KITUI THE ECOSYSTEM INTEGRATION AND CHANGE AN OVERALL FRAMEWORK

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1. KITUI THE ECOSYSTEM INTEGRATION AND CHANGE AN OVERALL FRAMEWORK

1. A Note on the Concept of Ecodevelopment

The concept of ecodevelopment[1] has been recently introduced into multi-disciplinary research which marries social and natural sciences. Eco-development "aims at defining a style of development especially suited to the rural regions of the third world".[2] This approach is one where the ecoregions will use their own resources, build public rather than private transport systems plannings cross-sectorially, saving resources for future generations, fulfilling regional needs in the region and finally centering on man! If this sounds garbled up it is boiling down of jargon by the new ecologists.[3]

The ecological approach has come about in international scholarship after the failure of the development decade when the prescriptions for development were building a civil service, having a slice of the green revolution and getting aid.[4] Of course after the Pearson Report[5] clearly showed that there was hardly any development in the development decade and the growth of an underdevelopment dependence[6] critique of development, international organisations,

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1. See Sachs, I. Environment and Styles of Development Environment in Africa. Environment and Regional Planning Research Bulletin vol. 1, No. 1, 1974, pp. 9-33 for a definition of environment as being composed of natural environment, man-made technostructures and social environment.

2. Ibid. p. 17.

3. Ibid. pp. 17-19.

4. See for example the tortuous way the Kenya government went about designing rural development with these assumptions as covered in "The Myth of Kericho: was SRDP Experiment?" in Mutiso, G.C.M. Kenya: Politics, Policy and Society, Nairobi, E.A.L.B. 1975, pp. 132 - 161. For a report emphasizing the need to develop a civil service see Leys, Colin and Stamp, Patricia, Organisation and Development. Dilemmas of Administrative Training in Kenya. Unpublished. 1972?

5.a. (Pearson Report) Report of the Commission on International Development. Partners in Development, N.Y. Praeger, 1969.

b. Taylor, John Vernon, Enough is Enough, London, S.C.M. Press; 1975.

6. Godfrey, Martin and Langdon, Steve. in Partners in "Underdevelopment"? The Transnational Thesis in a Kenya Context" nd. review the major theoreticians of the development of underdevelopment e.g. Amin, Frank, Sunkel, Rodney and Givan et. al and put them in the Kenya context. See also Leys, Colin, Underdevelopment in Kenya: The Political Economy of Neo-Colonialism. 1964-1971, London, Heinemann, 1975.

foundations and academics had to introduce the concepts of ecology/environment into the study of the Third World. When Third World academics jump into the ecology framework they should be aware that the concept of environment was developed in the developed world where they had techno structures and social environments which had been reified. Thus they had to start environmental programmes to save (in a banking sense) their man-made technostructure, the limited natural environment and the existent social environment. For the third world the issue is to create alternative man-made techno-structures and social environment within the limited natural environment. This demands internal creativity in the Third World about the three areas of eco-development where we should not be interested in the wilder arguments about pollution etc, but where we ought perhaps to start with a look at how our societies used the environment and see whether we can incorporate some of their conceptualizations in planning a future.

This chapter is part of a wider multi-disciplinary study whose basic objective is to identify alternative planning methods for arid areas. The Pilot Study covers Kitui District. The chapter will only present a view of ecosystem change and class evolution in areas of Kitui District derived from fieldwork. Other parts of the study reporting on specific case studies of water extraction systems, land holding systems, and cattle holding systems, hydrogeology and the central plans for the district will be reported on later. Until the study is completed the last point will not be covered satisfactorily.

2. The Kitui Historical Ecosystem

A person interested in reconstructing the ecology of a past era can rely on archaeological data, botanical data, geological data, the oral tradition and written documents of the past. As most people are aware there is very limited systematic arachaelogical, botanical and geological data collected in districts like Kitui. It is hoped that out of the wider study subsequent papers by the author/other members of the research team will present papers in these areas. Since our particular interest in this paper is how the Kitui people have interacted with the ecosystem in keeping livestock and raising crops in the last hundred years we shall only rely on data from the written records and the oral tradition.

Probably the areas of early settlement in Kitui District were in the Central hill massif which runs in a North-West South-East direction. Dundas[7] wrote that this was inhabited area and it was about 50 miles wide and

7. Dundas, Charles, "History of Kitui". Journal of the Royal Anthropological Institute, Vol. 43, 1913, p. 480.

a and a hundred and sixty miles long. If this was the case the population around the turn of the century would have been in the area between Mumoni/Tseikuru Hills all the way South to Kanziku Hills. In the East the settlement then would not be East of Mutito since the population fillup East of Makongo/Mutha axis is very recent. In fact Mbitini in Nzambani/Kisasi Locations, twenty miles directly East of Kitui Town was not settled until 1940s. The region between Athi River, Kitui Town and South-east of Kitui (further South of present Tiva) is of interest in terms of ecosystem change since Ainsworth[8] described it systematically as early as 1896 and it was also object of development manipulation by Aldev.

Moving from Mwala across the Yatta Plateau following pretty much the present day Wamunyu/Kitui road Ainsworth described the region from present day Katangi to Mwitasyano as follows:[9]

> "The country up to this had begun with thick bush; afterward it opened out into expanses of plains and then assumed parkland appearance ..... When nearing the Chyanu River the bush begins to be thick again". (9) (This was to be an area of thick ikusyi and ithia by 1946 when the Aldev grazing schemes were introduced).

He further described the area from Mwitasyano to Kitui town as follows:

> "The country nearly up to Mavani (Maavani) hills is what maybe termed parkland, but from Mavani to the Tiva it is fairly thickly timbered ..... About 6½ miles from Tiva we came across the first shamba since leaving Mala and now we were in Kitwyi. Another 7 miles brough us to the village of Chief Simba Mwyulu, in the districts of Kitwyi called Nengia ..... There is apparently a large area under cultivation. Maweli and Mohindi seem to be the principal grains that are cultivated. Cattle and goats are abundant. I should consider the country as being somewhat thickly populated. Their mode of cultivation is somewhat varied from that of the Ulu people, in as much as many Swahili (Digo) hoes are used, but the crops seem much the same". (10)

Finally the area between Kitui and Kavisuni on to Yatta Escarpment was described as follows:[11]

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8. Ainsworth, J. On a Journey from Machakos to Kitui. Geographical Journal, Vol. VII 1896, pp. 406-12.

9. Ibid., p. 406.

10. Ibid., p. 407

11. Ibid., p. 409-10.

"..... We left Kitui for our return to Ulu ..... the road lay South-West to the Tiva River. For about 5 miles from Simba's we found the country populated and cultivated. For another mile farther on it was cultivated only and then for 52 (25?) miles to the Tiva river the road lay through thick bush over fairly level country ..... We passed Tiva river ..... and passed along a level country covered with bush. A little over 5 miles brought us to the Ascent of the Athi escarpment and here again we were amongst cultivation and population. This district to the Athi River ..... In Yata we saw very little cattle until we got close to the Athi.

The country is fairly well favoured with timber and gives the idea of recent occupation; indeed I understand from the natives that within recent times all Yata was inhabited by Masai. But now there is certainly a very large population of Wakamba who have come over from Ulu side ..... this camp is about 25 miles from Mongia".

We have quoted Ainsworth extensively to document some points. First, one should note that the area from present day Katangi to Mwitasyano as being infested with bush and not having a population. The oral tradition of the South-Eastern Machakos (especially Kibauni/Wamunyu) has it that there was incessant fighting by the South-eastern Machakos people and Kitui people at the Mwitasyano. Thus one utilized all the arrows for the last stand (Kwita syano) at this river. From this one can conclude that this area which had extensive bush had been populated earlier and that the bush spoken about had come about as a result of continuous over use (with stock) and burning which range ecologists tell us leads to increase in a hockii complex with its associated ecosystem.[12] The people would have migrated to other areas-

12. Kerfoot, O. in "Vegetation of an Experimental Catchment in the Semi-arid Ranchland of Uganda" East African and Forestry Journal, Vol. 30, No. 3, 1965, pp. 227-245 where he studed the Karamajong area of Uganda concluded thus: "An attempt has been made to show how the present day cover of dry savannah type steppe and more degraded species associated with steppe conditions, may have been derived from semi-evergreen woodland and higher status savannah" p. 244. Although traditionally the growth of the hockii complex has been discouraged for example Aldov, made a central part of their programme goat control and bush clearing, recent research suggests advantages of the growth of the hockii complex. Harrington, G.N. in "Bush Control: A Note of Caution", East African Agricultural and Forestry Journal Vol. 39, No. 1, July 1973, pp. 95-96 reporting on research conducted at Muko Range Experiment Station in Ankole, Uganda writes interalia: "It is often noticed that, with the cessation of burning comes a great increase in the amount of woody vegetation ... although

Footnote 12 contd.

this is not invariable. The density of acacia hockii de wild can be over 4,000 per hectare under an annual burning rate. When burning is prevented these plants can develop rapidly into thicket which is difficult to penetrate.

Relative success against a hockii has been reported ..... using picloram 2, 4-D formulation, but early indications of the effect on cattle growth rates have not been maintained which calls for this note of caution. The inference is, that any increase in grazing area caused by bush removal is offset by lost advantages. Possible advantages of bush include enriching soil by leaffall, reduction in the rate of drying of the surface soil and shade for the grazing cattle. A normally ignored factor is the loss of insects and birds which use the bush layer. These may represent a considerable proportion of the total cycling energy and nurrients.

A hockii is a single stemmed plant, which can be induced to a multi stemmed form by repeated cutting or burning when too short for the spical region to escape serious fire damage. Cessation of burning causes a rapid evolution to the single stemmed form and under conditions of high density, a rapid reduction of density, probably due to intra-specific competition.... Carefully controlled burning against the wind, when grass is only half-dry can help to prune lower branches from the small trees, resulting from several years of fire protection without damaging the apex and causing lateral and basal regrowth.

The use of heavy machinery on bush problems, should also be undertaken with caution, as coppicing species may merely become a greater interference by increasing the stem number per plant and reducing the height of the branches. Chaun clearing of combrutum/Accia Savanna is Bunyoro, Uganda followed by heavy grazing and no fire, was fairly successful in controlling the combretum spp but allowed an increase of A. hockii from 100 to 1,500 per Hectare. This increase was highly significant statistically."

Wilson, J.G. and Bredon, R.M. in "Nutritional Value of some common cattle Browse and Fodder Plants of Karamoja, Northern Province, Uganda". East African Agricultural and Forestry Journal vol. 28, No. 4. April 1963, pp. 204 writes inter alia: "There is no doubt that during the dry season, in semiarid areas, when grass is extremely scarce, cattle browse to a considerable extent and as the chemical composition of both shrubs and herbs indicatesa high nutritive value, this must be a valuable adjunct to available grazing. In some species, the protein and ash content may be as high as 30 per cent and 16 per cent respectively and this high nutritional value of herbs is also good but as they mainly occur in the rainy season when grass is plentiful and nutririous, they are of less importance". Payne W.J.A. and MacFarlane J.S. reporting on research in Tanganyika "A Brief Study of Cattle Browsing Behaviour in a Semi-arid Area of Tanganyika", East African Agricultural and Forestry Journal Vol. 29, No. 2. October 1963, pp. 131-133 write inter alia. "It was estimated that more than half the time all (cattle) groups spent browsing was concentrated on capparidaceous shrubs, particularly Maerua spp. Second choice was the pods of Acacia Tortilis subspecies spirocapa or the leaves of opuntia spp .... It may be concluded that in the dry season browse may comprise a significant part of the total nutrient intake of cattle and that the length of time cattle spent browsing is a function of the quality of browse at their disposal and the total available grazing time".

Little, E.C.S. in "Bush control and utilization" mimeo Symposium on Animal Production in Arid Areas: Nairobi April 16, 1971 UNDP/FAO Range Management Project has argued that the crude protein content of the leaves of Acacia Prepanolobium (whistling thorn) is 17%. He pointed out further that goats fed on it "maintained their weight and did almost as well as similar goats free ranging on grass and regenerating whistling thorn.

The Ministry of Agriculture, Kenya Government 'Final Report of the Livestock and Meat Working Party January 1971" also concluded inter alia "Bush control in East Africa is of major importance and until the economy is sufficiently buoyant and profitable to eradicate bush entirely and do so at a profit (note the ambivalence author) many leading ecologists believe that the goat is an essential component in livestock management of rangelands". p. 8.

Heady, H.F. in Range Management in East Africa, Nairobi Government Printer 1960 (1972 edition) writes also on mechanical bush control and the role of goats in 'bush clearing' as follows:

"Mechanical bush control on semi-arid lands is questionable. It is true that the bush canopy is reduced, that some species are essentially eliminated and usually an abundance of grass soon appears, but within a 2 or 3 year period woody regeneration eliminates the first appearance of success. If follow up control measures are not taken, cleared areas are soon unusable and frequently more difficult to deal with than the original bush ..... goats are only one type of possible bush controlling factors. They should be used in conjunction with other methods, such as burning, mechanical control etc,..... The second approach should be with large members of goats on small areas for short periods. Let the bush sprouts grow until they are 1 ft. long, reduce them by concentrated grazing in a short period and repeat the process every time the sprouts get about 1 ft." pp. 37 and 80.

Other recent research at Samburi has shown that integrated grazing of sheep, goats and cattle lead to very high carrying capacities. Of course traditional studies of pastoralism had established that pastoralist conceived range in stock integrated versions and set up migration patterns to adequately take advantage of all range potential. This literature is reviewed extensively by O'Leary, M.F. in Economic and Political Influences of the Residential and Marriage Patterns of Pastoralists in East Africa, M.A. thesis University of Manchester, 1974. We have reviewed this research extensively to point out that the traditional ecoculture was rational in its utilization of range. This is being confirmed by recent rangelands/fodder research. However once the free migration is limited to the evolution of a rural land system which is not extensive and which is non collective the rational connexion of this traditional physical technology with the social technology is denied. Of course to argue this is not to deny that the traditionally rational eco use system cannot be used in the 'planned' private ranches. This might even deny the uneconomic use of resources for mechanical or chemical bush clearing. The physical techniques and ecological parameters of managing the range are however subject of another study.

Those he speaks about in Yatta between Tiva and Athi. This area is only 10 miles if he had gone southward directly parallel to the Mwitasyano. Clearly the area between Mwitasyano, Maavani and Tiva would be 'parklike and timbered' since as an area of contention between Kitui and Machakos Kamba there wouldn't be the settlement which would lead to the decimation of the trees. As one gets towards the Tiva, extra riverine bush similar to that existing at the Mwitasyano recurs. Just before reaching Tiva there is cultivation not just because this is not the cutting edge of the frontier but also since there are the very well watered flood plains of the Tiva. (After Aldev was finished these would be occupied by Machakos Kamba who called the area Zambia). This is now (1976) an area where asomi Akamba from both Kitui and Machakos have earned private holdings averaging 50-100 acres each.

Chief Simba's place is just around Kitui town - a logical place to have the permanent settlement since the permanent Kitui hills springs can supply the area, and from a defensive point of view it is within reach of the hills where one can have a masada. Clearly there are two points in Ainsworth's account of the return journey. Tiva and Kibauni are to the South-West of Kitui town. Kavisuni, the only natural ford is also about 25 miles if we assume that he used the 'Krapf road' which is the divide between Muiluni drainage and Miumbu drainage. This became the permanent road between Kitui, Katulani and Kavisuni. The only other route would have taken him too far east i.e. Kitui, Kyuluni, Kisasi and Ikanga and then across to Kibauni.

The second ecosystem point is the crop agriculture of the people. Although Ainsworth argues that there is 'Maweli (bulrush millet) and Mohindi (maize), he does not give us a clue as to which is the staple. Dundas on the other hand argues that the staple crop is "maweli".[13] These two accounts perhaps can be reconciled by pointing out that Ainsworth was likely to have seen "Mohindi" grown by the 'Swahilized' Kamba around Simba's camp. Dundas more extensive stay in the region would have extensive knowledge of food habits. If we follow this interpretation we can also assume that the reference to Swahili hoe by Ainsworth[14] is not representative and that Dundas description of the impliment technology - the "Muo" (Muo)[15] is the more representative implement in agriculture. Dundas further describes the slash and burn technique for exploiting the natural fertility of hillslopes and the diversification of fields.[16] Dundas does not explain the reason for the multiple cultivated fields.

13. Dundas, op.cit., pp. 499-500.
14. Ainsworth, op. cit., pp. 407.
15. Dundas, op. cit., p. 499.
16. Ibid.

Recent research in BRALUP[17] has shown that in arid areas soils and therefore effective moisture may vary in areas even less than one kilometer apart. Thus in terms of rational agriculture it pays to have fields in varied areas so as to adopt to the ecosystem adopt to the ecosystem parameters especially as a technique of drought adjustment.

In terms of the interdependency of the district ecosystem, our third point, Ainsworth points out that there are surplus cattle in the central area which Swahili traders took to Mumoni to trade. He writes:[18]

> "I learned that it was a very common occurence for Swahili caraves to pass through Kitwyi with lots of women and children. The natives say that these women come from Meru (Kenia District) and Meranga. It appears that these Swahili sell these women in Kitwyi for cattle and with the cattle they return to Mumoni to buy ivory".

Sheep and goats are not as important as cattle. It is interesting to note that to date the Mumoni - Tana River region still remains a source of ivory and national bureaucratic and politician asomi traders exchange cattle for ivory but the direction of trade is different with most being siphoned to the Kenya Meat Commission or to local urban consumption.

Finally, the fourth point, the controlling factor of population distribution - availability of water can be deduced from Ainsworth's general discussion of the vegetation - controlled by sand river systems and from Dundas who is more specific. He writes:[19]

> "Permanent running water is not found except in the Rivers Athi and Tana or 'Kiloluma' as it is called by the Akamba and in the dry season water is often a serious problem to the natives, particularly as the water obtained by digging is often to salty for human consumption.

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17. Mascarenhas, Adolfo C. "Food Production, the Total Environment and Rural Development". Worshop on Environment and Rural Development in East Africa IDEP-UNEP-SIDA, Nairobi, November 11-30, 1974 reviews some of these facts as they relate to Tanzania. See also Berry L. et. al. "Human Adjustment to Agricultural Drought in Tanzania. BRALUP Research Paper No. 13, 1972.

18. Ainsworth, op. cit., p. 400.

19. Dundas, op. cit., p. 499.

> Large riverbeds maybe seen which are now quite dry and overgrown; some of these might scarcely be recognized as river-beds but for their names; still retained by the natives. Thus the River Nziu forms a broad watercause, but the bush and small trees in it show it has been running for many years, and one may dig twenty and thirty feet in the sand without coming upon water. These facts make it probable that there was a time not so long ago when the country was more richly watered".

From the ecosystem point of view the last sentence is nonsense since recent arid area research[20] suggests that weather does not change over short run but rather that human land use may account for what appears as weather changes. In our study of Kitui we have been able to identify two riverbeds which have cut watercourses quarter kilometer wide in the last few years. Such a river is Mui which is a branch of the Thua. By deeping its channel and changing it the old riverbed wells have dried and new areas sprouted river-bed wells. The cause for the wild river channeling is stripping of the cover on its upper reaches by human population and livestock population. The upper reaches of the Mui have had such a growth in the last 10 years with the more populated Mwingi side pushing population to the Mui/Ikoo valley. The other river is the Kisio which is a branch of the Thuo.

Implicit in this discussion of scarcity of water is the technology for exploitation of water resources. Since the sand rivers trapped water populations also followed the rivers so as to assure water for livestock but these populations, given the relative ease of exploiting sand river wells did not develop a well technology away from river-beds as say the Digo or the Somali. This has remained to the present as a constraint to rational ecosystem use. As the riverine forests are exploited then, this interferes with rainwater percolation and leads to widening of channels as well as increasing the speed of surface and river run-off then leading to further ecological decay. A good illustration of this is the Kisio arm of the Thua flowing from Mbitini in Nzambani locations. In places where four years ago one could drive across (between Inyuu and Kanduti) there are now channels 10 to 15 feet deep. Of course this river does not have as a wide catchment as Mui and thus it has not packed its gorge with water retaining sand as the other river - but the relative 'drought' of Kisio river is apparent to the in-

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20. McGinnes and Goldman, B.J. Arid Areas in Perspective, Tucson: University of Arizona Press 1969. See also Dalby David et. al. (eds.) Drought in Africa: Report of the 1973 Symposium, London University Centre for African Studies, 1974.

habitants of the area who now lament the lack of sand riverbed in its lower reseaches. It is progressively drying towards its upper reaches.

This discussion of rivers drying is extensively dwelled on to point out that Dundas probably misunderstood the 'cause' of the dry river-beds. We would suggest that as livestock and human populations encroached on a river it dried and they moved onto other river systems. This was extension of the slash and burn technology applied not just to crops but to livestock agriculture. As the riverine forests were allowed to grow after the population had moved then the rivers would be slowed, ground percolation would increase and the ecosystem would be naturally regenerated for the next cycle of settlement.

3. Migration and Rational Ecosystem Use

Since there was human society migration has been one of the ways of adopting to ecoregion parameters. This is particularly so for arid areas.[21] If one looks at the extrapolated isohyets of Kitui district it is clear that the rib area Dundas was writing about[22] is the area of higher rainfall. The central locations of Mulango, Nzambani/Kisasi, Matinyani, Mutongui, Migwani and Changwithya/Miambani have 30-40" annual rainfall. Belts like between Nuu hills and Mumoni and Kanziku Hills probably come close to this annual rainfall. The oral tradition confirming Dundas argues that it is in these high rainfall areas that the greatest density of population has always existed. These areas continue to enjoy high population densities. The absolute low rainfall area North and Eastern Kitui (where Aldev data suggests annual rainfall is 10-20")[23] Yata (where Aldevdata suggests annual rainfall of 20")[24] have always had less permanent population. These areas seem to have been non-Kamba in earlier times. Ainsworth[25] suggests that Yatta was Masai country and he seems to be supported by the oral tradition which speaks of all Western plains of Kitui - from Yatta through Kithyoko and Mwingi to Gai and beyond as areas which may have been Masai. North (Tseikuru) and Eastern Kitui (beyond Mutha, Makongo

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21. For comparative details see O. Leary M.F. "Economic and Political Influences of the Residental and Marriage Patterns of Pastoralists in East Africa, M.A. thesis, University of Manchester, 1974. See also Swift Jeremy "Disaster and a Sahelian Nomad Economy" in Dalby David et.al (eds.) Drought in Africa, op.cit.,

22. Dundas, op. cit., p. 480.

23. Ministry of Agriculture, Kenya, African Land Development in Kenya, 1974-1962, Nairobi: Government Printer, 1962 (henceforth cited as Aldev Final Report), p. 63.

24. Ibid., pp. 60, 65.

25. Ainsworth, op. cit., p. 410.

and Nuu) were Galla as Aldev[26] argues and is corroborated by the oral tradition. However as the population of the central rib grew the population moved outward to Yatta North and Eastern Kitui. By the turn of the century there were Syengo in parts of these low rainfall areas. The socio-economics of Kyengo is that a collection of individuals would move their livestock out of an established village to a safe uncrowded region. If there are possibilities of being attacked, a group (not always necessarily a clan) would move out in an attempt to establish temporary cattle bomas. These would be mainly young men populations looking after cattle. When the region became safe enough to bring women clearly the region is a new settlement . It is the Syengo which pioneer the migration for Kitui Kamba. The practice for establ - ishment of Syengo as new homesteads was to marry another wife and leave the base home of origin. This new home would also become a Ngundu where the individual would have legal right to the land. Although the official administrators' view that Kitui Kamba by 1920's "made increasing use of the crown-lands for wet weather grazing"[27] my fieldwork data suggests that these areas were Syengo. They have become Ngundu during the 1960's as migrants are finding out that in the 1970's they must pay Mbuiya Mathanzu when they want to build in these areas. In other areas they are required to "kuvakua muu" or to buy outright.[28]

This migrating to adjust to population pressure was stopped by the imposition of the colonial situation and the ancillary differentiation in society.[29] Population distribution by 1915/16 is shown on Map.E.7. The differentiation was regional with the high rainfall areas getting into the colonial society first since they had "access" to its institutions and culture and the more arid areas remaining out of the reach of the colonial society basically since communication was bad! What is striking in the field interview data is the fact that many people returned to the high rainfall areas in the 1930's ostensibly for their children to get education, but also to get into colonial crop agriculture which had its social status and accumulation base. I have argued elsewhere the process of asomi consolidation of

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26. Aldev, Final Report, p. 64.

27. Ibid, p. 63.

28. The mbui ya mathanzu was a goat paid to the elders of a locality into a new area where one did not have use rights. Kuvakua muu entailed sacrificing a goat/oxen to the previous owner of a particular parcel so as to establish Ng'undu rights by the incoming family.

29. Munro, Forbes, J. Colonial Rule and the Kamba, Social Change in the Highlands 1889-1939, London: OUP, 1975. Part III, pp. 125-246 discusses this process with respect to Machakos Kamba. My fieldwork supports the point.

power.[30] All I want to stress here is that those in Kitui who were at the cutting edge of this process basically originated in the high rainfall areas of Kitui, a few gravitated there from low potential areas. The government, missionary and commercial sectors of the colonial society were concentrated in the high rainfall area. The most educated (number of degrees) in Kitui is a family from the high potential area (Matinyani Location). They had moved from beyond Mwingi. / Even where some asomi moved to the district periphery more arid areas and grabbed land and stayed in livestock as the primary economic activity it was to do primitive accumulation to enable t'em to move back to the Changwithya, Nzambani, Mulango, Matinvani, Mutonguni and Migwani area. Good examples are the reputed biggest transporter and the biggest grain speculator in Kitui town. All had moved into land grabbing and livestock trading as their primitive accumulation before becoming men of commerce at the district center. The Aldev destocking days was their capital base as they were 'allowed' to buy confisicated livestock at prices which in general were a quarter of market prices.

4. Bad Ecosystem Use and Asomi Accumulation

By the end of World War II the high rainfall part of Kitui had already been monetized. The asomi had begun to press their poor clansmen out of the high rainfall land since they could manipulate the administrative structure (sub-chief/chief local native council and African Court Elders). Thus a lot of people were to move to the drier areas having lost the economic (at the existent technology) portions of their high rainfall land. Such people are the settlers of Nuu (East of Kavindu) and Endau East of Engamba. It was in this situation that the colonial programme of betterment agriculture was to be introduced to the high rainfall area. "The Betterment Scheme started by ignoring the dry locations where these impermanent methods (of slash and burn agriculture) were practiced, and concentrating on the six rainbelt locations of Changwithia, Mulango, Nzambani, Matinyani, Mutonguni and Migwani, where rainfall of 30-40" and a density of population indicated that a more permanent system of farming could be achieved",[31] Between 1946 and 1961 the bulk of the £408,810 spent in the district to improve agriculture by terracing, bush control, water catchment dams, livestock disease control, and track construction was mainly spent for the aiding of the asomi in the six most populated and high potential regions,[32] particularly in the Yatta 82 and Athi/Tiva (Ainsworth's tramping ground) as areas that could earn

30. Mutiso, G.C.M. 'Kenya: Politics, Policy and Society, Nairobi, EALB 1975, chapter 1, pp. 3-46.

31. Aldev Final Report op. cit., p. 52.

32. Ibid. pp. 52-63.

cash income by keeping cattle. Other than the onfarm techniques, the technology was capital intensive and beyond the reach of the average person. Examples of this were (a) the tractor bush clearing which among other things was extremely expensive and perhaps technologically nonsensical since coppicing species regenerated thicker bush.[33] The traditional technology of burning, overgrazing, a mixed herd of goats, sheep and cattle as a rational resource management pattern is now recognized.[34] The Tractor bush clearing was seen as necessary for the introduction of improved cattle keeping. Mixed herds were not encouraged and traditional herd structures were not encouraged either.

(b) the Aldev requirement for 7 acres per beast with paddocks with a rotational system only favoured the Asomi in 82 and Athi Tiva Scheme. Attempts to spread this to areas outside the formal programme areas e.g. Mbitiri / Zambani location and the related destocking forced prices down and acculation by asomi. The non-Asomi had to move further into the arid areas[35].

(c) The whole betterment scheme encouraged the rise of maize growing in areas which traditional ecoculture knowledge had shown that they were really suited to the millets and the grams.[36] This dependency on maize particularly to the non-Asomi who had uneconomic pieces was even more vicious considering that they could not get manure out of their livestock which they had to move out since there were Mang'alata to be reclaimed and if cattle trespassed there were fines to pay.

(d) Finally the Aldev programme basically created technology which was collective but which could not be broken for individual utilization. This is clear in water policy. Most of the new water sources were earth dams some of which were built with unpaid illiterate (non-asomi) labour and which given evapotranspiration rates and silting rates[37] are illogical in such an ecosystem. Where the technique was to build concrete weirs across rivers this was simply an improvement of old technology of sand river-bed wells and it generated general localized desertification[38] as people converged on the waterhole from miles. It is true the rock-catchment technology was developed and it could be used by communities or individuals but it needs blasting

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33. Ibid., pp. 65-66, see also footnote 13 above.

34. See Footnote 12.

35. Aldev Final Report op. cit., pp. 65-66 for the data on asomi benefitting by the Athi-Tiva scheme. The point about non-asomi moving into more marginal areas is from my own fieldwork. The detailed migration points are reported in O. Leary, M.F. "Aspects on the environment, Economy and social structure of the Kihii Akamba. Dept. of Sociology Staff Seminar, No. 23, 1975 Nairobi.

36. Dundas op. cit., Ainsworth op. cit.,

37. Aldev Final Report pp. 57-60.

38. An example from my field work is the Kitho area of Nzambani location.

of the rock base for storage - an activity beyond the reach of many. What was needed was a cheap, water technology which would have 'spread' the water sources away from rivers and possibly onto individual plots so as to avoid localized desertification by convergence.

The peculiar advantages acruing to the asomi during the late colonial period have continued in neocolonial times.[39] As Ambrose pleads there has not been research on marginal agriculture. Ascroft and others show clearly how extension caters to the asomi also.[40] As asomi are able to draw on the capital intensive and asomi oriented economy they are able to manipulate the savings of the district (livestock and farm surpluses in years of good rainfall) to the detriment of the non-asomi. For example, in 1975 March after the rains had fallen the price for a mature goat at Mutha dropped from Shs. 90/- where it had been pushed the year before by basically ivory smuggling income into the area down to Sh.10/-. By September 1975 given the continuation of the drought the price dropped to less than Sh.5/. The drought has led to falling land prices with urban-based and local asomi moving to buy the land - even in the driest of areas since they can make it produce by utilizing expensive technology to break the ecosystem barriers. They now have ploughs and tractors whose deep ploughing is unsuited to arid areas.[41] They plough and fence the bottom lands thereby closing access to watering points which is contrary to tradition.[42] They are the farmers, livestock and grain traders, rural commercial traders, transporters, teachers, etc. It seems as if Kitui is on the way to having landlords and tenants.

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39. Mutiso, op. cit., chapter 4, pp. 75-101.

40. See their "The Tetu Extension Pilot Project" in Strategies for Improving Rural Welfare, Nairobi, IDS Occasional Paper No. 4, 1971.

41. See FAO "Tillage and Seeding Practices and Machines for Crop Production in Semiarid Areas", Agricultural Development Paper No. 92, Rome, 1972. Johnson, B.F. and Muchiri C., in "Equipment and Tillage Innovations for Kenya's Medium Potential (semi-arid) Farming Regions" (n.d.) write "Ojectives of tillage in semi-arid areas are to improve soil structure reduce bulk density, control weeds, reduce run off, increase infiltration and reduce moisture loss by evaporation. The mould-board plough has been found unsatisfactory for the purpose of achieving most of these objectives" p. 6. For other related problem see Farm Equipment innovations for Agricultural Development and Rural Industrialization, Nairobi IDS Occasional paper No. 15, 1975.

42. Refer to Kanduti Case Study.

5. The Structure of Poor Integration

Poor integration is dependent on several factors (a) poor ecological parameters given the existing technology (social and physical), (b) the emergent class structure in the rural area and its connection to the national leadership, (c) the control of b over the national resources allocation. We shall discuss these seriatum.

Poor ecological parameters given the present technological parameters are probably the most critical in determining the integration of societies or parts of them into the national system. This is most clear in Kitui. Historically the development of the poor regions by Aldev cited above[43] is illustrative. The idea was to develop the poor (ecologically) Southern and South-western (Yatta-Tiva) parts for the interests of the people (basically asomi) from the more ecologically endowed areas of the Central part (Central division). Thus the cooperatives and grazing control systems as well as the new water prospecting systems generated by Aldev served the people of better endowed ecological systems. It is these areas who terraced, moved into crop agriculture and send their surplus cattle into the Yatta-Tiva schemes. They also benefitted from the cheap cattle who were culled so as to impliment controlled grazing. The final Aldev Report[44] states that the really bad areas (Eastern Crown lands then, now State land) were only investigated then (1946-1961). They were not permanently settled. Now they are In fact local informats make it clear that their cattle were moved out of the area for bureacratic reasons and further that as their area became more crowded as a result of natural population increase and in migration of the poor (non-asomi) from the high potential areas they were forced to sedetarize and go into maize/beans agriculture which did not provide subsistence as cattle would. Since independence deepened the process we shall discuss the class aspect below.

I have elsewhere developed a class model explaining the evolution of rural classes over time.[45] This model is also applicable in Kitui. The only points to add is that class formation took place first in the high potential areas where the mission centers were located (See Map. E.8) and where the Aldev improvement programmes took place. Furthermore, the creation of an asomi class led to an appropriation of local resources, land and cattle, by the asomi. Traditionally land was held/used collectively initially by clans but as Cummings points out by 19th century by poly clan villages. One had usufruct rights in a ngundu where one built a homestead. This was usually

43. Aldev Final Report op. cit.
44. Ibid. pp. 63-65.
45. See footnote 30.

in the high potential hills. Then there was the low potential lowlands, weu, where several homesteads sent the syengo. These would be cattle herding temporary homesteads which were never sent by one homestead. However as this system broke down because of colonial class formation (based essentially on access to western education and/or colonial employment) the members of the Asomi class began to force the individuation of land holding. This they were supported in by the colonial missionaries and administrators who saw it as a way of improving native agriculture.

Since the asomi controlled ascess to the colonially created legal and administrative system they were able to fence originally clan land, go to the new courts which they controlled and make the decision stick. Munro writing on Machakos[46] and Mike Cowen writing about Mugutu in Nyeri[47] document this process. For Kitui our interviews show that as this individual tenure evolved the beneficiaries were the asomi. The non-asomi (traditionalists and the poor clansmen) had to migrate to those low potential ecological zones. There are two points to note here. The non-asomi still preferred the livestock related production since it was not new and they had the labour (polygynous families and boys who were not going to school). The asomi on the other hand moved into capital intensive cash agriculture (maize beans etc.) terracing and could use higher technology - the hoe and the plough.

For the non-asomi, migration into the bad ecological zones meant migrating from the colonial situation. For the asomi moving into 'improvement' agriculture meant monetization within the colonial situation. As beneficiaries of colonial improved agriculture and salaried positions they became the critical rural class. They unlike in West Africa, were not a traditionally derived class. Politics of the nationalist movement were nothing more than the pressing of (colonizer) benefits' to be distributed to this class. Thus when Swynerton[48] and others argued for a cash crop/improved agriculture, the needs of the colonizer dovetailed with the emergent needs of the asomi. Similarly

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46. Munro, op.cit., Chapter X pp. 189-223. One should however point out that his discussion of musyi, ngundu weu and kisesi are wrong.

47. Cowen, M.P. 1. "Differentiation in a Kenya Location", Nairobi EAUSSC 1972. 2. "Wattle Production in Central Province, Capital and Household Commodity Production 1903-1964". Mimeo July 1975. 3. "Patterns of cattle Ownership and Dairy Production" mimeo n.d. 4. "Concentration of Sales and Assets: Dairy Cattle and Tea in Mugutu 1964-1971", Nairobi. IDS Working Paper No. 146, March 1974 and 5. "Note on Agricultural Wage Labour in a Kenya Location", with Frederick Murage n.d.

48. Swynnerton, R.J.M. A Plan to Intensify the Development of African Agriculture in Kenya. Nairobi, Government Printer, 1954. For a critique of its impact see Mohiddin, Ahmed, "Notes of the Colonial Backgrounds of Sessional Paper No. 10 of 1965" Nairobi EAUSSC 1972, espeially pp. 10-31.

the employment orientation of the East African Commission[49] dovetailed with the needs of this class. Post independence national politics[50] and development of roads, water systems, locally only serve to allow this class to deepen its domination of the rural areas. For example, in Kitui the improvement of roads in the arid areas has allowed the asomi large scale cattle owners to transport their cattle into new grazing areas. This was remarkable during the 1974/76 drought when they moved their cattle by truck from as far North as Usueni to Tsavo National Park (a member who is in charge of the Parks nationally had allowed them to utilize them informally although it is contrary to National Policy).

But even more serious is the managerial techniques. Before we had mentioned that the asomi had pushed the non-asomi from high potential areas. The former are now following the latter into the low potential areas and given that they can utilize the national governmental infrastructure (especially roads and watering points/projects) they are grabbing the most important resources for pastoralists/semi-pastoralists i.e. water and grazing. In the Eastern Kitui statelands, and the dry locations of Eastern Division, Near North Division, Far North Division and Southern Division asomi are buying land which embraces the major watering points. They are moving their cattle to get into the available grazing lands. Thus they deny the two herd migration systems -- the epicyclical and the oscillineal -- which historically have been the adaptation techniques for pastroralists as is ably discussed by O'Leary.[51]

Thus when capital intensive developmental projects are executed by Central Government, or even harambee, the payoffs accrue more to the asomi. than to the non-asomi. Now in Eastern Division of Kitui the major political issue is whether indigenous asomi will create group ranches in the stateland or whether the stateland will be appropriated by non-local asomi which will go into capital intensive ranching systems. The extensive low technology ranching system of the non-asomi will thereby be denied and they will be relagated to mundane subsistence crop agriculture which is not suitable to the ecological parameters. In this situation one gets a system of irreversible accumulation whereby disasters like droughts lead to more accumulation for the asomi. This can be shown in land acquisition, control over watering points, mobile truck tanks, seeking of forage, and control over marketing of livestock from the district. On the last point one should note that at Mutha goat prices

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49. East African Royal Commission 1953-1955 Report. Command 94-75, 1955.

50. Lays, Colin, Underdevelopment in Kenya: The Political Economy of Neo-Colonialism 1964-1971, London, Heinemann, 1975 reviews the major political developments.

51. O'Leary, M.F. Economic and Political Influence of the Residential and Marriage Patterns of Pastoralists in East Africa, M.A. Thesis, University of Manchester, 1974, especially chapter 2, pp. 15-61.

have fluctuated from Sh. 90/- to shs. 5/- during the last drought. It is the aspmi who bought dirt cheap and sold in the national system at average prices of Shs. 120/-.

Finally we should discuss the control of asomi over the structure of national resource allocation. Whereas it is true that for arid zone Kitui the asomi politicians and bureaucrats have atressed roads (communication) and water projects these can easily be shown to benefit the asomi class. To build roads is to make commercial penetration easier. A Njonjo's[52] research in Turkana and my research in Kitui have shown this to be true. The joke is the asomi who in his air conditioned Volvo or Mercedes leads a Leyland Super Hippo truck into these areas and buys the goats at next to nothing price. He ultimately sells in the national market at profits usually exceeding 1000%. The other important point is the land adjudication process whereby the central highlands (high potential) are increasingly being adjudicated. This legalizes individual tenure and is a deepening of the Swynnerton colonial system.[53] It leads to borrowing for speculation on land in poor ecological systems, on top of the capital already controlled by the asomi class. Since the national government and the planning system encourages this[54] it means that in the long run asomi from high potential ecological areas will also control land and other resources in low potential areas. In fact in terms of some specific projects like the national feedlot system there is a conscious plan to utilize the poor ecological regions to syphon the capital of the arid areas to the asomi of the high potential areas who are already utilizing capital intensive technology. National extension of wet region agriculture (derived out of colonial plantation and peasant agriculture) serves only the asomi as Schlie and Ascroft among others[55] have argued.

In summary then the poor integration of the national society has led to a class evolution in rural areas where the non-asomi have been denied access to high potential ecosystems and physical technology by the asomi who monopolize not only the high potential ecosystems but also other ancillary technologies (social and physical) as well as capital.

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52. Personal communication.

53. See footnote 48.

54. By continuing the land adjudication process and pushing credit to the rural areas.

55. Harnessing Research for Production Dissemination Utilization, IDS Occasional Paper No. 5, 1972 and the subsequent In Search for a System for the Dissemination of Research Findings and Technology in Kenya, IDS Occasional Paper No. 7, 1973.

6. The Bludgeoned Traditional Ecoculture

There seems to be a feeling that the ecodevelopment approach can be researched and utilized in terms of synthesizing environmental questions. At least Steve Jones[56] has posed the question. My reaction is that unless the asomi commit class suicide in the Cabral sense this will not be possible. Since the traditional social and physical technologies now adhered to only by the non-asomi have been made dysfunctional by the emergence of the asomi class who have appropriated higher physical and social technologies particularly their control over the politics of national planning machinery, national politics and the land system.

To explain the above statement it is important to digress to the evaluation of the Kamba social and physical technologies as they relate to livestock keeping and agriculture. Krapf, Dundas, Ainsworth Hobley, Middleton, Larby, Ndeti, Owako, Penwill, Cummings, Lindbloom and Jackson, among others[57] have argued that historically the Kamba were both pastoralists and agriculturalists. There is not yet definite research on when the balance started shifting towards crop agriculture but as Munro[58] argues the Kamba were a "frontier" people where the needs of shifting agriculture and localized desertification led to establishing homesteads (misyi) by migrating from region. Usually the homesteads were in the massif hills which dot Kamba. The way where the grazing camps (syengo) were established was ecologically a different region. It was the plains where the incidence of tsetse flies and thus the deadly East Coast fever as well as pleuropneumonia was less than in the hilly massifs.

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56. Background paper to Environmental Planning and Poorly Integrated Societies in Africa. Port Louis IDEP-UNEP-SIDA April 12-20, 1976.

57. a. Krapf, J.L. Travels, Researches and Missionary Labours in Eastern Africa, London, 1860.

b. Dundas, op. cit.,

c. Ainsworth, op. cit.

d. Hobley, C.W. Ethnology of the Akamba and Other East African Tribes London, Cambridge, 1910.

e. Middleton, J. The Kikuyu and Kamba of Kenya, London. International African Institute, 1953.

f. Larby, N. The Kamba, Nairobi, W. Boyd and Co. 1944.

g. Ndeti, K. Elements of Akamba Life, Nairobi, EAPH, 1972.

h. Owako, F.N. The Machakos Problem: A Study of Some Aspects of Agrarian Problems of Machakos District of Kenya, Ph.D. thesis, University of London, 1969.

i. Penwill, D.J. Kamba Customary Law: Notes taken in the Machakos District of Kenya Colony, London, Macmillan, 1951.

j. Jackson, K.A. An Ethnohistorical Study of the Oral Traditions of the Akamba of Kenya, Ph.D. thesis, UCLA 1972.

k. Cummings: R.J. "The Early Development of Akamba local trade history c. 1780-1820". Kenya Historical Review Journal Vol. 4. Vol. 1976 pp 85-110

58. Munro, op. cit.

In terms of traditional beliefs it was at the weu that the spirits (especially Muviti/kutu) were powerful. The evidence for this was in the health of the livestock and the fact that muviti/kutu sacrifices were at tracks leading towards the weu and thus away from the villages where the misyi were. It was to Muviti/kutu that sacrifices were m ade during periods of collective tribe or region wide disasters. These sacrifices were introduced by a Mwathani or Mundu mue and were not by individuals or families alone.[59]

Establishing syengo was a collective affair where the village elders had to agree. Where a mundu munene (rich man) had enough cattle to send to an 'individual' kyengo. Thus as far as the Kamba were concerned nobody sent a kyengo alone. All the village elders were involved. Settlement in villages was initially by clans (mbai) but as population increased and internal and external trade grew (because of the generally poor ecosystem and particularly the recurrent famines)[60] villages became polyclan as Cummings documents. In this situation, acquisition of land for the homestead (musyi) which ultimately became ng'undu for that particular family was controlled by the institution of the mbui ya mathanzu which was a goat and beer given to the nzama (elders council) of the village, one could then be given a piece of land on which to settle.

The above was the system until the colonial situation began to force rural class formation and the upper class, the asomi, not only began to force individual tenure but also went and fenced other areas away from the musyi called kisesi which Munro[61] discusses only from the grazing point of view. What should be important is to note that in the pure traditional form the mountains had misyi and one could negotiate a garden to slash and burn around them. The bulk of the livestock, other than a few for milk and small stock for eating which were around the home, were in collective syengo in the weu. Thus the evolution of the Kisesi i.e. a fenced grazing ground away from the musyi but in the mountains first and later in the weu belonging to a particular person is indicative of the breakdown of the traditional ecoculture which integrated high potential areas for permanent homesteading (since they were safe and crop agriculture productive) and the weu (which were strategically insecure that spiritwise more potent than the homesteads because of Muviti/kutu) and which were exploited collectively for livestock production.

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59. Ongoing debate on the 'living dead' between Philip Mbithi, Judith Mbula and may lead to writing about them abd showing their functional linkages with some occupations like herding, etc.

60. Cummings, 1976, op. cit.,

61. Munro, op. cit., pp. 200-203.

It is then the acquisition of higher agricultural technology the joe and the plough/plough oxen by the asomi which led to the exploitation of larger (non-subsistence) acreages in the high potential areas. As the asomi improved their agricultural land (contouring,, terracing, permanent crops and permanent houses) there was the need to make sure that the land was individual and not held by the family, clan or tribe. Thus the pressure for title deeds for Africans during colonial "nationalism".[62] The corrollary point is that they displaced their poor clansmen (non-asomi) into the establishing of the misyi at the weu. This should be seen as not only impoverishing to the non-asomi but at once breaking the inter-dependence of ecological regions which was the key in traditional eco-culture. According to Munro[63] this took place in Machakos in 1930s. My Kitui research suggests it took place in Kitui in 1940s and early 1950s and was helped along by the Aldev system. In districts like West Pokot, Taita, Kajiado and Narok the process took place in k960's as a result of land adjudication and the establishment of group ranches.[64] In Yatta and Ikutha location in the Southern Division of Kitui the group ranch phenomenon has formalized this system. Adjudication of Mulango, Changwithya, Kisasi, Miambani and Matinyani locations of Central Division of Kitui has only legalized informal system of land holding existent in the past twenty or so years.

The development of roads and water systems which in the final analysis can only be exploited by the asomi has also contributed to the negation of the traditional eco-culture use patterns. Pastoral studies have definitely shown that the traditional eco-culture determined the size of herding camps depending on livestock grazing patterns and ecological potential. Although we do not have empirical details of these current research and oral reconstruction in the extreme Eastern Kitui might throw light on this although other parameters are impinging on the traditional eco-culture and its utility in development. Take for example roads. We have found that in Kitui they enable the asomi consumers of higher technology (bicycles, motor cycles, cars, trucks, etc.) to travel and exchange information about grazing potential in

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62. See Bennet, G. Kenya: A Political History: The Colonial Period London, OUP, 1963 and Sorrenson, M.P.K. Origins of European Settlement in Kenya, Nairobi, OUP, 1966 and Murray Brown, J. Kenyatta London, Unwin, 1972.

63. Munro, op. cit., pp. 200 - 223.

64. Halderman, John M. "An Analysis of Continued Semi-Nomadism on the kaputiei Masai Group Ranches: Sociological and Ecological Factors" IDS Working Paper No. 28 1972 and Hedlund Hans, G.B. "The Impact of Group Ranches on a Pastoral Society", IDS Staff Paper No. 100, 1971.

Eastern statelands of the district. Roads further make it possible not only to transport livestock but also to ferry water for their herds as well as to bring tractors to farm the flood plains of the dry zone thereby denying dry season grazing across ecozones . But even more important is the chain of individual land buying triggered by both roads and land adjudication in the poor ecological zones. We expect to present a case study of such a system of Kanduti sub-location of Zambani location in Kitui district later.

Finally, although the above paragraphs have shown that the traditional eco-culture has been bludgeoned and further that perhaps it is not as virile as the emergent asomi system of ecological exploitations, where the ruling asomi class is willing to commit class suicide research conducted in BRALUP[66] has shown that by utilizing local (essentially non-asomi) knowledge about soils, water availability etc. one can come up with a rational land use system which will not be dependent. Furthermore the design of water system can favour the asomi class.[67] Illich's studies of car-based transportation systems, and medical systems, and Paulo Frerire's studies of educational system[68] show clealy that the asomi design systems which favour their class accumulation and/or deepening of control. To miss this point is to be naive. All one can do give the present systems which deny mass mobilization (the only way non-asomi demands/interest would be articulated and translated to policy alternatives) is to be policy-incrementalist. All talk about upward planning is purely emeliorative and is not tuned into structural changes.

7. Conclusion

In this chapter utilizing ecological and class analysis we have reported on a district which had historically both sedentary and pastoral elements. The intention was to underscore the point that it isn't just typically non-nationally integrated societies (ethic groups) e.g. pastoralists, hunters and gatherers and mountain-dwellers where environmental planning is a

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66. See footnote 19

67. Tschannerl, G. "The Political Economy of Rural Water Supply" African Environment Vol. 1, No. 3, October 1975, pp. 51-76.

68. Mutiso, G.C.M. "Tools are for the People". Ecumenical Review Vol. 24, No. 3, 1972 discusses technical needs of the society in Illich's framework. The argument is deepened in Kenya: Politics, Economics and Technical Training: A Kenyan Case Study (with Martin Godfrey, Nairobi EALB forthcoming. The relevant works of Freire, P. are Pedagogy of the Oppressed, N.Y. Herder and Herder 1971 and Education for Critical Consciousness. London: Sheed and Ward, 1973.

problem. Similarly we wanted to show that the class evolution of these districts as appendages of national/international classes is as important a variable as is the environment since the institutions of the eco-culture which have evolved overtime to integrate different ecological and ecotone regions have been superceded by the new technology appropriated by asomi classes. Another point implicit in this chapter which forms part of a wider study is an assumption that to incrementally plan the arid zones (a) a system of controlling water and grazing for the greater bulk of the people must be evolved and (b) that non-capital intensive technologies for grazing use and access to water must be encouraged. The methodologies for generating the data (theory of the chapter) have ranged from ethnohistory and planning through geology and to political science).

Finally ecology interacts with society at the socio-economic and physical technological levels in terms of those who are in control. This chapter has attempted to show such a relationship. The point one wanted to make is that the ecodevelopment approach is limited. Eco regions are manipulated by classes for accumulation processes and it ultimately behoves those interested in equity to look ar alternative technologies to serve different classes. We hope in subsequent papers to discuss in detail a closed portion of an ecosystem only twenty miles from Simba's to show how withdrawal can lead to technological (Physical and social) stagnation - which makes the non-asomi open to even greater manipulation. Even non-asomi migration in such situations loses its ecological adjustment role and becomes the circular plight path of a moth before plunging into fire.[69]

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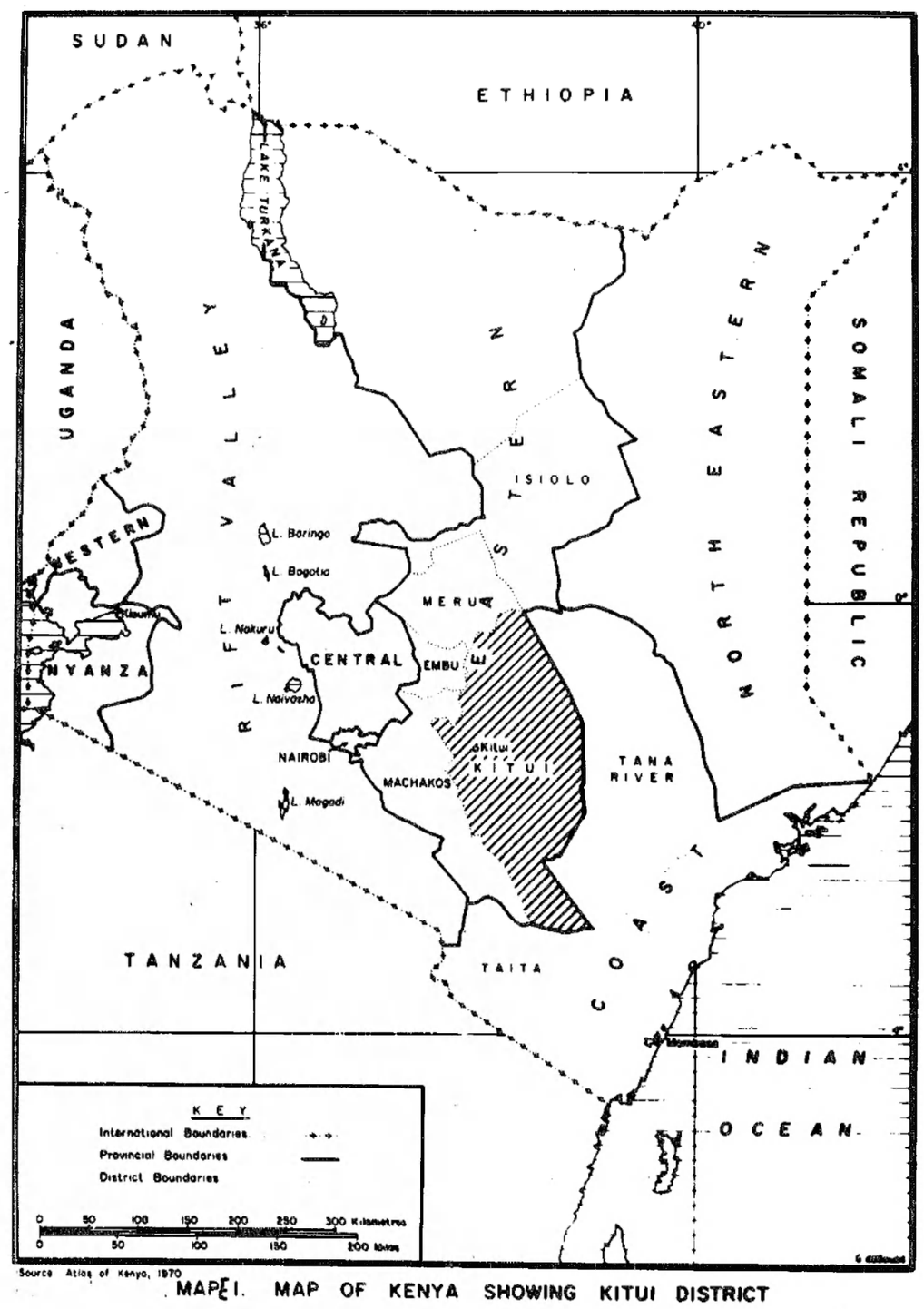
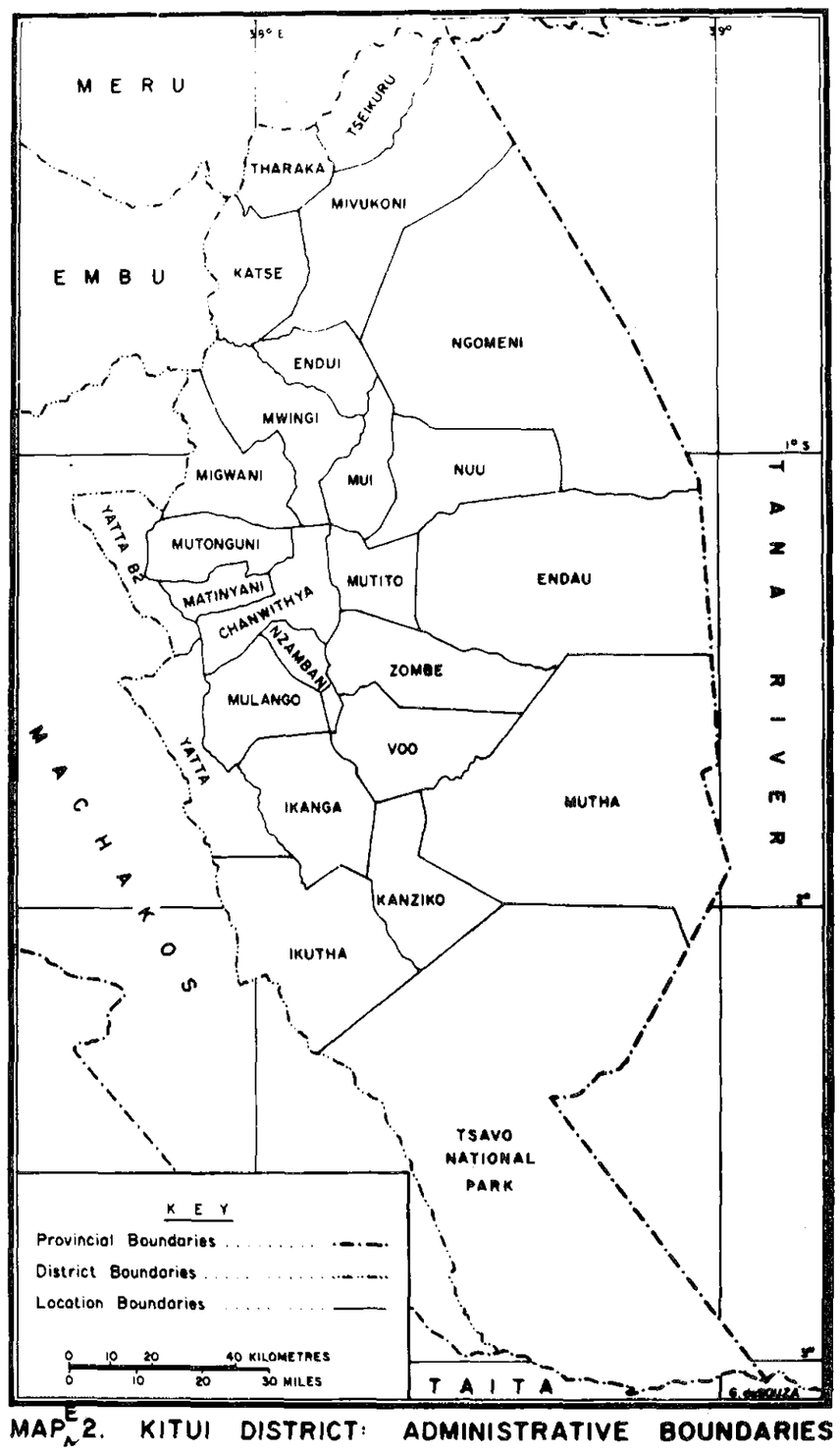
69. There are few inter-rural 'permanent' migration studies in Kenya. However a pionnering effort is Philip Mbithi's work essentially reported in Spontaneous Settlement Problem in Kenya, Nairobi, EALB 1975 where it is implied that there is a unindirectional migration pattern - from the wet areas to merginal areas - for the poor. Our questionnaire data suggests that there are cyclical migration patterns which can be explained as adjustments to new parameters (land holding and control other over water points) which then interfere with the epicyclical and oscillineous mobility patterns. From a class point of view the asomi move to exploit the range and the non-asomi move to try to break the class disadvantages. However, they do not have the choices of pure pastoralism since the state and the asomi are pushing for individuation of land tenure and rights.

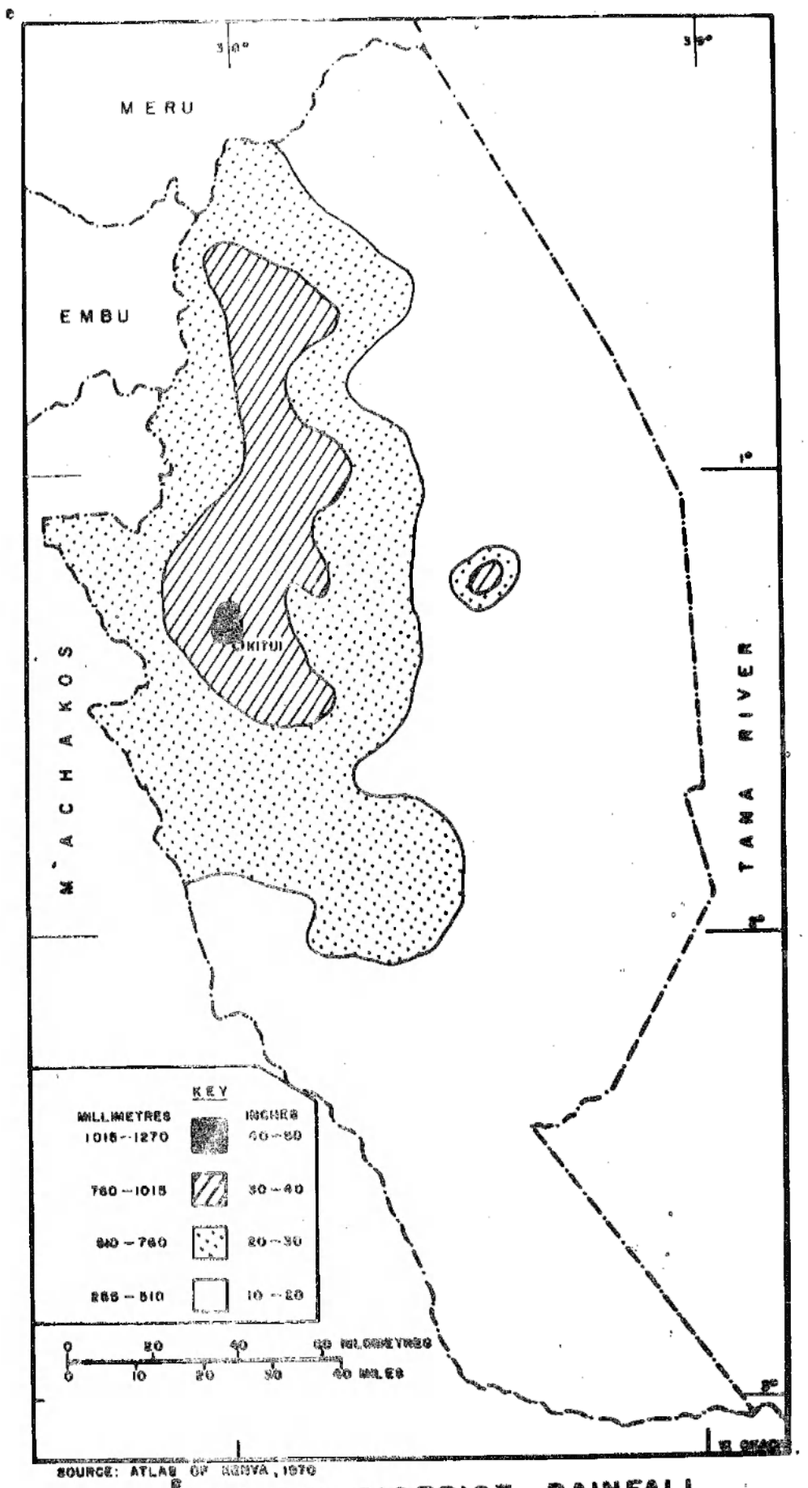


Source Atlas of Kenya, 1970

MAP I. MAP OF KENYA SHOWING KITUI DISTRICT



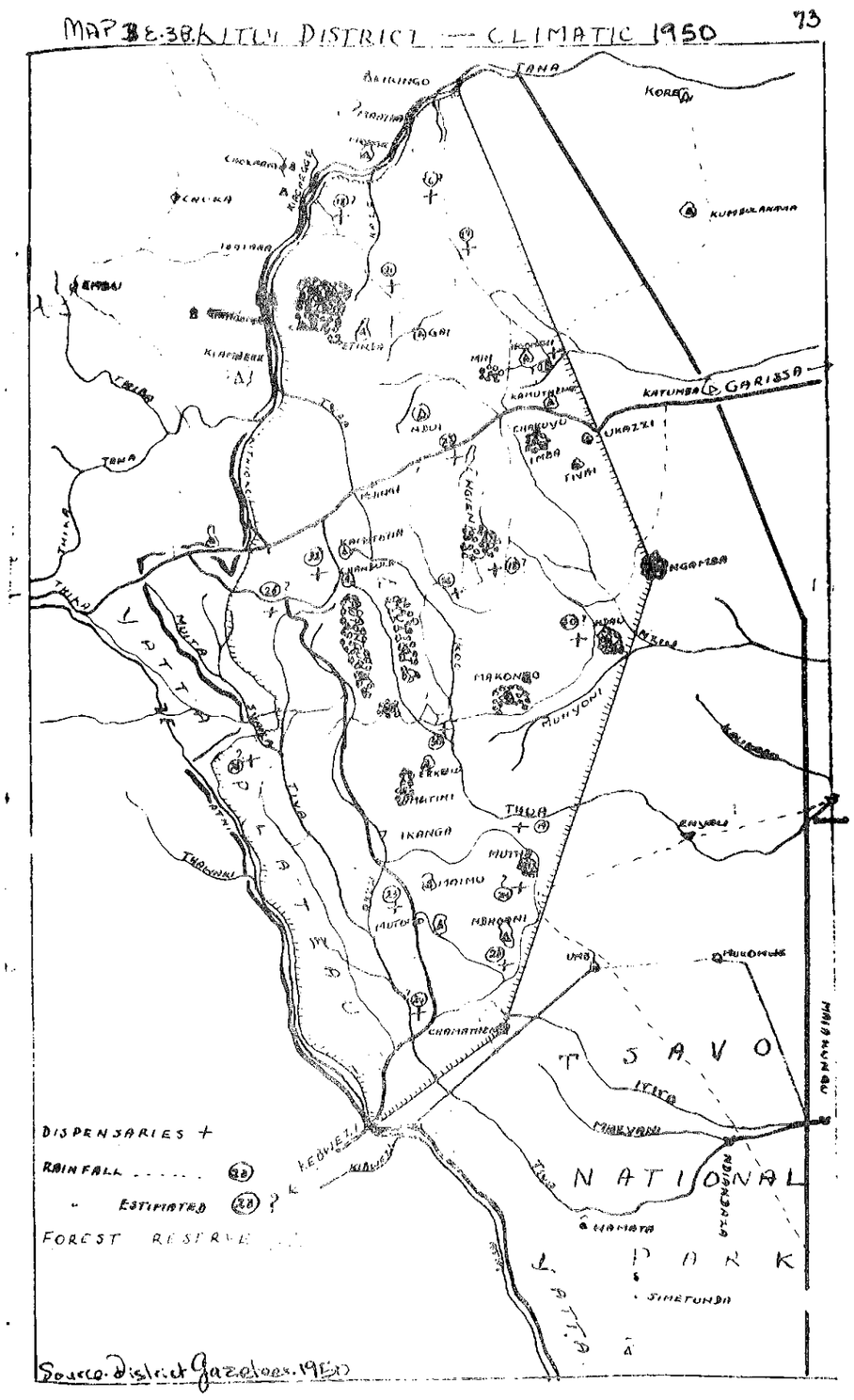
MAP 2. KITUI DISTRICT: ADMINISTRATIVE BOUNDARIES



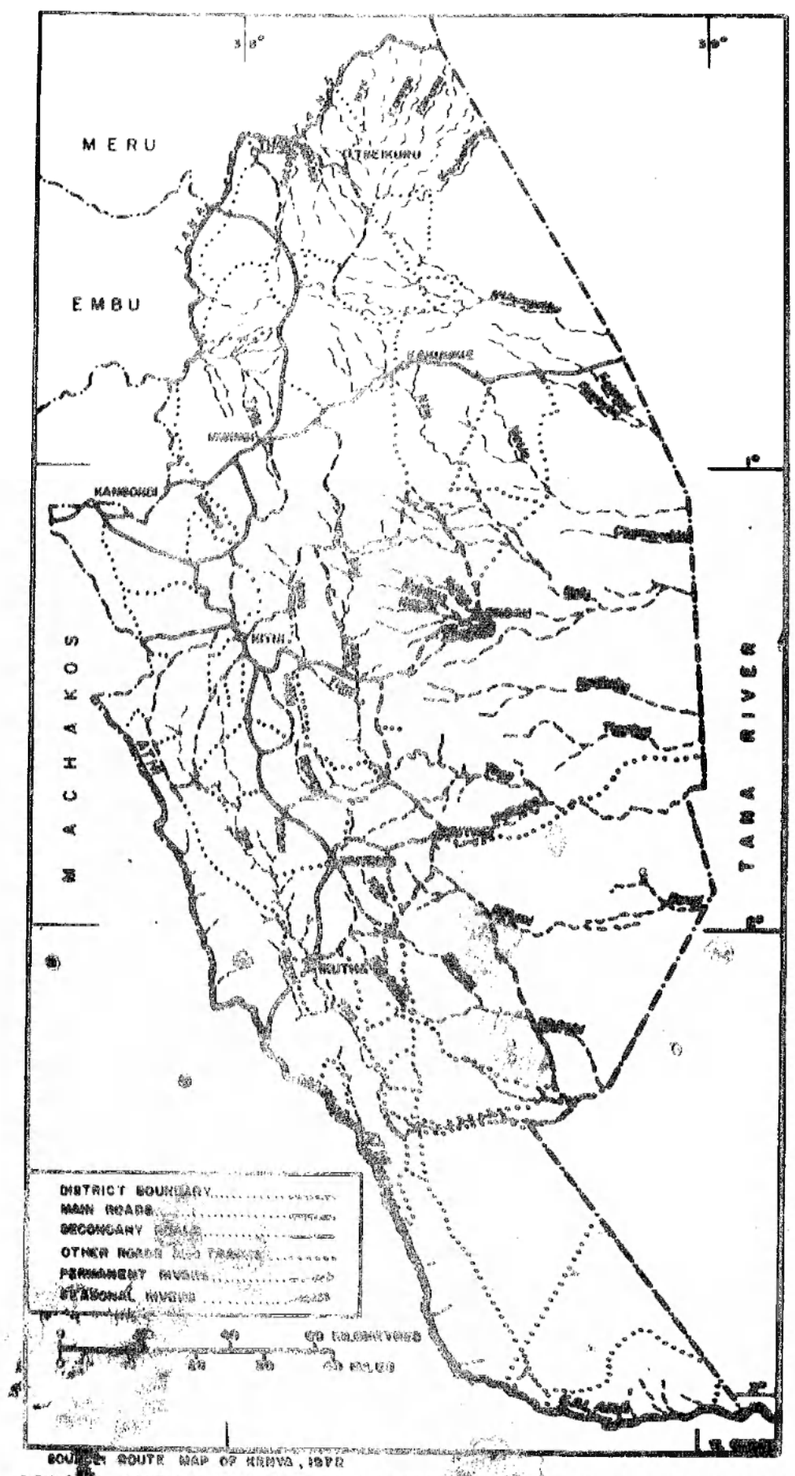
SOURCE: ATLAS OF KENYA, 1970

MAP 3A-KITUI DISTRICT: RAINFALL

MAP 38. KITUI DISTRICT — CLIMATIC 1950

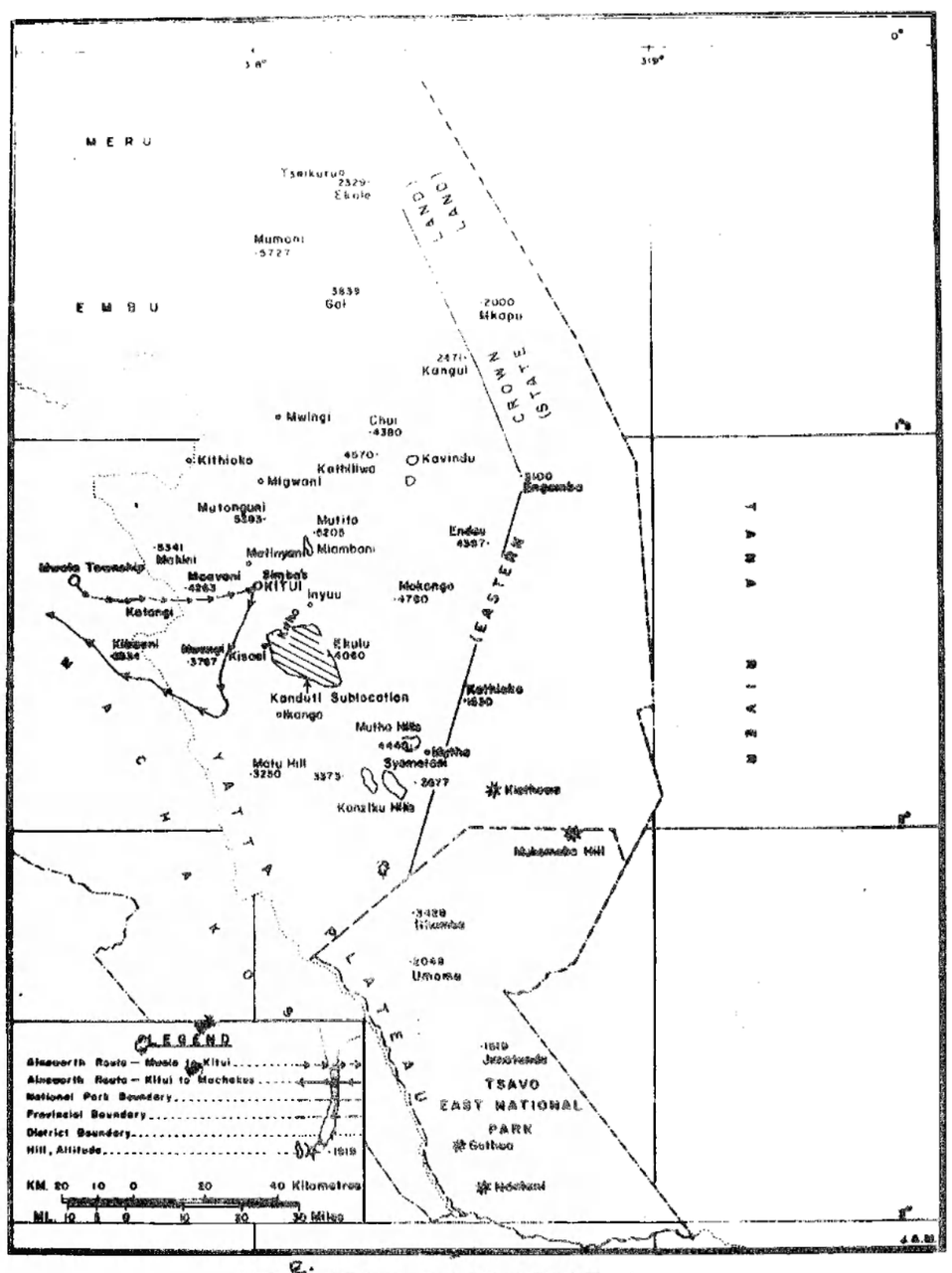


Source. District Gazetteer. 1950

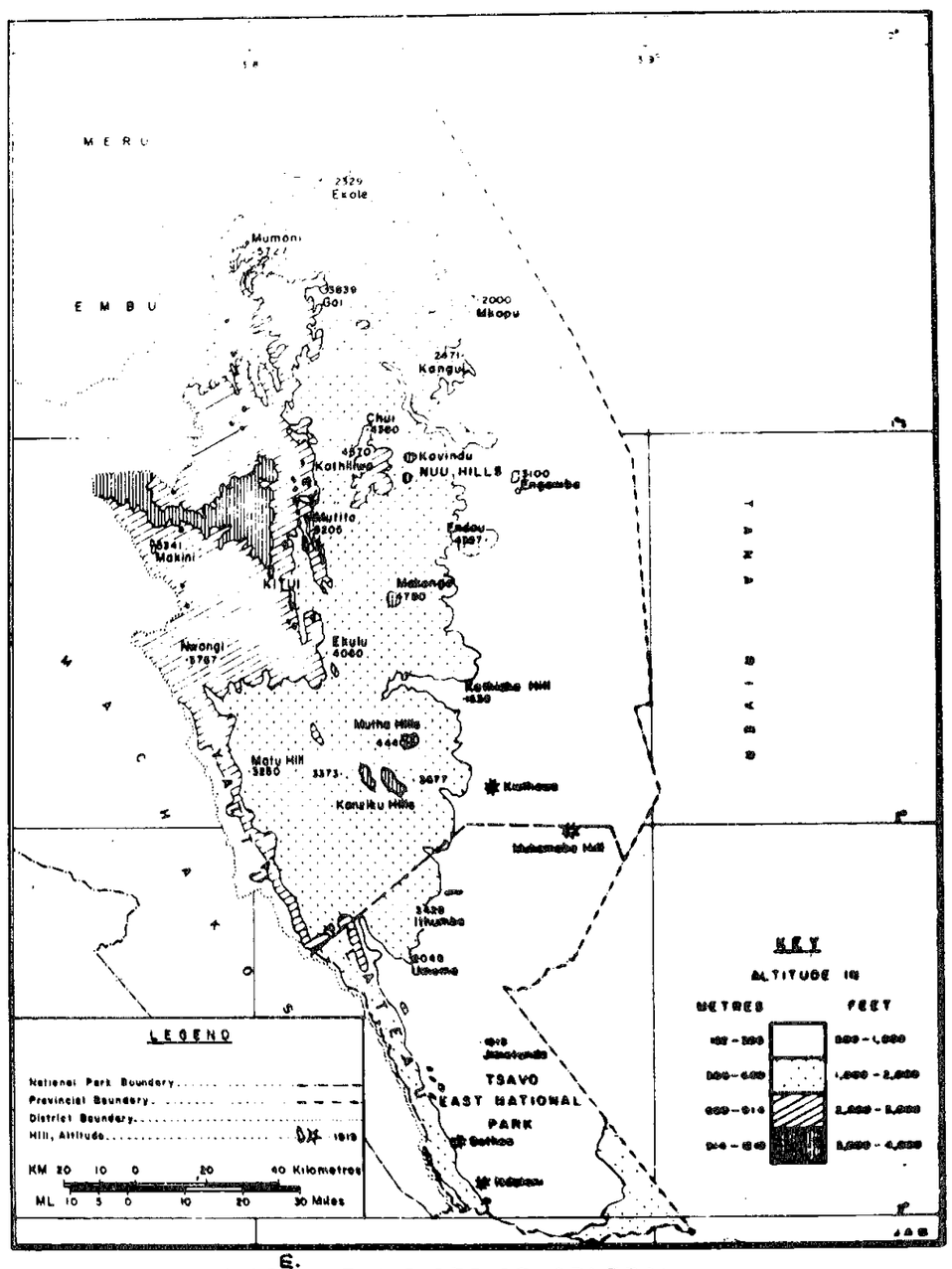


SOURCE: ROUTE MAP OF KENYA, 1978

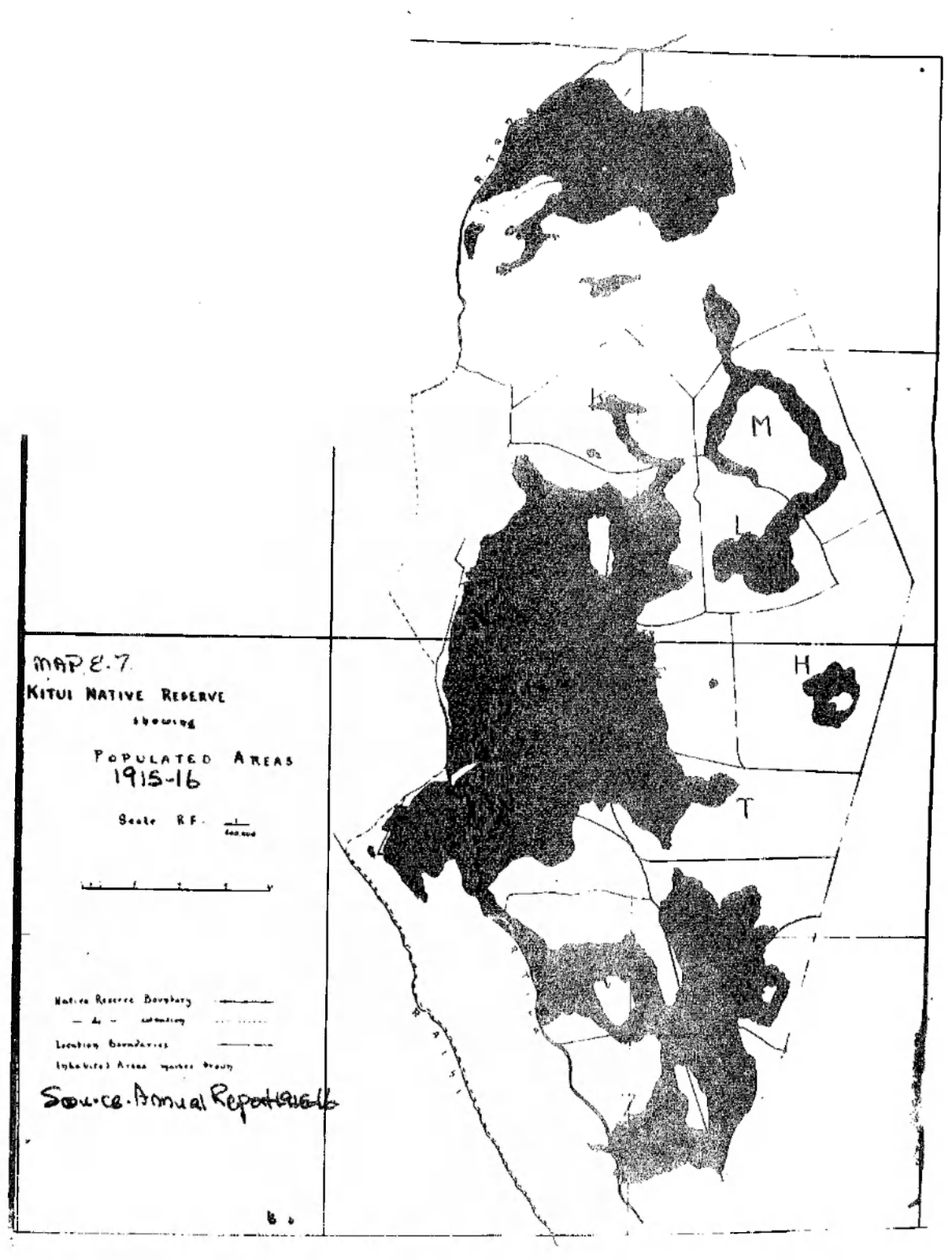
MAP.E.4 MAP: KITUI DISTRICT: COMMUNICATIONS & DRAINAGE



MAP 5 KITUI DISTRICT: PHYSICAL



MAP 6 KITUI DISTRICT : GENERAL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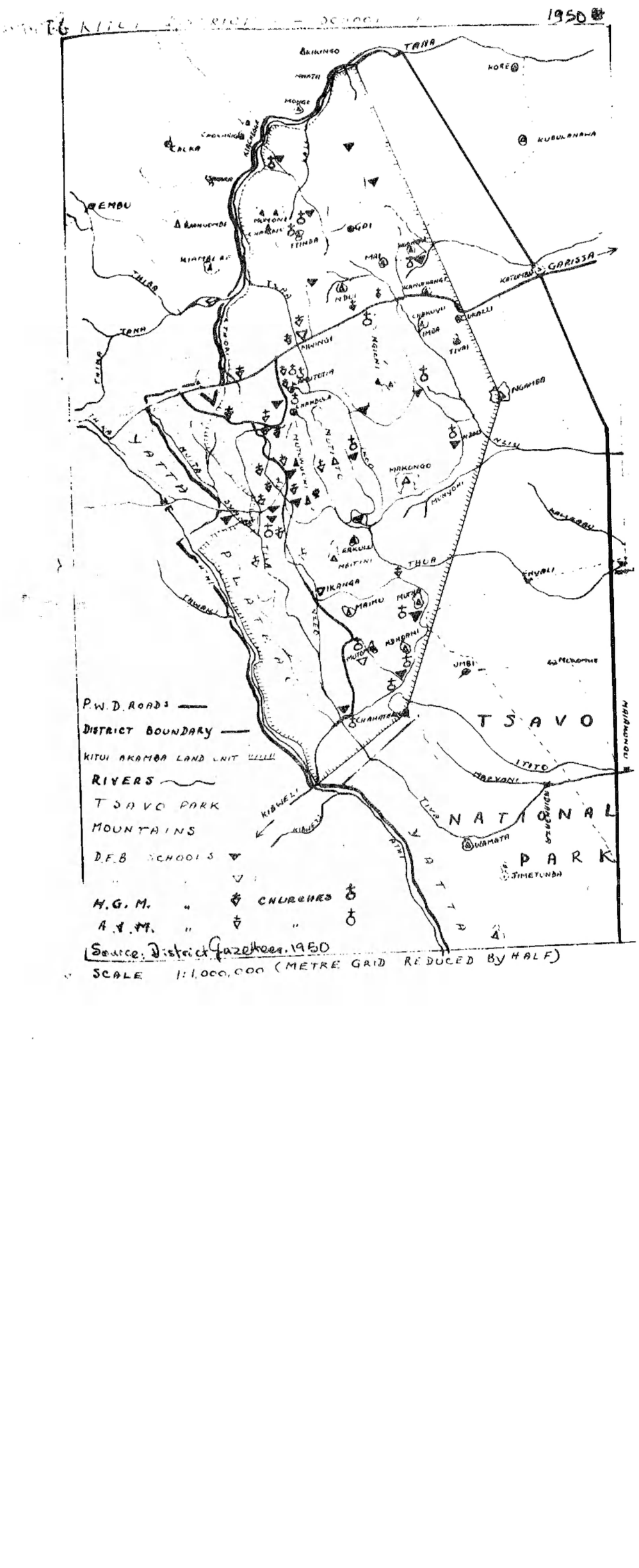
H
T
MAP E.7.
KITUI NATIVE RESERVE
showing
POPULATED AREAS
1915-16
Native Reserve Boundary
Location Boundaries
Source. Annual Report

1950



Source: District Gazetteer. 1950

SCALE 1:1,000,000 (METRE GRID REDUCED BY HALF)