food and raw materials. Farm produce by type was then sold in each outlying region at the city price less the difference in the cost of transport to that region and the city. Similarly, land rent, intensity of land cultivation, and density of the population were lower the further away the location from the city. This theory may approximate some locations in developing countries even today, especially African small-scale farmers, because most of them still cultivate their products on the land where they have grown up and happened to live, and in addition sell most of their produce in isolated rural markets. Therefore the major question of the small-scale farmer is partly answered by this theory, that is, what farm produce can be advantageously cultivated in a given plot of land?

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TRANSPORTATION IMPACTS ON AGRICULTURAL
AND RURAL DEVELOPMENT: THE CASE
OF MURANGA DISTRICT, CENTRAL PROVINCE,
KENYA, EAST AFRICA

BY

Mabula Maseni Sabula

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ABSTRACT

TRANSPORTATION IMPACTS ON AGRICULTURE
AND RURAL DEVELOPMENT: THE CASE OF
MURANGA DISTRICT, CENTRAL PROVINCE, KENYA,
EAST AFRICA

By Mabula Maseni Sabula

This study analyzes road transportation impacts on development, based on extensive data gathered between June 1972 and August 1973, as part of a study on the role of growth centres in rural development (Kimani and Taylor, 1973).

In terms of agricultural development, most farmers did not attribute their income changes to transportation development. Also the uneven use of inputs among farmers could not be explained by accessibility differences. Similarly, transportation did not seem to have played a key role in market expansion or product specialization.

However, for rural development, a significant number of businessmen ascribed their income changes to transportation development. Likewise, the main beneficiaries appeared to be urban residents and public transport operators. Further, the profits made by businessmen and public transport operators were mostly reinvested in development sustaining activities.

Our conclusions therefore support previous studies by Wilson (1966), Hoyle (1973), and others that transportation is not unique in development.

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To Professors Iain Wallace, Fraser Taylor and Michael Ray, who were very helpful "most of the time", to my wife Ruby and son Taja and to all others who talked with me about this study, thank you.

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LIST OF ABBREVIATIONS

SYMBOL

MEANING

EAC

East African Community

GFI

Gross Fixed Investment

ICDC

Industrial and Commercial
Development Corporation, Kenya

KNDP

Kenya National Development Plan

LIST OF EQUIVALENTS

CURRENCY

1 USA Dollar (U\$)	=	7.6173 Kenyan Shillings (KShs)
1 Pound Sterling (£)	=	15.9887 KShs
1 Canadian Dollar (C\$)	=	6.4955 KShs
1 Pound Kenyan (K£)	=	20 KShs
1 Kenyan Shilling (Ksh)	=	100 Cents (Kcts)

AREA

1 ha ²	=	2.4711 Acres	1 Acre	=	0.4047 ha
1 mi ²	=	2.5900 km ²	1 mi ²	=	640 Acres

DISTANCE

1 Km	=	0.6214 mi	1 mi	=	1.6093 km
------	---	-----------	------	---	-----------

WEIGHTS

1 metric ton	=	2,205 lbs	=	1,000 kg
1 long ton	=	2,240 lbs	=	1,016 kg

2

CHAPTER 1

RATIONALE AND CONTEXT OF THIS THESIS

"If I could do only one thing in a region to spur agricultural development, I would build roads. If to this I could add a second, I would build more roads. And if to these I could add a third, I would build still more roads " (Ashby, A.W., Agricultural Economist, quoted in Mosher, 1966, p.119). .

1.1 Introduction

The reasons for giving priority to rural and particular agricultural development in many of the developing countries "...are powerful and widely accepted" (Chambers, 1976, p.12). Although the emphasis of specific reasons may differ from one country to the next, the common underlying problem seems to be that of poverty.* Further, there appear to be no quick solutions to the alleviation of poverty, mainly because of the continued high population growth rates, the low agricultural productivity and the minor progress towards industrialization. The worsening terms of international trade for particular commodities, and the OPEC hike in oil prices since November 1973 have also contributed their share of

*For detailed discussion on poverty in this decade see the World Bank Development Report, 1979.

development problems. International aid* is certainly not the answer because it is unreliable, insufficient in quantity, and is frequently counter-balanced by the terms of trade which mean high prices for imports and low prices for exports (Nyerere, 1977). What is required is a "new international economic order", coupled with deep structural reforms in both the agricultural and industrial sectors of many developing countries.

The almost complete agreement as to the need for agricultural and rural development, however, leaves the contribution of individual sectors to be debated. Concerning the transport sector, there is currently no consensus, either by development theorists or practioners, on its exact impact or effects. A review of the existing massive description and analyses, seems to indicate that some basic level of transport provision in the earliest stages of development is desirable, beyond which the relationship may have: positive impacts, no impacts, or negative impacts.

This means that as development proceeds it becomes a matter of disagreement as to whether it is desirable to have more transport investment, or whether scarce capital resources, especially foreign capital, available for investment might more efficiently and beneficially be used to provide other complementary facilities such as markets, supplies and equipment, appropriate technology, social services and other production incentives for agricultural and rural development.

*For a detailed discussion of emerging strategies in foreign aid, by the World Bank, UNDP, USAID, see Rondinelli and Ruddle, 1978.

Even the basic level, that is, precondition for development, is almost impossible to determine because of the many other factors involved in development. Wilson, after studying some transportation development projects in South America concluded that:

...where there is no initial growth or development, a single transportation project cannot be expected to accomplish much. It is in this type of situation that a coordinated set of investments, inducements, and policies is most essential...The initiation of growth is a fundamentally different and more difficult task than its facilitation and normally requires a more careful appraisal of noneconomic factors as well (Wilson, 1966, p.212).

In addition to transport, other capital and natural resources, Wilson then named some of the important noneconomic factors in the growth process such as: appropriate psychological attitudes toward economic activity and change; entrepreneurial abilities; technical abilities and education; and the legal, social and political environment.

Hoyle, on the other hand, by assuming that the "magic" basic level of transport provision has been reached in developing countries, summarizes the controversy about transportation impacts on development by stating:

The less-developed countries have progressed beyond a stage when almost any transport improvement seemed bound to bring economic benefit, to one in which the main need is not just for more and better transport facilities, rather for a greater degree of

precision in the establishment of transport policies in the sight of some appreciation of what transport can and cannot be expected to do and of what else must be done if transport investment returns are to be maximized. Transport does not work miracles, and integration of transportation planning with other economic sectors is essential to development strategy (Hoyle, 1973, p.16).

Referring to rural transport provision, he warns transportation planners:

...we should not lose sight of the fact that the most primitive modes - head portage and canoes - account for the greatest proportion of goods movement in the less developed countries... Therefore, a high priority of transport policy should surely be to extend and improve rural road systems so as to bring some form of modern transport within reach of most people and thus increase overall mobility (Hoyle, 1973, p.16).

From Hoyle's summary, we may safely conclude that it is truly beneficial to rural residents if governments do invest in rural transport. Table 1.1 appears to confirm this conclusion and illustrates the huge magnitudes of transportation investment in developing countries. However, the data also seems to indicate that there are indeed no guidelines as to the share of GNP or GFI that should go into transport investment at any stage of development. It is not even clear whether the proportion of resources devoted to transport increase or decline as GNP per capita increases, thus leaving the whole debate wide open.

TABLE 1.1

5

PERCENTAGE OF GFI ALLOCATED TO
TRANSPORT AND COMMUNICATIONS IN
FORTY FIVE COUNTRIES, 1945-65

INCOME LEVELS	NO. OF COUNTRIES	% RANGE OF GFI*	% AVERAGE
Over \$500 per Capita	15	13-16	19
\$200-500 "	8	14-22	19
\$100-200** "	7	4-26	15
Below \$100 "	5	16-50	27
Socialist Countries	10	7-16	12

* Excludes automotive equipment.

** Kenya fell in this group.

Source: World Bank, Transportation Sector Paper, p. 5.

It is also informative to note from the table the low levels of investment in transport by socialist countries. McCall provides an answer, when he writes:

In socialist countries there is a different approach. Here the guiding principle is that transport must be kept to a minimum; it is there to serve industry and agriculture and is not a sector, far less a productive sector, in its own right... therefore transport always lags behind other investment... (McCall, 1977, p.102).

McCall however proceeds to caution developing countries against blind copying of the socialist policy:

However there are obvious drawbacks to such a policy; in both the USSR and China there have been bottlenecks in development due to a lack of or shortage of transport at crucial times in crucial sectors (McCall, 1977, p.102)

Hence there is a need to strike a balance somewhere. Assuming that the goal of most governments is to improve the quality of life of most of their rural residents, then it makes sense to ask some of the following fundamental questions: Who really benefits from rural transport improvements? Is transport a precondition for agricultural and rural development? Does transportation increase exploitation or independence of rural areas from urban areas? This thesis seeks to provide partial answers to these and other questions, using a case study of Muranga District, Central Province, Kenya, East Africa.

1.2 Kenya's Rural Development Policies

Kenya is a mixed (capitalistic) economy, with the private sector having the largest share. The public sector accounts for approximately 24 per cent of GDP while the private sector accounts for 76 per cent. These relative shares have remained fairly constant over the years. The contribution of the public sector to GDP takes two forms -- the provision of services (social overhead capital) and public enterprise activities (directly productive activities). The former has grown most rapidly since independence, rising to 14.2 per cent of GDP in 1976 from 12.9 per cent in 1964. The latter has in fact fallen from 11.2 per cent in 1964 to 10.0 per cent in 1976, despite the fact that the share of the country's capital formation allocated to this sector increased from 15.2 per cent to 25.4 per cent over the same period.

In the private sector there are signs that the growing monetary (modern) sector is gradually breaking down the dual nature of the economy, as the role of the traditional (subsistence or semi-monetary) economy continues to be diminished. This is supported mainly by the rapidly increasing marketed production from small farm areas, and the increased contribution of manufacturing to GDP. The latter has almost doubled since independence (1963), rising from 8.8 per cent in 1964 to about 16.2 per cent in 1978.

Likewise, the overall economy has grown relatively faster since independence when compared with her former EAC partners. The average annual rates of growth of GDP

between 1964 and 1977 was 5.8 per cent. However, the GDP per capita has not grown as fast because of high population growth rates averaging about 3.5 per cent annually. The population has in fact increased by about 3.75 times from about four million in 1931 to fifteen million in 1978 and projected to more than double the present figure to thirty-four million by the year 2000.

The demographic structure of the country also poses some problems in providing jobs, goods and services. Thus in 1978, 48.3 per cent of the population were children (0 - 14 years) and 48.0 per cent were of working age (15 - 59 years), giving a potential labour force of six million (85 per cent of working age population) in a country where there were slightly less than one million individuals employed for pay. This makes the problem of youth unemployment and rural underemployment almost impossible to manage. Despite this population problem, there are indications that the poorer section of the society is sharing more in the wealth of the country. Thus the share of the poorest 25 per cent of the population in the country's income rose from approximately 4.1 per cent in 1969 to 6.2 per cent in 1976 whereas the share of the richest 10 per cent dropped from 56.3 per cent to 37.7 per cent during the same period (KNDP, 1979-83, p.7).

However, the gains of the poor are still very minimal, considering the massive poverty that still exists in both urban and rural areas. The government has now identified five poverty groups, mostly in rural areas which will be given special attention (KNDP, 1979-83). This approach is

much better than in the previous plans which sought to alleviate poverty without identifying any target groups. The groups identified are: pastoralists (195,000 nomadic families) with average annual household incomes of sh. 2,000 or less; small farmers (618,000 families) with average annual household incomes of sh. 2,000 or less; landless rural workers and squatters (410,000 families) with average household annual incomes of sh. 2,250 or less; urban poor (40,500 families) with average annual household incomes of sh. 2,400 or less; and the handicapped adults (140,000 families) with average annual household incomes of sh. 3,000 or less. These families include a population of about seven million which is about 50 per cent of the total population. These families include nearly all of the rural landless and squatters and pastoralists and nearly 40* per cent of all small farm families. Since the majority of these working poor will continue to find employment in rural areas, the government has adopted a small farms policy in agriculture; and the growth centre concept in rural planning so as to make the rural areas more livable by providing some of the basic infrastructure which will also hopefully generate or attract private small scale industries.

*This excludes another 14 per cent of small families with average annual household incomes in the range sh. 2,000 to sh. 3,000. The GNP per capita is about sh. 1,700.

1.2.1 The Small Farms Policy

On the whole then, the majority of Kenyans, of which 85 per cent currently live in rural areas, will continue to gain their livelihood in farming. As time goes on, the scarcity of arable land (high and medium potential land), which is estimated to be 17 per cent (99,050 Km²) of Kenya's total land area of 569,200 Km² will increase. The average overall population density was .26 persons per Km² in 1978, while the density on arable land was 135, (excluding Nairobi and Mombasa). By the year 1983, these densities are expected to be 31 and 158 respectively, and by 2000, 50 and 250 respectively (KNDP, 1979-83, p.65). This scarcity of good farm land will mean more reliance on small farms as opposed to large farms. "Large farms are defined as those "...which used to be included in the former scheduled European areas, less those which have been transferred for subdivision into settlement schemes" (Kenya statistical Abstract, 1976, p.113). The average size of large farms is about seven hundred hectares, though there are some relatively smaller and larger units (Table 1.2). The small farms which used to be in the former non-scheduled (African) areas are generally under five hectares, here too there are some outside this range (Table 1.3). In 1976 it was estimated that of the total agricultural labour force, about 77 per cent were engaged in small farms, 7 per cent in large farms, 4 per cent as squatters on large farms and 12 per cent as pastoralists (KNDP, 1979-83, p.230).

As such the overwhelming importance of self-employment (producing both food and marketed commodities) in the small farm sector has essentially dictated the government policy

TABLE 1.2

11

SIZE DISTRIBUTION OF LARGE FARMS IN KENYA, 1976

SIZE OF FARM (Hectares)	NUMBER OF FARMS*	% DISTRIBUTION	% DISTRIBUTION AT INDEPENDENCE
0-19	452	13.8	8.6
20-49	361	11.0	8.4
50-99	320	9.7	7.9
100-199	384	11.7	10.7
200-299	345	10.5	10.9
300-399	258	7.8	8.5
400-499	219	6.6	8.1
500-999	492	15.0	18.5
1000-1999	211	6.4	9.2
2000-3999	111	3.3	4.3
4000-19999	107	3.2	3.7
20000 and Over	13	0.3	0.3
ALL SIZES**	3273	100.0	100.0***

* Large farms includes those with mixed crops, livestock and plantations with industrial and export crops.

** The total area in each class width can be estimated by multiplying the average (midpoint) by the number of farms in each group.

*** The number of large farms at independence in 1963 was 3368. Those clearly affected by the subdivision have been those between 400 and 3999 hectares.

Source: Kenya Statistical Abstracts, 1969, 1977, p. 119.

TABLE 1.3

12

SIZE DISTRIBUTION OF SMALL FARMS IN KENYA, 1975

SIZE OF FARMS (Hectares)	NUMBER OF FARMS* (nearest thousand)	% DISTRIBUTION
Below 0.5	206	13.9
0.5-0.9	269	17.9
1.0-1.9	400	27.0
2.0-2.9	224	15.1
3.0-3.9	132	8.9
4.0-4.9	107	7.2
5.0-7.9	96	6.5
8.0 and over	51	3.5
ALL SIZES	1,483**	100.0

* Includes both registered and unregistered small farms. By 1969, about 770,000 small farms had been registered. The registration process is now almost complete.

** This total may not add up exactly owing to rounding; the total area in each class width can be estimated by multiplying the average (mid-point) by the number of farms in each group.

Source: Kenya Statistical Abstract, 1977, p. 135.

to encourage the individual small family farm. This will require the subdivision of all large farms, with the exception of certain "ranches and plantations where economies of scale already exist" (KNDP, 1979-83, p.51). Because the issue of subdivision is politically sensitive, the rate at which it has been implemented has been relatively slow, as exemplified by the fact that only about one hundred farms (approximately one-third of total mixed farming area) have been subdivided since independence. The government also hopes to discourage absentee landlords, landlord-tenant systems, and the holding of land for speculative purposes, through tougher regulations; a task that will be difficult to achieve mainly because about 15 per cent of the agricultural labour force is landless.

The emphasis on small farms is also supported by other evidence besides self-employment generation. Tables 1.4 and 1.5 show the relationships among farm size, output, land utilization, employment and mechanical expenditure on small farms and large farms respectively. By examining these two tables it is possible to generalize that on the whole the small family farm produces more per acre; utilizes land more intensively; employs more labour-intensive methods of production and therefore less productivity output per worker. Moreover, the value of marketed output from small farms has grown to surpass that of large farms; rising from 18 per cent in 1954 to 21.7 per cent at independence (1963) and 56 per cent in 1978 (Senga, 1976, p.95; Kenya Economic Survey, 1979, p.94).

TABLE 1.4

THE RELATIONSHIP BETWEEN FARM SIZE, OUTPUT, LAND
UTILIZATION, EMPLOYMENT AND MECHANICAL EXPENDITURES
ON SMALL FARMS* IN KENYA, 1968

Farm Size Group (Acres)	Average Farm Size (Acres)	Gross Output Sh. per Acre	Land Use		Labour Inputs - Men Equivalent per 1,000 Acres			Expenditure on Machinery Cultivation** { Sh. Per } { Crop Acre }
			Proportion of Land Under Crops (%)	Grazing Land per Stock Unit (Acres)	Family Labourers (No.)	Regular Labourers (No.)	Total Labourers (No.)	
Less than 10	7.3	635	45	0.9	781	27	808	6
10-19.9	13.8	250	30	2.6	370	29	399	11
20-29.9	23.5	156	24	3.0	211	23	234	9
30-39.9	34.7	161	16	3.8	135	24	159	28
40-49.9	44.4	113	14	4.1	103	21	124	21
50-59.9	52.3	98	13	5.1	93	18	111	19
60-69.9	64.5	98	19	5.3	77	32	109	12
70 or more	124.8	111	14	3.6	42	28	70	10
Farms	30.5	156	19	3.5	164	26	190	14

* Calculations based on settlement schemes.

** These figures do not reflect the charge per acre for machinery services, but indicate the average expenditure over all crop acres.

Source: Ministry of Finance and Planning, Kenya Statistical Digest, Volume X, No. 1, March, 1972, p. 7, reprinted in *Serga*, W.M. et al, 1976, p. 94.

TABLE 1.5

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THE RELATIONSHIP BETWEEN FARM SIZE, OUTPUT, LAND UTILISATION, EMPLOYMENT
AND MECHANICAL EXPENDITURE ON LARGE FARMS IN TRANS NZOIA

DISTRICT, KENYA, 1971

FARM SIZE GROUP (acres)	AVERAGE FARM SIZE (acres)	GROSS OUTPUT (Sh. per acre)	Land Use		Employment-Men-Equivalents*			EXPENDITURE ON MACHINERY CULTIVATION (sh. per crop) (acre)
			PROPORTION OF LAND UNDER CROPS (%)	GRAZING LAND PER STOCK UNIT (acres)	REGULAR Labourers (NO.)	CASUAL Labourers (NO.)	TOTAL	
less than 250	183	248	46	3.2	38	55	93	135
250-499	326	161	21	3.1	31	31	62	140
500-749	546	133	24	3.8	26	17	43	136
750-999	816	113	19	6.2	29	15	44	146
1,000-1,249	1,012	89	13	4.4	19	15	34	119
1,250-1,499	1,194	149	18	4.2	28	18	46	167
1,500-1,999	1,502	128	10	4.3	18	10	28	155
2,000 or more	1,979	65	9	7.1	7	7	14	131
ALL FARMS		890	16	4.8	21	15	36	143

per 1,000 usable acres

Source: Ministry of Finance and Planning, Kenya Statistical Digest, Volume X, No.1, March 1972, p. 8, reprinted in
Seega, W. M. et al, 1976, p. 95.

1.2.2 The Growth Centre Policy

The growth centre concept is part of Kenya's rural development policies. "Centres have been divided into four categories depending on the services performed, the economic potential of the area served, the population served and the spatial distribution required to promote development through the nation" (KNDP, 1979-83, p.45). The population characteristics of the four levels of centres are shown in Table 1.6*. Although the overall purpose is to disperse opportunities, the specific functions of the centres in order of descending importance and size are: urban centres are towns which have been designated to serve as the main commercial centres for an entire district; rural centres are designated to serve rural areas with administrative, social, commercial services and other services, and with the progressive development of the rural areas they may grow into small towns; market centres are designated for the provision of a lower level of services, as well as the usual traditional produce markets; and local centres are designated to be important trading and social centres especially in sparsely populated areas and usually have no administrative functions. The growth centre hierarchy follows the administrative hierarchy at the district level very closely.

The population of urban areas (2000†) is expected to grow at more than twice (over 7 per cent) the annual rate of the total population (at 3.5 per cent) or rural population (at 2.8 per cent) between 1978 and 1983 as new towns emerge

*For guidelines concerning the location of services in growth centres, see Appendix 1.1.

TABLE 1.6

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POPULATION CHARACTERISTICS OF THE
DESIGNATED GROWTH CENTRE HIERARCHY

CATEGORY OF CENTRES	RESIDENTS OF CENTRES	Average Population CATCHMENT AREA	NUMBER OF CENTRES	Urban classified*** (over 2,000 residents)	
				1978	1983
Local Centres	Under 300	5,000	1,015	0	1**
Market Centres	Under 1,000	15,000	420	0	0
Rural Centres	Under 1,500	40,000	150	10	11
Urban Centres	22,130*	120,000	96	58	96
TOTAL			1,681	68	108

* If the eleven municipalities of: Nairobi, Mombasa, Kisumu, Eldoret, Kitale, Kakamega, Nakuru, Thika, Nyeri, Embu and Meru were not included, the average would be 4,565.

** One of the centres now classified as local, Faza in Lamu District, is growing rapidly and is expected to achieve urban status by 1983, but its catchment area will still be about 5,000.

*** In 1948 there were 17 urban centres with resident populations of 2,000 or more. By 1962 there were 34, and now double as shown in the table.

Source: KNBP, 1979-83, p. 46.

to meet the needs of rural areas and the natural growth of existing towns is supplemented by rural migration.

Therefore the various growth and service centres, especially at the local and market level, must be appropriately located throughout the country so that they can perform their main function, that of providing direct services to their catchment populations. The importance of building from smaller centres up, as opposed to the conventional economic theory of "trickle - down" from a few large urban centres is emphasized by Rondinelli and Ruddle who concluded that:

In short; a more balanced spatial system can be achieved in most developing countries by building from the "bottom up", by stimulating increased production, employment, and demand in rural areas, and by extending to smaller settlements the services and facilities that will encourage increased productivity and the consolidation of rural populations into large economic centres (Rondinelli and Ruddle, 1978, p.17).

1.3 The Synopsis of the Key Hypotheses to be Tested

The main thesis of this study can therefore be summarized in the following six hypotheses:

1. Improved transportation may raise agricultural production by increasing the availability of purchased and non-purchased inputs. -- improved transportation may enable a majority of the small - scale farmers to achieve a significant increase in their output by increasing the accessibility to the villages of extension agents and other technicians; by increasing the availability of other major inputs such as fertilizers, pesticides and weed killers, manufactured feeds, purchased seeds, farming equipment and other inputs that may be required. Although, the essential role of an agricultural extension agent is to link agricultural research centres and farmers, transmitting new technologies to the farmers, and current farming problems to the researchers, that is, diffusion of innovation; he may also serve as a link between the farmer and suppliers, credit, markets or other services deemed desirable by the government or the world at large, thus increasing the importance of his role in the overall social system;
2. The more frequent use of purchased and non-purchased inputs by large farm owners as compared to small farm owners may be caused by their different levels of mobility resulting from locational differences with respect to transportation development. -- there may be some uneven

application of extension services between small - (nonprogressive) and large - (progressive) scale farmers caused by their different levels of accessibility. In Kenya, at least in theory, it is arranged for every small farm family to be visited once a year by an extension agent. In practice, however, there may be some unequal provisions of visits among farmers in different villages or even same village, thus accentuating the gap between the rich minority large - scale farmers and the poor majority of small - scale farmers;

3. Improved transportation may increase marketed output from small - scale farms. -- improved transportation may raise the incomes of small - scale farmers through high levels of marketed outputs by increasing their accessibility to one or more rural markets. This can also lead to changes in the agricultural pattern from an overemphasis of lower paying (and less nutritious too) traditional food grains and cash crops to higher paying (and more nutritious) vegetables and dairy products due to the increased marketing opportunities to nearby local markets or more distant rural markets which were formerly restricted by inferior transport technology such as head portage or pack animals (donkeys);
4. Improved transportation may benefit rural businessmen more than small - scale farmers. -- improved transportation may benefit rural businessmen (general or specialized, wholesalers

or retailers) more than small - scale farmers; since they are then able to expand their markets and also variety and delivery reliability of their stocks. One might suggest that their benefits are even greater if they own land or own "matatus"*; for this may further work to the disadvantage of small - scale farmers (in particular landless farmers) who may be at the mercy of these businessmen in terms of prices paid for their produce or in terms of providing passenger transportation, and to a limited extent goods transport. The farmers are even in trouble when transport costs vary greatly with road conditions, rainy seasons, and other variables with little government control;

5. The benefits from improved transportation tend to accrue to urban residents and "matatu" operators rather than small - scale farmers. -- improved transportation tends to increase rural and urban interaction, but mostly to the benefit of urban consumers, urban merchants, and "matatu" operators; and to some smaller extent small - scale farmers. The urban consumers may mainly benefit from increased (hopefully cheap) agricultural produce; the urban merchants from the increased demand of manufactured food products (meat, fish, sugar, tea, canned foods etc.) and household goods (kerosene, soap, toothpaste, etc.); the "matatu" operators from the increased passenger flows; while the rural residents from increased urban employment opportunities;

*"Matatu" is defined as a small passenger-carrying vehicle under three tons tare (empty) weight.

6. The group which gains most from transport improvements are the "matatu" operators. -- improved transportation services (and better infrastructure) favour the rich rural areas (those with high development potential) than the poorer areas, because "matatu" operators seek only to maximize profits by operating mainly on profitable (high demand) routes. We shall argue that infact the "matatu" operators are the ones to whom most of the benefits from improved transport accrue, thus increasing overall income inequalities*. The uneven accessibility among individuals or areas may have an overall effect on the quality of village life, in terms of access to social services, and may retard the flow of information in the near absence of other communication channels in rural areas. We shall further suggest that the profits accumulated by "matatu" operator entrepreneurs are not usually invested in growth sustaining activities, but are used to buy luxury goods and support big extended families.

This study was not concerned with transportation on the farm, but with transport to and from collection points or markets within the district, because on the small farms and within villages, transport is still by head portorage. A small fraction of inter-village "grain" may be carried by donkeys or bicycles. Away from the roads, there is very little use of "wheels", and head portorage** of harvest, fertilizers and other supplies is a way of life. As Makings notes:

*Matatu operators are usually urban rather than rural based.

**Although this is technically correct; in Muranga District women carry the produce to markets on their backs.

...in their haste to swap the oxen for the tractor neither peasant or politician is likely to envisage fully the consequences this may have on the ancient concept of agriculture as a way of life (Makings, 1966,p.2).

Under these kind of circumstances, it becomes very difficult to fully appreciate the real impacts of transportation, some of which may not be quantifiable, because they strike at the very roots of the traditional society.

It is clear now that this study is primarily concerned with agricultural and rural development, although as implied in the hypotheses and elsewhere, this kind of development cannot be isolated from urban development, because they both form parts of the same system. However, "agricultural development is not synonymous with rural development, although certain elements are common to both" (Mosher, 1972, p.1). On the other hand, the need to have employment creation as a major objective of rural development makes agriculture the heart of rural development.

In testing the first three hypotheses, "agricultural development" will be defined as increases in agricultural production as measured by farm income improvements or declines. Likewise, the last three hypotheses, will refer to "rural development" which will be defined as increases in rural incomes resulting from non-agricultural activities as measured by business income improvements or declines. The terms "quantitative", "qualitative" and "self-sustaining" although not used here have sometimes been used when defining rural development (Lele, 1974, p.2). The quantitative element refers to long - term economic growth and the

qualitative element pertains to reaching the desired goal of socio-economic structure, while self-sustaining means continued improvements overtime by getting the rural residents involved in the development process. The term "transport development" will mean increased accessibility due to new or improved road infrastructure or more availability of vehicles.

1.4 Data Sources and Methodology

As stated in the previous section, the primary objective of this thesis was to examine road transportation impacts on agricultural and rural development. The area of the study was Muranga District, Central Province, Kenya, land of Kikuyu tribe. This was chosen because: firstly, it is an area of high population density and high agricultural potential, consisting mainly of small - scale farms, which is typical in many developing countries; secondly, the area has developed a relatively comprehensive road transport network and rural and urban markets over the years, due to the attention given to it prior to and after independence; and finally, there were public transport survey data for the area readily available at the university. The other secondary sources of data were Kenya government publications, of which the main ones were: the five year development plans from 1964 - 1983, the annual statistical abstracts from 1964 - 1977 and the annual economy surveys from 1964 - 1979. Similarly, there were other minor sources from books and journals as is indicated throughout this report.

The primary source of data available at the university was gathered by field research teams between June 1972 and August 1973, as part of a study "to examine the role of small growth centres in rural development and how the efficiency of such centres could be improved" (Kimani and Taylor, 1973, p.4). The research project was a joint one between the Department of Geography, University of Nairobi and the Department of Geography Carleton University; with research funds made available by the International Development Research Centre (IDRC), Ottawa, Canada. The data collected was of two main types: (i) primary data collected in the field, and (ii) secondary data derived from documentation much of which was in the form of unpublished records. "In general the reliability of the data, ...was as high as could possibly be expected given the field circumstances" (Kimani and Taylor, 1973, p.27).

Although the data were not specifically geared to the test of the hypotheses in this thesis, careful examination had revealed that the data were overall appropriate for the study irrespective of the usual problems associated with field data collection; such as "many of the responses to questions on investment of capital were of dubious value", except for comparative purposes (Kimani and Taylor, 1973, p.27). A possible disadvantage is that the author was not involved in the data collection and fieldwork, however, his experience in rural Tanzania compensates for any lack of first hand experience in Muranga.

There were ten computerized data files, of which only five containing data pertaining to transportation were used. These were: the market file, the composite village file, the "dukas" (shop or business) file, the farm file and "matatu" (Public transport) file.* All the files, with the exception of the transportation file were geocoded using a nine digit code allowing access to be made at the "district" level, the "divisional" level, the "locational" level, the "sub-locational" level, and the "village" level. Each of these, with the exception of the village, is an administrative planning unit of decreasing size.

The analysis is therefore based on observations made on actual day - to - day effects by the rural residents themselves as reported in the direct interviews. The usual approach of road and no-road comparison was not used, mainly because disaggregate, locational and time series data on

*For a listing of the variables pertaining to transportation from the five files, see Appendix 1.2.

the transportation network was difficult to obtain. However, it was assumed that the African farmer who had lived in the same location most of his adult life, surely knew or could recall the socio-economic impacts of transportation over time.

The methodology of this study followed the normal steps involved in any scientific investigation. Six steps were clearly identifiable. The first two, identification and definition of the problem entailed the preparation of the thesis proposal. The main outcomes of this, were a list of the six hypotheses, data sources and a bibliography. The next two steps, data collection and analysis, involved essentially the reading of reference materials and the testing of the hypotheses. The last two steps included the presenting of conclusions to the thesis supervisor and the writing of this report.

The data analysis was essentially qualitative. Evidence for the hypotheses was in terms of tables and figures; either in terms of frequency tables for the replies to specific questions or in terms of descriptive statistics or occasionally some Pearson correlation coefficients were calculated. Unclear statistical inferences were avoided. Since many developing countries have low density transport networks, new or improved facilities are likely to produce more impacts. Thus there is a need to understand which impacts do occur, which are claimed to occur, which are intended by planners or which can be foreseen in particular socio-economic environment. Moreover, these impacts may not easily be quantifiable, making qualitative judgements of when and where, and in what circumstances will transport have desirable impacts on agricultural and rural development the only answer.

1.5 Organization of this Report

In order to explore further the evidence to test the hypotheses outlined in the last section, the report will be organized into four parts.

Part I, is a more comprehensive survey of the literature, with Chapters 2 and 3 concerned with the present understanding of the relationships between agriculture and development, and transport and development respectively. Because this study is not meant to be a general thesis on development, some of the discussion on these two chapters and elsewhere may appear rather brief and superficial to development specialists. However, as might be implied, any theoretical discussions on development included in this report are provided purely as a background for readers less familiar with the basic and current arguments in this field.

Part II, provides a more detailed background on development in Kenya, where Chapters 4 and 5 deal with the agricultural and rural sector, and the rural transport system respectively. These two chapters provide an overall description and to some extent an analysis of the past and current situation, major government policies and conclusions thereof.

Part III, discusses the case study itself. Chapter 6 analyses the transportation impacts on agricultural development and provides evidence for the various hypotheses based on perceptions of the rural residents from the following sample categories: buyers and sellers at 49 markets, residents of the 253 villages, 3097 shop (business) owners,

5142 farm owners, and 365 "matatu" transport operators. Similarly, Chapter 7 considers transportation impacts on non-agricultural aspects of rural development using the same samples.

Part IV, which consists of chapter 8, gives the overall conclusions of the study.

PART I

SURVEY OF LITERATURE

CHAPTER 2.

AGRICULTURE AND DEVELOPMENT

"...the basic reason why agricultural growth is so important in many countries is not because people need more food. Instead, it is because so many and such a percentage of the people are dependent on farming for their income and because alternate employment opportunities are so limited (Mosher, 1966, p.79).

2.1. Introduction

Since the Second World War an immense amount has been written about agricultural and rural development in Asia, Africa and Latin America. Most of the early writings either emphasized that the first priority in the development efforts should be given to industry or on the other extreme to agriculture. However, "there is now pretty wide consensus that the extremists on both sides of this debate were wrong, and that the complementarities between agriculture and industry are so pervasive that except in very unusual cases neither sector can progress without substantial growth in the other" (Hapgood and Millikan, 1967, p.1). The evidence comes mainly from the failure of several industrial development plans, as many developing countries rushed to industrialize upon attaining independence. Clearly then, agriculture was the loser in this tug of war.

As such the growth of agricultural production has generally lagged the rest of the economy and despite the green revolution* the standard of living of the majority of rural residents has yet to improve significantly. Some of the rural areas in many developing countries have thus failed to provide even enough food for themselves and the rapidly growing urban areas; and also to provide the extra markets required to sustain the expanding industrial sector due to their low incomes. In addition to this, the overall weak economic absorptive capacities (low domestic savings, poor administrative machinery, undeveloped human capital and poor social infrastructure) of many developing countries, makes a search of alternative strategies mandatory if the welfare of most citizens (rural residents) is to be maximized.

Therefore, the simple two sector models such as Lewis (1963), where industrial growth in urban areas (modern sector) expands to absorb the surplus labour of the rural areas (traditional sector) and Prebisch (1950) description, where he views the world economy as a global periphery producing food and raw materials for a great industrial centre are too simplistic to capture the entire explanation of development. Rondinelli and Ruddle (1978) have summarized the shift of thinking in this field. They regard development as a complex process of inter-related (integrated) parts, where very little is known about the best combination of technical, social, economic, and administrative resources needed to stimulate rural development.

*The present green revolution which encompasses both biological and socioeconomic developments, had its beginnings in the 1940's in Mexico, when a new variety of wheat was developed. This new hybrid outyielded the best traditional varieties by one to three times or more.

As a result, since the late 1960's, increasing attention has been given to rural development, in particular agricultural development by both governments and international development agencies. The purpose has been to increase agricultural productivity of both food and cash crops, so as to alleviate malnutrition, increase rural incomes (markets), reduce food imports, promote agro - industries and to increase foreign exchange earnings to finance the purchase of capital and consumer goods. "Thus the performance of agriculture in at least the larger of the developing countries is of vital concern not only to those interested in rural development but also to anyone committed to the promotion of sustained national economic development" (Hapgood and Millikan, 1967, p.7). For a majority of the population in developing countries live and will continue to live and work in the rural areas in the foreseeable future. As a rule of thumb, more than 50 per cent of the labour force in many developing countries is engaged in agriculture. The percentages reach 75 per cent or more in some African countries, like Kenya, Malawi, Tanzania, Uganda, Ethiopia and Chad.

Although agriculture provides over 50 per cent of all employment, its share of GDP is generally far less, averaging about 33 per cent, with the exception of few countries such as those mentioned in the previous paragraph. The main reason is low labour productivity (Table 2.1). It was estimated* that, agriculture as a whole generally accounted for nearly twice as much employment as it did income, and the average productivity of labour in the agricultural sector was less than half that of the other economic sectors.

*Estimations were based on the figures shown in the World Bank Development Report, 1979, pp.126, 130, 162.

TABLE 2.1

WEIGHTED AVERAGE OF AGRICULTURAL INVESTMENT
IN DEVELOPING COUNTRIES, 1950-65

MEASURE	12 COUNTRIES 1950-60	18 COUNTRIES 1960-65
As a % of GFI	11.5	12.3
As a % of Agricultural Output	6.9	7.4
Gross Marginal Capital Investment Ratio		
(a) in agriculture	1.78	1.73
(b) in the entire economy	2.70	3.20

Source: Szezepanik, 1970, p. 2.

The relatively low labour productivity of the agricultural sector can be attributed to the generally low priority which politicians have assigned to agricultural development in comparison to urban industrial development as already indicated. This has resulted in a low proportion of total investment being allocated to agriculture (Table 2.1); a proportion which does not reflect the importance of agriculture to GDP or to its contribution to total employment. The overemphasis on urban investment over rural capital formation has usually resulted in: slow or negative growth of food and cash production, rising agricultural prices, increased imports or decreased exports of agricultural products, etc. In short, massive poverty and unemployment reinforced by low productivity in agriculture and technologically inferior farming at a low subsistence level has caused significant migration from the rural areas to the slums of few primate cities to seek the "good" life of chronic unemployment or underemployment.

The rest of this chapter will further elaborate on some of the major issues touched on in this introduction, specifically: characteristics of agriculture as an industry, objectives for agricultural development and factors affecting agricultural development, with particular reference to land tenure and transportation. These two factors were chosen because, on one hand the author thinks that land tenure is the most important factor; and on the other, the transportation factor is the centre of study for this thesis. The general relationship between transportation and development will be discussed in detail in the next chapter.

2.2 Characteristics of Agriculture as an Industry

In formulating objectives for agricultural development certain characteristics peculiar to agriculture as an industry should be considered. Some of the major ones are:

1. Agriculture is a biological production process which uses growth processes of plants and animals. This implies that farms are located throughout the rural areas of any given country to take advantage of the natural factors such as sunlight, fertile soils, rain etc. It follows then that any required services must be provided equally widely, making it an expensive proposition. Similarly, unlike other industries, agriculture produces a wide variety of commodities • food, fibres, oils, leather, rubber, etc. which may also produce different service requirements.
2. The farms in most countries vary enormously in size, from subsistence to commercial farming. This creates a heavy burden in modernization attempts as it "...requires shifting each small farm unit from a relatively simple pattern of producing a few traditional crops with few if any purchased inputs to a multiple or specialized enterprise with many interrelated products and inputs" (Hapgood and Millikan, 1967, p.18). This can pose problems because those with smaller farms usually have little cash to purchase inputs;

3. Agriculture is an industry composed of many independent entrepreneurs (farmers), making any program of change very difficult to implement. These individual farmers who make day-to-day decisions must be convinced of the advantages of any change; in contrast to other industries where few managers can easily be controlled. To achieve two way effective communication with the farmer a complex and extensive organizational/administrative is essential;
4. Agriculture is conceived as a low-status occupation in most developing countries.* However, if agriculture is to be modernized, it has to attract the young, brightest, most imaginative, most innovative and most ambitious members of the rural community in farming and related activities. Trained nationals are a must to manage farm businesses and some related activities such as research and extension;
5. Modernizing agriculture is a very slow process, which can take decades, unlike other industries where machines and operators can easily be trained. Sustained increased agricultural output requires technical, economic, attitudinal, and political transformations of the whole structure of rural society, the way of life.

This list is not exhaustive, but it shows us the complex nature of agricultural development in developing countries.

*Even this author had the same notion before he left Tanzania.

2.3 Goals for Agricultural Development

It is obvious by now that the basic economic goal of agricultural development is to increase agricultural production. There are two ways to increase agricultural production: the first is to expand the capacity of the agricultural industry for future production; and the second is to take measures to increase the degree to which present opportunities for greater production are actually exploited.

To expand the future capacity of the agricultural industry, Mosher (1966) suggests that the priority goal should be the creation of "modern agriculture". This he defines as one in which:

1. The technology and efficiency of farming are continuously being improved;
2. The kinds of commodities produced on farms are constantly changing (at least in their proportions to each other) in response to changing market demands and costs of production;
3. The quality of land, the competence of labour, and the farms and quality of capital instruments used in farming are steadily being improved;
4. The proportions in which land, labour and capital are combined in farming keep changing in response to changes in population growth rates, changes in alternative employment opportunities, and changes in farm technology as expressed in shifting relative prices of factors of production;

5. Finally, a modern agriculture is one that is served by private and public agencies that are continuously being adapted to serve new functions in new ways.

And to take measures to increase the degree to which the present opportunities are exploited for greater production, Mosher (1966) names four goals as follows:

1. To increase the value-added in agriculture. A productive agriculture is desirable not so much because it produces food as because it can produce income for individual farmers and for the nation. Hence, each farmer is more likely to squeeze more income out of the resources of his own farm and location if he is free to select his own pattern of production than if he is merely forced* to grow certain crops in order to help meet government commodity targets;
2. To provide remunerative employment. As we have said several times, agriculture continues to provide employment for at least as many people in each country as it does now, and probably for many more, if increasing numbers of workers are not to remain unemployed because of the high rates of population growth and the high cost of increasing non-farm employment;
3. To overcome adverse foreign exchange situations. The foreign exchange costs of importing inputs such as tractors, fertilizers etc. must be

*This has been the experience of the author in his rural district, Mwanza, Tanzania. Farmers have switched to rice and other crops away from cotton, as the central government forces the growing of cotton to meet expected export targets, with very little or no price (or other) incentives.

carefully weighed against the employment effect of investing large amounts of scarce capital in domestic production facilities. Farmers must be encouraged to produce enough food for their own use and the domestic market; and commodities for which there is a foreign market or that which can substitute for ones now being imported;

4. To reduce rural poverty. This is the fundamental objective. It raises the basic problem of balancing productivity and equity, and will be discussed further on the section devoted to land tenure. Clearly it is possible to have increased agricultural production by concentrating resources on the more promising regions and individuals and thereby still have large numbers of very poor people in rural areas. Those who are likely to have greater income possibilities than others are: large farm owners over small farm owners, farm operators over landless farm labourers, farm owners over tenants, and those with better land over those with poorer land (Hapgood and Millikan, 19

The relative importance of the objectives will be different from country to country and from one time to another in the same country. The objectives may even have conflicts among them.

2.4 Factors Affecting Agricultural Development

We are now at a point to summarize the various factors that may affect the rate of agricultural development. Mosher (1966) asserts that any factor to encourage agricultural development must: (a) modify the production process of agriculture, or (b) change the behaviour of farmers, or (c) change the nature of individual farms, or (d) change the relationship between costs and returns in individual farm businesses. These factors are shown on Table 2.2, and each of them may accomplish more than one of the four functions.

The factors are divided into five major categories - physical input factors, economic factors, organizational factors, cultural and motivational factors, and knowledge factors - each of which is divided into a series of sub-categories (Hapgood and Millikan, 1967). Hapgood and Millikan emphasize the interdependencies of the factors when they write:

We cannot appraise the consequences of a number of factors in our classification by looking at each one separately and then summing the results. The interdependencies among the factors are so strong that the effects of a package of factors are likely to be very different from the sum of the effects of each one applied by itself (Hapgood and Millikan, 1967; p.17).

In light of the characteristics of agriculture discussed before, it is indeed very difficult, if not impossible to predict the effect of any one variable accurately, it boils down to a matter of experimentation and trial and error.

TABLE 2.2

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A POSSIBLE CLASSIFICATION OF FACTORS AFFECTING AGRICULTURAL DEVELOPMENT*

1. Physical Input Factors
 1. Nonhuman physical inputs
 - a. Land
 - b. Climate
 - c. Seeds
 - d. Water
 - e. Fertilizer
 - f. Pesticides
 - g. Structures
 - h. Work animals
 - i. Other animals
 - j. Tools and machinery
 - k. Fuel and power other than animal power
2. Labor
2. Economic Factors
 1. Transport, storage, processing, and marketing facilities for products
 2. Facilities for the supply and distribution of inputs, including credit
 3. Input prices, including interest rates
 4. Product prices, including prices of consumer goods
 5. Taxes, subsidies, quotas
 6. Foreign trade opportunities
 7. The rate of population growth
 8. Domestic income distribution
 9. The extent of non-agricultural employment
 10. The state of the domestic industry

TABLE 2.2
(CONTINUED)

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3. Organizational Factors
 1. Land tenure
 2. Farm size and legal form
 3. General government services and policies
 4. Voluntary and statutory farmers' organizations for:
 - a. Coordinating physical input use, e.g., irrigation associations, tractor stations
 - b. Economic services, e.g., purchase, sale, credit associations and cooperatives
 - c. Social services, e.g., health centers, schools, family planning centers
 - d. Local government
 - e. Diffusion of knowledge, e.g., adult education classes, youth clubs
 - f. Farmer's participation in the political process
4. Cultural and Motivational Factors
 1. Integration of agricultural institutions, practices, and values within the culture and society of the nation
 2. Public administration factors, structure, values, mode of operation of the bureaucracy.
 3. Social structure, cultural values, and dynamics of peasant communities
 4. Processes of sociocultural change, barriers, and motivations in the innovative sequence, functional harmony or disharmony in society as its constituent parts change

(CONTINUED)

5. Knowledge Factors

1. Organization of basic and applied research
2. Diffusion of knowledge relating to:
 - a. Technical knowledge, e.g., agronomy, plant genetics, soil science, water management, agricultural engineering, pest control, home technology
 - b. Economic knowledge, e.g., land economics, general economics, farm management
 - c. Policies e.g., politics, public administration, planning
 - d. General education, e.g., literacy, adult education, mass communication

* For a different classification see Mosher, 1966, p. 8.

Source: Hapgood and Millikan, 1967, p. 15, with some additions.

Due to the geographic nature of agriculture, Mosher (1966) argues that certain of the factors should be declared essential and made available to the best agricultural regions of any one country; as opposed to what he calls accelerators (catalysts) which could be made widely available to all regions. He concludes that accelerators are important but not indispensable, and agricultural development can take place without one or more of them.

Mosher then goes to name the five essentials as: (i) markets for farm products, where prices are high enough to repay farmers their efforts and cash costs; this requires (a) a strong domestic and international demand, (b) development of a marketing system to perform the marketing functions of transportation, processing, financing and managing, and (c) the building of farmers' confidence in the marketing system; (ii) constantly changing technology, where new techniques or methods and research efforts are directed to improving local old ways and at crops to which there is a market; (iii) the local availability of supplies and equipment, these must be technically effective, of dependable quality, but most of all cheap and available locally in appropriate sizes or amounts; (iv) production incentives for farmers, economic or non-economic; although economic ones are of primary concern such as: fair price relationships, reasonable share of the harvest for tenants, and the availability of goods and services that farmers and their families may require; (v) transportation, efficient and low cost if it is to be an incentive to farmers; to be discussed fully in section 2.4.2. The author feels that land tenure reform should have been emphasized as number one production and equity incentive to farmers as discussed in section 2.4.1.

The accelerators named were: (i) education; (ii) production credit; (iii) group action by farmers, (iv) improving and expanding agricultural land; and (v) national planning for agricultural development. The interactions of the factors mentioned in this section, explain why there is very little agreement as to the exact effect or impact of any one of the factors on agricultural development from one country or locality to another. In this thesis we shall try to assess the impacts of transportation, while remembering fully that its role is deeply affected by other factors and that complete isolation of its impacts is impossible.

2.4.1 Land Tenure and Agricultural Development

One of the scarcest factors that does greatly affect agricultural production in developing countries is the availability of cultivatable land. Specifically, the structure of the land tenure may be the single most important explanatory factor of the prevailing inequalities of rural incomes and wealth in many countries. Studies done by FAO (1974) have concluded that land tenure reform remains a prerequisite for agricultural development in many developing countries, primarily because: (a) income inequalities and unemployment in rural areas have worsened; (b) rapid population growth threatens to worsen existing inequalities--growth in rural population is rising at the same rate or less as food production; and (c) recent and potential technological breakthroughs in agriculture, will benefit mainly the more privileged and powerful rural residents, resulting in an increase of their power, ~~we~~ wealth and capacity for resisting future attempts at reform.

The World Bank (1975) has identified seven factors that influence patterns of land ownership and land use in different developing countries. These are: (a) the political system and situation; (b) the structure of the economy; (c) the social system; (d) the legal system; (e) the demographic conditions; (f) the agricultural system; and (g) the national resource base. From the interrelationships of these factors they then distinguished six broad land tenure - land use categories, as follows: (a) the feudal Asian type, also involving landlord - tenant relations; (b) the feudal Latin-American type; (c) the traditional communal type; (d) the market economy type

(prevalent in Africa); (e) the socialist type; and (f) plantation - ranch type, often interspersed with other forms of tenure. Categories (a) to (c) exist in the traditional context, while (d) to (f), are also found in developed countries.

The greatest inequalities in incomes and land-tenure are found in Latin - America. In Asia and Middle East, rights of access to land are restricted and landlord - tenant arrangements predominate. In Africa, the problem is the opposite, in that the traditional patterns of group ownership and communal rights are being changed in favour of individual ownership which has created the same concerns of inequalities in economic and political power.

As we saw earlier, there is a great need to increase agricultural labour and land productivity per worker and unit of land respectively. Naturally then, we have to ask ourselves, if the restructuring of the tenure systems in the developing countries can accomplish this objective. There is evidence to suggest that land tenure reforms, especially when accompanied by a comprehensive agrarian reform usually generate some increased productivity per unit of land.* Land tenure reform is here used only in the narrow sense to mean to redistribution of the rights of ownership and for use of land away from large landowners to small landowners or tenants or landless workers, as opposed to agrarian reform which refers to an overhaul of the whole agricultural or rural system.

*See especially, Dorner, 1971 for detailed discussion. He concludes that land reform doesn't usually reduce productivity, although in certain cases it may be neutral.

In Section 1.2 evidence was also presented in support of small farms over large farms in Kenya, where land productivity per acre increased as farm size declined. Table 2.3 also seems to suggest the same conclusion for almost all developing countries, especially those with few landless workers. Since agricultural land is usually the scarcest of the factors of production, it is safe to conclude that the farms with the highest yields per hectare are usually the most efficient. Therefore creating small farms would both help to reduce income inequalities, while at the same time increasing total output.

Similarly, as we saw in the Kenyan case, smaller farms tend to have low output per worker (labour productivity) because of labour-intensive technology. However, this disadvantage of relative decline in labour productivity is outweighed by the potential employment opportunities and more equitable income distribution. Besides, labour productivity can be improved by intensive agriculture and better farm equipment technology away from the ubiquitous hoe. The Kenyan case also showed that the value of marketed products had grown to surpass that of the large farm sector in the long-run. In the short-run however there is some evidence to show that land tenure reform may decrease both the marketed surplus and the savings.* This tendency can be offset by considerable increases in output, especially if a more comprehensive (integrated) programme of development is implemented.

*See in particular, Wharton, 1975.

TABLE 2.3

PRODUCTIVITY, EMPLOYMENT, SIZE AND THE DISTRIBUTION
OF LAND IN TEN DEVELOPING COUNTRIES

Country	Data Year	Farm GDP ¹ per Hectare (\$)	Farm GDP per Worker (\$)	Employment per Hectare (No. of people)	Average Farm Size in Hectares	Landless Workers as a part of Active Pop. in Agr. (%)
Costa Rica	1963	83	951	0.09	40.74	53
Mexico	1960	22	569	0.04	132.90 ²	49 ²
Nicaragua	1963	55	580	0.09	37.34	43 ³
Argentina	1970	18	1,903	0.01	270.10	51
Chile	1965	18	692	0.03	118.50	66 ³
Paraguay	1961	11	479	0.02	108.70	55
Pakistan	1960	240	249	0.96	2.35	29
Indonesia	1963	323	149	2.17	1.05	20
Egypt	1961	681	360	1.89	1.59	38
Kenya	1969	183	140	1.31	4.20	15 ⁴

1 GDP also includes hunting, forestry and fishing

2 Data for 1970

3 Data for 1971

4 Data for 1979

Source: FAO, Production Handbook, 1971, pp. 10-11, 21-23; UN, Monthly Bulletin of Statistics, 1972, Vol. 26, No. 4 and 1973, Vol. 28, No. 11; ILO, Year Book, 1971, pp. 43-294, and 1972, pp. 4-301; IMF, International Financial Statistics, Vol. 26, No. 6; KNBP, 1979-83.

2.4.2 Transportation and Agricultural Development

Efficient and ~~low~~^{low}-cost transportation was listed as the fifth essential factor for agricultural development. The transportation system (network) must have high connectivity and adequate capacity (infrastructure and vehicles) if it is to serve all the farmers spread out over numerous villages at an acceptable minimum level of service, such as minimum bustrips per route. Thus "evidence of deficiencies in latent demand or a less than optimum supply in an existing transport system must be looked for in: (a) excessive movement costs due to the necessity of using inappropriate modes; (b) ineffective utilization of existing transport capacity; (c) excessive time devoted to transport activities due to the employment of inappropriate means; (d) untimely receipt of farm inputs fertilizers, insecticides, etc. or delivery of outputs; and (e) restricted use of available productive land because of, among other things, inadequate transport capacity" (Howe, 1977, p.36). Therefore any transportation system should strive to correct some of these deficiencies and increase her efficiency.

Although efficiency is the critical factor to maximize its potential use by farmers transportation must be as cheap as possible. It is not possible in general to say what mode is the lower cost means of transport because the cost of transportation depends upon several factors like: (a) the nature of the commodity to be hauled - how heavy or bulky, whether it requires special packaging or careful handling to protect it from damage, whether it is perishable and must be moved quickly; (b) the distance the goods are shipped, the quantity that is shipped at one time; (c) the

nature of the route, whether direct route or cross-country; (d) inter-modal cooperation or competition; (d) loading and unloading mechanisms, whether electro-mechanical or personal; and (e) other local prevailing conditions such as roads (paved or unpaved, rainy or not rainy season), policy on passenger and freight charges,* policy on subsidies, terminal costs, transshipment costs, return hauls, etc.

In many developing countries the policy of governments on subsidies has been generally in favour of railway transport (which is usually publicly owned), thus restricting free competition with road transportation (passenger and freight haulers). The structure of tariffs is such that low rates and high rates are charged for exports and imports respectively in the interest of agricultural development. Moreover, this policy is not an innovation because the same structure would have resulted from charging what the market would bear because imports are normally higher value goods as compared to agricultural exports.

We shall divide agricultural/rural transportation into two major parts, of which the first one is the major concern of this thesis: (a) short-distance or long-distance transportation markets within the district, and (b) short distance or long-distance transport to other national markets or international markets. Some generalizations are possible for these two parts of agricultural transportation: (i) farm products usually go from the farms in the villages (at roadsides or railroad stations or ports or airports) to district, national or international markets, whereas farm supplies, equipment, and some non-purchased inputs such as extension services

*For a discussion of a transport pricing see any good text on transportation economics.

usually go through the reverse process, (ii) air transportation is not used for agricultural transportation within district markets, and only used in ~~other~~ national and international markets where its high cost can be justified in transporting highly perishable or valuable products or where the origin and destination are not accessible by other modes, (iii) natural waterways - the seas, lakes and navigable inland rivers usually offer less costly transportation where they are available and if speed is not too important, especially for international markets, (iv) in general the capacity of a road transport unit (vehicle) is smaller than in rail transport (box cars), so that road transport is likely to be less affected than rail by excess capacity because full capacity loading is more easily achieved; however the large capacity of rail transport makes the railway a low-cost mode of large and regular flows of traffic, and for long-distance hauls to district, national or international markets, than for short-distance hauls, so that its relatively greater terminal costs can be counteracted.

Therefore, from the farmers' point of view short-distance trips* pose an immediate concern, as they are the norm for most farmers. These we have further subdivided into two general groups: (a) the majority of trips, which normally are undertaken using non-motorized modes of transport, and, (b) those that require conventional (modern) road vehicles. The non-motorized modes can either be walking (headloading,

*For the purpose of this report, in reference to road transportation, we shall define: short distance, 0-15 miles; medium distance, 15-30 miles; long-distance, greater than 30 miles, based on experience of author.

shoulderloadings) for trips usually of less than five miles; or those which involving the use of the wheel such as: animal carts (sometimes pack animals), bicycle and its variations, and wheelbarrow for trips of up to fifteen miles. Medium-distance or long-distance trips normally require the farmer to use motorized transport (truck, bus, car, tractor, motorcycle or its variations) usually as a passenger with goods carried free or charged separately, because goods are as a whole shipped to rural market centres in small lots to sell to the consumer directly or to the local traders.* The use of vehicles on hire-basis is therefore very limited.

However, as distance increases to the rural or urban markets, the farmer usually sells his crops at the farm or roadside or any selected pick-up points to urban (middlemen) traders who provide their own transport. Of course these urban traders add transport costs to the prices they are willing to pay, with very huge profit margins, because with poor storage facilities the farmer has really no choice other than going to sell to the rural or urban markets where he may end up selling to the same traders. Some of these traders may own the transport businesses and large farms cultivated by labourers thus creating monopolies which can depress farm prices. The situation is a bit different when cooperatives or marketing boards or other specialized organizations are involved in the purchase of farm products, in that these organizations usually provide the medium - and long-distance transport. Farmers have still to provide

*In many rural areas of developing countries it is very difficult to distinguish between passenger and goods (freight) transport because most modes perform both purposes simultaneously with goods charged per volume rather than per weight.

the short-distance transport to selected pick-up points or stores. The reliance of the farmer on these organizations is small, because typically most farmers still sell their food crops directly to consumers or the local trader, while these organizations concentrate on mainly export crops.

The author thinks that the mistake most developing countries* have made is in making the implicit assumption that their only role is to provide adequate capacity of roads and to let the private sector supply the appropriate vehicles to make efficient use of the roads. In light of the poverty of rural areas we have already discussed, this kind of policy discriminates against the poor who cannot afford to buy (or pay the charges for their use) private vehicles and casts doubts as to the advantages (benefits) of relatively huge investments in transportation. There is a need for the government to get involved in the supply of vehicles.

*This assumption may have been derived from developed western countries.

2.5 Conclusion

In this chapter we have attempted to show the importance of agriculture in rural and national development. We also discussed at length the factors that affect agricultural development, in particular transportation and land tenure. There is clearly a difference between developed (industrialized) and developing countries in the relative scarcity and abundance of labour, capital and land. Capital and land are relatively abundant, while labour is relatively scarce, thus encouraging capital-intensive enterprises in developed countries. The opposite is true in developing countries, where labour is abundant, and capital and land relatively scarce, thus making access to capital and other inputs (credit, fertilizers, etc.) a luxury of the rich large land owners. This restricts the demand of industrial (manufactured) goods, as the majority of small land owners have very little financial resources to exert any effective demand.

Land tenure reform was then presented as a remedy to reduce the inequalities between large landowners and small landowners or tenants or the landless. This has a lot of political and socio-economic implications, so that this kind of reform is usually unpopular in politically unstable countries. However, the political will and practical support of the national and local leadership is essential. Griffin (1974) categorises the "styles of rural development" followed by developing countries into three: technocratic, reformist and radical (Table 2.4). After looking at several countries he concluded that most developing countries tend to use the technocratic strategy. The primary economic objective being increased agricultural output, by using more conventional

TABLE 2.4

STYLES OF RURAL DEVELOPMENT IN
DEVELOPING COUNTRIES

Development Strategy	Objectives	Major Beneficiaries	Dominant form of Tenure	Ideology	Representative Countries
Technocratic	Increase Output	Land Owning Elite	Large private corporate farms, plantations, various tenancy systems	Capitalist	Philippines, Brazil, Ivory Coast
Reformist*	Redistribute income (and wealth); increase output	middle peasants progressive farmers	Family farms, cooperatives	Nationalist	Mexico, Egypt
Radical	Social Change; redistribute political power, wealth and output	Small, peasants and landless labourers	Collectives, Communes, State farms	Socialist	China, Cuba, Algeria.

*Kenya would probably fall in this Category.

Source: Griffin, K., 1976. p. 199

inputs such as land or by encouraging farmers to adopt an improved technology. Under this strategy, income and wealth remain concentrated in the hands of few large land owning elites.

The reformist strategy, tries to strike a balance between the technocratic and radical strategies, by trying to maximize both income distribution and increased output. Johnson and Kilby (1975) argue that this kind of approach may result in "dualism" or "bi-modal" pattern of growth in the agricultural sector.* In this case, development plans usually differ significantly from the way things are implemented. For example in Mexico, the redistribution of land to peasants in the populous south represented a policy approach that was different to the one encouraging capital intensive farming in the irrigated northern areas of the country.

The radical strategy, gives priority to achieving rapid social change and a redistribution of political power; followed by a redistribution of wealth/income and generation of increased production. The author thinks that this seems to be the only quick solution for the seemingly insoluble problems of socio-economic equity (massive poverty, chronic unemployment, highly skewed income distributions, etc.) and lack of mass political participation in the development

*For a detailed discussion of "bi-modal" versus "uni-modal" strategy of development, see Johnston and Kilby (1975), especially chapter 4. A "uni-modal" strategy entails the progressive modernization of the entire agricultural sector, as opposed to "bi-modal" which divides the agricultural sector into sub-sectors each using different technology.

process. The way this is done will differ from country to country, and the author is not here advocating bloody revolutions, but merely a sincere effort by the decision makers to help the majority who are poor and therefore have no basis for political power.

To sum up then, in addition to land tenure programmes, there is a need for deep structural reform in some rural societies involving many of the following factors: (a) the diversification of the rural production system to include both agricultural and industrial output, (b) the development of both national and international markets; (c) the creation of institutions such as cooperatives to supply and distribute credit and other inputs to the most needy and deserving; (d) the improved quality, coverage and effectiveness of agricultural extension services; (e) the development of communicating channels for the transmission and adoption of innovations of intermediate technology in rural areas; (f) the achievement of some balance between labour-intensive and capital-intensive means of production; and (g) the equilibrating of factor payments with a view to eliminating factor-price distortions; and by increasing the real rate of return to investment in agriculture and related activities.

CHAPTER 3

TRANSPORT AND DEVELOPMENT

"The opportunity cost of ill-advised investments in transportation in terms of housing, education and medical investments forgone is a luxury which most developing countries can hardly afford" (Soberman, 1966, p.7)

3.1 Introduction

What role should transportation play in the overall development process? As with the role of agriculture in overall development discussed in the previous chapter, ideas about the relationship between transport and development have similarly changed considerably over time. Since transportation (movement of persons and goods) has inherently a space dimension attached to it, development planners agree that in any one country some minimum transportation system and network is required to link the spatial distributions of the population and economic activities in the earliest stages of development (Figure 3.1). However, as development proceeds, there is no complete agreement as to whether the observed overemphasis of investment in transportation of the past two decades served to accelerate the development process or whether some of this capital should have been diverted for investment in other sectors such as housing, education, health care, etc.

The relationship between transport and spatial analysis shown in Figure 3.1 indicates six key interrelationships (denoted by arrows), of which the first four (a to d) are the major concerns of transportation planners (Piskozub, 1967). These are: (a) impact of distribution of population and characteristics of settlements on transport, (b) impact of transport system on the distribution of population and characteristics of settlements, (c) impact of transport on spatial distribution of economic activities, (d) impact of spatial distribution of economic activities on transport; (e) impact of the distribution of population and characteristics of settlements on the spatial distribution of economic activities, and (f) impact of the distribution of economic activities (and resources) on population distribution and characteristics of settlements.

It is important to note that whereas the interrelationships (a) and (d) affect the demand for transport almost immediately; changes in the state of the transport system (transport costs and level-of-service) tend to affect interrelationships (b) and (c) with short or long time-lags (delays) because the advantages of adjusting to new (or improved) transport opportunities (or problems) may be offset in the short run by the high costs associated with relocation. That is, in the short run we may assume that the socio-economic environment is not affected by the cost and level-of-service (performance) of transport, until in the long run we have a mutual interdependence between the two. In fact this issue of time-lag in reaping the advantages of changes in the transport system, coupled with the fact that transport is generally a derived demand or need, help fuel the controversy of the role of transport in later stages of development.

FIGURE 3.1

THE RELATIONSHIP BETWEEN TRANSPORT AND
SPATIAL ANALYSIS*

*lettered arrows denote key inter-relationships

Source: Piskozub, 1967, p. 6, with minor changes.

Moreover, the mix of transport and other inputs required to achieve a desired need (consumption or production) is not necessarily fixed, because there usually exist possibilities of substitutions between transport and non-transport inputs. Examples of the substitution of non-transport for transport input are: instead of using a distant material (lower material costs and higher transport costs) one could use a local material (higher material costs and lower transport costs); or instead of travelling long distance to work, a person moves to a new residence closer to his place of work. Examples of the substitution of transport for non-transport inputs are: using a faster and more flexible transport mode to cut inventory costs; or moving a plant to a lower production costs location which involves higher transport costs; or using more expensive transport means to assure safer delivery or to reduce costs of packaging.

Despite the issues raised in the preceding paragraphs, in seeking to accelerate (agriculture and rural) development, decreased transportation costs resulting from transportation system changes continue to be used as a major tool to increase interregional trade (and passenger) flows. The increased trade flows can theoretically be achieved in three ways:

- (a) in cases where factors of production are relatively immobile, and hence trade theory applies, a decrease in transportation cost increases regional comparative cost differentials c.i.f., and thus increases the gains from trade;*
- (b) where internal economies of scale are important, a decrease in transportation costs will encourage the consolidation

*For example let A and B refer to the production costs of two goods in regions i and j; and t_{ij} as the transport costs between them. Given that $A_i/B_i > A_i/B_j$, then region i has comparative advantage in B, and region j in A. Therefore there will be trade so long as $\frac{A_i}{B_i} > \frac{A_i + t_{ij}}{B_j}$.

$B_i \quad B_j$

of production in fewer plants, thus raising the length of the haul on average, and (c) decreased transportation costs lead to settlement of natural resource frontiers, which also lengthens the average haul. The increased passenger flows need no further explanation, as many developing countries have very poor transportation systems, especially those serving the rural areas. Passenger transport is important in explaining rural-urban interaction in terms of: migration, diffusion of new ideas, the distribution of consumer (manufactured) goods, the creation of local entrepreneurs (because of lower capital outlay and lower overheads) and the overall social life.

The main purpose of this chapter will therefore be to review the different ways of viewing transportation in the development process, ranging from the historical classical location theories to the current generalized macro-and-micro relationships. The last part will also discuss some national transportation problems in developing countries.

3.1.1 Multidisciplinary Nature of Transport Studies

The study of transportation is ubiquitous, being found in several academic disciplines, each studying different aspects of its interrelationships with the socio-economic environment (Figure 3.1). What then has been the contribution of transportation geography to the study of the role of transportation in the development process? Notwithstanding some minor weaknesses in the past, such as overemphasis on mere description of transportation facilities or their historical development, or comparison among different countries, geographers have contributed significantly for some time now, especially since the 1960's.

Thus, Jefferson (1928) was among the first to draw attention to national railway development and levels of economic prosperity on an international scale. Garrison (1960) also introduced the use of graph theory as a method of analyzing transportation networks (or patterns), with considerable implications on accessibility and linkages within the network. This has been elaborated further by other writers such as Kansky (1963) and Haggett and Chorley (1969). Berry (1960) also attempted to relate transportation network densities (not only railways) to development levels in statistical terms, and concluded that there was a covariation of transportation availability and development at the international scale*. Gould (1960) similarly deduced the same conclusion at the national and sub-national scale in Ghana and Nigeria. Furthermore, the work of Gould et al (1963) in Ghana and Nigeria showed that certain morphological adjustments of transportation networks are typical at

*See also Yeates, 1968, pp. 113-121, using graph theory.

various stages of economic development. They found that as population increases in an area, the demand for transportation is intensified; as new transport lines are built into the area, a greater population increase is encouraged, which in turn, calls for still more transportation. O'Connor (1965) arrived at similar conclusions after studying transportation and development patterns in East Africa.

To sum up, the book edited by Hoyle (1973), titled "Transport and Development" provides the best treatment of the subject in transportation geography. In particular, the last article by Wilson (1966, pp.208, original from Brookings Institution) "Toward a Theory of Transport and Development", gives a really thoughtful view on the relationship. It concludes with the current "controversy" or "policy dilemma" that transport investment is no more an initiator of growth than any other form of investment or deliberate policy. In part, the case study in this thesis seeks to throw some light on this conclusion.

3.1.2 Transportation in Classical Location Theories

Although Location Theorists were among the first to investigate the role of transport (costs) in the location of specific economic activities, and did not per se attempt to generalize their results to overall development effects (impacts), they nonetheless made significant contributions to the understanding of "...why a particular factor is important to one industry or economic activity and not to another" and vice versa (Smith, 1971). In the case of transportation as a factor of location, the function to be estimated boils down to:

$$\text{Demand for transport to or from a given location} = f(\text{Growth of activity (ies) at the given location}),$$

which usually leads to two practical transport demand problems:

(a) market area problem, which is demand related to the expansion (in volume and/or geographical extent of the trading area) of production at the given location, and (b) supply area problem, which is demand related to the growth of consumption (including local production) at the given location. This kind of analysis is narrowly focused and difficult to integrate with an overall system or network analysis and results in specific demand models such as those aimed at estimating automotive traffic generated by shopping centres or some remote resource-based industrial community.

Like many other socio-economic theories, examination of classical location theories shows that they have lost much of their importance, being "replaced" by behavioural theories which argue that entrepreneurs are not all-knowing (economic man), that they act in the real world and therefore do not always seek to maximize profits (usually a short-run

obsession); but would settle for a reasonable profit in the long-run (satisficers). Despite this trend of knowledge, this author thinks that classical location theories may have something still to offer in developing countries, and hence merit at least some brief mention.

Smith (1971) groups the various major contributions under three theory categories, of which we shall review only the first one because it seems more relevant to the rural producer. The first category consists of least-cost theories which assume competitive pricing, different costs among locations, unlimited demand for the output of any firm at the prevailing price and a given buying centre (city) that is accessible to all sellers, who then seek the least-cost location; the major contributor in group who is more relevant to this study is Von Thunen (1826), while the others are Weber (1906) and Hoover (1937). The second category consists of interdependence theories of location, which seek to explain the location of firms in terms of cost of production and the need to control the largest market area; the major contributors are Fretter (1924) and Hotelling (1929). The third category consists of an integration of the least-cost and locational interdependence theories; and the major contributors are Isard (1956) and Greenhut (1956).

von Thunen attempted to explain the effect of distance (and therefore transport costs) on agricultural production. He postulated a land (rural) surface (ie. location given) homogenous in all respects (capital and labour are equally available and completely mobile), and a consuming centre (city), at the middle, which supplies the outlying districts with manufactured goods, in exchange for agricultural produce,

food and raw materials. Farm produce by type was then sold in each outlying region at the city price less the difference in the cost of transport to that region and the city. Similary, land rent, intensity of land cultivation, and density of the population were lower the further away the location from the city. This theory may approximate some locations in developing countries even today, especially African small-scale farmers, because most of them still cultivate their products on the land where they have grown up and happened to live, and in addition sell most of their produce in isolated rural markets. Therefore the major question of the small-scale farmer is partly answered by this theory, that is, what farm produce can be advantageously cultivated in a given plot of land?

3.2 Macro Relationships of Transportation and Development

As was pointed out in Chapter 1, the role of transport in promoting overall development is no longer taken for granted either in developed or developing countries. It appears the consensus is that, given sufficient time, transportation may have positive, negative, or neutral effects (impacts) on development (Wilson, 1966; Hoyle, 1973). The positive effect results when new, directly productive activities are the direct result of providing transportation facilities. The negative effect results when the presence of transportation facilities eliminates directly productive activity and effectively reduces the level of economic growth, as for example, where a poor developing country's overambitious and prestigious efforts to create a national airline may well divert investment from where it could have led its economic growth. The neutral effect is when transportation facilities do not themselves call forth directly productive activities and subsequent increases in the level of economic growth.

To resolve the problem of time-lag sequence in the relationship of transportation and development, Storey (1969) introduced three obvious temporal factors, producing a possibility matrix of nine outcomes (Table 3.1). These factors were: (i) precondition - where the provision of transportation facilities predates development; (ii) concomitant - where the provision of transportation facilities is concomitant with other sectoral development. (iii) postdates - where the provision of transportation facilities postdates other sectoral development. The first outcome in the matrix denotes the common view of transport as a precondition or prerequisite of development, implying both

TABLE 3.1

TRANSPORTATION AND DEVELOPMENT: A POSSIBILITY MATRIX OF
CASUAL AND TEMPORAL FACTORS *

Temporal Factors	Causal Factors		
	Positive	Neutral	Negative
1. Precondition	1	2	3
2. Concomitant	4	5	6
3. Postdates	7	8	9

*Numbers in the matrix denote possible outcomes

Source: Storey (1969), with slight modifications.

causal and temporal precedence. However, Storey concluded that outcome five in the matrix may well be a more reasonable representation of reality. That is, transport may play a neutral role, developing concomitantly with the development in other sectors. The government usually providing the transportation infrastructure at full cost or with huge subsidies at the expense of other services.

This author thinks that the conclusion reached by Storey doesn't fully explain the actual role of transportation in practice, especially in many developing countries as was raised in Chapter 1. For who really benefits from transportation development--private construction contractors, private firms, vehicle owners, the poor, farmers, urban residents, public transport operators etc.? Although the answer to this central question may be easy to guess at the micro (project) level; the complete outcomes (impacts) of any transport investment are very difficult to predict because not only may they differ on different segments of the society as already suggested; but also may differ in the short - and long-terms. This last aspect is well illustrated by the colonial transport and development sequence discussed by Taaffe et al (1963) for Ghana and Nigeria. In the short term transport investments then, were generally made in order to exploit minerals, to develop agriculture, and to strengthen political and military control. However, in the long term, these transport investments have had lasting effects, creating major regional disparities in accessibility and development levels.

3.3 Micro Relationships of Transportation and Development

U The macro relationships of transportation and development discussed in the previous section have little meaning, unless given concreteness by means of particular cases within a given local socio-economic environment. This is what we have tried to accomplish in this thesis, based in the day-to-day effects (impacts) of transportation on agriculture and rural development. Most of the information on rural transportation impacts in developing countries is available in the form of economic feasibility studies or project evaluation reports which are usually commissioned by foreign aid agencies, with feeder roads, having dominated the past decade. However, as we shall see in the next section, these studies have several shortcomings in countries with very underdeveloped transportation facilities. Another limited source of information, is the role of transport in diffusion of innovations, at both the macro and micro levels. The study of this relationship has received very little attention, when compared to economic evaluation methods. This is a pity because studies in this area have revealed some interesting or unexpected results, such as by Wilbanks (1972) in North India, who concluded that the information effects of roads are far greater than the transport cost reduction effects.

3.3.1 Transport and Development in Project Evaluation

One of the frequently mentioned benefits of rural transportation during project or plan evaluation is agricultural or rural development. Sometimes an expected monetary value or increased agricultural production or some measure of increased rural-urban interaction is also included. The basic problem is that although such impacts as traffic congestion, safety, pollution etc. are associated directly with transportation (the physical movement of persons and goods), the link with development is usually indirect for the achievement of a selected (trip) purpose, and it is therefore very difficult or impossible to infer cause and effect. Added to this is the fact that some of the benefits of transportation have a non-market value. In countries with underdeveloped transportation facilities these non-market value benefits maybe even more important than those with market values (prices) such as reduced travel time, reduced transport cost, level of service etc. The same is true for resource inputs such as capital, labour, land etc. which have market values, as compared to air, water, aesthetics etc. which have non-market values.

The problem of insisting on actual market values or imputed market values (shadow prices) is very important because economic efficiency measures are the conventional techniques for evaluation. These techniques seek to maximize economic returns. Their methodology usually requires a minimization of annual total costs or some form of benefit-cost manipulation. The following shortcomings are therefore obvious: there is too much emphasis in effects (impacts)

than can easily be expressed in monetary terms while neglecting intangibles; the distributional issues of benefits are usually underestimated or ignored altogether; due to presence of sizable externalities* in transportation the use of the market system may not be appropriate; and so on. In addition to these there are several technical problems such as: choice of interest rates, project life, proper pricing etc.

To reduce the overemphasis of quantification in monetary terms, some impact incidence matrices are added for all possible quantifiable effects, but not necessarily in monetary terms (De Neufville and Stafford, 1971). The onus of making a choice and interpretation is then left to the decision-maker. Two other advanced methods of evaluation are currently being used. These are the effectiveness method, which measures the extent to which objectives and criteria are met by all alternatives; and the cost-effectiveness method which, as the name implies measures both the relative efficiency and effectiveness of each alternative (Khan, 1972). These two methods are theoretically limited only by completeness of the goal-setting process. Their basic shortcomings are: lack of sound conceptual basis, dependence on weighting which may produce biases, and take no explicit account of the temporal nature of transportation.

*Externalities are costs that arise from operating a service. These include pollution, use of land for transportation that affects other economic activity, aesthetic factors, disruption to communities, socio-economic activities, health and safety. In many cases these are difficult to value in monetary terms.

3.3.2 Transport as an Indirect Channel for the Diffusion of Innovations

The diffusion approach has been applied to development at the macro level (focused on change at the social system level) by some geographers and has come to be known as the spatial diffusion of modernization. Thus Soja's (1968, p.1) work on Kenya was "...an attempt to provide a detailed description of areal variations in the extent of transition from traditional to more modern forms of social, economic, and political organization and behaviour." Similarly, Berry (1972) traced the diffusion of television stations and market penetration in the U.S. between 1940 and 1968 and found that hierarchical diffusion down through the urban system was the dominant form. However, in addition to hierarchical filtering down the urban hierarchy, Pred (1971) also found lateral diffusion between centres at the same hierarchical level and the diffusion from lower to higher order centres. Therefore, the "conventional" view where innovation diffusion is considered unidirectional (top down) is supplemented by locally-based innovations (bottom up) (Lundqvist, 1975; Taylor, 1975).

However, micro studies, that is, those which deal with the role of the individual to adopt or reject an innovation are more relevant to this study, because the first two key hypotheses deal with the diffusion of agricultural innovation at this level. We shall turn to sociology and anthropology where there has been significant concern on the adoption of innovation at the personal level. Here Rogers and Shoemaker (1971) have outlined a model for the diffusion of innovation (to be discussed further in Section 4.3 in connection with extension services) which consists of five elements as follows:

the source of the innovation which may be an individual or institution; the innovation itself, which is an idea, practice or object perceived as new by an individual; the channel, is the means by which the innovation gets (diffuses) to the individuals in the social system; the individuals in the social system; over time, are the consequences within a social system as a result of the adoption or rejection of an innovation.

In this model transportation may play a very important role, though indirectly, because the very weak penetration of the mass media in the rural areas of many developing countries means that interpersonal (face-to-face) communication is the only reliable channel, even for very routine information flow. Hence we find in the agricultural sector, the extension agent is usually supposed to visit each individual farm as opposed to group extension work, thereby creating an abundance of trips requiring the availability of both transportation infrastructure and vehicles, and of course a huge "army" of extension agents. The emphasis in this case is not lowered transport costs per se but on improved information flow via extension agents.

3.4 Some National Transportation Planning Problems*

The most memorable occasion that some tourists from developed countries might recall from diverse cities such as Lagos, Cairo, Port-of-Spain, Jakarta, Bombay, Caracas, Rio de Janeiro, Bangkok etc. is when they were caught in traffic jams especially during the morning and evening peaks. For those who went to rural areas, it may be getting stuck in the mud with a four-wheel drive vehicle or some peculiar anecdote related to railway transport. Typically, the major means for intra-national travel are roads, followed by railroads and to some extent airports. Most international freight and passenger traffic goes by sea and air respectively.

The urban transportation problem (caused mainly by rapid urbanization, concentration of major economic activities in very few cities, and poor land use-transport interaction) is therefore visible to everybody and has commandeered more resources from central and local governments alike at the expense of rural and intercity transportation, despite the overall low car ownership (Table 3.2) and its concentration in higher income groups. In many cities public transport vehicles have also been nationalized by central governments so that the system could ostensibly be run in the nation's interest. On the other hand common carrier rural or intercity transport has usually been left to private companies for road transport or outdated government railways.

*Mainly based on the author's experience in Jamaica, however many may be applicable to other developing countries. The planning process usually consists of first creating a macroplan and then filling it with projects. For "Seven Sins of Development Planners see Appendix 3.1."

TABLE 3.2

PERSONS PER VEHICLE 1955 and 1970,
WORLD AND SELECTED COUNTRIES

Location	Persons per Vehicle*	
	1955	1970
Africa	114	73.4
Asia	644	83.7
Europe	32	8.3
North and Central America	3.5	2.6
Oceania	5.0	3.1
South America	66	23.6
World	27	14.4
Australia	4.3	2.6
Brazil	92	26.9
Canada	4.0	26.9
France	11	3.5
Germany, West	21	3.8
Great Britain	10	4.1
Sweden	10	3.3
United States	2.6	1.9

* vehicles includes passenger cars, trucks and buses

Source: Automobile Facts and Figures, 1956 and 1972 and Motor Vehicle Manufacturers Association reprinted in Institute of Transportation Engineers, 1976, p. 4.

The planning for rural transportation facilities is usually left to local governments as opposed to major intercity facilities which are normally owned by central governments. This has resulted in a patchwork for maintaining rural facilities because of the lack of both economic and trained human resources by local governments. However, the basic causes of rural transportation appear to be twofold: (a) the poor spatial hierarchy of urban centres is such that the rural populations in many countries are scattered in numerous villages with intermediate sized cities lacking, thereby making it impractical to provide adequate infrastructure or vehicles to all villages, especially those which lack agricultural potential or other resources; (b) all infrastructure or vehicles lead to urban centres; may be due to recent colonial history which tended to focus transportation and communication infrastructure on the primate city, which was usually a seaport. Thus among villages or small urban centres modern transportation is very poor or non-existent. The massive ^{poverty} of rural residents makes the problem difficult to solve unless governments become actively involved both in the provision of infrastructure and vehicles. There is a very big need to design vehicles which are relatively cheap and suited to rural areas.

Notwithstanding that the basic causes of the rural transport problems are known, what are some of the obstacles (realities) one is likely to encounter in trying to alleviate them in many developing countries? We shall list ten of these (not in order of importance) and discuss each briefly.

First, there are the high capital costs of providing transportation infrastructure; many countries (OPEC excepted) cannot afford to build major new facilities or even do major repairs. This leads to reliance on foreign aid or borrowing from the World Bank or other agencies to finance the facilities construction. In fact most of the aid or loans for transport programs have been of this nature, to the neglect of more urgent transport problems such as: training of mechanics, foreign exchange to buy spare parts, research into local technology for vehicle and infrastructure construction and maintenance, provision of new or used or more rolling stock for railway companies, training of transportation specialists, etc. Although the amount of infrastructure may be inadequate, there is a need to maximize its use through better management, and more investment in human resources. This may not be of any benefit to aid giving agencies which in some cases insist on tied aid, for the benefit of donor countries.

Second, there is the use of excessive import restrictions on cars and spare parts. This is usually done because of shortage of foreign exchange and not because of inappropriate technology. Such a policy may have some disadvantages which could reduce the impact of transportation on development

by: (a) restricting imports will mean that older and poorly maintained vehicles will be kept on the road longer which may increase accidents, use more gasoline* and use more spare parts (presumably imported) thereby minimizing any benefits thereof. A better method might be

*The use of gasoline by private automobiles in many developing countries is generally low, accounting typically about 25 per cent of the total consumption. The rest is mostly used by public transport and industries.

to restrict the number of models imported in the country, using cost, performance and country of origin criteria, while at the same time improving public transport; (b) restricting imports with no local substitutes creates artificial shortages in supply which causes prices to reach astronomical heights, which may create social problems of theft, jealousy, etc. as the car is viewed as a status symbol. Moreover, these high prices divert economic resources from other activities; (c) restricting imports may curtail the benefits of the transport system to people who genuinely need private vehicles such as some farmers, salesmen and other self-employed people.

Third, there is the problem of poor institutional framework. Many of the transport and traffic regulations have been inherited from colonial days. In terms of freight policy, the view was generally to protect the railway. Some of these regulations need changing to meet current needs in light of modal competition. The situation is especially critical in passenger transport where the usual way of offering franchise areas or routes to transport companies has met great opposition from the operators of para-transit or intermediate transport vehicles.

Fourth, is the excessive use of labour intensive technology. There is a need to strike a balance between using labour to reduce unemployment per se, in both construction of infrastructure and the handling of domestic and international freight at railroad, seaport and airport terminals; and the using of labour to substitute for capital. In many countries there is a need to use shadow prices to evaluate the real

2

costs of both labour and capital because (a) unskilled labour and skilled labour is usually paid higher and lower wages respectively than their opportunity cost, (b) real interest rates on capital are usually set at some artificially lower rate for socio-political reasons, (c) real costs of foreign exchange are usually undervalued.

Fifth, is the excessive investment in international airlines or merchant marines. Many governments own and operate national airlines and merchant marines, for political reasons or on the justification that such investment saves foreign exchange either through making some meagre profits or from not paying freight charges to foreign vessels. This author thinks that in most cases these huge investments would be more beneficial to most citizens elsewhere in the country, especially when governments have to borrow heavily to maintain these services.

Sixth, is the lack of transport substitutes. Although the demand of transport is minimally affected by substitutes, such facilities as storage and/or refrigeration could go a long way in stretching the capacity of the network and avoid spoilage of agricultural produce in the remote rural areas, especially during peak harvesting periods.

Seventh, is the lack of comprehensive national transportation policy on such matters as subsidies, tariffs, fares, etc. In fact the urban residents receive more subsidies, although they are relatively richer. Most subsidies to public transport operators are too lenient, because they are not usually tied to any sort of performance or revenue-cost ratios, thus sometimes creating financial irresponsibilities.

Eighth, is the lack of trained local people to carry out a comprehensive transportation planning process, instead of a piecemeal approach where projects are considered singly. The use of foreign experts to fill this gap has several disadvantages, as they have sometimes produced "master plans" or "blue prints" which poor countries can't afford.

Then, there is the lack of or limited computer technology. The complexity of modelling transport and her interrelationships with other sectors of the economy, usually produces mathematical problems that can only be handled by computer, otherwise planners are forced to use mere extrapolations or very simple models. The major comfort is that the value of these complex models can be questioned in light of their ability to handle rapidly changing economic, population and political characteristics; and of their huge data requirements which are rarely met.

Finally, is the overemphasis on arterial roads. Although the past decade has seen a trend towards feeder roads (farm-to-market or farm-to-main road), it is still easier to get aid or loans to build arterial roads because they can usually pass the benefit-cost analyses compared to the feeder roads which usually fail. This is because these agencies tend to emphasize the same benefits of transportation as in developed countries viz. reduced maintenance costs, and some vague term of induced economic development; and costs are total construction costs. There is therefore a need to expand the evaluation methodology especially for non-arterial roads in rural areas to encompass as many factors as possible, affecting both users and non-users. Some of these problems we have discussed may also be found in developed countries with varying degrees of complexity.

3.5 Conclusion

What then can we conclude from the literature about the role of transport in the development process? It seems there is an agreement that transportation development should not be considered a remedy for all agricultural and rural development problems. It may serve as an effective catalyst for agricultural and rural development, but if it is to perform this function, other elements must also be present, such as loans to farmers, land reform, medical facilities, clean water, schools etc. We also saw that the emphasis has been on the effects (impacts) of reduced transportation costs on freight (goods) flows, while the information effects (diffusion of innovation) and passenger flows have generally been given low attention in research. The need for improvements in the techniques used in the evaluation of transportation investments so as to include a more comprehensive set of impacts which includes not only financial/economic but also political, environmental and goal-related system performance was amply demonstrated.

Despite the complexity of the relationship between transport and development, the past two decades have seen investment in new transport facilities in developing countries continue to absorb a significant proportion of total investments (recall Table 1.1). Gauthier (1970) asserts that many economists think this is the case for two main reasons. Firstly, because many politicians (the decision-makers) believe that investment in transportation will bring development and is politically safe (visible, location-fixed). Secondly, the lumpiness, longevity and externalities associated with transportation capital, make it difficult to correct errors compared to those sectors with assets that wear out rapidly or can be built in small increments.

However, both these two reasons are open to serious question, because investment in transportation is no more politically safe than investment say in dams, wells, schools etc. Similarly, some facilities can be constructed in short links joining points or extending from existing into proximate hinterlands, as is the case with feeder or access roads in agricultural areas or among villages.

What then should be the safest strategy to guide investment in transportation? The World Bank (1971) suggests to wait until increases in production or captive productive schemes (usually resource based) signal clearly the infrastructure requirements. That is, to wait until bottlenecks appear or solid traffic volume problems and clear trends exist, and then to take appropriate action to increase capacity or reduce costs for an assured clientele. This strategy would not tell you when a pioneer investment is economically justified. The only way out in this case is to assume the demand functions from experience elsewhere, then do the usual calculations and assume considerable risks.

To resolve the issue of overemphasis of transportation investment/ⁱⁿ development, really requires a compromise between the social overhead capital (SOC) and direct productive activities (DPA). For on one hand transport is not a DPA in itself, always a derived demand; but on the other it is a necessary SOC with implications for overall development. Since many developing countries cannot afford to expand both SOC and DPA at the same time because of the numerous problems discussed before, two choices are open: to promote development by excess SOC, thus making DPA production costs cheaper (more profits) and hence an incentive to invest more DPA

(generally the capitalistic approach); or to promote development by a shortage of SOC, thus expanding DPA (production costs rise) and then improve SOC facilities (generally the socialist approach). There is really no agreement on what should be the "equilibrium" SOC and DPA for any given level of development, because each country is endowed with different geographical and productive factors which offer a range of choices.

In general, then, the World Bank (1971) argues that, before any transportation improvement can be made to stimulate economic development, a number of conditions must be met; (a) the most important is showing that the economic development could not have taken place without the transport improvement, (b) that the new development would otherwise have remained unused or used less productively, and (c) that the economic activity stimulated does not replace activity which otherwise would have taken place. This therefore requires a comprehensive study of the interaction between transport and the other sectors of the economy.*

*We should mention here that since late 1960's there have been several macro-economic models which have attempted to link transportation and overall economic development or specific sectors (especially agriculture) in several developing countries (such as Martin and Warden, 1965 who report the Harvard Model; Stanley, 1971; Arthur and McNicoll, 1975; Brown and Deaton, 1973; Lamarre-Valor's International, 1968; etc.) due mainly to pressure from international lending and development agencies which have insisted on a more integrated and comprehensive approach to transportation planning. These demand and policy evaluation models have been plagued with several problems like glutinous data requirements, difficulties in measuring transport capacity, difficulties in projecting sectoral demands or growth, pricing problems and so on, as discussed in this chapter.

PART II

MORE BACKGROUND TO CASE STUDY: KENYA

CHAPTER 4

AN OVERVIEW OF AGRICULTURAL AND RURAL DEVELOPMENT

"...the government will continue to expand its extension and advisory services...and...intensify its programme of rural development in areas such as water, electricity, housing, health and roads, both to increase the 'social wage' in rural areas and to raise the farmers' productivity and cash incomes" (KNDP, 1970-74, p.139).

4.1 Introduction

Agriculture will remain for many years to come the most important sector in the Kenyan economy. This is supported by its significant contribution to the GDP, which continues to hover around the one-third share;

its huge contribution of over one-half the share of yearly foreign exchange export earnings; and most important of all is its contribution of about 80 per cent to overall employment. As we saw in Section 1.2, the majority of the people live in rural areas and make their livelihood in agriculture. However, about half of these people live in relative poverty because of inadequate farm incomes. The problems associated with poverty are reinforced by high rates of population growth and high unemployment rates; compounded by the fact that, prior to independence (1963), Africans at large had smaller access to wealth and income, and other government services.

Since Kenya has no oil, virtually no other mineral wealth and an underdeveloped industrial sector, this makes agricultural and rural development a top priority at least in the short run. This fact was recognized even during the colonial period when agriculture was considered most important and grew almost at the same rate as the rest of the economy. The main problem was that its growth was dualistic, along racial lines. As such the Non-African Population (mostly the 4,000 Europeans) owned about 80 percent* of the high and medium potential agricultural land. This sector in general had large farm sizes and accounted for most of the marketed production (nationally and internationally), where 4.1 million acres were ranches and plantations (chiefly coffee, tea and sisal) and 3.4 million acres were in mixed farming at independence.

On the other hand, the African population was restricted to the small farm sector, producing primarily food crops for domestic consumption, until in the 1950's when some of these restrictions were lifted. (Swynnerton Plan, 1954). The situation has improved greatly since independence with the abolition of all racial discrimination in terms of access to land and cash crop farming, such that in terms of overall marketed output the small farm sector has now exceeded the large farm sector. The rate of agricultural development has been good, thus providing the country with sufficient food most of the time and reliable export earnings due to the wide range of food crops and cash crops respectively.

Similarly, the growth of the industrial sector, which is heavily based on agricultural inputs, has been dualistic. The formal industrial sector has consisted of a high pro-

*This works out to about 9.6 per cent of the total land area. Compare this with South Africa and Rhodesia where 89 per cent of the land is allocated for permanent European Settlement.

portion on Non-Africans (mainly Europeans) and foreign involvement; is relatively large scale and urban based, and is generally capital-intensive. The commercial and trade sector which is also mainly urban based has been dominated by Non-Africans (Asians), with Africans being relegated to the informal sector such as petty retailers, some service activities, some rural transport activities and so on which was characterized by easy entry and usually rural based. Since independence, however, the government through its Kenyanization (Africanization) drive has tried to help Africans gain a foothold in the industrial and commercial sector with some success. The growth of the industrial sector has not been enough so as to absorb the open (chronic) unemployment of the urban areas, which is compounded daily by the ever increasing rural-urban migration. The only viable alternative seems to be in the agricultural and service sectors at very low wages.

The industrial sector however can be expected to keep growing in the future; one of the chief reasons being that the economic policies of Kenya which favour private enterprise (capitalist or market oriented), with limited government participation, have created a favourable image abroad, thus making it comparatively easy to attract foreign investment. Prior to 1973 the surplus balance of payments and negligible inflation rates were also an inducement. However, since then, the rising import prices, especially oil, the rising domestic food prices, and the rising production costs (other than wages) have all contributed to high inflation levels and serious deficits in the balance of payments. The rural and urban incomes, especially for the unskilled have also continued to diverge as strong trade unions in urban areas have bargained for

higher wages. Moreover, development programmes are still heavily biased towards the urban areas and the industrial sector despite government intentions. It is hoped to reduce this imbalance through the development of rural growth and service centres throughout Kenya with the emphasis of resource based small scale industries.

Like in many other developing countries, the existing "infant" industries, which are mainly for import substitution are heavily protected from foreign "cheap" imports and rely heavily on the national market and the East African Community. Their high cost makes them incapable of competing in other international markets; unless subsidized by the government. The high prices of agricultural inputs and consumer goods compared to the lower prices of agricultural products may be a disincentive to farmers and may serve to further weaken the linkages between the two sectors at a time when there is still considerable underutilized potential for growth in the agro-processing industries.

The purpose of this chapter is therefore to expand on what was covered in Section 1.2, by examining in more detail the various aspects of the agricultural sector such as objectives, land tenure, terms of trade, large farms and small farms. Most of the emphasis will be on the small farm sector and to a limited extent on the growth centre theory and its application in rural development planning.

4.1.1 Objectives of Agricultural and Rural Development

Going through the four KNDP's (1965-83) one meets several agricultural and rural development objectives being mentioned. Some of the major ones are: to achieve a significant growth of marketed production through intensified land use; to improve the distribution of rural income by increasing public expenditures on programmes aimed to helping farmers intensify their production, especially small scale farmers; to devise methods for achieving a balanced pattern of development throughout Kenya; to improve the standards of nutrition in the rural areas through education and increased production of energy and protein foods; to increase agricultural exports; to increase the opportunities for employment in the agricultural sector through subdivision of large scale mixed farms or imposing additional taxation on certain forms of mechanization and less intensive land use; the Kenyanization of ranches and plantations; the stabilization of prices of crops designated for domestic consumption, while prices of crops for exports will be left to fluctuate with international demand.

While it may be relatively easy to define the overall objectives, the implementation strategies in Kenya have to be location specific. This is mainly because the country has a wide range of climatic conditions, with varying rainfall patterns (usually in distinct seasons), altitudes, and temperatures, sometimes within very short distances such that the agricultural potential differs greatly. This has in turn affected the level of agricultural and rural development among the different areas.

The agricultural potential is generally classified under three categories (Ominde, 1971, p.167). These are (Figure 4.1): (a) the high potential areas, which comprise about 7 per cent of the land area are found at high altitudes or medium altitudes or at the coast. They have adequate and reliable rainfall and good soils and are not too steep for cultivation. Those at the high altitudes (where most of the European large farms were located) are more developed, densely populated and suited for the production of valuable cash crops such as coffee, tea, pyrethrum and dairy cattle. Those at medium, although densely populated do not produce a wide range of valuable cash crops; (b) the medium potential areas which comprise about 5 per cent of the land area suited for crop production but rainfall is unreliable in some years leading to crop failures. These areas are therefore suited to extensive livestock production; (c) the low potential areas which are sparsely populated cover the rest of Kenya, of which 5 per cent may be suited for some crop production depending on rainfall and soil type, 60 per cent is described as semi-desert and the rest may generally be suited for only livestock production (pastoral areas) at varying intensities.

FIGURE 4.1

LAND PRODUCTIVITY POTENTIAL IN KENYA

Source: Ominde, 1971, p. 167, modified to reflect present boundary changes (1

4.1.2 Land Tenure Reform

Although it has been decided that private individual ownership based on freehold titles is the key to Kenya's land policy, it still remains a hot political issue. The issue of the large mixed farms (plantations and ranches excepted) versus the small, has been resolved in favour of the latter as we saw in Section 1.2.1, where in settlement schemes, the farms will be subdivided into small farms and the new owners given freehold titles once their loans are repaid to the government. Exceptions to the policy of private ownership are only allowed in large scale irrigation schemes which are formed by tenants; the few state farms; in pastoral areas; and some ranches and plantations which may be owned by companies.

The reform of traditional land tenure in both small scale and pastoral areas in which men owned the land and passed it to their first sons in the event of death had a slow beginning in 1948. It consisted of the consolidation of fragmented holdings (especially in the Central Province) and the introduction of individual freehold titles. In areas of less fragmentation registration took place without consolidation, and in pastoral areas group titles were given as individual ownership was not feasible. The process was speeded up after the 1954 Swynne ton Plan (see also Section 4.2.2) and the "Mau Mau" Emergency of 1954-58.

Heyer, (1976, p.16) argues that "the reform has not been radical as it sounds and that...it has ^{not} been as successful as claimed." She cites the reasons given for consolidation as: less land would be taken up for boundaries and paths, less time would be wasted walking from one fragment

to another, the movement of manure and equipment would be easier, farmers would no longer be constrained in what they would grow on distant smaller farms, all farms would be better protected against theft and pests, it would be easier to rotate crops, and extension agents would be able to give better advice if they could see all the farm at once. This ignores some positive advantages of a limited degree of fragmentation which ^{can} enable farmers to: spread risks in areas in which climatic conditions vary over small distances, take advantage of variations of soil types, spread the risks of disease in crops and livestock by keeping them separate, and spread labour peaks where differences in soils and climate lead to differences in the timing of labour operations.

Similary, registration of titles was supported on the grounds that: it would reduce the amount of litigation, encourage investment as farmers would no longer feel insecure of their land, would enable farmers to take advantage of credit facilities and encourage a market for land. Heyer (1976) contends that: consolidation and registration has produced little real change; it should have been implemented only where fragmentation was severe, and moreover a good deal of fragmentation persists of the register; relative few farmers have received credit which could have been extended without registration anyway; the market of land existed; and the incentive to invest was never really a problem.*

*This author from his experience in Mwanza District, Tanzania where fragmentation exists but is not that severe would tend to agree with the objections raised by Heyer. The farmers know the capability of their fragments very well and will consolidate voluntarily if it was in their best interest; therefore forced consolidation might demoralize farmers and may result into reduced output. The answer it appears in Kenya is the subdivision of all large mixed farms, and possibly some plantations and ranches, after nationalization with or without compensation.

4.1.3 Terms of International Trade

The terms of trade, that is, the relationships between export prices and import prices have been more advantageous for developed than developing countries. The major reason is that most developing countries export low priced raw and semiprocessed primary products from their agricultural and minerals sector, which as a rule are vulnerable to the fluctuating forces of demand and supply in the world market. In turn they mostly import high priced manufactured goods from developed countries. Therefore, the benefits from any supposed international specialization of labour accrue to the developed; an argument used by others like President Nyerere of Tanzania as a justification for more aid or for restructuring the international economic system. Moreover, the price fluctuations of exports are a havoc to the economies of developing countries and may reduce the usefulness of planning geared to specific targets because although a rise in prices in the world markets may lead to increased output, a fall in price will not guarantee a reduction in output, especially in the short run, due to the inertia involved. It now seems that the "only" answer to the terms of trade problem by pessimists is to form producer cartels, like OPEC. But again, it is very difficult to find the right combination of output in the numerous products exported and the solidarity among developing countries.

Anyway, the overall terms of international trade for Kenya in 1977 were relatively better compared to other developing countries. This was caused by the increased

agricultural exports in terms of volume and prices which are also highly diversified; and a reduction in the real value of imports (oil and other imports) between 1970 and 1977. In terms of value the six major agricultural exports in 1976 arranged in descending order of importance were: coffee, tea, meat, pyrethrum, hides and skins, and pineapples, which together made up about 60 per cent of the total export sector (agricultural and other) earnings. Coffee* and tea above accounted for about 47 per cent, and the share was higher in 1977 because the prices of coffee and tea almost doubled compared to those of 1976, but again fell in 1978 by 31 per cent and 29 per cent respectively. The volumes of coffee have not gone up that much with price increases mainly because of the restrictions on new coffee planting order under the International Coffee Agreement from 1964 to 1974. Tea has responded and expanded accordingly, but the prices are slightly weaker. The other exports have also been fluctuating in volumes and prices (hence value) according to world demand and supply, with sisal hit the hardest.

Table 4.1 shows the terms of trade between Kenya and other African countries. It is clear that these are in favour of Kenya, especially with the defunct EAC agreement with Uganda and Tanzania, including Zambia. It is safe to conclude that Kenya will suffer most from any trade barriers that may be imposed by the former EAC members as the figures for 1978 tend to confirm. The trade with Tanzania and therefore Zambia have been worsened by the border closures between herself and Tanzania. It will be difficult for Kenya to expand to other foreign markets due to its high cost industries and the extra burden of transport costs

*In terms of foreign exchange earnings, tourism has now replaced coffee as the most important single source.

TABLE 4.1

KENYA'S TRADE WITH OTHER AFRICAN COUNTRIES, 1974 and 1978

K£ 000

	EXPORTS *		IMPORTS	
	1974	1978	1974	1978
UGANDA	39,676	38,429	3,843	1,977
TANZANIA	25,949	2,757	10,686	353
ZAMBIA	10,913	5,702	549	1,575
ALL OTHER AFRICAN COUNTRIES	19,345	46,989	2,207	5,271
AFRICAN TRADE AS % OF ALL EXPORTS/IMPORTS	40.7	23.7	4.9	1.4

* Including Re-exports

Source: Kenyan Economic Survey, 1979, p. 88.

for long distances. It can only be hoped that the EAC will be revived in the future, for the benefit of all involved, and because trade among developing countries needs to be expanded, not curtailed so as to reduce dependence on the few developed countries.

4.2 A Further Look at Agricultural Development

Kenya produces a wide variety of food crops, with maize being the main staple throughout the country. Others of importance are wheat, rice, millets and sorghums, potatoes, bananas and plantains, pulses and green vegetables and meat and dairy products.* The annual rate of growth in food production which is largely related to population and income growth of internal markets is estimated to be 4.3 per cent between 1978 and 1983. The rates of growth of livestock products is expected to be a bit higher at 4.7 per cent, reflecting a growing domestic demand (KNDP, 1979-83).

Similary, there is a wide range of cash crops of which coffee and tea are the most important in that order. Others of somewhat small significance are sisal, wattle**, wheat, pyrethrum, cotton, cashewnuts, and sugar cane. The rate of growth of industrial crops*** (those processed locally for domestic markets) is expected to be even higher at 14.0 per cent; and that of export crops at 4.2 per cent depending on world markets. The overall growth rate in marketed and non-marketed production is expected to be 6.9 per cent and 3 per cent respectively.

*Exotic strains of dairy cattle were officially supported in African areas only after 1955 and the necessary services such as disease control, marketing and genetic improvements were then introduced.

**Wattle was introduced in Kenya in 1902 from South Africa to act as a source of fuel supplies for the railway and later began to be used as a source of bark for purposes of tanning.

***This includes oil seeds and nuts, sugar cane, cotton, tobacco and barley.

4.2.1 The Large Farms Sector

As we saw in Section 1.2.1 the policy of the government is to subdivide all large mixed farms. However, after independence some of these large farms were not subdivided but transferred intact to Africans as individuals or groups. The total land transfer programme consumed a very high proportion of the development funds in agriculture in the 1960's, amounting to 75 per cent of the total in the first year of independence (1963-64). The transfer of whole farms to Africans may have been a mistake (politically popular) because it has created a new vested interest which seeks to maintain the same privileges as their predecessors and may hamper complete subdivision of the large mixed farm sector. The possibilities of subdividing ranches and plantations with tea or sugar or wattle or sisal have not been raised because they represent substantial investment which will be very expensive to buy out (unless nationalized with little or no compensation) or to modify if subdivided; this sector therefore continues to remain in the hands of non-Africans. The large farm sector has performed relatively well since independence accounting for about 44 per cent of gross marketed output in 1978. Among export crops, sisal is the only crop which has suffered a severe decline but is expected to improve as petroleum based synthetics continue to rise in prices. Other declines were noted in pyrethrum, wattle, and wheat which is predominantly a large farm crop.

The large farms sector relies heavily on purchased material and labour inputs. Using 1972 as a base, the volume of material inputs used increased by only one-third between 1975 and 1978, while the corresponding prices more

than doubled. This severely affected the operation of large farms and also further curtailed the use of purchased inputs in the small farms sector where they are used only lightly. These price increases have been caused by four factors: increased prices of imports, changes in foreign exchange rates, increased sea freight rates and the increased distribution rates in Kenya. The high cost of machinery and spare parts have been compounded by the shortage of skilled mechanics, which started after 1968, "...due partly to the departure of large numbers of Asian Mechanics..., and partly to the failure of the government...to train and promote local mechanics..." (Heyer and Hinga, 1976, p.246). However, the volume of purchased labour inputs increased by about two-fifths and the prices by only one-third during the same period. This implies also that it is even cheaper on small farms because labour is usually supplied "free" by family members; even when hired it is still cheaper because minimum wage guidelines and other employment guidelines are not followed strictly. If large mixed farms are to be maintained (not subdivided), then they have to adapt to the changing resource scarcities. The scope in this direction is narrow because, these farms already use machinery and many other inputs with little chance of technology changes to make them cheaper; while there is plenty of room for improvement in the small farm sector because there is little machinery and purchased inputs used.

The reliance of large farms on purchased inputs, has meant that this sector continues to receive more credit (over 50 per cent of total in 1977-78) than the small sector, despite the proportionately fewer farmers and a lesser contribution to the marketed output. In the small

farm sector, most of the credit goes to those in settlement schemes (subdivided large mixed farms). The policy for credit is low interest rates, subsidized by the government. Heyer (1976) argues that this kind of policy is undesirable because:

The fact that official credit goes to large farmers more than small, rich more than poor, and in some areas more than in others would not matter so much if the credit were not subsidized...If there is a case for a subsidy on income grounds then a well designed subsidy programme, one that really reaches the poor and affects their production system should be devised (Heyer, 1976, p.210).

Current credit policy also tends to favour inappropriate resource combinations. For example it may be easier to get credit to buy a tractor than an oxen or a plough; or to buy material inputs than to pay wages. The government has now realized some of these inadequacies in its credit programmes and plans to weed them out (KNDP, 1979-83). Thus, credit will be extended more to small-scale farmers, to purchase labour as well as other inputs, and the interest rate policy will be reviewed such that more creditworthy farmers will be required to obtain their credit from commercial banks.

As with the credit programme, the marketing system essentially caters for the large farm sector, with heavy biases towards export crops. The large farms deal with the appropriate marketing boards directly. The export marketing boards have been criticized for not pursuing export price stabilisation policy; their main concern being with the

efficiency of the marketing process. The marketing of the products from the small farm sector is a two tier system, where the cooperatives which have been characterized as inefficient handle the initial buying and some processing, and then pass it to the appropriate marketing boards.

The marketing system of food is similarly centralized and plagued with numerous problems, such that surpluses in one area may not reach an area with huge deficits. This not only creates disincentives to specialize in the agricultural sector, but also increases the price of foods (cost of living) and the cost of labour in the industrial sector (as unions bargain for higher wages). The pricing of food crops has also been criticized for being irrational for it totally ignores locational and seasonal factors, thereby discouraging increased production or sometimes exploiting the consumer.

Since the large farms were geared for export markets, they received preferential treatment from the government such as: protection from imports, light taxes, more credit, quotas for production and most of the development funds. The price policy up to 1965 was for high domestic prices and exporting surplus at a loss. This therefore benefitted the larger farmers much more; and was reinforced by their considerable locational advantages. For almost all rail development served the freight and travel needs of large farms and as such most of the major urban (market) areas developed near them. Of urban areas (over 5,000) only Kisumu, Nyeri, Isiolo, Lamu, Nyahururu (Thomson Falls), Marsabit and Machakos developed in African areas; and only Kisumu was served by rail.

4.2.2 The Small Farms Sector

The small farm sector contains about 1.5 million farms in the arable areas and 0.25 million in the pastoral areas, all being located in the former African areas. The latter are much larger, "but the quality of land and the system of land use is such as to qualify most of them as small on income grounds" (Heyer, 1976, p.187). The main concern for this study is the former. The sector also by definition includes 0.035 million farms of "legal" settlement schemes and 0.3 million of "illegal" settlement schemes in the former European areas; and about 0.035 million in irrigation schemes in which farmers do not own the land but are tenants. The main purpose of the settlement schemes was to cater for the more advanced (progressive) farmers from the crowded African areas; and the landless and unemployed, giving preference to the displaced farm labourers who were previously employed on European farms. In the less densely populated areas, the schemes have been criticized for removing successful farmers from their communities where they serve as models or opinion leaders. The pressures to subdivide large farms still exist, and the government has indicated the willingness to proceed, although it remains to be seen at what rate.

There is considerable heterogeneity in the small farm districts in such matters as the availability of government services, levels of development, agricultural potential, population density and accessibility to markets all which have combined to create an unequal distribution of incomes within and among districts. This is so because, those in higher altitude districts have more dairy cattle and high

value permanent crops such as coffee and tea; while in the lower areas they rely more on low value annual crops like cotton (Figure 4.1). Therefore a possible classification of the small farm sector could be based on the following characteristics: the quantity of marketed production, the role of permanent crops, the role of livestock, and the use of purchased inputs. Thus we can have four subsystems: those primarily producing for subsistence and those for markets (commercial farmers); those where permanent crops play a major role to those where they don't; those where livestock are peripheral and those where they are at the centre of production; and to those where purchased inputs are used lightly to where they are used heavily. In addition to the small scale of operation, the small farm sector differs from the large sector in the availability and use of the basic factors of production -- land, labour, capital and purchased inputs as was discussed in Section 1.2.1.

The small farm sector has performed very well since independence, rising from 18 per cent in 1954 to about 56 per cent of all marketed output in 1978. These figures do not take into account the average 55 per cent of total farm production used for subsistence and some of the marketed output, especially food crops which do not appear on official statistics because they are sold to consumers directly or to local traders with exact amounts very difficult to estimate (Table 4.2). "Although farm production is the major source of income for small holders, on average about 43 per cent of the total income of households is

TABLE 4.2

PERCENTAGE DISTRIBUTION OF SMALL FARM SALES BY COMMODITY AND TYPE OF BUYER, KENYA, 1976

PRODUCT	CO-OPERATIVE SOCIETY	MARKETING BOARD OF ITS AGENT	Percent				TOTAL
			TRADER	CONSUMER	OTHER		
Maize	8	20	59	12	1	100	
Finger Millet	-	56	16	26	2	100	
Sorghum	-	66	-	33	1	100	
Beans	-	16	55	28	1	100	
Potatoes	-	-	84	7	9	100	
Cabbages	3	-	54	42	1	100	
Tomatoes	-	-	96	4	-	100	
Bananas	-	-	36	63	1	100	
Chicken	-	-	43	47	10	100	
Eggs	-	-	13	86	1	100	
Milk	63	9	11	16	1	100	
Sheep	-	-	56	33	11	100	
Goats	-	-	71	21	8	100	
Cattle	6	-	73	10	11	100	

nevertheless derived from non-farm sources" (KNDP, 1974-78, p.99). Food crops make up most of the sales in all provinces (with the sales of maize as the most important), excluding the Central Province and Rift Valley Province where export crops and milk respectively are most important. Infact only about 10 per cent of all small-scale farmers in Kenya have export crops as their main source of income.

The significance of the "informal" marketing sector (local traders and consumers at local markets) to the small farm sector as shown in Table 4.2 cannot be underestimated. The "formal" sector (cooperatives and marketing boards) play an insignificant role in the overall marketed production of the small farm sector. Cooperatives form the main buyer mostly for coffee, tea and milk; while the Maize and Produce Board is an outlet for maize, millet, sorghum and beans. The prices offered by the "informal" sector closely match those by the "formal" sector, thus showing the importance and reliability of this sector and the need to avoid further government interference.

The high overall growth rates in the marketed production from small farms can be attributed to the increased area and production in coffee, tea, and pyrethrum and increased dairy products in the high potential areas. This has widened the inequalities between the high potential and other areas, and between groups within the high potential areas where the benefits have been concentrated in those with higher cash crop acreage and dairy cattle. These increases in area and production in small farms have been attributed to the Swynnerton Plan of 1954. This plan recommended

several programme improvements for the former African areas in matters of: land tenure (already discussed in Section 4.1.2); cash crops and dairy production, by removing some of the restrictions and increasing government services; and pastoral area development through stock reduction.

Most of the recommendations by the Swynnerton Plan were accepted even after independence, with the exception of the one on pastoral areas which was rejected as being too pessimistic. This is being replaced by a comprehensive programme which essentially involves a stratification of beef production where some areas will be for producing immatures, other to fatten and so on. The land tenure programme as we have seen has been criticized for achieving less ; while the availability of government services have been criticized for being heavily concentrated in high potential areas and only to those with large farms. The only significant achievement of the Swynnerton Plan appears then to be the allowing of Africans to grow cash crops and to raise dairy cattle.

4.3 The Role of Extension Services in the Diffusion of Innovations

Agricultural and veterinary extension services* are considered as one of the most important factors which can affect agricultural development. In this study we shall try to see how farmers rate these services compared to other farm inputs; and if inaccessibility of some of the small farms has in any way contributed to the concentration of extension services to large farm (progressive) owners. "The word extension may derive from the fact that the assistance is extended to individuals or groups where they are engaged in production...It provides a means of increasing production very largely without quantitative change in the basic factors of land, labour and capital (Makings, 1967, p.62). The returns from extension, although may be relatively large, are usually indeterminate and continuative. The initial rôle of extension is therefore first to assist the farmer to improve his production using the same crops and the same resources; and then later to introduce innovations which may include new crops or new resource inputs.

Most of the extension services in Kenya are available through the Ministry of Agriculture. The main extension methods are: individual farm visits, "barazas" (meetings), agricultural shows, 4-K clubs (youth clubs under the auspices of the Ministry of Agriculture to teach the young about rabbits, poultry, vegetable growing etc.) and

*Although our discussion is limited to this kind of extension services, there also exists home economics extension services which are concerned with other aspects of rural development especially nutrition.

dissemination of information directly from the research station. In 1973 the estimated ratio of extension agents to farmers was about 1:300; which must be higher by now. The corresponding figures for Tanzania and Uganda were 1:1,500 and 1:1,800 respectively. However, despite this huge number of extension agents, the rate of diffusion of innovation has been slow. "Most of the beneficiaries of the services have been from the above average size and progressive farmers who form only a small proportion of the farming community..." (KNDP, 1979-83, p.238). The failure of diffusion of innovations from the better farmers to the others has been attributed to the alienation of these farmers from the rest of the community. Dissemination through the research stations to the small scale farmers has generally been a failure because these farmers see these stations as practising a form of agriculture which they cannot emulate (Mbithi, 1972). The government hopes to correct this by bringing farmers to cultivate plots in the research stations. Group extension methods will also become the normal approach in the future in order to reach more farmers as opposed to individual visits.

4.3.1 The Success of Extension Agents in Kenya Versus the Model of Diffusion

Rogers and Shoemaker (1971) define a model for the diffusion of innovations which has similar elements as the S-M-C-R-E communication model. Whereas the communication model is concerned with the transfer of all types of messages (M) from the source (S) via certain channels (C) to the receiving individuals (R), producing societal or individual effects (E); the diffusion model is treated as a subset of the communication model, which is only concerned with the transfer of innovations (ideas, practices or objects perceived new), hence involving some degree of risk and time. In essence then, the diffusion model "... focuses in bringing about overt behaviour change, that is adoption or rejection of new ideas, rather than just changes in knowledge or attitudes" (Rogers and Shoemaker, 1971, p.13).

Our concern in this study is the importance of the source. There are three types of sources which may generate social change or development. These are: vertical, diagonal or horizontal (Figure 4.2). Most research in developing countries has tended to focus on the vertical and diagonal impulses for change, to the neglect of horizontal impulses; in the small farm sector this is mainly because the small farmers are regarded as incapable of innovating. However, Lundqvist (1975) after studying the increase in agricultural production in cash crops in Morogoro District, Tanzania concluded that the increases were the result of locally, rather than centrally generated impulses, thus pointing to the need of more studies dealing with local generated impulses. In Kenya, the vertical sources are the

FIGURE 4.2

LUNDQVIST'S MODEL OF INFLUENCES THOUGHT TO GENERATE DEVELOPMENT

Source: Lundqvist, 1975, p. 126.

research stations; however as we have seen, their success has been minimal, as farmers less distant treat them as irrelevant.

The main sources then are the diagonal sources. The two main ones being the change agents and opinion leaders. "A change agent is a professional who influences innovation decisions in a direction deemed desirable by a change agency" (Rogers and Shoemaker, 1971, p.35). The change agent expects that the consequences of the adoption or rejection of an innovation will be functional, direct and manifest as opposed to being dysfunctional, indirect and latent. "Opinion leadership is the degree to which an individual is able to informally influence other individuals' attitudes or overt behaviour in a desired way with relative frequency" (Rogers and Shoemaker, 1971, p.35). In Kenya the change agents are the extension agents (workers), the progressive farmers are the opinion leaders and the Ministry of Agriculture is the change agency.

In Kenya the problem of concentration of extension services to more progressive farmers has already been noted. This is more a question of history which has tended to favour the sector with large farms and hence more cash crops, this being more reinforced by agricultural planning which reinforces targets. Extension agents have also been criticized for having little empathy with small farmers, their low level of technical and communication skills and their paternalistic attitude, reminiscent of the colonial times, which tends to alienate the majority of small farmers. The extensions services have also failed to attract more educated people, because employment in the agricultural

sector is regarded as a last resort; which is magnified by the unwillingness to work in rural areas which is usually associated with poor promotion opportunities.

The rationale of using opinion leaders is that "... the change agent provides the aegis of local sponsorship and sanction for his ideas..." (Rogers and Shoemaker, 1971, p.244). However, as we have seen in Kenya, the use of progressive farmers as opinion leaders has not helped in the diffusion of innovations to the small-scale farmers because of the lack of communication between the two groups. Therefore, the only alternative is to concentrate the extension services on the small-scale farmers. However, in order to avoid wasting the time of extension agents by visiting individual farms just to create an awareness of a particular innovation; this role should more frequently be played by radio or other mass media; thereby leaving extension agents to teach farmers the application of the innovation.

4.4 Growth Centre Theory and Rural Development

In Section 1.2.2 we indicated that the growth centre concept was at the core of Kenya's rural development policies. Prior to the KNDP (1970-74), the strategy was to emphasize industrialization and the growth of the major urban areas. The relative scarcity of certain resources, especially capital, and the uneven distribution of the resulting benefits of industrialization brought the change in direction. The current KNDP (1979-83) makes an effort to remedy the shortcomings of earlier plans, by its poverty strategy which intends to concentrate development resources on the poor. The rural growth centres are expected to ^{be} the centres of non-agricultural activities or small scale industries which might be attracted to these areas after the government provides the necessary services such as clean water supplies, improved transportation facilities, electricity and so on. The overemphasis of service functions to these centres has been criticized by Kimani and Taylor (1973) who have written:

For the purpose of rural development the growth centre theory and growth centre concept must include economic, social and service elements. If the growth in these centres is to be self-sustaining then the service functions of these centres must not be allowed to dominate. A service element can be added to a growth centre much more easily than a growth element to a service centre (Kimani and Taylor, 1973, p.42).

The growth centre concept was formulated by Perroux in 1955. It was based on the fact that "...development does not appear everywhere and all at once: it appears in...

development poles... "and spreads along diverse channels and has varying terminal effects" (Hermansen, 1972, p.3). Since then the dangers of development poles in forming polarized spatial development have been well articulated (Myrdal 1957; Hirschman, 1958; Friedman, 1972). However, the concentration of resources in growth centres, appears to be the only way for developing countries because, "... nations have very limited resources and by necessity have to concentrate their scarce resources..." (Kimani and Taylor, 1973, p.42). What is required is to adapt the essentially urban based concept to a rural context. This is very important in many developing countries, where the few cities that do exist are linked to themselves and then mainly to the coast for exports; thus linkages with their hinterlands have been negligible. Therefore there is a need to create more intermediate sized towns.

The Kenya government has designated four levels of centres. The lowest two levels are the local and market centres, which are really intended to serve service functions; while the top two, rural and urban centres, are to provide both service and growth functions. Kimani and Taylor (1973) criticize the hierarchy as impractical to be of any use because it contains too many centres, especially the local centres. They suggest replacing the four-fold hierarchy with a three-fold hierarchy of local, rural and urban growth centres with catchment populations of between 30,000 to 80,000.

In implementing the growth centre policy, the "Harambee" (Self-help) projects are expected to play a very

great role. For example in 1978, some of these projects contributed up to one-third of the total value of development projects in some districts. The construction of schools and health centres have been the most popular. However, these are kinds of projects which have recurrent costs as the government must provide the teachers and medical assistants to run these facilities. In order to avoid a proliferation of similar projects, the government has introduced a registration of all self-help schemes, where it then assigns a priority for implementation purposes. Only those projects which may help generate growth, that is agricultural and commercial productivity are now encouraged.

The growth pole concept, is essentially tied to measuring development in the traditional way, that is, with increases in GNP per capita. This approach is now regarded as partial, because although incomes have gone up for most developing countries, poverty hasn't decreased. Some people now believe that a direct attack on poverty is required, as the one proposed for Kenya. This has been referred to as the basic needs approach (or other terminology) to development. It seeks to redefine development as the improvement of the general welfare of the people by providing the opportunities for the full mental and social development of the human personality. It focusses on channelling particular resources to particular group identified as deficient in these resources. It therefore concentrates on the nature of what is provided rather than on income such that the emphasis is on ends not means (Streten, 1977). As such the main criticism of this approval has been that it is therefore politically undesirable. Other problems

that plague the approach are: cost, distinguishing degrees of poverty, defining basic needs, identifying sources of intermediate (labour intensive) technology as developed countries show no evidence of developing such technology or for that matter even buying more of the labour intensive products from developing countries, and other technical problems.

4.5 Conclusion

The overall performance of the agricultural sector over the years has been impressive. However, although inequalities in the sector can no longer be strictly divided along racial lines; the old problems still persist. Thus more attention in the form of government services (extension services, credit, marketing, research, training etc.) is still being given to the high potential areas and more to those with the large farms, than in low potential areas. The government intends to change this by modifying its programmes to meet the needs of the small farm sector. The pastoral areas are also receiving a significant boost from an improved range management programme so as to increase the number of marketable animals, mainly through rationalization of herd size, pasture and water supplies.

The future of small farms looks brighter than those of large farms. This is mostly because the large farms depend more on purchased inputs (fertilizers, insecticides, machinery), which are mainly imported and whose prices are rapidly rising. Even if most of these were produced locally they would still be expensive. In the small farm sector there is also a need to develop some intermediate technology, especially for the initial cultivation where hoeing dominates. The use of oxen equipment* or some other modified mechanical equipments have to be expanded wherever appropriate. This means considerable research expenditure because if the use of farm implements is to increase they have to be produced cheaply. The use of tractors for hire in initial cultivation should be encouraged and expanded and not viewed simply as one of inappropriate technology.

*The use of oxen equipment in Muranga District and other highland areas is almost impossible because of steep slopes

CHAPTER 5

THE RURAL TRANSPORTATION SYSTEM

"The development of Kenya and indeed any country requires adequate transport facilities. In this connection the road transport has a highly significant position. More than any other transport mode, roads can reach the remote part of the country and a wide variety of people engaged in diverse activities" (KNDP, 1979-83, p.411).

5.1 Introduction

The British treated the transport systems of the three countries of Kenya, Tanzania and Uganda as one system within a regional framework. The railway system which was focussed on the coasts of Kenya and Tanzania was the foundation of the system. In Kenya, a similar system continues today, dominated both by the main railway line from Mombasa to Kisumu on Lake Victoria, and the international trunk road from Mombasa to Tororo in Uganda. As such the transport pattern remains fan-shaped from the coast to the interior. At Nairobi the pattern becomes somewhat dendritic, so as to serve as the focus for mainly agricultural products before they are carried to Mombasa for export, and vice versa as a focus of consumer goods before they are distributed to other interior areas.

The three countries continued to treat their respective transport systems as one, even after each country's independence (Kenya, 1963; Tanzania, 1961; Uganda, 1962) under the auspices of the EAC treaty of 1967, which was preceded by the East African Common Services Organization of 1948*. The EAC disintegrated in January 1977. The EAC corporations were involved in: transportation (railways (with bus and truck fleets), harbours, airways), posts and telecommunications (mail, telegraph, radio-telephone, telephone, telex), customs union, an integrated taxation system, for a number of years a common currency and university, as well as general fund services which include institutions administering such services as statistics, agricultural and forestry research and other research bodies, air traffic control, and meteorology. These corporations have now been replaced (or will be) by Kenyan national corporations. This chapter will therefore present statistics and discussions limited to Kenya.

*The three sections of the EAC railways were actually physically linked in 1963 by the construction of the Ruvu to Mnyusi lateral line which linked the main railway across central Tanzania with the Ugandan-Kenya-northern Tanzania system.

5.1.1 Performance of the Transportation and Communication Sector

The contribution of the overall transport and communication sector to GDP reached a temporary peak in 1976 at 5.6 per cent from 5.4 of the previous year, and then began to decline, stabilising at 5.3 in both 1977 and 1978. This is because the slight increases in railway and water transport were severely outweighed by the major decreases in the outputs of both air and road transport. Thus the decline in the output of air transport was about 36 per cent and that of road transport was about 8.5 per cent as compared to the small rise of 2 per cent from rail transport and 7.7 per cent from water transport. The KNDP (1979-83) explains the decline:

...following the collapse of the EAC Airways..., it was not immediately possible for Kenya Airways Limited, which was then set up as the country's international carrier, to take over the full range of services (KNDP, 1979-83, p.160)

Similary:

The decline in the output of road transport is accounted for by the drop in the receipts from freight haulage activity,... because of the breakup of the EAC and the border closure by Tanzania, which particularly affected long distance hauliers especially to Zambia (KNDP, 1979-83, p.160).

The small increase in total receipts from rail transport was explained as being due to lower demand caused by higher tariffs which were introduced in July 1976. The rationale was to encourage the use of the railway system by both

agricultural and industrial products, by lowering those commodity rates that were artificially high, and raising those that were artificially low. Of course the closure of the EAC Railways, which was replaced by the Kenya Railways Corporation also reduced the carrying capacity due to poor availability of traction power, at a time where there was a shortage of spare parts and poor wagon (car) turn round in Uganda. The EAC Harbours corporation was also replaced by the Kenya Ports Authority. The better performance of water transport was due to a rise in the volume of imports in fertilizers, vehicles and ports, and iron and steel.

5.2 Distinguishing Between Transport and Communications

There is interdependence of transport (the physical movement of goods and people) and communications* (the interchange of information, which can affect the forecasting of future demands for transport (Khan, 1976). Historically, even in developed countries, transport and communications were the same, because communication was possible only through the transportation of a message, such as by mail through the post office. This may have therefore lead to the fallacious conclusion that the two are usually synonymous or direct substitutes, especially in the rural areas of Kenya and many other developing countries, where the inadequate and often impassable rural roads are almost the sole means of disseminating information.

What then is our current understanding of the relationship between transport and communications?*

*The Department of Communications, Ottawa (1971) defines: Communication as generally meaning the transmission or interchange of information, whereas Telecommunications narrowly means any transmission, emission or reception of signs, signals, writing, images or sound or intelligence of any nature by wire, radio, visual or other **electromagnetic** system. Therefore the term communication or mass media as used in this thesis encompasses telecommunications.

**Most researchers in developed countries "...believe that travel undertaken mainly for social contact or recreation is less susceptible to substitution by telecommunications. Business-related activities, on the other hand, have been viewed to be more attractive with respect to their substitution potential...The degree of substitution may depend on tasks to be performed, characteristics of journey (cost, duration), travellers attitude in terms of savings in time vs amount willing to pay, and service characteristics of travel and telecommunication modes" (Khan, 1976, pp.210-211).

Although, not much research has been done in this area, what we can say for sure is that in all countries transport and communications always complement one another. Thus for example, it would be beneficial to all farmers if before taking their crops to the markets, some sort of accurate (or up to date) information on such issues, transport modes, weather, prices etc. would always precede their physical undertaking of their trips. This is not always the case, because the information that farmers and other rural residents need to know is usually sporadic, unselective, outdated and unreliable because it relies on interpersonal communication as reported by friends, neighbours, relatives and local merchants. The ever increasing high volume of travel especially for road transport, is a drain on the existing transport capacity and a luxury (in money and time costs) that the (rural) poor can't afford, if they have to travel in order to communicate.

A partial solution lies in improving all communication facilities, while at the same time reducing adult illiteracy. Even extension workers who visit individual farmers to advise and demonstrate can make use of improved communications facilities, to reach more farmers simultaneously or through group discussions based on previous mass media programmes. Rogers and Shoemaker (1971), using evidence from Colombia, concluded that the lack of reliance on the mass media in developing countries results from less mass media exposure of the farmers, lower literacy levels and a lack of relevant messages on the existing mass media channels. Similarly, Mbithi (1972) concluded that in Kenya, the limited radio programmes and periodical articles produced then were not suitable for the majority of small-scale farmers. The

changes that have occurred since then are not that significant.

The low-cost of individual transistor radios compared to televisions make them ideal for "transporting" knowledge in developing countries. Shapiro's work (1968) in Turkey demonstrates this point clearly. He found that villages distant from a road but with many radios were much more developed, more eager for development, made more trips (and had more visitors), and had more knowledge about what went on in their village, than villages near a road but lacking radios. Travel to and from these villages was determined, not by ease of transport, but by the channels of communications that had been established. UNESCO recommends that a rural community should have a minimum of five radio sets per one hundred people in order to be effective in reaching the majority of rural residents.

5.3 Development of Transportation and Communications

5.3.1 Sequence of Modern Transportation Development

The sequence of transport growth in Kenya is comparable to that in many developing countries, and generally follows the model outlined by Taaffe et al (1963). The first phase consists of a scattering of small ports and trading posts along the seacoast. In Kenya, such ports were Vanga, Mombasa, Kilifi, Lamu, and Patta (Figure 5.1). These ports were to a large degree independent from one another except for small African and Swahili fishing craft and irregularly scheduled Arab trading vessels. The ports had limited hinterlands and were in frequent conflict over the control of coastal trade (Soja, 1968).

The second phase consists of penetration lines from the seacoast to the interior, followed by the concentration of port activity usually at the termini of the earliest penetration lines. This results into the domination of one or more ports in a country for both import and export traffic. The three principal motives for building penetration lines identified by Taaffe et al (1963) (also mentioned in Section 3.2) were: political and military control of the interior area; to reach areas of mineral exploitation and/or areas of potential agricultural production. In Kenya this phase began to appear in the last half of the nineteenth century, with the coming of Europeans. Thus "...Mombasa, Lamu and to some extent Malindi, each on or near the starting point of trade routes into the interior, far outstripped the other ports in size and, as

FIGURE 5.1

DEVELOPMENT OF PORTS, CARAVAN ROUTES AND RAILWAYS IN KENYA

LEGEND:

———— KENYA AND UGANDA MAIN RAILROAD

----- BRANCHES

NUMBERS INDICATE YEAR COMPLETED

○ MAJOR CENTRES OF CARAVAN TRADE

● RAILWAY CENTRES

----- CARAVAN AND EXPLORER'S ROUTES

Source: Soja, 1968, p. 28, with some name changes.

evidence of their importance, the three were connected in 1895 by Kenya's first telegraph line "(Soja, 1968, pp. 77-78). However, the construction of the Kenya-Uganda railway between 1895 and 1902, motivated by strongly political-administrative reasons, produced its own modes which superseded the old ones on caravan and explorer's routes, and became the chief line of penetration. The first train left for Nairobi in 1899. The uncountryside administration was then shifted from Machakos to Nairobi and Mombasa became the only significant port. The growth of traffic resulting mainly from increased British immigration, especially after the first world war, caused congestion at old Mombasa port. Thus a new port was built at Kilindini in 1931 with five berths, which has now expanded to the largest port on the East African coast with nineteen berths.

The third phase, distinguished by lateral inter-connection as feeder lines begin to move out both from the ports and from the nodes along the penetration lines was concentrated in the Highlands. By 1931 the construction of railway feeders (branches) was completed and no new (with the exception of minor sidings) lines have been built. The importance of the railway on the development of the urban spatial system is emphasized by Soja (1968) who wrote:

"The railways established the general urban pattern of Kenya, fostering the growth of important centres as key points along their route. The even spacing of these centres reflects the weak influence of local economic factors in initial urban growth, for nearly all were within 100 - to - 125 mile jumps from

one another. Starting from Mombasa,...
 Voi, Kibwezi, Makindu, Nairobi, Nakuru,
 Kisumu,...Eldoret, and Nyeri. In the
 Highlands, nearly all the other major towns
 lie at...50 miles or so between those
 previously mentioned: Fort Hall (Muranga),
 Nanyuki, Naivasha, Thomson Falls, Eldama
 Ravine,...,Kitale, Bungoma, and Lumbwa"
 (Soja, 1968, p.29).

The concentration of the rail penetration lines (feeders) in the southwestern quadrant of the country, meant that the nodes in this area, especially Nairobi increased in size and importance over coastal towns like Mombasa. During all this time roads played a very minor role, and by 1908, there were only about 816 km. of motorable earth roads, the most important of which was Nairobi-Fort Hall (Murang'a) and Lumbwa-Kericho (Soja, 1968). By 1928, there were about 10,240 km., many of which were feeders to the railway, and 60 per cent were located in the African areas and 32 per cent in the European areas.

The fourth phase following the development of a fairly complete and coherent network may be characterized by the dominance of road over railroad, and the emergency of high-priority (main streets) linkages connecting centres with high density traffic routes. This phase may have begun as early as 1951, because during this year a road authority was established to construct and maintain roads, and African local authorities were allowed to build roads to serve cash crop producing areas. The first trunk road was also built from Nairobi to Nakuru (153 km.), and by 1952, 562 km. of bitumen (paved) roads had been completed. At independence (1963), there were about 1,181 km. of

paved roads along the major trunk routes, and the emergence of high-priority (high-density, short-haul) traffic routes could be observed between: Nairobi-Nanyuki, Nairobi-Nakuru (the go-between Nyanza and Central Provinces), Nairobi-Namanga, and Kisumu-Butere (the only line built to serve African commercial farmers). The most heavily travel international road is the Mombasa-Tororo (Uganda) road.

5.3.2 Communications Development

The Kenyan mail service was an off-shoot of the Zanzibar mail service. The Zanzibar post office started handling regular mail deliveries from Western Europe in 1872. This was followed by a branch at Mombasa in 1899, with mail services initially restricted to the coast. With the construction of the railway, the services expanded along the railway, which led to establishment of another branch at Nairobi in 1909 (Soja, 1968). By 1978, there were 634 postal offices and postal agencies. Although the overall growth has been significant, the services offered to the rural population (the majority) has been inferior when compared to the service received by urban populations. The same is true for all other communication channels like newspapers, telecommunication channels, radio and television, books, cinemas, dramas, magazines and music. The high adult illiteracy of 60 per cent (1975 estimate) make the radio a very powerful tool for the dissemination of information.

5.4 The Current Rural Transportation System

5.4.1 The Rural Transport Problems From the Rural Resident Point of View

In Kenya, as in many other developing countries, development has increased the movement of both persons and goods, so that government and private resources that could be devoted to directly productive activities (DPA) are now being used to improve transport systems.

What then are some of the major rural transport problems in Kenya today? Firstly, are the high truck (in some cases railway) freight rates which are often inflated by low backhaul ratios.* Similarly, although the bus services may appear relatively cheap because they are often crowded and used for transporting goods of all kinds; the passenger fares are high because the structure of fares (usually above government limits) is such that passengers with no goods usually cross-subsidize those with goods. Secondly, is rural isolation. It will be very many years before all villages are accessible by "all-weather" roads. The rural roads (minor or special feeder) are usually hazardous and poorly maintained. Thus heavy storms frequently cause roads to be washed away and boulders along escarpment roads are very common. This rural isolation delays delivery of agricultural supplies and consumer goods, and severely reduces some social benefits which could be derived from good transportation such as: accessibility to amenities or jobs, improved living conditions because qualified teachers, doctors etc. are usually

*See Ferguson (1979), pp. 248-263, who discusses the spatial variations in oil prices in Kenya. He concluded that the pricing system set jointly by government and oil companies used for the retailing of petroleum products in Kenya, enables the core areas to actively exploit the peripheries, thus increasing income spatial disparities in time.

unwilling to be assigned to such areas. This isolation could be minimized by providing mobile services and constructing dead-end roads connecting different villages. The problem is that, money budgeted for improving rural accessibility usually ends up being spent on trunk roads or elsewhere.

Thirdly, are the restricted market areas. The problem is aggravated by lack of reliable storage and information. Some small-scale farmers are far removed from motorable roads, such that particular commodities may spoil if not delivered to the market quickly or when delivered at the market the products may have to be sold at a loss or some farmers end up deciding to produce only low-bulk and high-value commodities which can be stored easily and last for long periods without spoiling. There is no doubt that accessibility to larger cities not only creates new markets but also introduces small-scale farmers to modern marketing practices. Lastly, is the failure to use available local resources for the benefit of the whole country. It follows from the three previous problems that better rural transport can help earn foreign exchange either by substituting domestic production which will be widely available in the country for food imports (actually saves foreign exchange) or by collecting all surplus for export markets.

5.4.2 Goals of Transportation Development

Road transport contributed about one-third of the total value of output of the transport sector in 1977. It is the most important mode for internal transport, followed by railway transport and to a limited extent air transport and lastly water transport. In fact allocations to new road construction when compared to the total capital development expenditure between 1963 and 1974 have always hovered around 30 per cent. This figure has since reduced somewhat to around 20 per cent and is likely to decline further, because there is no longer an overemphasis for the construction of trunk roads. Some of the main goals for road transport currently are:

- (i) greater emphasis will be given to the improvement and maintenance of secondary and rural access roads so as to bring more farmers into the cash economy,
- (ii) road construction will be done by stages to meet current and short-term traffic needs*,
- (iii) new construction in the international trunk network is to be limited to works which will eliminate bottlenecks,
- (iv) all road planning and expenditures are to be centralized by the Ministry of Works,
- (v) labour intensive construction methods will be used in order to provide rural employment,
- (vi) transport services (buses) will be improved in low-demand areas and in remote areas,
- (vii) "matatus" will be required to comply with sections of the traffic act dealing with speeding, overloading, roadworthiness (safety checks) and insurance.

*Kenyans drive to the left. However they might switch to right-hand driving before 1983.

Similar, the main goals for railway transport are: (i) to improve long-distance passenger and freight services, and (ii) the continued rationalization of tariffs through integrated rail-road planning. Although air transport is geared mainly to international passenger traffic, and for the export and import of perishable and high value goods; it is also being used internally to serve both remote areas and regions of growing local and tourist interest. In the same manner, water transport is the main mode for the transportation of exports and imports. It is therefore expected that the handling and clearing of goods will continue to be improved.

5.4.3 Road Transport

5.4.3.1 Road Transport Infrastructure

All motorable roads in Kenya fall under the following categories: (i) Class A - these are international trunk roads which link centres of international importance, and cross international boundaries or terminate at international airports, (ii) Class B - these are national trunk roads which link nationally important (urban) centres, (iii) Class C - these are primary roads which link provincially important (urban) centres to each other, or to high class roads, (iv) Class D - these are secondary roads which link locally important (rural or market) centres to each other, or to higher class roads, (v) Class E - these are special purpose roads which are identified with the economic purpose they serve such as tourist, settlement, agricultural, fisheries or strategic roads.

The classified road network totalled about 50,572 km. (excluding urban areas) in January 1979, of which 4,331 km. were bitumenized (paved) and 46,241 were gravel and earth.* This works out to about 0.1 km. per km² of land. Going ten years back (1969) the total was about 41,660 km. (2,489 km. paved and 39,171 gravel and earth) and a density of about 0.07 km. per km². Similarly, the number of vehicles increased from about 125,000 in 1969 (12 vehicles per 1000 population) to about 230,000 in 1979 (16 vehicles per 1000 population). The average size of freight vehicles has also increased over the years from about 3.5 tons in 1963 to about 7.5 tons

*In addition to the classified road network, there is unspecified number of unclassified roads and tracks totalling between 60 and 80 thousand km.

in 1965. The figure of 7.5 tons must be higher now because of an increase in heavy commercial vehicles such as truck-trailer combinations, especially on international trunk roads (Table 5.1).

Since the damage done by these heavy vehicles to road surfaces designed for far lighter loads is of considerable magnitude, then could possibly be recouped from any user changes imposed, the enforcement of axle-load regulations is therefore crucial.*

Another interesting observation from Table 5.1 is that over half of all vehicular movements (62 per cent of total vehicle kilometerage) occur on trunk roads, despite the fact that they comprise only 13 per cent of the total length of the classified road network. Thus, these roads have to be constructed to very high standards in order to resist wear and reduce maintenance frequency and costs. Similarly, primary roads which represent 18 per cent of the total classified system, carry about 27 per cent of the total vehicle kilometerage. The two classes of roads, therefore, carry between them a total of 89 per cent of the total national road traffic. As a result of this importance, their allotted share of road development expenditure between 1979 and 1983 is about 70 per cent. The rural access roads programme attracts about 10 per cent of the total. Since the emphasis of this programme is to provide all-weather access roads from rural farms to markets, the programme should have attracted more funds, say up to 20 per cent. Moreover, the programme will have constructed only 14,000 km. of farm to market access in

*Infact, despite political and other problems in the EAC, one of the major reasons for the Tanzania-Kenya border closure was the large damage of Tanzania trunk roads by Kenyan heavy trucks on way to Zambia.

TABLE 5.1

AMOUNT OF TRAVEL BY CLASS OF ROAD AND VEHICLE TYPE, KENYA, 1978

Average Yearly Vehicle Traffic per Kilometre of Road Class (Veh./km.)							
Class of Roads	% of Total* Network	Cars	Light Commercial Vehicles	Medium Commercial Vehicles	Heavy Commercial Vehicles	Buses	Total (Veh./Km) (%)
Trunk	13	1,185	886	501	178	220	2,970 (62)
Primary	18	339	553	300	12	71	1,275 (27)
Secondary	23	71	258	95	1	53	478 (10)
Minor	46	1	8	2	--	--	11 (1)
All Roads	100	1,596	1,705	898	191	344	4,734 (100)
Per cent Veh/Km	-	(34)	(36)	(19)	(4)	(7)	--

* Excludes Special Purpose Roads.

Source: KNDP, 1979-83, p. 416

23 districts by 1982 out of 41 districts. The road priorities for construction are recommended by the various District Development Committees.

5.4.3.2 Vehicle Growth

The number of new road vehicles registered rose by 37 per cent in 1977 over 1976 raising the total in use by approximately 10 per cent. This increase was higher than the usual 8 per cent annual increases which had been observed since independence. The KNDP (1979-83), explains the dramatic rise in new registrations in 1977 by a rise in real incomes from coffee and tea as we saw in the last chapter. The largest increases were recorded by vans and pick-ups of 63.8 per cent and by passenger motor cars of 55.4 per cent. The increased popularity in vans and pick-ups is a reflection of the growth of "matatu" operation. Most of the vehicles imported in 1975 were from Japan, France, and U.K. in that order. The many variety of models imported in the country may be a further drain on foreign exchange because of the corresponding variety of spare parts which have to be imported in absence of interchangeability of spare parts. The government might be wise to restrict the importation of cars to fewer models (say five) from big trading partners, using some selected criteria.

Whereas, the number of new road vehicles registered has risen, the number of both freight licenses and passenger licences issued has declined. The former, as was explained in Section 5.1.1 has some connection with the loss of freight traffic on international operations, while the latter is a result of the increased competition from "matatu" operators who are exempt from road transport regulations. Thus operators of big buses are losing money while "matatu" operators are making profits. It is the view of this author that the "matatus" and big buses have

a complementary role to play and both should be encouraged to grow. The big buses must be used on high-density routes with few bus stops, for longer trips and on relatively good roads (alignment, surface, and flat terrain). The "matatus" with their smaller seating capacities can then operate on the remaining routes, sometimes providing door to door service or feeder service to the big buses. Some of the problems faced by big bus operators include: unavailability and cost of spare parts and types, bad roads or road surface, unfair competition from matatu operators, high operational cost (insurance, wages), unavailability of new buses and drivers, and so on. The existence of the big bus sector is seriously threatened unless a reorganization of the rural bus system is undertaken. The "matatu" operations must be included in the road transport regulations by easing entry regulations and encouraging the formation of small limited liability companies (cooperatives).

5.4.3.3 Vehicle Manufacturing

The booming local market for vehicles has led to increased production by the three commercial assembly plants, which produce vehicles from completely knocked-down kits. In addition to providing direct local employment, the three plants use considerable inputs of locally-made components such as oils, greases, batteries, radiators, silencers (mufflers), glass, tyres, tubes and upholstery. The relatively new plant in Mombasa (opened in 1978) by a consortium of companies produces Toyota, Mazda, Peugeot, Mercedes and Ford Commercial vehicles. The other two are in Nairobi, one a Leyland produces LandRovers, Range Rovers, VW Kombis, Scammels, Crusader Buses, the other a General Motors which produces Bedfords and Isuzus.

5.4.3.4 Kenya National Transport Company Limited (Kenatco)

This was formed in November 1966 as a subsidiary of ICDC. The KNDP (1974-78) describes the nature and major function of this company:

...it is an autonomous body operating on commercial lines in a competitive market. It is neither subsidized by the government or given special favours. No equipment is obtained duty free, and no special licensing concessions are granted. Road haulage is the major function... (KNDP, 1970-74, p.392).

Thus Kenatco holds contracts with several Kenyan (agricultural, industrial and commercial) and other East African companies, especially in Zambia. However, since the break-up of the EAC and the closure of the Kenya-Tanzania border, Kenatco has expanded her market to Zaire, Ruanda, Burundi, Southern Sudan and Ethiopia. Kenatco also operates a rental car service in a joint venture with Avis Rent-A-Car International system. The service is geared mostly to the tourist industry, and to some limited extent to local and visiting business people. Therefore, Kenatco accomplishes a dual role of expanding the motor transport industry, while at the same time providing a training ground for Kenyans to manage this kind of industry.

5.4.4 Other Modes of Transport

The Kenya Railways Corporation maintains a network consisting of a total of 2114 km., of which 1,086 km. is the main line between Mombasa and Kisumu and the border with Uganda, and 1,028 km. of branch lines. The railway system offers both passenger and freight service from Mombasa through Nairobi and Nakuru to Kisumu and Eldoret on the main line and to points in Uganda and Tanzania. Other Kenyan towns not located along the main line that also have rail service are Butere, Kitale, Nanyuki, Nyeri, Thika and Thomson Falls (Nyahururu). The railway company also owns and operates bus and truck fleets. Over the years the railway has attracted fewer and fewer passengers (and sometimes freight too) compared to road and air transport modes. Water transport and air transport do not really play any significant role in rural transport; although domestic air services do play a role in tourism development.

5.5 Conclusion

Modern transportation has played a key role in Kenya's development since the early 1900's. However, since independence the expansion and/or improvement of parts of the transport system have been very rapid as demonstrated by the major expansion in road transportation infrastructure (and vehicles) and the ever increasing passenger and/or freight flows of all modes. Although road transportation has replaced railway transportation as the most important mode for both passenger and freight flow, its expansion has ^{not} been uniform throughout the country. Poorer rural areas (with low agricultural potential) have seen little or no improvement at all. Without reliable farm-to-market transportation, among other things, these areas may be consigned to "perpetual" subsistence farming and hence poverty.

As such Kenya can be divided into three distinct road regions (Compare Figures 4.1 and 5.2 which shows three distinct agricultural regions): (i) the high-density areas, stretching from Nyanza province including the southern portion of Western province, through the Nakuru area, thereafter southeastwards to the Nairobi area, then north-eastwards to the foot of Mt. Kenya (which includes our study ^{area} of Muranga District); and southeastwards towards Konza; and then to the coast around Mombasa township; (ii) the medium density areas, which cover the remaining part of Kenya and are broken with several parts by the low density areas; (iii) low density areas, this includes such areas as those: covering large parts south of Lake

FIGURE 5.2

THE MAIN ROAD NETWORK IN KENYA

Source: Soja, 1968, p.33, modified to reflect present network and some name changes (1978).

Turkana (Rudolf); in parts of the Rift Valley; in northeast of Kenya; in Mt. Kenya, the Aberdares and the Mau Hill areas; and in the section from Shimoni at the coast going northwestwards to the highlands east of the Rift Valley. The railway network also follows the high-density road network areas.

The breakthrough for road transport which served almost entirely as a feeder (complementary) to the thriving railway system really came in 1959. In this year some of the restrictive measures imposed in earlier years to protect the railway (monopoly) were lifted, and competition was set in motion. It was then that a programme was implemented to upgrade the road network, including roads running parallel to the railway network. The fear of competition was one of the reasons why it took so long to develop the Mombasa-Nairobi road to its present standard. Indeed improved road transport has severely reduced the demand for rail transport, such that the only daily railway passenger traffic is between Mombasa and Kampala, and between Nairobi and Kisumu and Butere, with less frequency on all other branches. Even the Nairobi-Nanyuki line, which used to be important both for its passenger and goods traffic has now reverted almost entirely to goods traffic. The road-railway competition in Kenya places the railway at a more disadvantaged position than in other African countries because the railway is not geared to carrying minerals (with the exception of the branch to Lake Magadi for soda ash) but agricultural and consumer goods which road transport can handle much faster and with more flexibility.

Pending the continued modernization of the railway system to carry both long-distance passenger and bulky goods traffic, bus transport should be expanded to all areas of rural Kenya and where possible substituted for rail service on all low-density branches. This should be supplemented by an expanded network of radio and television coverage. The domestic air transport system should also be greatly improved to provide faster travel of business executives, government officials and technicians, and of course to support increased tourism which is the largest foreign exchange earner for Kenya. The passenger and goods steamship on Lake Victoria is not worthwhile for Kenya alone to operate, because its share of the lake is minimal. Therefore, the major role of water transport is sea transport on the coast for export and import traffic.

The concentration of transport facilities is essentially the southwestern quadrant of Kenya and a small part at the coast has lead to the concentration of economic activities in a few industrial urban areas such as Nairobi, Mombasa, Kisumu, Thika, Nakuru, Eldoret, Kitale, Athi River, Machakos, Nanyuki, Nyeri, Malindi and Naivasha in that order of importance. Thus continued improvements in transportation tend to benefit more the relatively well-developed areas, and especially the urban areas; which they are linking together. The benefits to rural areas are relatively less, and only superficial, unless more resources are devoted to farm-to-market roads.

PART III

THE RESULTS OF THE CASE STUDY: MURANG A

CHAPTER 6

TRANSPORTATION IMPACTS ON AGRICULTURAL DEVELOPMENT

"Fertilizers, improved strains of seed, education and other objects are all of greatest importance. But the need for transport is prior to all these...It has been said in defence of the dwellers in the remote mountain regions..., that their persistent tendency to produce 'moonshine',...is explainable in terms of high transport costs in those regions, and the need to earn cash income and to produce for sale something which has a higher value per unit of weight than simple grain" (Clark and Haswell, 1964, pp. 157-58).

6.1 Introduction

Thus far we have reviewed arguments for the role of transport and agriculture in the development process and discussed the nature of these two sectors in Kenya. We now proceed to support our hypotheses with specific evidence, but need to make two initial comments about the data and the results. First, if the people interviewed concealed or forgot^{or} omitted relevant answers; or if the data were recorded wrongly, the data are faulty to that extent. Thus answers that were deemed outright unsuitable were excluded from the analysis, for example, the average daily amount of goods carried per vehicle was about forty tons, despite the fact that about 62 per cent of the vehicles were cars, and only 4 per cent were trucks.

Moreover, it was decided that the results would be presented in percentages in cases where only comparisons were all that mattered. Secondly, because some of the relationships claimed in the hypotheses may not be direct, due to the comprehensive nature of interactions among the variables, the results should be read with care.

Similarly, we would like to comment on the methodology. This author is fully aware that research based on direct interviews may not be considered "scientific" or "permissible" by some academics, who prefer mechanistic statistical rigor, a view he does not share. These studies are necessary, because they sometimes reveal interesting and unexpected results, which can lead to further investigation and measurement of costs and benefits; or to the rearrangement of investment priorities. For example, in Jamaica (Sabula, et al 1978) when rural residents* were asked to rank the advantages they expected from transport improvements, the weighted order of replies obtained was; increased job access to urban areas (21%), increased school access for children (16%), increases shopping trips (16%), more savings in travel time (13%), reduced cost of purchased household goods (11%), more family contacts (10%), fast delivery of farm products to markets and reduced spoilage (7%), will open new markets for farm products (5%) and other advantages (1%). The results were unexpected because it was assumed by the planners and decision makers that the agriculture-related advantages would be rated high in light of the rural feeder roads programme that was being implemented and was going to be expanded.

*In 1978 about 54 per cent of the population lived in rural areas or in towns of less than 2,500 out of a total population of 2 million people.

6.1.1 Agricultural Potential

As we saw in Section 4.1 (Figure 4.1), most of the district is classified as high potential agricultural land. The main physical features of the landscape are the deeply dissected volcanic plateau which falls from 3900 metres in the West at the edge of the Aberdane Mountains to 1219 metres in the East; and the very pronounced ridges and valleys crossing the plateau running West-East, which have been caused by hundreds of streams flowing from the Aberdares to join in most cases, the River Tana (Kimani and Taylor, 1973, p.8). The great change in altitude over a relatively short distance (4 per cent overall slope) has strongly influenced the ecology and climate which have in turn affected human activities especially agriculture.

The district is divided into three altitudinal and ecological zones which run roughly North-south (Figure 6.1) as follows: high Kikuyu, lying between 1,800 metres and 2,250 metres, has over 1,500 mm. of rain per annum; middle Kikuyu, 1,500 metres to 1,800 metres, has a rainfall of 1,140 - 1,400 mm. and is the most densely populated zone; and low Kiluyu, below 1,500 metres, and the least reliable rainfall, averaging 1,140 mm. a year. The long rains occur between March and June, and the short rains between October and December. Temperatures are moderate, the mean annual temperature being 10-15°C, providing the district with a year around growing season. The cropping systems in each of the three zones are the result of rainfall and temperature differences. The principal differences in agriculture among the zones lie in the cash crops, with tea and dairy cattle dominating in high Kikuyu; coffee in middle Kikuyu and to much lesser extent in Low Kikuyu.

FIGURE 6.1

CROSS SECTION OF THE KIKUYU PLATEAU, MURANGA DISTRICT

Denotes dominant cash product in the zones

Source: Taylor, 1967, p. 122, with some additions in the crop types.

6.1.2 Land Tenure

Traditionally, it was the men who were the land owners. The traditional rules of inheritance were based on a "mbari" to which each household belonged. "The Mbari was a lineage grouping of all Kikuyu who traced their descent through the male line from a known ancestor" (Sorrenson, 1967, p.5). The total amount of land owned by a "mbari" was known as the "githaka". The "githaka" was very fragmented because it had to be divided among close relatives, friends and tenants. The last two tenancies could be terminated at will, which resulted in hundreds of land cases being brought through the courts. Up to 1930's shifting cultivation was practised such that whenever there was insufficient land, a family would move to another location. With the introduction of European large farms between 1910 and 1950's, and the increasing population densities, more subdivision and fragmentation resulted until the "githaka" system was completely replaced by individual farms by 1930 (Taylor, 1969).

As we saw in Section 4.1 in order to eliminate the problem of fragmentation land consolidation in Kenya started in 1948. All the fragments were surveyed and then redivided to give each landholder a single block of land equal in area to all the bits we had previously held. Effort was made to locate the new holding on the site of the largest former fragment, and to give everyone a fair amount of the best and poorer land. "Landlessness, unemployment, low wages, low status, accelerating population growth and declining soil fertility in the Kikuyu reserve... and loss of political initiative by the colonial administration..." led to the explosion of violence in 1952 (Leys, 1974, p. 49). During the same year the "Mau Mau" Emergency was declared and lasted till 1958.* This was accompanied by a policy of enforced villagization, thus providing

*There was no land consolidation in Muranga District prior to the emergency. This was started in June 1954, and became provincial policy in October 1955 (Sorrenson, 1967, p. 115).

"...a golden opportunity to force through consolidation without political interference" (Sorrenson, 1967, p.113). The land consolidation programme was given a boost by the Swynnerton Plan (1954) already discussed, which introduced additional reforms for African areas, such as: increased extension services, more technical assistance and increased introduction of cash crops. This was followed by registration of freehold title; a process which is now complete in the whole Central Province. Since consolidation, women have also gained a foothold in landholding, owning about 30 per cent of all small farms.

The district shows a preponderance of small-scale farms, which occupy more than one half of the total district area of 2,476 km² (Table 6.1). Over half of the small farms are under two hectares (Table 6.2). In 1969 the population of the district was approximately 445,000, giving it a density of about 180* people per km² and a rank of fourth most densely populated rural district in Kenya. The district comprises four divisions: Kangema, Kiharu, Kigumo and Kandara. There is very little mechanization within the district, because of the small size of many of the farms, although fertilizer use has increased over the years.

*The population and density figures given include that of Makuyu Division, which in 1969 consisted primarily of European large farms as part of former Thika District which had a low density of about 59 people per km², as compared to the higher densities of the four African small-scale farming divisions: Kangema, 251; Kiharu, 226; Kigumo, 132; and Kandara, 302.

TABLE 6.1

AREA OF LAND UNDER SMALL AND LARGE FARMS,
AND MARKETING OUTPUT PER HEAD, CENTRAL PROVINCE, 1975

District	Marketed Output per Head (KShs)*	Large Farms (Km ²)	Small Farms** (Km ²)	Other*** (Km ²)
Muranga	64	494	1,506	476
Kiambu	105	447	1,032	972
Kirinyaga	107	100	831	516
Nyeri	106	434	1,238	1,612
Nyandarua	226	271	1,526	2,002

*These data are for 1969

**All land available for small farmers has been registered.

***Other includes non-agricultural land such as forests, parks, water etc.

Source: Kenya Statistical Abstract, 1977, p. 119.

TABLE 6.2

PERCENTAGE DISTRIBUTION OF
SMALL FARMS* CENTRAL PROVINCE, 1975

Size in Hectares	Percent
Below 0.5	6.7
0.5-0.9	10.5
1.0-1.9	37.0
2.0-2.9	16.5
3.0-3.9	11.9
4.0-4.9	5.9
5.0-7.9	7.6
8.0 and over	3.9
% Total	100.0

*The total number of small farms in the Central Province was 329,530, while that in the whole country was 1,483,422

Source: Kenya Statistica Abstract, 1977, p. 135.

6.1.3 Existing Transportation*

The main mode for both passenger and goods transport is road transport. The road network in the district is a combination of trunk, primary, secondary, minor and private roads which join most of the designated growth centres (5 urban centres, 8 rural centres, 30 market centres, 40 local centres) to form a whole (Figure 6.2). The road transportation infrastructure averages about 204 km. per 1,000 km² of land. Assuming all the land under large and small farms (Table 6.1) is cultivated, this gives an approximate ratio of 0.25 of kilometre of road per square kilometre of cultivated land. Some similar values of farm-to-market roads per square kilometre of cultivated land in other countries are: India, 0.42; Britain, France, Japan, U.S.A., 2.19; Taiwan, Denmark, 1.89; Malaya, 0.47 and Philippines, 0.63 (Owen 1968). Although developed countries have high density of farm-to-market roads, the figure for Muranga appears satisfactory. Most of the roads usually run east-west in accordance with the topography; however, the main Nairobi road and a few primary roads run north-south. Three of the five urban centres in the district are located near the main Nairobi road, including Muranga town, the administrative centre of the district.

The number of vehicles in the district can be estimated to be about 5,400, of which 50 per cent are cars, 25 per cent are trucks and buses and 25 per cent other

*Communication facilities are not discussed in here because their rate of availability is too low. For only 2% of the villages had televisions; 4% had telephones; and 4% had radiophones. The extent of other communication facilities was unavailable.

vehicles.* Public road transport in the district is operated by the private sector. This sector is dominated by "matatu" vehicles (Table 6.3), which provide mainly passenger service, and to some extent goods on the way to or from markets.

"Matatu" operation vehicles

do not legally require licences to operate as public passenger vehicles. This decision was taken by the Kenyan government so as to encourage self-employment and indirectly to increase the mobility of rural residents by removing the enormous redtape involved in registering vehicles as public passenger or goods vehicles. Table 6.3 also shows that over 60 per cent of the "matatus" are taxis, an indication of high transport costs. This is compounded by the fact that only about 5 per cent of the vehicles are available for hire most of the time. The two major complaints about "matatus" are the overcrowding and hazardous driving habits of which one reads regularly in Kenyan newspapers.

The other mode of public transport that has some sort of significance value is the Nairobi-Thika-Muranga-Nanyuki railway which was build to serve the densely populated areas of the Central Province and Nairobi. However, it has now lost almost all its passenger traffic to road transport. There is a public airstrip at Muranga town, but its use is very minimal. There is no water transportation in the district.

In terms of private transportation, individual car ownership is very low, mostly owned by businessmen and those farmers with relatively larger cash crop acreages. Bicycles are

*Using an esitimated vehicle density of 12 vehicles per 1000 persons in Kenya.

TABLE 6.3

TYPE OF PUBLIC ROAD VEHICLES, MURANGA DISTRICT

Type of vehicle	Number*	%
Saloon (Sedan) taxi	140	38.4
Station Wagon taxi	87	23.8
Mini Buses	42	11.5
Panel Vans, Pick-ups, etc.	25	6.8
Large Buses and Coaches	53	14.5
Lorries (Trucks)	13	3.6
Other type-Three Wheelers, Tractors, etc.	5	1.4
Totals	N=365	100.0

*The sample of 365 vehicles represents about 10% of all vehicles (public & private) in Muranga District, as estimated from the vehicle density in Kenya and the population of the district. This estimate is conservative.

*99.6% of the vehicles are owned by men and only 0.4% by women.

*99.4% of the vehicles are driven by men and only 0.6% by women.

*33.2% of the vehicles are owner driven; 11.3% by relatives of owners and 55.5% by non-relatives.

*37.6% are passenger only vehicles; 5.2% are goods only and 57.1% carry both.

*32.1% of the vehicles are not available for hire; 41.3% rarely; 21.9% sometimes and only 4.7% often.

*13.2% of the vehicles have fixed routes only one way; 75.3% have fixed routes two ways and only 11.5% have indefinite routes.

Source: Calculated from computer coded transportation data, 1973.

not widely used; they are expensive and not adapted to carry freight. Pack animals (donkeys) are also sometimes used, although head portage by women is fairly common. Walking then, seems to be the most important mode in private transportation.

6.1.4 A Reminder and Further Note on Data Sources and
Methodology

The impacts to be analyzed in this chapter and the next are mainly economic, to some extent social, but not political. Most of the data used was collected by a field research team between June 1972 and August 1973, as part of a joint project on the role of small growth centres in rural development, undertaken by the University of Nairobi and Carleton University. Since then there have been more transport improvements, and some of the incomes may have gone up or down. Despite this lapse of about seven years, it seems reasonable to suggest that the results presented here are still valid even today. Of course it would be interesting to compare the results presented here with current information to see changes in particular variables.

Of the ten computer data files available at the university, a complete analysis was carried on the transportation data file and only partly on four other files containing information relevant to transportation impacts. These were the: market, village, farm and business files. Since the main file, that, is the transportation file could not be accessed at the village level, it was decided that all the analysis be carried at the district level for compatibility purposes.

6.2 Testing of Hypothesis One: Transport and Agricultural Development*

The purpose of this hypothesis is to determine the importance of transportation in relation to other inputs; specifically to see if farmers attribute their income improvements or declines to transport development in the district. The basic assumptions here are that farm income decline or increase is a surrogate for agricultural development and that the availability of agricultural and veterinary services are surrogates for actual extension visits. The latter assumption follows from Chapter 4 where we saw that in Kenya, up to now most of these services are available to farmers through individual farm visits by the extension agents. Since the analysis is at the district level, this also includes specialized extension services by the Kenya Tea Development Authority and those in settlement schemes by the Department of Lands and Settlement as opposed to the usual Ministry of Agriculture services, which may distort the results.

Our aim therefore is to see if agriculture development so defined can be associated with the transportation improvements which have taken place in the district over the years. Farmers were asked to name the primary and secondary reason for their farm income improvement or decline over the last few years from a group of eight reasons which had been selected from a preliminary survey as the most critical factors for agricultural development in the district. The results are presented in Table 6.4.

*For the synopsis of the hypotheses see Section 1.3.

TABLE 6.4

REASONS GIVEN FOR IMPROVEMENT OR DECLINE OF FARM INCOME,
MURANGA DISTRICT

Reasons	Farm Income Improvement (Number and %)		Farm Income Decline (Number and %)		
	Primary Reason	Secondary Reason	Primary Reason	Secondary Reason	
Better agricultural and veterinary services	1,121 (46.4)	458 (21.0)	Inadequate agricultural and veterinary services	261 (15.8)	144 (10.5)
New or better cash crops available*	793 (32.8)	710 (32.6)	Cash crops not available*	192 (11.6)	154 (11.3)
Transportation Improved	43 (1.8)	102 (4.7)	Poor transportation	13 (0.8)	37 (2.7)
Marketing Systems Improved**	47 (1.9)	90 (4.1)	Poor marketing system**	203 (12.3)	108 (7.9)
Credit available	29 (1.2)	66 (3.0)	No credit available	170 (10.3)	222 (16.2)
Better weather conditions	169 (7.0)	265 (12.2)	Poor weather conditions	140 (8.5)	104 (7.6)
Other - specify	30 (1.2)	89 (4.1)	Other - specify	98 (5.9)	93 (6.8)
Better Soil conditions	183 (7.6)	397 (18.2)	Poor soil conditions	276 (16.7)	268 (19.6)
	N = 2,415 (100.0)	N = 2,177 (100.0)	Farms too small to be viable	297 (18.0)	237 (17.3)
			N= 1,650 (100.0)	N=1,367 (100.0)	

*This factor may also be related to extension agents as it is usually available through them.

**This factor may also be related to transport.

Source: Calculated from computer coded farm data, 1973.

Careful study of the table indicates that of the farmers who reported income improvements 46.4 per cent said better agricultural and veterinary services were the primary reason. When the second reason, the availability of new or better cash crops, which are predominantly obtained through extension agents, is added to the first, the percentage increases substantially to 79.2 per cent. On the other hand, only 1.8 per cent gave improved transportation as the primary reason: even when improved marketing is added the percentage rises to just 3.7. Examining the secondary reasons for improvement also supports the same trend, although the first two reasons now drop to 53.6 per cent and the next two climb to 8.8 per cent. Of course the question which remains to be answered is this: is the availability of the agricultural and veterinary services related to transport? This we shall answer when we test hypothesis two.

However, the primary reason given for farm decline was farms too small to be viable (18.0 per cent), followed by poor soil conditions (16.7 per cent) and then inadequate agricultural and veterinary services (15.8 per cent). This low ranking of extension services seems to be a farm size factor. It was noted in Section 4.3 that farmers with very small farms (non-progressive) may be ignored by the extension agents, hence not knowing the usefulness of these agents, they blame their income decline on their farm size. We shall also explore this further when we test hypothesis two. The seriousness of small farm and poor soil conditions, is further demonstrated by the fact that, even when inadequate agricultural and veterinary services are added to cash crops not available the per-

centage raises only to 27.4 which is still less than that accounted for by both farms too small, to be viable and poor soil conditions (34.7). Poor transportation is not held responsible for farm decline very much. Similarly, the secondary reasons for decline support the same trends. It is also important to note here that the reasons given for farm decline are fairly scattered throughout the spectrum, whereas those given for improvement are fairly concentrated in the first two reasons, indicating the overwhelming importance of extension services in agricultural development. We can now conclude, as pointed out in Chapter 5, that transportation seems to play a neutral or enabling role in development wherever a basic transport system already exists, and the farmers appear to confirm it.

The fact that small scale farmers use very small amounts of purchased inputs also may help to explain the minimal role transportation plays in agricultural development as we defined it. The only other areas in which it may play a role are markets and possible specialization of production at which we shall look in hypothesis three. The last three hypothesis will examine the role of transport in what we have defined as rural development.

It was also interesting to confirm the objections raised in Chapter 4 about the role of credit in small scale farming. The availability of credit was ranked lowest either as a primary or secondary reasons for farm income improvement. However, for those who reported farm income decline, the unavailability of credit, while also ranked low, was given more weight both as a primary or secondary reason. This suggests that the poor farmers need more help and that a case can be made for subsidized credit for them, but not for a universal programme as exists now.

6.3 Testing of Hypothesis Two: Transportation and Uneven Agricultural Development

The aim of this hypothesis is first to show whether or not there is uneven availability of inputs among farmers, specifically regarding extension services; and later check to see if transportation is the main cause. In addition to using the same basic assumptions as in Section 6.2, we shall now assume that we have established that availability of agriculture and veterinary services have a positive correlation with agriculture development.

6.3.1 Extension Services and Uneven Agricultural Development

Since Muranga District is predominantly a small-scale farming area, the distinction here can not be made between large and small farms per se, but we shall use some of the differences pointed out in Section 4.2 among small farms. We shall define progressive farmers for our purpose as all those who reported income improvements in the past few years; and non-progressive farmers as those who either reported farm income declines, or reported about the same, or who said did not know. After this we will look at their characteristics in terms of: cash crop acreage defined as total acreage under coffee, tea, sisal, maize and beans, pineapples, and other fruits and vegetables; income from these cash crops; the total farm acreage; the percentage of acreage under cash crops; the number of cattle; and income from cattle. These characteristics are presented on Table 6.5.

Since we already know from Table 6.4 that about half of those who recorded farm income improvement attributed it to extension services; in conjunction with Table 6.5 we can now conclude that these progressive farmers have slightly larger farms than non-progressive farmers, higher incomes from cash crops, more cattle, higher incomes from cattle, and higher cash crop acreage in absolute terms (interestingly less percentage wise), then, non-progressive farmers. The higher percentage of farm under cash crops for non-progressive farmers more than for progressive seems to justify their claim that their income declined because their farms are too small to be viable. This follows from the fact that in order to increase their farm incomes they have to rely almost solely on one or two cash crops because the lack of farm space hinders them from diversifying into other crops like pineapples or

TABLE 6.5

MAJOR DIFFERENCES BETWEEN PROGRESSIVE AND NON-PROGRESSIVE FARMERS
MURANGA DISTRICT

Income Status	Number and % of Farmers	Averages Per Farm****				% of Total Farm Under Cash Crops
		Cash Crop Acreage	Income from Cash Crops (Kshs)	Number of Cattle	Total Income from Cattle (Kshs)	
Improved*	2404 (46.8)	3.0	1069	4.2	325	48.6
Declined**	1652 (32.2)	2.6	518	1.1	62	56.7
About the Same***	913 (17.8)	2.5	325	1.4	54	62.5
Don't Know****	165 (3.2)	1.8	132	0.5	25	72.0
	N= 5,134 (100)					

*These are defined as progressive farmers. About half of these attributed their income improvement to better agricultural and veterinary services from extension agents. See Table 6.4 for the distribution of reasons given.

**These are defined as non-progressive farmers. About one-seventh of these attributed their income decline to inadequate agricultural and veterinary services from extension agents. Similarly See Table 6.4 for the distribution of reasons.

***These can also be classified in the non-progressive category.

****Compare these figures with those for the whole district shown in Table 6.12 and 6.13.

Source: Calculated from computer coded farm data, 1973.

increasing the number of their cattle, thereby relying on the constantly fluctuating cash crop world price. Therefore the lack of farm space has sometimes lead to overconcentrated (too many crops in one plot) mixed cropping or over-grazing, which may result in low yields and therefore low incomes. The fact of small farm sizes, however doesn't negate the fact that perhaps if more extension services were available to the non-progressive farmers their income would improve through increased output per acre.

We now can conclude that there is uneven application of extension services which has caused uneven agricultural development among farmers, thus verifying the existing situation which was discussed in Section 4.3. A check of cooperative membership among progressive and non-progressive farmers, showed that in both groups over 7.3 per cent of the farmers were members. This therefore could not have been an explanatory variable for uneven application of extension services, thus leaving transportation as possible underlying factor:

6.3.2 Transportation and Uneven Extension Services

Although there is a tendency towards using group techniques for offering extension services, the focus is still on individual farms which must be visited regularly. This calls for a relatively large number of extension workers, each of whom must be highly mobile within the zone of operations. The transportation network used by the extension workers ranges between a major road artery like the main Nairobi Road and the tracks running through the bush. Senga et al commenting on problems faced by extension agents, had this to say about transportation:

It is difficult to evaluate the extension services. To the casual observer it is obvious that good extension officers are trying very hard within their constraints and in some instances they are having beneficial effects. Nevertheless, the constraints are manifold and highly frustrating, and morale in the extension services is generally quite low. The constraints arise from the rapid expansion since independence. There is firstly the transport problem. Assistant range officers and range assistants often have no transport at all. This is a very serious handicap in range areas where the distances are so great and public transport is almost non-existent. At high levels, there may be transport available but the mileage allowances are so inadequate that range officers are frequently office bound. At the higher levels there also the problems of excessive administrative duties and committee work (Senga, et al, 1976, p.279).

Although Muranga District appears to have a good public transport system (Table 6.6), there are still some transport problems (Table 6.7). During the wet season it takes more than

TABLE 6.6

DAILY FREQUENCY OF ALL VEHICLES BY TYPE PER VILLAGE,
MURANGA DISTRICT

Vehicle Type*	Minimum	Mean	Maximum	N**
Buses	1	21	450	141
Trucks	1	20	350	208
Taxis	1	43	500	181

*The vehicle distribution is 62% Taxis, 4% trucks, 26% Buses, 7% vans and 1% other types (see Table 6.3)

**Indicates number villages for which this is valid.

Source: Calculated from computer coded composite village data, 1973.

TABLE 6.7

ACCESSIBILITY* OF VILLAGES TO MAIN NAIROBI ROAD,
MURANGA DISTRICT

Time Category Labels	Bus (number and %)**		Truck (Number and %)**	
	Dry season	Wet Season	Dry season	Wet Season
Less than 1/2 hour	61 (42.7)	38 (26.6)	113 (54.1)	70 (33.7)
1/2 to 1 hour	65 (45.5)	40 (28.0)	82 (39.2)	65 (31.3)
1 to 2 hours	16 (11.2)	42 (29.4)	10 ^N (4.8)	33 (15.9)
2 to 3 hours	1 (0.7)	13 (9.1)	2 (1.0)	12 (5.8)
3 to 6 hours	--	1 (0.7)	-	2 (1.0)
6 to 12 hours	-	1 (0.7)	-	2 (1.0)
12 to 24 hours	-	-	-	-
More than 24 hours	-	8 (5.6)	2 (1.0)	24 (11.5)
	N= 143 (100)	N= 143 (100)	N= 209 (100)	N= 208 (100)

*The minimum, mean and maximum number of miles from the Main Nairobi road for all the villages are 1.0, 8.9 and 35.0 respectively.

**14.5% of the total vehicle fleet are large buses and only 3.6 are large trucks. the number of villages for which replies are valid is indicated by N.

Source: Calculated from computer coded composite village data, 1973.

24 hours to reach 5.6 per cent and 11.5 per cent of the villages by bus and truck respectively. During the dry season there appear to be no transport problems in the district, for only 11.9 per cent and 6.8 per cent of the villages involve journeys of more than one hour to reach the main Nairobi road by bus and truck respectively. Part of the delays in each season are a function of the ridge and valley topography.

To see if transport causes the uneven application of extension services as we have established, three villages (Manjuu, Gaichanjiru, Kagumoini) which reported it takes more than 24 hours by truck and two more villages (Muruka and Gitui) which had reported that both buses and trucks take more than 24 hours to reach the main road were selected. In each of these villages the primary and secondary reasons for farm improvement and decline were examined. In Gitui, only 22 per cent of the farms recorded farm improvement and 45 per cent noted decline. The former all (100 per cent) cited improved agricultural and veterinary services as the primary reason for improvement; while the latter noted the major reasons as 33.4 per cent for farms being too small; 22 per cent gave inadequate agricultural and veterinary services and another 22 per cent gave cash crops not being available. In Muruka, 55 per cent reported improvement and 41 per cent noted decline. Of those with farm income improvement 85 per cent said it was due to better agricultural and veterinary services; while those in which there was decline the primary reason was inadequate agricultural and veterinary services, which

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received 31 per cent. The trend was the same in the other villages with relatively poor transport, no body seemed to blame declines on transport, but all those registering improvements attributed it to better extension services. Therefore somehow despite poor transport the extension agents managed to get to those villages.

How then can we explain this apparent paradox where in the same area of poor transport some attribute improvements to better extension services and others at the same time to inadequate extension services? The answer seems to go back to our usual theme, that extension agents concentrate on the progressive farmers with the usual characteristics we have already reviewed. The non-progressive farmers in these areas must know this bias because inadequate extension services are ranked very high as a cause farm income decline. Therefore, we can conclude that transport does not appear to be one of the major causes of uneven application of extension services and hence of uneven agricultural development either. However, Mosher (1966, p.117) reports a study in the Phillipines, which showed that after the construction of unpaved feeder roads to a main road paved highway the average percentage increases of visits by extension agents and agricultural credit officers was 171 and 267 respectively. These results are different to ours because it appears in this case there were hardly any visits before the feeder roads were constructed such that any percentages increases hide the true absolute (magnitude) increases, and also the distribution and motivation of these visits to the farmers is unknown.

6.4 Testing of Hypothesis Three: Transport and Local Markets

6.4.1 First, Some Information on Traditional Marketing System

Skinner (1964), observing rural Chinese markets, identified three levels of markets using Christaller and Losch Central Place Theory. These were the standard market town at the lowest level, then the intermediate market, and finally, the central market. The standard market town was characterized as the point from which agricultural products began to move up the central place hierarchy and down to which imported items move. Below the standard market town were the minor markets of local villages which dealt solely with the exchange of local foods. The poor frequent these rural markets because of the lower and sometimes negotiable prices; and also because transport costs are low as small amounts of goods for sale or purchase can be carried free on transport vehicles. Because many of the traders are also producers, they do not need the services of the market everyday. This reduces the distance to travel to markets, which are therefore periodic and densely distributed, located so as to minimize walking distances for both sellers and buyers, usually at crossroads.

The central market had wholesaling functions, which fit in nicely with Bromley's (1971, p.129) concept of marketing chains; which he defines as "the sequence of transactions and commodity movements between the initial

producer and ultimate consumer". He concluded that the importance of direct producer to consumer transactions decreases, and the importance of trading intermediaries increases as market systems develop. This chain decreases with improved transportation, as large scale wholesalers with more capital predominate. From what we saw in Section 4.3, the central market level does not exist in Muranga District.

Taylor (1967) agrees with this conclusion and argues that only the lowest two levels of the hierarchy are evident in the traditional Kikuyu spatial system. Markets at the lowest level occur at the boundaries of the different ecological zones. The largest such markets are located in Middle Kikuyu where produce from the three zones is exchanged. High Kikuyu brings firewood, charcoal and vegetables (cabbages, potatoes, onions) and Low Kikuyu (gourds, livestock, sisal ropes and medicines). These are exchanged for the food produced in Middle Kikuyu. Smaller markets also exist on the borders of the three zones; and minor markets within each zone, being most common in Middle Kikuyu where a variety of produce is grown. The markets forming the second level exist at the border of Kikuyuland. Taylor (1967) cites some of these markets in High Kikuyu which enable goods to be exchanged with the Masai. Both Skinner and Taylor saw that besides meeting the economic needs, the markets serve other functions too, like social gatherings, tax collection, headmen announcements and so on.* Taylor (1969, p.491-2) also

*For an investigation of the potential of markets in the diffusion of innovations in Muranga District, see Fiona Thompson, 1977.

notes that "poor communications appear to be the biggest single barrier to further agricultural developments in the Kikuyu plateau as they are restricting marketing at all levels...". This comment was at a time when there was less than twenty miles of paved (feeder) roads joining the paved main Nairobi Road. However, the transport data for this study was gathered at a time when significant improvements in transportation had taken place, the mileage of paved feeder roads having risen to about eighty.

It is therefore hoped that the farmers will be capable of noticing this change in transport development. This may be difficult, as the impacts of transport on agriculture are more indirect, when imposed to business development. The farmers may not comprehend the linkages among local markets, national markets and international markets, thereby underestimating the role of transport in the overall agricultural development; as the transport "problem" may appear far removed from them when viewed locally.

6.4.2 Testing: Transport and Marketed Output

Here we want to see if improvements in transportation had contributed to the growth in marketed production discussed in Chapter 4. We know that this has been attributed largely to increases in coffee and tea, but there is no reason to doubt that the marketed output of food crops in rural markets has increased. Did transport improvements have anything to do with it? Since we don't have direct data to show it, we shall do it indirectly by trying to reveal that improved transport in Muranga District has played a key role in the increased market output, either through the improved accessibility to rural markets, creation of more markets or through the increased periodicity of a static number of markets.

The number of markets in Muranga has expanded with time. In 1915 there were 8 markets, 15 in 1928, 42 in 1962 (Taylor, 1967) and 51 in 1973 (Kimani and Taylor, 1973). This clearly is a reflection of the growing change of emphasis from subsistence to producing for markets. But this can be caused by more than one factor such as in this case; removal of restrictions in the growing of cash crops, increased population densities, increased levels of income, increased demand and some improvements in transport.

Therefore, the problem is trying to isolate the effect of transport. Most of the markets are periodic (Table 6.8), the majority, about 92 per cent, meet twice or once a week, and only 6 per cent meet everyday. This low

TABLE 6.8

PERIODICITY OF MARKETS, MURANGA DISTRICT*

Frequency	Number and %
Everyday	3 (6.1)
Once weekly	10 (20.4)
Twice Weekly	35 (71.4)
Thrice weekly	1 (2.0)
	<hr/> N= 49 (100.0%)

*34.7% of the markets were roadside, and 65.3% were traditional, excluding 2 which were cattle auctions.

Source: Calculated from computer coded market data, 1973.

frequency can only be explained by a smaller aggregate demand resulting from almost self-sufficiency by small farmers because the other factors we mentioned previously would seem to indicate a higher level of periodicity to explain the increased marketed output. However, by looking at Tables 6.9 and 6.10 we are able to isolate to some extent the role of motorized transport. It seems that, although sufficient amounts of transport services are accessible (Table 6.9), still most sellers and buyers use inferior modes (walking) to markets, carrying small volumes at a time, thus reducing risks of spoilage or loss. This is verified by the fact that 72 per cent of all sellers and buyers were found to be women, selling mainly food crops, showing the preponderance of head portorage (playing with gravity!) by women; while men who sell tobacco and cloth will travel by bus, car, truck or bicycle (what a division of labour!).

We can therefore conclude that transport hasn't really played a key role in the increased marketed output at local markets. It is likely however that transport plays a key role in rural-urban trade, that is between the local rural market and the big urban markets of Nairobi, as we shall attempt to verify in Section 7.3; and also in the regional and national trade at large, which is outside the scope of this study. However, Mosher (1966, pp.115-16) presents a study from the Phillipines (Table 6.11), which contradicts, although in a somewhat different context, what we have just concluded. The study shows significant increases in prices at both the village

TABLE 6.9

PERCENTAGE DISTRIBUTION OF SMALL FARMERS BY
DISTANCE TO MARKETS AND ROAD TRANSPORT ROUTES
CENTRAL PROVINCE, 1975

Type of Service	Percent			
	Distance in Miles			
	Under 1.0	1-1.9	2-3.9	4-7.9 Over 8
Market	17.4	24.3	38.7	14.4 5.2
Big Bus Route*	30.8	34.1	21.0	7.2 6.9
Matatu Route*	45.7	28.2	15.1	5.5 5.1

*Compare with Jamaica, where 75 per cent of the rural households are within 0.3 miles to a road transport route; and 66 per cent are within 6 mile to a railway station (Sabula, et al, 1978, p. 13).

Source: Kenya Statistical Abstract, 1977, p. 137.

TABLE 6.10

MODE OF TRANSPORT TO MARKETS, MURANGA DISTRICT*

Mode	% Mean Modal Split for All Markets	N**
Bus	13.0	38
Car	4.0	34
Truck	2.0	23
Bicycle	2.0	32
Walk	79.0	49
	100.0%	

*72.0% of sellers and buyers at markets were female.

**This indicates number of markets for which reply valid.

Source: Calculated from computer coded market data, 1973.

and market town, and huge volume increases at the market town a year after the construction of unpaved feeder roads. Although we are not sure of the actual magnitude increases which would be more meaningful, the high prices in the village could be explained from increased demand, while in the market town the high prices seem to have in goods that were relatively scarce, that is, latent demand. The volume increases may be only a temporary phenomenon as this is seems to be an opening up situation.

TABLE 6.11

COMPARATIVE AVERAGE INCREASES IN VOLUME AND PRICES OF
FARM COMMODITIES A YEAR AFTER OPENING OF UNPAVED FEEDER
ROADS TO A PAVED HIGHWAY* IN THE PHILIPPINES

Product	Per Cent Increases in		
	Prices		Volumes
	In Village	In Market Town	
Rice	19	20	24
Corn	25	0.4	104
Tobacco	21	20	96
Root Crops	2	4	-
Bananas	14	2	12
Coconuts	33	27	30
Chickens	6	3	69
Swine	13	3	47
Goats	7	-	15

*The village had previously had no road access to the highway

Source: The study was reported in Mosher, 1966, pp. 115-116.

6.4.3 Testing: Transport and Agricultural Specialization

In Muranga District, export crops, mainly coffee and tea are the main sources of income; followed by dairy cattle, and then food crops, especially maize and beans (Tables 6.12 and 6.13). The export crop income fluctuates with world prices and so can be disastrously low at times. Therefore developing a strong domestic base to cushion off any bad years of export prices is a desirable goal. There are three possible alternatives which are not mutually exclusive: either to increase food production, or dairy products or horticultural products. The returns from food crops may be low compared to dairy products; however choosing to increase dairy products is becoming increasingly a problem in Muranga District because of the scarcity of grazing land which is being taken for agriculture. The only way to do it is through very intensive agriculture. Cultivating horticultural crops such as pineapples, avacadoes, pears, flowers and so on appears a good alternative because of both high local and international demand. The production of these crops is still very low in Muranga District, but the potential is there.

For the horticultural products geared for international markets there may be two possible transport problems, which are outside the scope of this study.—These are: (a) the high air freight rates, and (b) despite the high freight rates, during the peak harvesting there may be shortage of freight space. The former problem can be minimized by high labour productivity and making special

TABLE 6.12

DISTRIBUTION OF CROPS AMONG FARMERS, MURANGA DISTRICT

Crop	% of Farmers Growing the Crop	Average Acreage per Crop**	Average Income Per Crop (KShs)**
Coffee*	56.8	1.3	989
Tea	18.4	1.7	1057
Sisal	0.1	1.1	650
Wattle	16.4	2.6	497
Maize and Beans*	98.4	1.6	332
Pineapples	0.7	0.8	338
Other Fruits and vegetables*	59.8	0.8	321
Other crops	2.6	1.1	288

*These crops may be considered as part of a typical farm, because these are distributed in over half of the farms.

**The average total farm size was 5.9 acres (N= 5140). The average acreage under cultivation was 3.1 (N= 5133), which approximately equals the acreage under typical crops, the balance being left for grazing.

***The Pearson Correlation Coefficient between total farm size and total farm income was found to be about 0.50. The average of people per household was 8; the average age of farm owners was 45 years; and the average people actually engaged in farming was 3 per farm.

Source: Calculated from computer coded farm data, 1973.

TABLE 6.13

DISTRIBUTION OF LIVESTOCK AMONG FARMERS, MURANGA DISTRICT

Livestock	% of Farmers Owning the Livestock	Average Number Of Livestock	Average Income per Livestock Type (KShs)
Cattle*	65.6	2.9	790
Sheep	44.8	3.3	123
Goats	28.7	3.1	101
Pigs	3.6	2.8	477
Chickens*	61.4	107.2	576
Other Animals	1.1	4.8	52

*These livestock may be considered as part of a typical farm, because they are distributed in over half of the farms.

**Livestock sales, including their related products account for about 40 per cent of total income.

Source: Calculated from computer coded farm data, 1973.

deals with airline companies. The latter problem can also be reduced by proper storage or processing some of the surplus. Unfortunately we do not have enough data to show the role of transport in increasing specialization in Muranga District at large, but from what we have seen so far, there is scope for more. Between 1974 and 1978, Kenya's export of fresh horticultural produce doubled in volume from 11,000 tons to 21,000 tons; and quadrupled in value from about K£2 million to K£8 million. There is therefore no doubt about the high demand of these products, and that increasing their production would be greatly beneficial.

Although, in general, improved transportation may lead to specialized production, subsistence production (from both small and large farms) plays a great role that should never be jeopardized. This is because subsistence production involves very low non-farm costs (transport, storage, processing, marketing, etc.) and is therefore the cheapest way of supplying food for the country. In a sense it reduces the quantity of transport (or other) infrastructure that would be required at the national level if food had to be constantly transported throughout the country. This also means that rural-urban migration, in addition to creating other well-known problems, involves a shift from low cost food consumption to high cost consumption due to the high non-farm costs incurred before the food supplies reach the consumer. The high costs may offset the advantages of specialized farm production. Instead of overemphasizing cash crop production as we saw in Chapter 4, and neglecting the subsistence farmers, we should be helping them to diversify their food base to include all foods required for a balanced diet.

6.5 Conclusion

To conclude then, this chapter reveals that, in terms of agricultural development, most farmers in the district did not attribute their success or failure to transport development, but rather to the availability of agricultural and veterinary extension services. In the same way, although there was uneven application of these services between those with small and large farms, this again it was found was not due to different levels of accessibility to the farms by the extension agents, but to the inherent bias in the extension system which tends to favour those with large farms and hence more acreage of cash crops and more livestock. Infact, transportation does not seem to have played a significant role in market expansion or product specialization. This may be due to the overemphasis of coffee and tea in the district and the fact that a countrywide food distribution system is relatively underdeveloped because in the past most resources have tended to be used to develop a marketing system for exports. Moreover, most of the farmers sold most of their non-cash crop produce to traders or consumers at nearby periodic local markets, thereby reducing the demand for motorized transport.

Accordingly transport has played a neutral role in agricultural development in Muranga District: that is, it is best viewed as a necessary but not sufficient condition for agricultural development. It requires other major inputs, in particular agricultural and extension services. This agrees with the general consensus of most transportation researchers today. Although the question of rural feeder roads was not addressed directly, this chapter does question the excitement surrounding them.

CHAPTER 7

TRANSPORTATION IMPACTS ON RURAL DEVELOPMENT

"From the earliest days of colonialism in East Africa, Africans were trained as drivers, turn boys, mechanics and cleaners;...this nurtured national and class consciousness. But more important than the role of driving... was the concomitant development of driver-ownership as a key in creating native entrepreneurs..." (McCall, 1978, p.59).

7.1 Introduction

Although the majority of people who live in the rural areas are farmers, there is a minority which is engaged in non-agricultural occupations. These range from individuals in business or self-employed (such as "matatu" operators, bicycle repairmen, carpenters, maize mill operators, retail and wholesale traders, butchers, shoe repairmen, mechanics, charcoal sellers etc.) to those employed in agroindustries and government institutions like teachers, nurses and so on. These non-farm occupations not only provide employment to landless workers and seasonally displaced rural workers but are crucial for providing the necessary services required by farmers. In Chapter 3, we concluded that an integrated approach to rural development was essential, where agricultural and industrial (processing and services) development go hand in hand. The term "rural development" in this chapter therefore refers to the non-agricultural

activities, which were not covered in the last chapter. The evidence presented in this chapter may shed some more light on some of the hypotheses already tested.

Non-agricultural employment is also important to small scale farmers as was pointed out in Chapter 4. In fact the current KNDP (1978-83) predicts that the population dependent on agriculture will grow at a lower rate than the total population. It writes:

An estimated 43 per cent of rural incomes come from outside sources outside the family farm. Non-agricultural work in rural areas is likely to attract a growing share of the labour force of agricultural families and there will be some migration from rural areas to urban areas. It is estimated that the population dependent in agriculture will increase by 2.5 per cent annually over the plan period, compared to 3.5 per cent annual growth in the total population. (KNDP, 1979-83, p.214).

7.2 Testing of Hypothesis Four: Transport and Business Development

The purpose here will be to see if savings due to improved transport accrue more to business operators than to farmers; and to see if there are any connections among business owners, land owners and transport operators, which may work to the disadvantage of small scale farmers; where business income is taken as a measure of business development.

7.2.1 Testing: Transport and Business Income

Business operators were asked to rank eight reasons as causes of their income improvement or decline (Table 7.1). For those who reported income improvements for the past few years transport improvements were ranked as number three, obtaining 11.3 per cent, behind increased demand for new goods (31 per cent) and people have more money (30.9 per cent). For those who reported an income decline, worse transport conditions were ranked lowest, obtaining 3.2 per cent; most blaming it on people have less money (35.0 per cent), increased competition (15.2 per cent) and decreased demand of goods or lack of services (12.6 per cent). Transport may have played a role in increased or decreased demand of goods. Anyway, out of the 47.6 per cent of businesses which recorded income improvements 11.3 per cent attributed them to transport improvements; whereas out of 46.8 per cent of farmers who reported income improvements only 1.8 per cent said transportation was a primary reason. Even the negative side is also revealing, for out of the 21.4 per cent of businesses which declined, 3.2 per cent blamed it on poor transport; whereas for the 32.2 per cent of farm income declines only 0.8 per cent blamed it on transport.

As with the farm sector, credit does not seem to bother those whose incomes have improved, but those whose incomes declined complained more about the non-availability of credit. We can therefore conclude that benefits from improved transport tend to accrue to business owners more than to farmers, in terms of income improvements.

TABLE 7.1

REASONS GIVEN FOR IMPROVEMENT OR DECLINE OF BUSINESS INCOME, MURANGA DISTRICT

REASONS	BUSINESS INCOME IMPROVEMENT (number and %)	BUSINESS INCOME DECLINE (number and %)*
Improved road conditions	177 (11.3%)	Worse road conditions 23 (03.2%)
People have more money	484 (30.9%)	People have less money 253 (35.0%)
New services introduced	157 (10.0%)	Lack of services 91 (12.6%)
Increased demand for new goods	488 (31.0%)	Decreased demand for goods 91 (12.6%)
Credit available for business	27 (01.7%)	No credit available for business 70 (09.7%)
Don't know	25 (01.6%)	Don't know 9 (01.2%)
Other-specify	57 (03.6%)	Other-specify 75 (10.4%)
Decreased competition	155 (09.9%)	Increased competition 110 (15.2%)
	N = 1572 (100%)	N = 722 (100%)

* 47.6% of businesses recorded income improvement; 21.4% declined; 27.9% remained unchanged and 3.1% didn't know.

Source: calculated from computer coded business data, 1973.

The importance of improved transport to businesses may be shown by their source of supplies. Only 4.4 per cent of the businesses surveyed said that their primary source of stock was a local wholesaler or trader respectively; and for about 49 per cent their source of stock was outside Muranga district (Table 7.2). Other ways in which improved transport favour business owners will be seen in Section 7.3 when we test hypothesis five. However, we would like to mention here that farmers, who rely more on "matatu" operators, have to face the fact of higher fares. About 21 per cent of the operators reported that their fares vary with type of road surfaces, seasons and demand variables, with fares ranging from 10 cents per mile to a maximum of 50 cents per mile (Table 7.3). Surely this penalizes the farmers who come from villages with poor roads, for no fault of their own; even the issue of demand based on paydays still discriminates in favour of townsfolk. The "chaos" in matatu operation has resulted because of total lack of government control. To increase the mobility of all rural farmers, matatu operators should either be limited to short routes, thus providing feeder services to big buses, or licensed for both short and long routes but each operator being given both high demand/good roads and low demand bad roads.

TABLE 7.2

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SOURCE OF STOCK FOR BUSINESSES, MURANGA DISTRICT

SOURCE OF STOCK	PRIMARY (Number and %)	SECONDARY (Number and %)
Nairobi City	234 (06.9%)	154 (06.2%)
Thika Town	856 (25.2%)	159 (06.4%)
Muranga Town	667 (19.6%)	270 (10.8%)
Maragua Town	332 (09.8%)	140 (05.6%)
Wholesales in village	148 (04.4%)	130 (05.2%)
Dealer Deliverers*	386 (11.4%)	952 (38.2%)
Local trader	478 (14.1%)	343 (13.8%)
Other-specify	178 (05.2%)	277 (11.1%)
Saba Saba Town	119 (03.5%)	69 (02.8%)
	N=3398 (100%)	N=2494 (100%)

* Most dealers who deliver come from Nairobi City

Source: Calculated from computer coded business data, 1973

TABLE 7.3

TRANSPORT COSTS PER MILE, MURANGA DISTRICT

CONDITION LABELS*	MINIMUM Cts/mile	MEAN Cts/mile	MAXIMUM Cts/mile	N**
Weekday dry season	10	13.38	50	350
Weekend dry season	10	13.78	30	169
Prior to payday	10	13.89	25	169
After payday	10	14.88	30	211
Weekday wet season	10	13.75	30	171
Bitumen (tamac/paved) roads	10	13.58	20	169
Earth/gravel (murrum) roads	10	13.89	50	168
Seasonal roads during wet season	10	14.16	50	168
Poor roads in remote regions	10	14.82	50	143

* Only 20.6% of all the vehicles reported that their transport costs(fares) change according to the above conditions, whereas the majority 79.4% keep theirs constant; although still higher than what is recommended by the government which averages to K10 cts/mile.

* Indicates number of vehicles for which replies are valid.

Source: Calculated from computer coded transportation data, 1973.

7.2.2 Testing: Connections Among Business Owners, Land Owners, and Transport Owners

The overwhelming majority of business owners (59.5 per cent) said they own land and only 0.65 per cent owned buses (Table 7.4). The size of land or number of buses was unavailable. Assuming most of the land owned is agricultural land, it shows the strong link between the business and agricultural sectors. Although the link of business ownership appears weak with the transport sector, in Section 7.4 we shall discuss the opposite link, that of "matatu" transport owners and their ownership in business and land interests.

We shall now suggest three ways in which agricultural land ownership by business owners may work to the disadvantage of small-scale farmers, especially the very poor and landless. Firstly, it may lead to excessive monopolistic profits. This can arise from the fact that by owning agricultural land the business owner controls the production process. He then may employ the poor or landless at very low wages to produce selected commodities and may supplement his output by purchases from the local markets. He may then process* (mainly maize flour milling) and distribute (retailing or wholesaling). In the end the consumer usually pays very high prices not justified by reasonable profit margins and hence the excessive profits. The profits are even higher if the business owner also controls passenger (and goods) transport. Secondly, if the businessmen own large farms, they may simply subdivide and sell at

*Flour milling is also done for individual farmers at an agreed cost.

TABLE 7.4

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EXTRA SOURCES OF INCOMES BY BUSINESS OWNERS, MURANGA DISTRICT

EXTRA SOURCE OF INCOME LABLES	FOR THOSE OWNING PREMISES		FOR THOSE RENTING PREMISES	
	(number and %)		(number and %)	
None	178	(13.8%)	654	(27.6%)
Own land**	776	(60.2%)	1392	(58.7%)
Own other shop	206	(16.0%)	152	(6.4%)
Have another job	105	(8.1%)	142	(6.0%)
Own buses***	11	(0.9%)	10	(0.4%)
Other-specify	14	(1.1%)	21	(0.9%)
	N= 1290(100%)		N=2371(100%)	

* 34.6% Businesspeople own their premises; 65.4% rent their premises.

** Strong linkages with the agricultural sector.

*** Very weak linkages with the transport operation ownership.
Source: Calculated from computer coded business data, 1973.

huge prices -- a once - and - for - all action if carried out. And thirdly, poor small farmers who usually can not get credit from the formal institutions like commercial banks may end up borrowing from these businessmen, sometimes at very high interest rates. We can not really verify these statements from the data we have. However, as we saw in Chapter 4, this informal sector appears very reliable in terms of prices paid to farmers. This may lead us to conclude that the concurrent ownership of business, land, and public transport vehicles per se does not work to the disadvantage of farmers.

7.3 Testing Hypothesis Five: Transport and Rural-Urban Interaction

Under this hypothesis we will try to show that although improved transport does benefit both rural and urban residents, the main beneficiaries are the urban merchants through increased flow of consumer goods; the urban consumers through increased food supply; and the "matatu" operators through increased passenger flows. The main underlying assumption is therefore that improved transport has played a role in the increased rural-urban interaction, as Figure 7.1 seems to suggest. The figure indicates the importance of Muranga as an administrative urban centre and its adjacent Mukuyu market. However, on a ranking of one to seven representing minimum and maximum influence respectively, the average for all the seven towns shown on the figure was 3.5 indicating that the urban areas in the area exert only a medium influence in terms of origin and destination of trips which heavily influences "matatu" operation. None of the urban areas scored five or higher.

Anyway for rural residents our major aim will be to show the extent of rural-urban migration and the number of rural residents holding urban employment, assuming that improved transport played a key role in both. Little, writing on urbanization in West Africa, supported this assumption on the role of transport when he wrote:

Western contact with Africa, like the Industrial Revolution in Europe, has created new social and psychological needs, which life in the countryside is rarely able to satisfy. The consequence is a tremendous migration of men and women to the towns...Many of these people are in search of a higher standard of living in the shape of more up-to-date amenities

FIGURE 7.1

HOW SOME URBAN CENTRES INFLUENCE THE OPERATION OF
TRANSPORT BUSINESS , MURANGA DISTRICT

*Influence measured in terms of magnitude of origins and destinations of passengers and goods.

N=365 Vehicles

Source: Calculated from computer coded transport data, 1973.

and better housing as well as the higher income that the town can offer. But this is not the only motivation. A large number of the younger men are looking for further educational opportunities or are hoping to start a fresh career. Others move as a means of escaping from the restrictions of village life, and... out of love of adventure and desire for fresh experiences...the development of motor transport in the shape of the ubiquitous lorry truck is an important factor in these respect. Not only has it greatly increased local mobility between town and town and between town and surrounding countryside, but it has created a new and influential social role - that of the lorry-driver, as a go between the urban labour market and the rural village (Little, 1957, p.580.

Our concern for rural migration does not belittle the role of improved transport in social development, in the form of increased accessibility to schools, health centres, libraries and the like. For as Table 7.5 shows, the distances to some of the social services makes frequent walking impractical. Mosher (1966, p.117) reports a study in the Phillipines which indicates huge increases in the visitations of officials to a village after the construction of unpaved feeder roads to a paved highway (Table 7.6). One might ask if the frequency was maintained as the novelty wore off. Moreover the importance of these results is reduced by the fact that they are given in percentages without a base, which hides the true nature of the real magnitudes, thus defying any useful comparison. Hughes (1969), who studied the social benefits of the construction of rural feeder and penetration roads in Malaya, concluded that although social development took place, seen in terms of increased attendance at schools,

TABLE 7.5

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PERCENTAGE DISTRIBUTION OF SMALL FARMERS' BY DISTANCE TO SELECTED SERVICE' CENTRAL PROVINCE, 1975

TYPE OF SERVICE	DISTANCE IN MILES						% TOTAL
	Under 1.0	1-1.9	2-3.9	4-7.9	over 8		
Drinking Water-wet season*	88.5	11.0	0.6	0.0	0.0		100
Drinking Water-dry season*	83.1	15.0	2.0	0.0	0.0		100
Primary School	42.6	43.0	11.7	2.8	0.0		100
Government Secondary School	3.5	11.7	27.0	41.6	16.3		100
Harambee Secondary School	8.0	17.1	38.3	28.6	8.1		100
Health Centre*	4.0	13.9	43.5	30.0	8.7		100
Post office	5.1	18.3	33.1	30.6	12.9		100

* Compare with Jamaica again, where 68 percent of all rural households have piped water in their homes, 24 percent have access to a standpipe 0.25 miles away, and only 8 percent have access to a health centre within 1 mile (Sabula, et al, p. 23, 1978).

Source: Kenya Statistical Abstract, 1977, p. 137

TABLE 7.6

COMPARATIVE AVERAGE PERCENTAGE INCREASED IN VILLAGE
VISITATIONS BY SELECTED OFFICIALS AFTER THE
CONSTRUCTION OF UNPAVED FEEDER ROADS TO A
PAVED HIGHWAY* IN PHILIPPINES

<u>OFFICIALS</u>	<u>AVERAGE PERCENTAGE INCREASES</u>
Rural Health Doctor	580
Other Doctors	675
Rural Health Midwife	450
Rural Health Nurse	540
Sanitary Inspector	154
Home demonstrator	138
Policeman	70
Mayor	200
Councillor	283
District school supervisor	150
Social worker	1000

* The village had previously no road access to the highway.

Source: The study was reported in Mosher, 1966, p. 117.

increased reading of newspapers, increased access to medical care and so on; improved housing and occupational changes were not immediate outcomes. In fact the personal incomes of the pre-road residents actually went down because the new trades, such as, bicycle and vehicle repair, retailing and processing went mainly to the new comers who had the necessary skills or entrepreneurial abilities.

7.3.1 Testing: Transport and Rural-Urban Trade Flows

Our aim here is to show that improved transport has benefited urban merchants and urban consumers greatly through increased two way flow of goods. The basic assumption is that over the years, due to increased farm incomes, Muranga District farmers have built some form of consumption habits of consumer goods. Consequently, to maintain these habits they have to keep selling even more farm products to the urban areas. In terms of living expenses by farmers, it is the purchase of manufactured food products (eg. canned products, sugar, tea, salt) and household goods (eg. kerosene, soap, primus stove) which account for most, followed by passenger transport costs.

Figure 7.2 presents the frequency of vehicle usage by various products and trip purpose ranked on a scale of one to four. Manufactured consumer goods, in particular food items and household goods, ranked highest, thus indicating the benefits accruing to urban merchants, as we had hypothesized. The average for all manufactured goods was 2.3. Subsistence crops from farm to market were ranked next after household goods. The average for all subsistence crops movements was in fact higher at 2.6. This may indicate the increased flow of foods to the urban markets thus benefiting consumers as we had suggested. However the usage of motor transport is still very low to justify any hard core conclusions. The non-usage by livestock, with the exception of chickens is to be expected, as these are carried by specialized transport vehicles usually owned by cooperatives or the government through Kenya National Transport Company.

FIGURE 7.2

VEHICLE USAGE BY DIFFERENT GOODS AND / OR TRIP PURPOSE , MURANCA DISTRICT

Goods Type and / or Trip Purpose Labels

N=365 Vehicles

Source: Calculated from computer coded transport data, 1973.

7.3.2 Testing: Transport and Passenger Flows

As we said before, the next highest fraction of living expenses is spent on passenger travel, which greatly benefits "matatu" operators. Figure 7.3 shows the results of a ranking of one to four representing no usage and maximum usage respectively of vehicles by trip purpose. Farmers and business peoplescore each an average of 3.6, indicating the heavy passenger flows of passengers as hypothesized. Due to diversified agricultural development in Muranga District, farm income flows are almost evenly spread throughout the year, thereby eliminating season peaks in rural-urban passenger flows as the case would be in areas depending on annual cash crops (Table 7.7). The only peaks that seem to appear are those related to pay days.

FIGURE 7.3

VEHICLE USAGE BY DIFFERENT PEOPLE AND / OR TRIP PURPOSE ,

MURANGA DISTRICT

Trip Makers and / or Trip Purpose Labels

N=365 Vehicles

Source: Calculated from computer coded transport data, 1973.

TABLE 7.7

DAILY PASSENGER LOAD CAPACITY PER VEHICLE UNDER DIFFERENT CONDITIONS, MURANGA DISTRICT

CONDITION LABELS	Minimum	Mean	Maximum	N
Seating capacity per vehicle	4	18	70	353
Weekday dry season	10	68	450	350
Weekend dry season	10	83	600	350
Prior to payday	10	90	1500	349
After payday	10	110	1200	350
Weekday wet season	10	64	800	349

*This is actual capacity. It is included here for comparative purposes with the other achieved loadings.

Source: Calculated from computer coded transportation data, 1973.

7.3.3 Testing: Transport and Flow of Migrants

The evidence presented here will be mainly indirect, involving a look at some migration statistics and wage employment in the Central Province and the rest of Kenya. A careful study of the growth of the largest twenty one towns in Kenya with a population of 5,000 or more shows that in two decades, 1948 to 1968, the size of Nairobi has more than quadrupled, while that of Mombasa has almost tripled. Other important towns like Nakuru, Kisumu and Thika have also fared very well. As we saw in Chapter 5, all these lie at important transport modes; with the Nairobi-Thika-Nanyuki route being the most important in terms road passenger flows.

Table 7.8 shows the level of migration from the provinces. This table reveals that provinces with more urban areas have attracted the most migrants.* The Western and Central Provinces lost more people than any of the other. Most of the people who migrated from the Central Province can be assumed to have gone to nearby Nairobi.

The proportion of non-farm employment in the Central Province is on Table 7.9 and Table 7.10 shows the growth of wage employment in Muranga District between 1967 and 1976. Only about 4.1 per cent of the total population in the province commute for urban employment. The share rises to about 8.8 per cent when only men are considered. The continued rapid growth of wage employment in rural areas, and an improved transport which enables rural migrants to obtain urban employment will help increase rural incomes thereby reducing the income lead of urban areas.

*The distribution of the 21 urban areas with 5,000 or more people excluding Nairobi is: Coast (4), Rift Valley (7), Nyanza (2), Central (3), Eastern (4), Western (1) and North Eastern (0).

TABLE 7.8

COMPARISON BETWEEN POPULATION ENUMERATED
AND BORN IN EACH PROVINCE, KENYA, 1969

PROVINCE	TOTAL ENUMERATED (Thousands) (A)	TOTAL BORN* (Thousands) (B)	PERCENTAGE NOT BORN IN PROVINCE (A-B)/B
Nairobi	509	427	+ 19.2
Central	1,676	1,840	- 8.9
Coast	944	759	+ 24.4
Eastern	1,907	2,014	- 5.3
North Eastern	246	245	+ 0.4
Nyanza	2,122	2,115	+ 0.3
Rift Valley	2,210	1,838	+ 20.2
Western	1,328	1,457	- 8.9

* These figures excluded 10,000 who were born in Kenya but province is unknown, 159,000 who were born outside Kenya and 79,000 whose birthplace was unknown. The total population was about 10,943,000.

Source: Kenya statistical Abstract, 1977, p. 19.

TABLE 7.9

PERCENTAGE DISTRIBUTION OF EXTRA SOURCES OF INCOME FOR SMALL
FARMERS OVER SEVENTEEN YEARS OF AGE BY EMPLOYMENT, CENTRAL PROVINCE, 1975

<u>EXTRA SOURCES</u>	<u>MALES*</u>	<u>FEMALES*</u>	<u>ALL FARMERS</u>
None	74.3	95.3	85.9
Operate another small farm	0.2	1.3	0.8
Labourer in another small farm	2.9	1.0	1.9
Other rural work	10.5	0.5	5.1
Teaching/government employment	3.1	1.2	2.1
Urban employment	8.8	0.1	4.1
Other	0.3	0.0	0.1
% TOTAL	<u>100</u>	<u>100</u>	<u>100</u>

* The total small farm population in the Central Province was 2,289,881 of which 1,148,139 were males, and 1,141,742 females.

Source: Kenya Statistical Abstract, 1977, p. 134.

TABLE 7.10

GROWTH OF WAGE EMPLOYMENT IN MURANGA DISTRICT COMPARED TO KENYA, 1967-76

	Percent									
	1967*	'68	'69	'70	'71	'72	'73	'74	'75	'76**
MURANGA	100	108	112	118	141	141	131	151	144	161
TOTAL KENYA	100	102	105	108	116	120	127	138	137	146

* Using 1967 figures as base = 100%, Muranga had 15,909 jobs, whereas the total in Kenya was 597,369.

** The totals in 1976 were 25,766 for Muranga and 857,530 for all of Kenya

Source: Kenya Statistical Abstract, 1977, p. 271

7.4 Testing of Hypothesis Six: "Matatu" Transport Operators and Rural Development

Under this hypothesis we shall first check to see if there is uneven availability of transport services favouring the more developed areas. Then after this we will examine in detail the role of the "matatu" entrepreneur in rural development.

7.4.1 Testing: Transport Services and Economic Development

Table 7.11 presents some selected statistics on the vehicles, their owners and drivers. The most striking figure here is the mean daily gross income from goods and passengers of KShs 226.* This works out to about Ksh 82,490 (C\$12,700) annual gross income. Comparing this mean figure with the distribution of annual household incomes from all sources in small farm families in Table 7.12 makes one tremble. Even if we assume an extreme where 75 per cent of the gross income is spent on capital or debt costs, operating costs, depreciation, and other costs this still leaves an annual profit of Kshs 20,622 (C\$3,175). Likewise the incomes of small farm families shown in Table 7.12 include marketed output and other employment expenses, which means that the net incomes are considerably less. The argument that the income of small farm families is augmented by the value of domestically-consumed produce, does not really hold, because the same/^{is}generally true for "matatu" operators.

In order to test the factors, that affect the profitability of a transport business a ranking of one to six was used which meant, will cause bankruptcy and gives more success respectively. The results are shown in Figure 7.4. Clearly the development factors, all scored above four and were ranked highest. Therefore, as we suggested, those areas which were better developed received more transport services; although this can in a way be treated as a circular argument.

*Even the minimum daily gross income of KShs 25 yields KShs 9,125 per annum (C\$1,405), and the maximum daily income of KShs 1,200 yields KShs 438,000 (C\$67,431). These income are not only unattainable by small farm families, but by the majority of Kenyans employed elsewhere. Remember the GNP per capita is less than U\$300.

TABLE 7.11
SELECTED STATISTICS PER VEHICLE, MURANGA DISTRICT

<u>STATISTICS</u>	<u>MINIMUM</u>	<u>MEAN</u>	<u>MAXIMUM</u>	<u>N</u>
Daily frequency on primary route	1	4	13	353
Daily frequency on secondary route	1	3	13	72
Gross income daily from goods and passengers (KSH)	25	226	1200	365
Number of owners	1	2	20	364
Number of employees	1	2	5	325
Daily trip miles	30	186	500	362
Age of vehicle to reavest year	1	5	17	353
Age of drivers	20	37	70	364
Age of owners	30	43	73	182
Years owners have been in business	1	4	35	332
Time transport business opens daily*	4	7	12	364
Time transport business closes daily*	16	18	23	365
Number of times vehicle has been replaced due to accidents, age, etc.	1	2	5	147

* Times given in the 24 hour clock

Source: Calculated from computer coded transportation data, 1973.

TABLE 7.12

PERCENTAGE DISTRIBUTION BY ANNUAL HOUSEHOLD
INCOME FROM ALL SOURCES FOR SMALL FARMERS IN
CENTRAL PROVINCE COMPARED TO KENYA, 1975

INCOME GROUPS	CENTRAL PROVINCE*	ALL KENYA**	Percent
Less than 0 shs	10.4	6.7	
000-999 shs	7.9	11.8	
1,000-1,999 shs	13.8	22.4	
2,000-2,999 shs	14.1	13.8	
3,000-3,999 shs	10.1	11.7	
4,000-5,000 shs	15.1	13.5	
6,000-7,999 shs	11.3	8.0	
8,000 shs and over	17.4	12.1	
% TOTAL	100	100	

* The total number of small farms in the Central province is 329,530.

** These figures do not include the North-Eastern Province because it is largely a pastoral area. The total number of small farms in Kenya is 1,483,422; which in addition to those in the Central Province also includes 69,861 from the Coast Province, 353,159 from the Eastern Province, 386,431 from Nyanza Province, 89,823 from the Rift Valley Province and 254,618 from the Western Province.

Source: Kenya Statistical Abstract, 1977, p. 140.

FIGURE 7.4

SELECTED IMPACTS OF PARTICULAR FACTORS ON TRANSPORT BUSINESS, MURANGA DISTRICT

N=365 Vehicles

Source: Calculated from computer coded transport data, 1973.

7.4.2 Testing: Transport Entrepreneurs and Rural Development

In contrast to Tanzania's socialist strategy which appears to discourage entrepreneurship, in the sense of seeking material progress, Kenya has instituted fairly comprehensive plans to aid and encourage African businessmen. The operation of "matatus" is one such example, where matatu operators are not required to obtain public passenger vehicle licences. The lack of achievement motivation or encouragement of entrepreneurs in many developing countries can definitely be cited as one cause of underdevelopment. Economists have long recognized it, for "...among the proximate causes of economic development, the supply of entrepreneurial and managerial abilities now occupies a position of pre-eminence at least equal to that of capital" (Hirschman, 1958, p.1).

The greatest number of private Kenyan African enterprises are concentrated in distribution; ranging from wholesaling to petty retailers. Service and artisans activities form the next largest group, such as carpenters, shoemakers, butchers, woodcarvers and so on. There are, however, fewer Africans in specialized service establishments such as plumbers, electricians, mechanics, dry cleaners etc., these having been dominated by Asians in the past. Third in importance are transport and construction firms. Transport businesses are usually one-vehicle (bus, taxi, truck), individually owned operations. Similary construction firms range from one individual promoter-contractor to larger firms. The formal sector such as banking, finance and manufacturing enterprises are dominated by Europeans, with the exception of cooperative-operated institutions.

The Kikuyu entrepreneurs dominate in Kenya. In 1966, the Kikuyu, with only 20 per cent of the male population received 44 per cent and 64 per cent of all commercial and industrial loans respectively granted by the government ICDC (Morris and Somerset, 1971, p.70). Morris and Somerset explain the dominance of the Kikuyu as resulting from their experience in trading with the Masai in which "the Kikuyu were always the entrepreneurs,... and the Masai their condescending customers...", and also because "...the Kikuyu were surrounded by the achievements of modern European commercial agriculture..." (Morris and Somerset, 1971, pp.36, 72).

Morris and Somerset (1971) examined the previous occupations, education, source of capital, the effects of the extended family, employment of relatives and the extent of diversification of Kenyan entrepreneurs in order to determine the inadequacies of African enterprises. They found that there was high proportion of businessmen from relatively skilled categories of employment (Table 7.13), which they interpreted on purely motivation terms as follows:

Business gave them a sense of fulfilment which they could not find in employment: the jobs open to them were neither responsible nor interesting enough. What mattered was not so much the money for itself but to be master of their own achievements (Morris and Somerset, 1971, p.64).

In terms of education the entrepreneurs were found to have higher level of education than the general population (Table 7.14). Similarly, they found the higher the educa-

TABLE 7.13

PREVIOUS OCCUPATIONS OF KENYAN ENTREPRENEURS

<u>LAST OCCUPATION before Business</u>	<u>MARKET Businessmen %</u>	<u>IGDC Businessmen %</u>
No. occupation*	13	10
Farming	17	7
Hawking, Petty trade	8	12
Employed:		
Unskilled	16	3
Skilled Manual	25	29
Non-Manual-clerks and teachers	17	32
Army and Police	4	7
% TOTAL	<u>100</u>	<u>100</u>

* Including those in detention and at school.

Source: Marris and Somerset, 1971, p. 62.

TABLE 7.14

LEVELS OF EDUCATION OF KENYAN ENTREPRENEURS COMPARED WITH
THE GENERAL POPULATION

CATEGORY	% WITH YEARS OF FORMAL EDUCATION*			% TOTAL
	NONE	PRIMARY (1-8)	SECONDARY (9 or more)	
Males over 15 (Kenya)	68	31	1	100
Males 25-29 (Kenya)	50	46	4	100
Market businessmen**	23	73	4	100
ICDC businessmen**	7	68	25	100

* This comparison underestimates educational differences between entrepreneurs and others of their generation because (i) 75% of ICDC businessmen and 66% of market businessmen were between 30 and 50 years old at time of interview, and (ii) the proportion of education declines consistently with age.

** Data based on 683 shopowners in market centres in 10 regions of Kenya, 87 businessmen who had obtained loans from ICDC (47 industrial and service, 40 commercial-wholesale, retail and transport). It was found that 50% of market businessmen had no employees and only 4% had more than 5. All ICDC businessmen had more than 5, the average being 6-20 and 10.3% had more than 40 employees.

Source: Marris and Somerset, 1971, p. 211.

tion the bigger the size and complexity of the enterprise. However, they did not find any correlation between formal education and the profitability of firms. The predominant source of capital was personal savings, this being 59 per cent (49% of personal savings, 3% sale of land or cattle, 7% asserts of previous business). This clearly demonstrates the motivation of individual businessmen. Infact, they found that businessmen dependent on government sponsored credit were least successful. As regards the effects of the extended family, they concluded that it seemed unlikely to inhibit expansion, unless there was a severe capital shortage. The employing of relatives was not widely spread. The reasons given for not employing relatives were: difficult to dismiss relatives, jealousy and insurbordination. On diversification, they found that 38.8 per cent of the entrepreneurs had interest in more than one business.

Our results on Table 7.15 agree with Marris and Somerset (1971) concerning education, for while the adult illiteracy rate in Kenya is now about 65 per cent, only 13.9 per cent and 7.8 per cent of owners and drivers had no education at all. The employment of relatives was also held at minimum, with only 11.3 per cent of the vehicles being driven by relatives, 55 per cent by non-relatives and 33.2 per cent by their owners. Similarly, the extended family did not seem to affect investment capital, for only 13.3 per cent indicated that covering living costs was their first priority (Table 7.16).

Three other conclusions can be drawn from Table 7.16. First, and most important of all, is that the profits are

TABLE 7.15

FORMAL EDUCATION OF VEHICLE OWNERS AND DRIVERS, MURANGA DISTRICT

EDUCATION LEVEL ATTAINED	OWNERS (number and %)	DRIVERS (number and %)
No education at all	25 (13.9%)	28 (07.8%)
Grade 1-4 not completed	49 (27.2%)	104 (28.8%)
Grade 5-7 not completed	66 (36.7%)	171 (47.4%)
Grade 9-12 not completed	22 (12.2%)	49 (13.6%)
Grade 13-14 not completed	11 (06.1%)	7 (01.9%)
Post Secondary not completed	3 (01.7%)	2 (00.6%)
Post Secondary completed	3 (01.7%)	0 (00.0%)
Other additional education	1 (00.6%)	0 (00.0%)
	<u>N = 180 (100%)</u>	<u>N = 361 (100%)</u>

* 33.2% of the vehicles are owner driven, 11.3% are driven by relatives and 55.5% are driven by non-relatives

Source: Calculated from computer coded transportation data, 1973.

TABLE 7.16

INVESTMENTS OF TRANSPORT BUSINESS PROFITS, MURANGA DISTRICT

INVESTMENT LABELS FOR PROFITS	FIRST PRIORITY (number and %)	SECOND PRIORITY (number and %)	THIRD PRIORITY (number and %)
Improve existing transport business*	33 (10.7%)	30 (09.9%)	38 (13.3%)
Start additional transport business**	34 (11.0%)	72 (23.8%)	41 (14.3%)
Improve land already owned	23 (07.4%)	20 (06.6%)	19 (06.6%)
Buy additional land	28 (09.1%)	35 (11.6%)	21 (07.3%)
Improve shop or wholesale business already owned	116 (37.5%)	52 (17.2%)	23 (08.0%)
Buy additional shop or wholesale business	15 (04.9%)	20 (06.6%)	7 (02.4%)
Cover family living costs	41 (13.3%)	36 (11.9%)	76 (26.6%)
Buy saving bonds	15 (04.9%)	31 (10.3%)	60 (21.0%)
Other specify	4 (01.3%)	6 (02.0%)	1 (00.3%)
	N = 309 (100%)	N = 302 (100%)	N = 286 (100%)

* Generally means to add vehicle(s) to same route(s)

** Generally means to start new route with new or used vehicle(s).

Source: Calculated from computer coded transportation data, 1973.

being used for economic growth activities instead of being used to buy luxury goods, which shows some maturity in business. The main areas of investment of profits were: 21.7 per cent in the transport business, 16.5 per cent in land related activities, and 42.4 per cent in other business/shop related activities. This heavy involvement of vehicle owners in trading may indicate that reduced transport costs from improved roads have enabled them to expand their transport routes (see Table 7.11 for primary and secondary routes) to villages far away where they can buy a variety of cheaper products. Therefore their profits can be expected to be even higher than those who are predominantly businessmen/shopkeepers because they can make profits from the three types of businesses: land ownership, business/shops, and control of mainly passenger transport. In this case they may create a monopoly more dangerous to the poor farmer than we suggested when discussing transport and business development.

7.5 Conclusion

To sum up then, this chapter appears to confirm that transport development in the district has tended to benefit the rural businessmen, urban merchants, urban consumers and "matatu" operators more than the farmers. There is also a clear trend for "matatu" operators to seek more economically developed areas, however, this can be expected to diminish as more cash crops and other rural employment opportunities become widely distributed in the district. It was interesting to learn that most of the profits made by "matatu" operators were either reinvested in the transport business or in other useful economic activities as opposed to buying say luxury goods.

Therefore transport improvements seem to play a positive role in non-farm (business) activities as compared to the more neutral role in agricultural development; with the biggest beneficiaries of all being the public transport operators. That is, transport plays a support role, a necessary but not sufficient condition, in both business and agricultural development. The fact that it is given more weight by businessmen may be due to its more direct impacts, is compared to farmers where the impacts tend to be more indirect.

PART IV

CONCLUSIONS

CHAPTER 8

CONCLUSIONS

"History has taught us that events rarely repeat themselves exactly, because of the elusive nature of the forces which provoke them. Similarly, transportation is not an isolated phenomenon; its impact is enhanced by the interaction of a variety of other economic stimuli whose magnitude cannot be predicted with great certainty" (Kraft, et al, 1971, p.1).

8.1 Worthwhileness of This Study

A study on development is more likely to be controversial than any other, for in the end there are really no "correct" answers to the hypotheses posed. Everything seems to be based on ifs and buts. It is very difficult to make far-reaching statements which are applicable to other parts of the world because particular physiographic or socio-economic characteristics on an area or simply the inertia on the part of individuals to take advantage of improved conditions may ruin all expectations of government planners. Moreover, the views on what development is are changing, which means that the roles of both agriculture and transport and their interactions have to change accordingly. A universal model based on "scientific principles" to cure all development ills is unavailable and will likely remain so in the future. "Trial and error" based on previous experience (feedback) seems to be the best solution.

And in rural areas the difference in perspective between the farmers and businessmen regarding the importance of transport development demonstrates the difficulties associated with development planning. In this case, this difference points to the inadequacy of the distribution of benefits resulting from rural transport. The same may be true for other development activities. This therefore requires a two-way communication between the government and the various rural groups, in particular farmers because they are usually the underprivileged group. From this point of view, this study is therefore worthwhile, in that it deals with the actual responses by farmers and businessmen (users) and transport operators (suppliers) towards road transport improvements.

Although this study did not cover all the aspects of transport and agricultural and rural development, and did not even calculate the usual savings in market or other transport costs; the evidence used to test most of the hypotheses was generally satisfactory to enable us to make some specific conclusions. Therefore, it is hoped that this study will contribute in some small way to the understanding of transportation impacts in the rural areas of developing countries.

8.2 Transport and Agricultural Development

In terms of impacts of transport on agricultural development, the overall conclusion was that farmers do not attribute their economic gains or losses to better transport or inadequate transport respectively. Therefore transport was shown as playing a neutral or supportive role, with little positive or negative effects. The most important factor in agricultural development seemed to be the availability or non-availability of agricultural and veterinary extension services. However, it was found that these services were concentrated on the more progressive farmers (those with relatively larger farms and therefore higher incomes) than on the less progressive farmers (those with relatively smaller farms and therefore lower incomes). Transport was found not to be the key cause of the uneven availability of the extension services. The bias stems from the colonial period which tended to favour those with larger farms. Thus, the gap between the poor and the rich farmers will continue to widen unless this policy is reversed.

Similary improved transport did not appear to have been one of the major causes of increases in marketed output in rural markets. This was mainly because most of the sellers and buyers walked to these markets; despite the existence of motorized transport. It was not possible to judge accurately the extent to which transport has led to specialization in agriculture; but from the scanty evidence we had, this did not seem to be happening, because of the predominance of cash crops. The lack of intermediate transport technology, such as oxdrawn carts, in East Africa at large, may help to explain the lack of benefits accruing to farmers, in terms of increased marketed output.

8.3 Transport and Rural Development

On the other hand the impacts of transport on rural development (non-agricultural) were more favourable. The percentage of businessmen attributing their success to good road conditions was significantly higher than for farmers. This may have been the case because the majority of businesses obtained their supplies from dealers outside the immediate local area. There was found to be some weak connection between those owning businesses and at the same time owning buses; the bond was a bit stronger with land ownership. It was suggested that this type of ownership could act to the disadvantage of small scale farmers, especially the very poor, but there was no hard evidence.

Using slightly weaker evidence it was concluded that the main beneficiaries of transport improvements were the urban residents and the transport operators as compared to rural residents in general*. The urban merchants gained from the increased flow of consumer goods; the urban consumers from the increased food supplies at markets; and the transport operators through the increased passenger transport flows. The rural residents gained only slightly from the increased access to urban employment.

The availability of transport services was also found to favour the more economically developed villages; resulting in huge profits by transport operators. In fact, among all beneficiaries of transport improvements, it was this group which benefitted the most. It was however, reassuring to discover that most of the profits were reinvested in useful economic activities, mainly shops and to some extent land ownership.

*See Gaile (1979), who discusses distance and development in Kenya, both theoretically and empirically. He concluded that, development diffusion was more aspatial from large urban centers than small growth centres.

8.4 Planning Implications

Despite the mounting evidence from this study and many others, investments in roads in the hope that agricultural development will follow keep being undertaken, as was illustrated by some of the quotations which formed the prelude of all the chapters in this report. This may be partly explained by the overestimation of what governments can influence. There is a need to find out what the people want and not what the government thinks the people want; the basic needs approach seems to be heading in this direction. Care also should be undertaken in the fashionable five year plans. These plans have produced blue prints which have sometimes tended to produce rigidity and misallocation of resources, through the commitment of funds to projects in advance, which need not be implemented due to changed conditions when their turn came. The situation is even more difficult when international funds are involved. Planners should also avoid planning transportation as an independent sector.

In this author's view at least, the main problem in implementing changes in agricultural and rural development has been the lack of political commitment. There is too much lip-service, as can be evidenced by the hundreds of reports on agricultural and rural development in many countries, which lie rotting in shelves; their recommendations, having been given, are laid to external rest. In many countries the politicians know the answers, but the courage to implement is not there. The nationalization of underutilized land and distribution to the peasants in countries where landless farmers form a significant population should be encouraged. Even in Kenya, despite

the intentions of the government to subdivide all large mixed farms, it remains to be seen how long it will take; but at the current rate, one wonders if it will ever be accomplished. The overcentralization of decision making by the central government, the office of the President and the bureaucracy at large, is a serious threat to the widely publicized district planning autonomy and initiative.

8.5 Research Implications

Several themes of future research are discernible from chapters 6 & 7 and elsewhere. But the most important ones appear to be: (a) there is clearly a need to investigate the extent of land ownership, business ownership and public transport ownership by ^{same} individuals, and to see indeed if monopolies are starting to form. The research can investigate the extent of profits and the magnitude of competition among transport operations; (b) more research needs to be done to connect improved transport and increased demand of goods; and (c) a detailed research of the role of transport on local markets relating more variables such as periodicity of markets, volumes of goods, distances, modes, prices and so on.

APPENDICES

R

APPENDIX 1.1

GROWTH CENTRES AND LOCATION OF SERVICES*

Level of Centres	Educational Services	Health Services	Recreational and other Social Services
Principal Town National Capital	University Teacher Training College (secondary level) Technical College	Hospital (national standard)	
Principal Towns Municipalities	Teacher training college (primary level) Technical school (secondary level)	Hospital (provincial standard)	
Urban Centres	Senior Secondary School (At least to form IV) Village polytechnic	Hospital (district standard)	Museum/art centre
Other Urban Centres	Secondary School (at least to form IV) Village Polytechnic	Health centre (maternity unit)	Stadium Public Library, Recrea- tional Park, Cinema, Showground Mobile Library Service, Sports field, Social Hall, Mobile Cin- ema
Rural Centres	Secondary School	Dispensary Family Planning Service	
Market Centres	Full primary school (2-3 streams) Nursery School		
Local Centres			

1.*Private sector facilities, e.g. commercial and industrial undertakings, will be located in service centres according to the economic development potential.

2.To the services listed against each level of centre should be added those services listed against the centres at lower levels, e.g. in most cases a rural centre will also have all the services existing in market and local centres.

Administrative Services	Civil Services	Transportation and Communication Services
Government Ministries High Court National Police Headquarters		International Airport International Bus Service
Provincial Administration Resident Magistrate's Court Provincial Police Headquarters	Fire Station	Served by International/National Trunk Road Head Post Office Facilities, Telephone (automatic exchange) Regional Bus Service Airfield
District Administration District Court Divisional Police Headquarters		Served by National Trunk/Primary Road Airstrip
Divisional Administration Police Station	Sewage Disposal system Grid Water Supply Electricity	Served by Primary/Secondary Road Departmental Post Office
Locational and Sub-Locational administration Police Post	Public Water Supply	Served by Secondary/Minor road, Telephone (Manual exchange), Sub-Post Office, Airstrip (only remote areas), Local Bus Service

APPENDIX 1.2

LIST OF VARIABLES RELATED TO TRANSPORTATION FROM FIVE FILES

41 MURANGA FARM VARIABLES

CENTER CODE
 AGE OF FARMER
 NUMBER OF PEOPLE PER HOUSEHOLD
 ACREAGE TOTAL FARM SIZE
 NUMBER OF PEOPLE WORKING PER FARM
 ACTUAL ACREAGE UNDER CULTIVATION
 ACREAGE UNDER COFFEE
 ACREAGE UNDER TEA
 ACREAGE UNDER PINEAPPLES
 ACREAGE UNDER MAIZE AND BEANS
 ACREAGE UNDER SISAL
 ACREAGE UNDER FRUITS & VEGETABLES
 GRAZING ACREAGE FOR CATTLE
 ACREAGE UNDER WATTLE
 ACREAGE UNDER OTHER CROPS
 INCOME FROM COFFEE
 INCOME FROM TEA
 INCOME FROM PINEAPPLES
 INCOME FROM MAIZE AND BEANS
 INCOME FROM SISAL
 INCOME FROM FRUITS & VEGETABLES
 INCOME FROM WATTLE
 INCOME FROM OTHER CROPS
 NUMBER OF CATTLE
 NUMBER OF SHEEP
 NUMBER OF GOATS
 NUMBER OF PIGS
 NUMBER OF CHICKENS
 NUMBER OF OTHER ANIMALS

16 MURANGA VILLAGE/CENTER VARIABLES

CENTER CODE
 VILLAGE POPULATION
 TOTAL NUMBER OF BUSES PER DAY
 NUMBER OF TRUCKS PER VILLAGE
 NUMBER OF TELEPHONES PER VILLAGE
 NUMBER OF TAXIS PER VILLAGE
 NUMBER OF TELEVISIONS PER VILLAGE
 NUMBER OF MILES FROM TARMAC RD PER VILLAGE
 IS THERE A RADIO-PHONE IN THE VILLAGE
 IS THERE PIPED WATER IN THE VILLAGE
 IS THERE ELECTRICITY IN THE VILLAGE
 HRS TO MAIN NAIROBI RD BY BUS NO RAIN
 HRS TO MAIN NAIROBI RD BY BUS IN RAIN
 HRS TO MAIN NAIROBI RD BY TRUCK NO RAIN
 HRS TO MAIN NAIROBI RD BY TRUCK IN RAIN
 TYPE OF GROWTH CENTER

10 MURANGA SHOPS/BUSINESS VARIABLES

CENTER CODE
 TYPE OF BUSINESS
 DO YOU OWN OR RENT PREMISES
 IF OWNER WHAT OTHER SOURCE OF INCOME
 IF RENTER WHAT OTHER SOURCE OF INCOME
 HAS BUSINESS IMPROVED RECENTLY
 WHY HAS BUSINESS IMPROVED
 WHY HAS BUSINESS DECLINED
 PRIMARY SOURCE OF STOCK
 SECONDARY SOURCE OF STOCK

12 MURANGA MARKET VARIABLES

INCOME FROM CATTLE
 INCOME FROM SHEEP
 INCOME FROM GOATS
 INCOME FROM PIGS
 INCOME FROM CHICKENS
 INCOME FROM OTHER ANIMALS
 MEMBERSHIP IN COOPERATIVE
 HAS INCOME IMPROVED THE PAST FEW YEARS
 PRIMARY REASON FOR IMPROVEMENT
 SECONDARY REASON FOR IMPROVEMENT
 PRIMARY REASON FOR DECLINE
 SECONDARY REASON FOR DECLINE

CENTER CODE
 TYPE OF MARKET
 FREQUENCY MARKET OPENS
 TOTAL FEMALE SELLERS PER MARKET
 TOTAL FEMALE BUYERS PER MARKET
 TOTAL MALE SELLERS PER MARKET
 TOTAL MALE BUYERS PER MARKET
 PEOPLE GOING TO MARKET BY BUS
 PEOPLE GOING TO MARKET BY CAR
 PEOPLE GOING TO MARKET BY TRUCK
 PEOPLE GOING TO MARKET BY BICYCLE
 PEOPLE GOING TO MARKET ON FOOT

97 MURANGA TRANSPORTATION VARIABLES

TYPE OF VEHICLES
 ROUTE PATTERN OF VEHICLES
 MAIN PURPOSE OF VEHICLES
 NO OF OWNERS PER VEHICLE
 NO OF EMPLOYEES PER VEHICLE
 NO OF VEHICLES REPLACED PER ROUTE
 YRS OF SERVICE PER VEHICLE PER ROUTE
 PASSENGER SEATING CAPACITY PER VEHICLE
 DAILY FREQUENCY ON PRIMARY ROUTE
 DAILY FREQUENCY ON SECONDARY ROUTE
 DAILY MILES VEHICLE TRAVELS
 DAILY MILES VEHICLE TRAVELS
 NO OF PASSENGERS WEEKDAY DRY SEASON
 NO OF PASSENGERS WEEKEND DRY SEASON
 NO OF PASSENGERS PRIOR TO PAYDAY
 NO OF PASSENGERS AFTER PAYDAY
 NO OF PASSENGERS WEEKDAY WET SEASON
 DOES FARE CHANGE WITH CIRCUMSTANCES
 FARE WEEKDAY DRY SEASON
 FARE WEEKEND DRY SEASON
 FARE PRIOR TO PAYDAY
 FARE AFTER PAYDAY
 FARE WEEKDAY WET SEASON
 FARE ON TARMAC ROADS

SEX OF DRIVERS
 AGE OF DRIVERS
 FORMAL EDUCATION OF DRIVERS
 YEARS OF DRIVING EXPERIENCE
 SEX OF OWNERS
 AGE OF OWNERS
 FORMAL EDUCATION OF OWNERS
 YEARS OWNERS HAVE BEEN IN BUSINESS
 TIME TRANSPORT BUSINESS OPENS DAILY
 IS VEHICLE AVAILABLE FOR HIRE
 VEH USE SUBSISTENCE CROPS FARM TO MARKET
 VEH USE SUBSISTENCE CROPS FARM TO SHOP
 VEH USE FOOD CROPS SHOP & MARKET TO HOME
 VEH USE FOOD CROPS SHOT & MARKET FOR RESALE
 VEH USE CASH CROPS FARM TO COOPERATIVE
 VEH USE CASH CROPS FARM TO WHOLESALERS
 VEH USE CASH CROPS PURCHASED FOR RESALE
 VEH USE CHICKENS FOR SALE OR PURCHASED
 VEH USE SHEEP FOR SALE OR PURCHASED
 VEH USE GOATS FOR SALE OR PURCHASED
 VEH USE PIGS FOR SALE OR PURCHASED
 VEH USE DAIRYCATTLE FOR SALE OR PURCHASED
 VEH USE BEEFCATTLE FOR SALE OR PURCHASED
 VEHICLE USE MANUFACTURED FOOD
 VEH USE MANUFACTURED, HOUSEHOLD GOODS

FARE ON MAINLY EARTH ROADS
 FARE ON SEASONAL RDS WET SEASON
 FARE ON REMOTE REGIONS & POOR RDS
 INCOME DAILY FROM GOODS & PASSENGERS
 FIRST PRIORITY INVESTMENT OF PROFITS
 SECOND PRIORITY INVESTMENT OF PROFITS
 THIRD PRIORITY INVESTMENT OF PROFITS
 FIRST PRIORITY BUSINESS PLANS NOW
 SECOND PRIORITY BUSINESS PLANS NOW
 TOPOGRAPHY EFC ON TRANSPORT SRVC
 ROAD CONDITIONS EFC ON TRANSPORT SRVC
 COMPETITION EFC ON TRANSPORT SRVC
 LOAN AVAILABILITY EFC ON TRANSPORT SRVC
 OWN CAPITAL AVAILABILITY EFC ON TRANS SRVC
 ECONDEV OF AREA EFC ON TRANSPORT SRVC
 PRESENCE OF PUBLIC SRVCS EFC ON TR SRVC
 LEGAL PROBLEMS EFC ON TRANSPORT SERVICE
 TOWNS ENROUTE EFC ON TRANS SRVC
 MARKETS ENROUTE EFC ON TRANS SRVC
 GAS ETC AVAILABILITY EFC ON TR SRVC
 RAIN EFC ON TRANSPORT SERVICE
 GOVT RESTRICTIONS ON IMPORTS EF ON-TR SC
 IDENTITY OF DRIVERS

VEH USE CLOTHING AND BLANKETS
 VEH USE LUXURY GOODS
 VEH USE FARM EQUIPMENT & SUPPLIES
 VEH USE MEDICAL SUPPLIES
 VEH USE TRANSPORTATION EQUIPMENT
 VEH USE OTHER MANUFACTURED GOODS
 VEHICLE USAGE FARMERS AS PASSENGERS
 VEHICLE USAGE FARMERS ON HIRE BASIS
 VEHICLE USAGE BUSINESSMEN AS PASSENGERS
 VEHICLE USAGE BUSINESSMEN ON HIRE BASIS
 VEHICLE USAGE GOVT OFFICIALS ON BUSINESS
 VEHICLE USAGE PROFESSIONAL PEOPLE TO WORK
 VEHICLE USAGE MIGRANTS TO WORK IN TOWNS
 VEHICLE USAGE MARKET BUYERS OR SELLERS
 VEHICLE USAGE PRIMARY SCHOOL STUDENTS
 VEHICLE USAGE SECONDARY SCHOOL STUDENTS
 MARAGUA, INFLUENCE ON TRANSPORT SERVICE
 MERU, INFLUENCE ON TRANSPORT SERVICE
 MURANGA, INFLUENCE ON TRANSPORT SERVICE
 NAIROBI CITY, INFLUENCE ON TRANSPORT SERVICE
 NYERI, INFLUENCE ON TRANSPORT SERVICE
 SABA SABA, INFLUENCE ON TRANSPORT SERVICE
 THIKA, INFLUENCE ON TRANSPORT SERVICE
 AGE OF VEHICLE TO NEAREST YEAR

APPENDIX 3.1

SEVEN SINS OF DEVELOPMENT PLANNERS*

Mahbul ul Haq (1976) in his book the "Poverty Curtain" refers to development planners as "priests" who began practicing in late 1940's. He describes them as "...men who had tremendous confidence in themselves but little confidence in their own societies which they all wanted to transform in a hurry." He uses examples from Pakistan, and goes on to discuss* what he calls "the seven sins of development planners."

The first one is "number games". The fascination with numbers, where it is quietly assumed that whatever is measurable is relevant; and what is non-measurable can be conveniently ignored. Thus **endless** work goes into econometric models; and not enough into economic policy formulation or decent project appraisal. Secondly, is the use of "excessive controls". There is a curious love for direct economic controls. It is too readily assumed that development planning means encouragement of public sector and imposition of a variety of bureaucratic controls to regulate economic activity, particularly the private sector. Thirdly, is the "investment illusion." There is a constant preoccupation with investment level, because it is believed that capital formation is the heart of the development process. Thus the planners keep fussing continuously about the investment going up or down. For although capital may be

*These are included in this report, because they illustrate some of the sentiments raised in this study, and the whole "controversy" of development planning.

*See Chapter 1 of his book.

scarce in many developing countries, there is also a lot of productive capital lying idle or flowing abroad or being used for luxury goods especially housing or being used in low priority investments.

Fourthly, is the turnover of "development fashions". There is an addiction to development fashions; partly because in order to keep up-to-date (start-of-the-art) in the chase of development and partly because of the need to subscribe to the currently fashionable thinking in the donor countries. Using Pakistan he cites the following:

<u>Period</u>	<u>Development Fashion</u>
1948-55	import substituting industries are the key to development;
1960-65	import substituting industries are no good; export expansion is the real answer;
1966-67	industrialization is an illusion, rapid agricultural growth is the only answer;
1967-68	give priority to population growth policies as all development is likely to be submerged by population explosion;
1971-75	the poor masses have not gained much from development. Reject GNP per capita as major indicator; distribution must come ahead of growth.

Fifthly, is the "divorce between planning and implementation." The convenient alibi of planners is that implementation is the responsibility of the entire political and economic system. This problem is even critical when physical planning and economic planning are done by different government departments or when the "filling in" of projects in the plan is not integrated, being done sector by sector. Sixthly, is the "neglect of human resources." Very little investment seems to have gone into the development of human resources (China excepted), may be because of the lack of any quantitatively established relationship between such investment and output.

Lastly, is the seeking of "growth without justice." The aim of increasing GNP per capita has forgotten the real objective of development, which is to meet basic human needs. He thus argues that, "development fashions" should be such as to build development around people, rather than people around development. He goes on to suggest that developing countries should declare themselves as socialists or capitalists and stop "fooling around" inbetween; a view this author does not share.

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*Denotes Sources that were deemed more important to this study.

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