

NOTICE: THIS JOURNAL MAPS ARE PROTECTED BY COPYRIGHT LAW (TITLE 17 U.S. CODE)

THE DELINEATION OF A PLANNING REGION: A CASE STUDY FROM WESTERN KENYA.

P. P. WALLER

Introduction

The first stage in the preparation of a regional plan is the delineation of a planning region. Frequently this stage must be completed very quickly in order to enable the planning team to begin their surveys in the area. In the following paper, a method will be described by means of which a planning region may be delimited very quickly on the basis of data generally available in developing countries.

In the autumn of 1966 a study group of the German Development Institute, comprising six members, was set the task of carrying out a preliminary study on regional planning in Western Kenya. In contrast to the physical planning group in the Ministry of Land and Settlement, this group was not obliged to observe administrative boundaries but was able to delineate the region according to its own points of view.

The Objectives of Regional Planning.

The point of departure was the question about the objectives of the envisaged regional plan. Since per capita income in Western Kenya is considerably lower than the Kenyan average, a major objective of planning had to be a major increase of income in the area. Apart from a modernisation of the agricultural sector, this target could only be achieved by promoting industrialisation. In order to determine economically sound locations for industry, however, it was necessary to create a planning region that was based on an economically interrelated area. Of particular importance was the system of central places and their local service areas. The central places with their existing infrastructure are to be preferred as sites for industrial enterprises; furthermore, the supply of the rural population with goods, services and public utilities can be improved only by systematically ameliorating the central places.

Administrative and Natural Boundaries

A comparison of Map 1 with Map 2 shows that the province boundaries are not suited as boundaries for a planning region. They have been drawn in Kenya on the basis of tribal boundaries and therefore do not take into consideration economic interrelationships. The provincial boundary of Nyanza, for example, extends only a few kilometres north of Kisumu, although the economic ties between Kisumu and Kakamega situated to the north are very close, as the highly frequented traffic routes clearly indicate.

With the exception of Lake Victoria, the natural boundaries are not clear and cannot be used as guidelines in delineation. On the one hand, the entire area of Map 2 represents one unit since it is identical with the catchment area of Lake Victoria; on

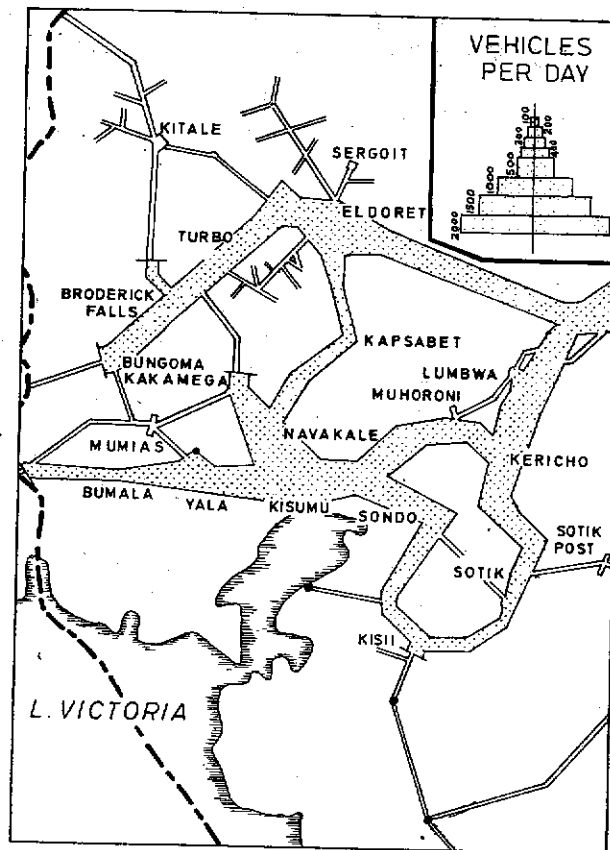


Fig. 1

Traffic flow in western Kenya, 1964.

the other hand, the region is divided into two parts by a zone of forests and escarpments extending from the Mau Forest in the south to Mt. Elgon in the north.

Delineation According to the Local Service Areas of Central Places

From various geographical studies it is known that the region in question is dominated by two central places of second rank, namely Kisumu and Eldoret (Nairobi being of first-rank). It therefore seemed logical to consider the local service areas of these two central places in Western Kenya as basis for delineating planning regions.

The extent of areas of influence of central places may be ascertained either directly or indirectly. In applying the direct method, the areas of influence of as many central functions as possible are recorded and an average boundary is then calculated. For this purpose, however, many basic investigations are required which could not be carried out during the short time available.

In the indirect method, a common indicator for the central functions such as traffic, telephone calls, etc., is used. Whereas there were no data on telephone calls, an OD Survey on the traffic flows in the whole of Kenya in 1964 was available, and this served as a basis for delineating regions.

DELINEATION OF A PLANNING REGION

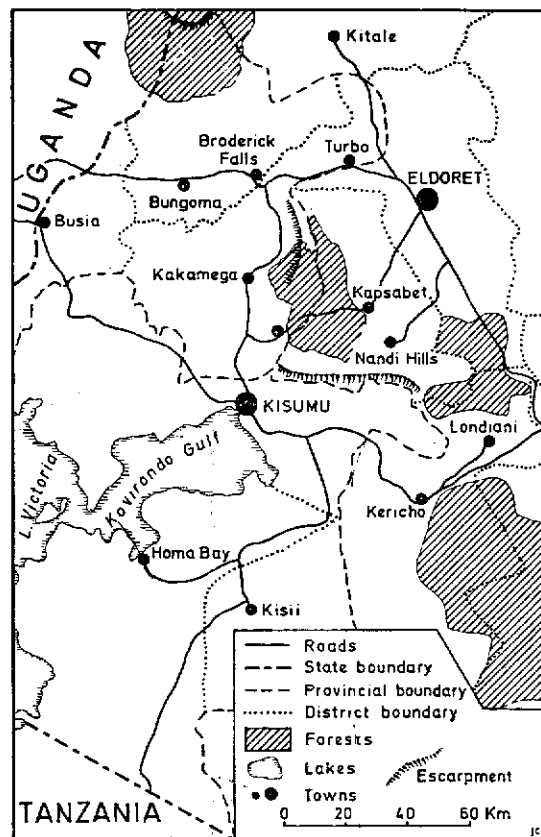


Fig. 2

Political boundaries and natural features in western Kenya.

Map 1 shows that the representation of traffic density does not suffice to determine the local service areas of Kisumu and Eldoret. Particularly on the northern axis the two-way through traffic between Uganda and Nairobi plays a significant role, pushing local traffic into the background.

The Determination of Local Service Areas by Means of a Graph Analysis

In order to analyze the pattern of traffic flow in the areas under investigation, the method of a graph analysis was applied. In a 7×7 matrix the average number of vehicles running between two towns (in both directions), as recorded in the OD Survey, were entered (Table 1). In each line the highest number was framed and the towns to which this number related were connected by a straight line as shown in Map 3. In this manner a basic structure with the two central places Kisumu and Eldoret was obtained. The columns for Nakuru and Nairobi, which are towns outside the area under investigation, served as a means of checking whether any of the towns in the area concerned tended towards centres outside the investigated area. After the basic structure had been established in this manner, the exact boundary between the local service areas of Kisumu and Eldoret had to be determined. For

EAST AFRICAN GEOGRAPHICAL REVIEW

Table 1: Graph Analysis of Traffic Flows Between Central Places in Western Kenya¹⁾

	Kisumu	Kisii	Kericho	Lumbwa	Kakamega	Eldoret	Kitale	Nakuru	Nairobi
1 Kisumu		46	62	1	149	44	13	24	75
2 Kisii	46		13	1				4	10
3 Kericho	62	13		16	2	3	1	51	27
4 Lumbwa	1	1	16		3			14	4
5 Kakamega	149		2			8	8		5
6 Eldoret	44		3	3	8		71	39	32
7 Kitale	13		1		8	71		9	26
8 Nandi Hills	4				1	26			
9 Kapsabet	1					8			
10 Kaimosi	14					8			
11 Turbo					4	27			
12 Brod. Falls	2				7	5			
13 Bungorna	10				16	5			

1) Average daily traffic in both directions (number of vehicles)
 Source: British Road Research Laboratory: Preliminary Note on the Origin and Destination Survey of Road Traffic in Kenya 1964/65.

DELINEATION OF A PLANNING REGION

this it was necessary to analyze the traffic flows between other towns in the boundary area. Since these figures were not contained in the 1964 OD Survey, the material contained in the original questionnaires had to be evaluated. Of the six additional towns, three were found to lie in the local service area of Eldoret, two in that of Kakamega (thus indirectly in that of Kisumu) and one in that of Kisumu. On the basis of this more detailed graph, it was possible to delineate the Kisumu planning area. For logical reasons in connection with statistics the boundary was drawn identically with the district boundaries to the extent possible. Except for a section in the northern part (cf. Map 3), the boundaries are in fact identical. Of particular interest is the fact that the boundary thus determined reflects natural barriers such as forests and mountains, since these barriers automatically delimit the local service areas of the central places. It is also of interest that the local service area of Eldoret northeast of Kisumu extends within a few kilometres' distance from Kisumu. The boundary is determined by the Nyando Escarpment which is a considerable traffic barrier. The thinly populated area to the northeast of the

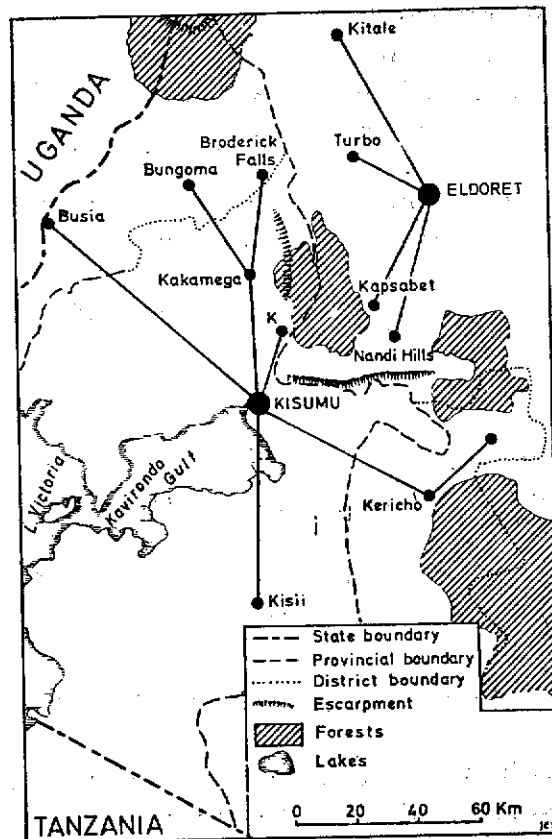


Fig. 3

Delineation of the Kisumu Region.

Nyando Escarpment can be reached more easily from Nandi Hills than from Kisumu and therefore belongs to the local service area of Eldoret.

Changes within the Local Service Areas

It is also of interest to compare in each line Table 1 the highest number with the second highest. For Kericho (line 3), for example, the ratio of 62 to 51 indicates a relatively strong influence from Nakuru. It would also be interesting to compare the development over a certain period of time. Perhaps the influence of Kisumu will increase, following the present trend, and Kisumu will maintain its leading role. On the other hand, Nakuru might gain rapidly in influence and perhaps one day even surpass Kisumu. Since planning regions are generally determined for an average period of 10 to 15 years, it is very important to take into consideration this dynamic element. Above all, if through regional planning a region experiences healthy economic growth, the local service area of the core might expand and thus the boundaries of the planning region might prove to be too restricted.

The expansion of the transport networks or varying rates of growth of the two towns may call for a change in the boundary between the two central places. The extension of the traffic routes from Kisumu to Kapsabet and Nandi Hills, which is already under way, could possibly lead to an expansion of this local service area at the cost of Eldoret. Since the rate of growth of Eldoret has lagged considerably behind that of Kisumu in the past years, the local service area of Kisumu will further expand if this trend continues. In several industrial countries gravity models are used to a considerable extent to forecast the shifting of boundaries. However, the use of such models in developing countries where the situation with regard to income and production varies greatly from region to region is highly questionable.

Bibliography

1. Boudeville J.R. 1966, *Problems of regional economic planning*, Edinburgh.
2. British Road Research Laboratory, 1966, *Preliminary note on the origin and destination survey of road traffic in Kenya 1964/5*, Nairobi (mimeo.)
3. Christaller W. 1966, *Central places in southern Germany*, Englewood Cliffs.
4. Dacey M, and Nystuen J. 'A graph theory interpretation of nodal regions', *Papers and proceedings of the Regional Science Association*, 1961. P. 29.
5. Grove D. and Huszar L, 1964, *The towns of Ghana*, Ghana Univ. Press, Accra.
6. Waller P. P. 1968 *Grundzüge der Raumplanung in der Region Kisumu, Kenia*, Hessling Verlag, Berlin.