-- type of road
-- cross-tabulations

In addition, CBS is surveying separately diet and nutrition of a sample of children from six months to five years of age.

The surveys started in early 1979 and the first cycles have been recorded on computer and are available for analysis. The system has some problems: the monthly and quarterly surveys form an awkward combination; some data are suspect, indicating enumerator slackness; there is a possibility of respondent fatigue; too much information is being collected, there being presently 90,000 items per household; sometimes there are delays in computer analysis.

Despite these reservations, this represents an imaginative and thorough approach, and will provide over the coming years, essential quantitative information, which can be supplemented by other approaches.

D. Devres/USAID, D. Brokensha, P. Moock, and B. Riley. Kenya RAR and GBCP. Consultants First Annual Report. (110p.), Washington, D.C., 1979.

In 1979, USAID/Nairobi, called for proposals to evaluate RARP and GBCP in Kenya. The contract, which was awarded to Devres, called for a multi-disciplinary team of three, who were to make annual visits over five years (1979/83), collect both quantitative and qualitative information, collaborate with CBS for data collection and analysis and co-operate with

other donors. The contract specified that the team ascertain anticipated benefits in each road area were being achieved; inquire into the distribution of benefits (were they reaching the poor?; what effects did roads have on women?; what happened to transport savings?); check on local participation in the program; analyze the selection process; and report on environmental impacts. The team was in the field for only the first year when the contract was modified as MOTC decided to conduct the road evaluations.

E. Other Relevant Studies

1. Intermediate Technology Transport Ltd.

"Appropriate Transport Systems for Rural Communities in Kenya" (52 pp.) London: 1976.

While not strictly an evaluation, this report is included because it contains a useful summary of transport in the regulated and unregulated sectors; the latter section includes notes on all forms of transport - lorries, buses, matatus, tractors, ox- and donkey-carts, bicycles, donkeys, handcarts, wheelbarrows and headloading. The background information and specific details are helpful for any evaluation.

2. der Veen, J.J., The Rural Access Roads Programme: Appropriate Technology in Kenya. (167pp.) Geneva: ILO, 1980.

This is a good, clear general account of RARP, emphasising "systems and procedures and (showing) how problems were overcome." It does not assess costs and benefits, but it does present basic reference material in an easily accessible form.

Several studies outlined suggestions for evaluation the RARP. These include reports by IBRD, and by two contracting firms - Practical Concepts, Inc., and Louis Berger. Each report has valuable recommendations which have mostly been incorporated in subsequent reports, so they do not need to be described in detail.

Summary

Our report indicates that there is much that is unclear about the socio-economic impact of Kenyan rural roads. It is essential to continue the evaluation procedures, to assess impacts effectively. Evaluation should be on several dimensions including regular MOTC data gathering CBS special surveys, supplemented by qualitiative reports on specific roads. The evaluation need not be on a vast scale, but does need to be ongoing and cumulative.

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APPENDIX H
WHICH COMES FIRST:
AN ALTERNATE VIEW

by

Cynthia Clapp-Wincek

The Team has concluded that the Kenya rural access roads project has a high potential for development. In my view, the potential may be there, but its fulfillment depends on other investments. I would like to raise the question in specific and in general terms as to what investments should be made and when. In this instance, roads were expected to be a lead investment in an area that needed investment for production. Unless they are followed up by that kind of activity, the roads investment will have been untimely. Beginning with the more general considerations that led me to this conclusion, I will discuss specific aspects of the project which reflect these general ideas on strategy and planning. With the limited resources available for development, choosing the best strategy becomes very important. In a period of particularly limited resources, such as we now face, the questions of sequencing and localization, in my view, can be crucial.

Sequencing is a question of appropriate timing and the order of investment. When should investment be made in a single sector--such as roads or health or agricultural production? At what later point should a particular single sector investment be followed by another investment, and which type of investment should it be that follows? When is it appropriate to group particular investments and undertake some form of integrated development? Which interventions work best together? Under what circumstances are particular combinations enhanced or undermined?

Localization is a question of responding to the unique characteristics and constraints of districts or regions within countries. A project can be undertaken on a nationwide basis, on a regional basis or in a small, delimited area such as a district or country. After assessing whether a country needs a particular investment, it still remains to be determined if it is equally needed everywhere. For example, some parts of the country may, because of economic fortuity or past development activity, have adequate infrastructure in particular sectors. Alternatively, some areas may need the particular investment, but cannot yet really benefit from it until certain circumstances or conditions are changed, as when a complementary sector must also be developed.

There is an infinite variety of development strategies and a great multitude of them have likely been tried at one time or another. In spite of their multiplicity, it seems reasonable to group them into several common types:

-- Single sector investment undertaken regionally or nationwide,

i.e., an investment in roads, health, etc., which is done on a widespread geographical basis.

-- Simultaneous, integrated development undertaken on a localized basis, i.e., the type of project referred to in AID as integrated rural development. It typically includes project components from several sectors implemented in a small area at one time.

-- Integrated time-phased development undertaken on a regional basis, i.e., purposefully planned and coordinated development activities which are implemented over a period of time. Inherently, this approach necessitates the prioritization of activities in different sectors. This can be done by sequencing particular sectors nationally, e.g., by deciding to do roads everywhere at once followed by agriculture; or by taking account of the unique circumstances in each area and prioritizing the investments on a more particularized basis. This can be called "localization" 1/

Each approach seems to have advantages and disadvantages. The single sector approach is the easiest to conceive, and because of its singlemindedness, perhaps the cleanest to execute. Indeed, a host of difficult questions can be easily passed over. It is most often undertaken on a national or regional basis. It has the very substantial advantage of distributing resources widely. This can be a crucial attribute in the highly competitive environment of Third World politics, especially in those countries where the variety of ethnic groups increase the intensity of competition. Indeed, in some countries, regional and ethnic polarization may make impossible development projects which concentrate, for whatever good reasons, their largesse on a particular group or area. However, a disadvantage or limitation of this modality is that it is rare to find an area as broad as a region or country where development needs are identical.

The advantage of simultaneous localized integrated rural development (IRD) is that, at least in principle, it attacks 'all' the problems at once. In a poor underdeveloped area there are almost always a variety of constraints to development prosperity and a localized IRD project attempts to address all the constraints at once--hopefully overcoming all the salient ones.

The most obvious disadvantage to simultaneous, localized IRD is that it is usually tremendously expensive, i.e., it has a very high cost for relatively few beneficiaries. In the highly competitive environment of the Third World, the resources expended on IRD projects most often have not actually continued long enough to complete the cycle needed to achieve

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1/ Although decision-making is carried out on a localized basis, that does not necessarily mean that the decision is made locally. This is a very salient question and will be considered to some extent further on.

sustainable development. The very considerable resources needed to achieve independent viability have attracted such attention that other groups have criticized the pattern of concentration and demanded some investment in their area as well. The subsequent redistribution of effort typically has come at the expense of completing all phases of an IRD program.

To avoid the constraints of both single sector projects and simultaneous localized integrated rural development projects, some blend seems desirable. Integrated, time-phased rural development takes elements from both.

The key factor in integrated, time-phased rural development is the careful sequencing of development activities in accordance with appropriate priorities. Investments are not made in the haphazard order which usually occurs with a preponderance of single sector investments, nor are they made simultaneously as with the classic IRD project. Integrated, time-phased rural development retains the important philosophy of simultaneous IRD which recognizes that development constraints are interconnected. However, it does not necessarily require that everything be done at once. In pursuing this approach, it is possible to implement each step on a uniform nationwide basis which rationally decides appropriate sequencing, or to vary the order of steps in response to local conditions. It also permits flexibility on the timing and type of investment, and may well offer greater opportunity for citizens to participate.

Where feasible, it would seem generally more advantageous to vary the order of the steps based on local conditions. To adequately decide priorities, a knowledge and understanding of the relevant circumstances and conditions are required. Although integrated time-phased development involving nationally uniform phases presumably embodies decisions of appropriate sequencing, it inevitably involves the danger of painting with too broad a brush. Too many important local variations may be ignored. This suggests the efficacy of a more localized approach, an approach more specifically responsive to local constraints and advantages.

In addition, because it is time-phased rather than simultaneous and thus less resource intensive at any one time, it can be pursued over a somewhat broader area. This tends to avoid some of the pitfalls of the regional or group competition which occurs when resources have been too highly concentrated in too small an area. As long as there is fairly equitable distribution of the quantity of resources with some activity occuring in all areas, the dangers of political contentiousness are minimized. It does not seem necessary to have a single sector project spread out nationwide to avoid competition and rivalry.

Another important implication of the trade-off between implementing projects on a nationwide basis or on a localized basis is the differing levels of complexity in management. Viewed from the perspective of a country's overall development strategy, nationwide implementation of a coordinated series of single sector projects only requires the decision of which to do first, second and third. But, if a country adopts a development strategy

with a more localized approach, much more information must be gathered, because decisions must be made as to which projects to do first, second and third in each locality. Then when this intricate yet massive decision-making is completed, no less virtuosity is required in the orchestral coordination of the implementation teams.

With this discussion of general ideas as a background, it is now possible to highlight important elements of the information and observations from the fieldwork, for this evaluation. The purpose of the field work was to evaluate a single sector, more or less nationwide investment in rural roads, in order to assess what impact it had on the people in the area as well as the economy as a whole.

Because there were not resources available to implement the Rural Access Roads project in every district in every region, attempts were made to assess the needs of the districts and build the roads where they were most needed. However, the decisions were made on the basis of having to more or less nationally distribute the resources of a rural roads project rather than on the basis of prioritizing the development needs of each district with reference to a set of diverse investments. Considering several examples highlights the importance of this distinction.

> Riding along one of the new dirt roads in Siaya, a district in Western Kenya, the impact evaluation team came upon two small girls hovering over a termite trap in the middle of the road. Termites--which can be eaten fresh, fried or dried--were being trapped in bent-stick structures covered by blankets. The smooth dirt roadbed made it easier to find the termites' holes. The young girls had set up shop some time ago, catching a considerable number of termites.

Apart from what this may say about the role of young girls in gathering food, it indicates how little traffic there was on that road. Unfortunately there was very little vehicular traffic on almost all of the Rural Access Roads the team visited in Western Kenya. This was supported by the traffic counts which indicated there were very few cars, trucks or matatus (the local bus/trucks) with hardly more bicycles or wheelbarrows.

> The team saw a woman carrying a single stem of bananas to the market at the end of another of the Rural Access Roads in Siaya. Passing her again on the way back, she told us that she had sold the bananas for exactly what the trip in a matatu would have cost her. It was inevitable that she carry them herself.

Throughout the area, the agricultural surpluses remain small because farmers know little about improved cultivation practices, cannot afford improved inputs and have little incentive to produce more because of fixed crop prices. The small crop surplus and high transport prices result in a transport demand too small to compete for Kenya's limited number of vehicles.

Because of the AID commitment to equity, i.e., to concentrate aid resources in areas where primarily small farmers and the "poorest of the poor" reside, Western Kenya is where they chose to provide their assistance for the Rural Access Road program. An area of low investment potential, the area had received limited Kenya Government resources in the past. This is in accord with Government policy to invest in areas with the highest potential return.

Several other Kenyan Government policies play an important role in the cycle of small crop surplus, small transport demand. Crop prices are regulated by Government policy at a level which provides little incentive for farmers to produce much surplus. To conserve foreign exchange, an import quota on vehicles limits the numbers available. Limited vehicles suggest increased transport prices and therefore, the Government has regulated transport prices on major roads. However, these regulated prices apparently do not extend to the smaller roads where high prices are charged, further reducing the already slim demand in an interactive downward cycle.

It is revealing to contrast Siaya with Nyeri, a district in Kenya's Central Province, where roads were constructed three years ago under the Rural Access Roads program with the assistance of the World Bank. It is a fairly wealthy district where the team saw ten vehicles in approximately one hour including several tractors, as well as vehicles carrying goods and people.

> At the end of the road, one farmer planting potatoes said the seed potatoes were his own, but he had purchased the fertilizer at a nearby market and brought it home in a matatu. When he harvested the potatoes, he waited for a buyer to pick them up in a truck. If he did not like the price he was offered, he waited for another buyer.

Within the scope of Kenya's various regions, Nyeri was inherently a high potential area: the land was generally above average, many farmers were using improved cultivation methods which they had largely learned from the white farmers in the area; distribution systems for fertilizer and hybrid seeds were established; and there had been considerable Government investments in the area both because of the Government's policy to invest in high potential areas and because it was a Kikuyu area (Kikuyu being the dominant ethnic group). Starting with this developmental context, it is perhaps not surprising that the team saw evidence of very rapid impact.

This comparison of the evident impact in the wealthier area with the lack of impact in the poorer area, does not suggest that roads should only be built in the wealthier areas. The point is not that AID funds should be targeted only in rich areas where impact may be immediately apparent, but rather that the investments in poor areas deal first with their most immediate needs in order to increase the probability of being of real lasting benefit. It is not a question of denial, it is a question of sequencing and localization.

The rapid development of traffic in Nyeri indicates that real demand for motorized transportation facilitated by the roads existed when they were constructed. Because of the developmental context in Nyeri, enough farmers were able to pay for transportation to attract vehicles to the area. In Siaya, some need for improved transportation exists, but not a great enough need to ensure the availability of vehicles or meaningful utilization of the roads. Until some investment is made to address the additional constraints which exist in Siaya, real demand for transport will develop very slowly.

This presentation of the contrasts between Siaya and Nyeri suggests some differences of interpretation between myself and the rest of the team. My perception is that we all agree on the desirability of making interventions in phases because regions usually have problems in more than one sector. Also, we agree that the development of transport infrastructure alone will not be sufficient to overcome the constraints in the Siaya area. There has been some suggestion that the situation in Siaya could be salvaged by a change in the pricing policy to give the farmers the incentive to produce more and the means to acquire improved inputs. On the face of it, this may seem workable. However, for the Kenya Government, it is a stark, but inevitable question of limited resources. For example, if the prices of grains and produce were raised, this would be tantamount to a tax on the urban consumers for the benefit of the farmers, and may involve considerable political cost for the Government. It is probably not within the power of AID to significantly effect political decisions of this sort.

However, could the same results be achieved with greater or less cost? In spite of a nationwide pricing policy, the farmers in Nyeri are able to overcome the constraints presented by the regulated prices. Because the policy does not preclude production and development equally throughout the nation and because of the costs to the Government of changing the present pricing policy, directly addressing the whole range of constraints to production in Siaya seems more efficacious at this point than changing the pricing policy. This localized approach would seem to yield the better return in addition to being within the realm of activities AID could effect.

The team also stressed the importance of the benefits which people perceived the roads provided. For example, transportation to a hospital for an emergency illness was the benefit mentioned first and most frequently in Siaya. But when people were asked if they knew of an instance when this had happened, no one could cite a specific instance. Because there were neither vehicles available in western Kenya nor the ability to pay for the vehicles if they had been available, no one was ever that sick, indeed almost by definition. The benefit was more perceived than actual.

These perceptual benefits were perhaps the most important benefit provided by the Rural Access Roads project because they provided people with a tangible connection to more distant places and thus, arguably connected them to the national life. Although this has value on a psychological level (and even politically through the roads' symbolic significance), these intangible benefits can probably be achieved less

expensively and in a way which is less prone to deterioration and decay. This deterioration and decay would tend to vitiate the initial intangible benefits and perhaps make the situation worse by raising people's expectations only to dash them.

It is a serious concern that roads built in areas with no real existing demand will deteriorate before the real demand actually occurs. Although it is unclear whether or not people will maintain the roads when they do need them and can afford to use them, it seems very likely that they will not maintain roads that they can do without because they cannot afford to use them. The cost in time alone would be too high compared to other activities they need to pursue. Therefore, the roads may indeed deteriorate before the real demand exists. If some type of project which fosters activity in the area (such as agricultural production) is done fairly soon after the roads are completed, this would not be such a concern since demand for the roads would develop much more quickly. Also, the presence of the roads would facilitate the implementation of that project. If the two types of projects were fairly well integrated, this constraint would be overcome. This again points to the need for sequencing and localization.

One serious consideration is the extent to which it is feasible for AID and/or the host government to target and appropriately sequence developmental activities. This raises the whole question of not only who knows enough about local circumstances to adequately assess the local situation, but also who is objective enough to prioritize the development activities needed. It is commonly understood in AID these days that the local people know most about their own circumstances. But, if we had asked the people in Siaya what they needed most, they may well have said roads. Because of my concern about how long it will be until those roads have any impact, I am concerned that that would not have been the best choice. This is not to say they do not know themselves <u>what</u> they need but to suggest that someone needs to objectively consider <u>when</u>.

There is also the more mundane question of manpower--if we answered the very tricky political question of who should make the decisions and how, would the manpower be available and capable to do so? Does this suggest that AID needs to do a certain kind of training of host country personnel? Does it suggest that AID needs to rethink the kind of people it sends to the missions? Rather than a transport engineer, perhaps a priority specialist - somebody who visits local areas and assesses the <u>when</u> of development as opposed to the <u>how</u>.

AID needs to study further the extent to which the sequencing of development needs to be an administrative or AID priority. If it is possible to locally sequence development, it should be done. If you are asking the right questions, it should be possible to provide a solution that is at least marginally better than an aggregated, undifferentiated development strategy.

Although the roads may indeed have very positive impacts in the long term, the short term picture suggests that the nationwide single sector

approach results in significantly varying degrees of impact and success. The main report takes this for granted when, in my judgment, the project has a mixed result due to its being a more appropriate intervention in some places than others. If development continues on the course we saw, the rural access roads will have little if any impact. Some complementary intervention could occur in the future which would lead to positive impact in the area, but those benefits will be due more to chance than to planning. A development strategy which was more carefully adjusted to the needs and priorities for local areas would lead to a more effective program of national development for all the various regions of Kenya.

APPENDIX I

MISSION CABLE RESPONSE TO FIRST DRAFT

(as presented in Nairobi, September 11, 1980)

R 221012A SEP 80
Fm Amembassy Nairobi
To Secstate Washdc 2084

Unclas Nairobi 18114

AIDAC

For John Roberts - ASIA/TR/ARD

E.O. 12065: N/A
SUBJ: Impact Evaluation of Kenya Rural Roads
Project 615-0147, 615-0153 and 615-0168

1. Mission has reviewed draft report prepared by the AID/W Impact Evaluation Team for Subject Projects and except for minor changes/clarifications discussed during final debriefing with team members, September 12 and additional comments in Para 2 and 3 below, Mission is satisfied with the report.

2. By way of emphasis, Vihiga SRDP project experimented with the US of appropriate technologies for rural roads. Based on the experience gained, the GOK was able to embark on a major rural roads program using labor-intensive technologies. A major lesson learned from the present state of disrepair of roads in Vihiga (they are not being maintained by Ministry of Transport and Communications) is that the appropriate host government ministries should be fully involved in the implementation of respective project components for which they will be expected to assume responsibility after the project is integrated into the current rural access road project in Kenya. Other donors of road projects also learned from the Vihiga experiment.

3. USAID suggests that the evaluation report include a statement of the reason NYS (Project 615-0153 roads activities were not reviewed in depth, namely that the project purpose did not focus specifically on roads but rather on NYS institution building. In the absence of such a statement, the evaluation report appears incomplete in its failure to treat the economic, social and other impacts of 615-0153 roads activities. The report should state that the roads activities were only one element of the original project purpose, i.e. an output designed to provide NYS the means for increasing its capability to plan and construct roads and the other infrastructure.

4. Mission commends the team for producing an exhaustive, detailed and candid report within the short time available. Mission would, or course, have preferred to receive GOK comments on draft report before publication, but we appreciate that teams' September 3 publication deadline does not permit this. This preference notwithstanding, the team's modus operandi speaks well for techniques that other evaluation teams may wish to adopt in future.

5. Mission requests sufficient copies (at least twenty) of the final report for distribution to GOK and other donors. HARROP.

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