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A NOTE ON TRANSPORT PROBLEMS AND ECONOMIC DEVELOPMENT IN THE REPUBLIC OF SUDAN

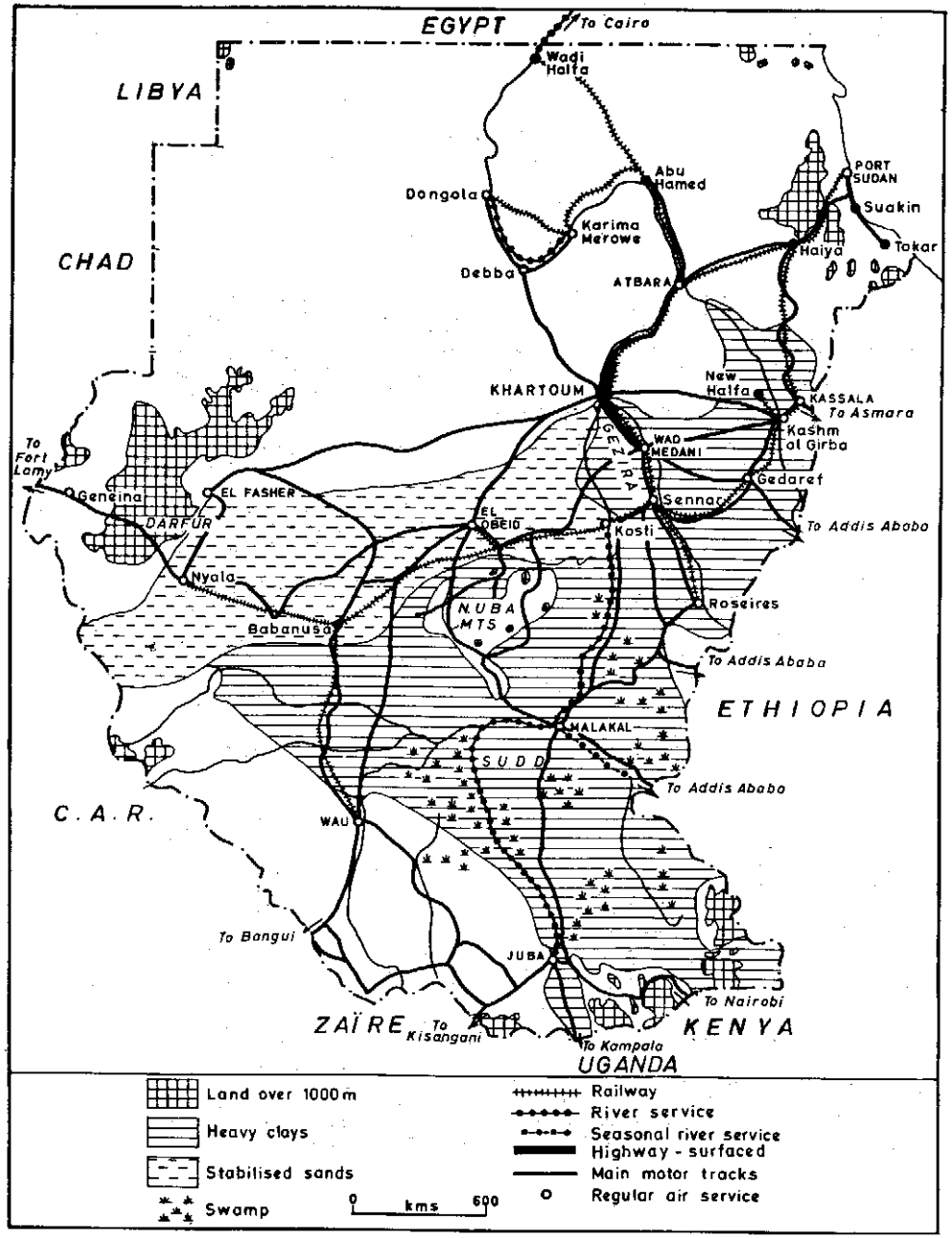
D. RODEN
Makerere University, Kampala

Poor communications restrict opportunities for using resources effectively, hinder the diffusion of ideas and techniques, and impede the process of national integration. An efficient transport system is therefore a major pre-requisite for rapid economic and social advancement. Unfortunately, many of the world's most backward regions are faced by conditions particularly hostile to the creation of modern transportation networks. Nowhere are these difficulties more clearly illustrated than in the Republic of Sudan.

For more than 2,000 years the traditional products of the middle Nile basin - slaves, gum, grains, metals, feathers and skins - were collected through a caravan network extending across desert, grassland and thick bush. Many routes, such as the famous Darb al-Arbein from the west, focussed on the River Nile, always the major outlet to the north, and towns grew up at important nodal points (1). Other tracks converged on the Red Sea coast of what is now Sudan and Ethiopia, and there over the last two millennia a succession of ports have prospered for a while from trade with Arabia and India before succumbing to changing circumstances and a vicious climate (2).

Elements of a modern communications system appeared with the southward extension of Turco-Egyptian rule early in the 19th century. The river route to Egypt was improved; seasonal expeditions began to penetrate the Sudd, the swamps on the upper reaches of the Nile; while general expansion of commerce brought new life to the decaying Red Sea ports of Suakin and Massawa (3). Revival was brief, however, for the Mahdist uprising of 1883-84 seriously disrupted internal and external trade, and Mahdist attacks curtailed plans to lay a railway inland from Suakin (4).

When Sudan was eventually re-conquered by Anglo-Egyptian forces twenty years later railway construction - this time up the Nile valley from Wadi Halfa - did indeed have a vital role in supplying a large army as it moved ever deeper into hostile and largely desert territory. Transport projects continued to receive priority over the first two decades of colonial rule, important both as a means of extending and securing administrative control and of laying a basis for financial self-sufficiency (5). The rail and river route to Egypt soon proved inadequate as it involved several transhipments, and navigation on the main Nile is interrupted by cataracts, rocks and shoals. A railway was therefore thrown across semi-arid plains and mountains to Suakin, but the limitations of the old island port for modern shipping became obvious even before the line was completed and a site sixty kilometres to the north was chosen for a new harbour. Within a year of its official opening in 1909 Port Sudan had captured 75 per cent of the country's foreign trade, leaving Suakin to a slow decline from which it has never recovered (6). In the south navigable channels were hacked through the Sudd by annual expeditions (7). Regular steamer services were then able to provide a tenuous connection with the outside world for missions and government posts set in the great expanse of swampland, as even



today they are the main link between north and south in Sudan. Head porterage was important away from navigation, especially around the higher southern rim of the country where climate and disease precluded the use of pack animals. By the mid-1920s the main agricultural districts of north-eastern Sudan were connected by rail to Port Sudan and the capital, Khartoum. Further railway construction was brought to a halt by the world depression, and was resumed only on the eve of independence 25 years later.

Early experiments with different forms of road transport - ox-carts, traction engines, motor lorries - had not been very encouraging. Consequently there was little attempt at systematic road building even after lorries began to replace camels for local collection and distribution in the 1920's. Physical conditions in Sudan favour railway construction, for the main areas of commercial farming lie on black clays and stabilised sands which do not form durable road surfaces and which lack suitable ballast for road foundations. Only on the laterites of the south-west can reasonable motor tracks be maintained at moderate cost. Railways, on the other hand, can be laid across the plains relatively easily with detailed alignment determined by the presence of permanent water supplies and by the need to minimise seasonal washouts (8). Once a basic railway network was established in the north-east, agricultural projects such as the Gezira cotton scheme tended to be sited along it. The growth of long-distance lorry transport as a potential competitor to the government-run railways was then actively discouraged by licensing policy. Roads were regarded simply as feeders to the railways, and the development needs of the greater part of the country which lay beyond the railway system were thus ignored, establishing a basis for future regional discontent.

This attitude was relaxed to some extent during World War II as strategic pressures revealed its inadequacies. New tracks were opened up and existing roads improved by the army, in particular from Port Sudan to the Nile, to the Ethiopian border, across the southern swamps to Juba and across the western sands to French Equatorial Africa for the movement of troops and aviation spirit (9). But once the war had passed it was decided that "transport on these roads can never be economic for local products without great capital outlay", and the western province of Darfur, for example, remained an economic backwater "rich in agriculture and animal products, but (where) lack of communications both within and outside the province prevents their profitable distribution" (10). Henceforth, motor tracks were cleared and maintained primarily to facilitate local administration, to bring produce to railhead, and, in the central clay plains, to allow excavation of rainwater storage reservoirs. A major road development programme was delayed to within a few years of independence, only to fall into abeyance soon after the transfer of power (11).

Political independence in 1956 brought no major change in the direction of Sudan's transport policy. Although the level of investment was raised, the railways continued to receive most capital spending. Completion of links west and south-west to Nyala and Wau has extended the network almost 50 per cent to 4,756 kilometres of single line track, while there has been an almost complete conversion to diesel locomotives. £S.63,000,000, representing 30 per cent of official investment, was set aside in the 1961/71 Ten Year Development Plan for transport and communications, and of this more than half was allocated for railway improvement compared with only £S.4,000,000 for road development (12). By the end of the plan Sudan had about 350 kilometres of asphalted main road, 186 kilometres of which was the Khartoum-Wad Medani highway initiated by U.S. aid as a demonstration project. Over the same period the number of lorries in the

country had risen from 15,000 to 20,000 vehicles (13). One of the most valuable developments since 1956 in what is areally Africa's largest state has been the growth of Sudan Airways. Set up in 1947 with four eight-seater aircraft, it now provides regular services between the capital and twenty regional centres in addition to international flights. Both government and private business have benefitted from easier movement of key personnel and equipment: the flight from Khartoum to Geneina in the west, for example, is a matter of hours compared with the week or so required by rail and road.

In spite of this expansion of the transport system, however, it has become increasingly clear that Sudan's overall communications network is now a major obstacle to further economic growth. Periodic shortages of essential imports such as petroleum and fuel oil, large seasonal variations in the availability of local foodstuffs in urban markets, persistence of a subsistence economy over the greater part of the country, and limited exploitation of known mineral reserves can all be traced to deficiences in transportation. Additionally, the commercial economy is strongly export-oriented, with one-third of commercial production marketed abroad, and about 70 per cent of government revenue deriving directly and indirectly from foreign trade. Disruptions in the efficient and rapid movement of export crops must inevitably have profound repercussions on the pace of development. Several major problems can be identified.

Since 1967, construction of the Aswan High Dam has drowned the northern river port of Wadi-Halfa which in the 1940s handled about 20 per cent of all foreign trade (14), and closure of the Suez Canal has radically altered the economics of ocean transport to the Mediterranean, north-west Europe and north America. Khartoum airport has thus become the country's second most important import-export point, used for high value and perishable cargo such as meat for Egypt, Kuwait and Libya, while Port Sudan remains the only major outlet for bulk produce of lower value which dominates Sudan's export trade.

Port Sudan has, however, been liable to congestion for more than twenty years. There is often insufficient space for all vessels calling there, and ships then either have to double-berth or wait out at sea, both practices time-consuming and costly (15). Reduction in Red Sea shipping has alleviated this problem to some extent - about 800 ships now call annually compared with 1,200 in 1966 (16). But tonnage handled continued to rise and long transport delays between port and hinterland, together with inadequate storage facilities around the harbour, means that cargo may be stacked on open quaysides for several months with consequent risk of damage (17).

Construction of a second port has been suggested as one solution to these limitations. In 1964 Yugoslav consultants recommended developing an inlet near Suakin, and the idea has recently been officially revived. Apart from the massive capital outlay required - estimated at £S.55,000,000 in 1964 (18) - this would not overcome some of the basic difficulties experienced at Port Sudan and so has yet to be implemented. A lesser expenditure to upgrade existing facilities, by extending sheds and building new quays on space available for example, would reduce some of the objections to Port Sudan, and improvements now underway should enable the harbour to meet national needs up to 1980 (19). There remains a prime necessity to strengthen communications between port and hinterland.

One insoluble problem is the location of Port Sudan itself, separated

from centres of production by a great stretch of semi-arid mountains and plains offering virtually no traffic and swept by seasonal torrents which may isolate the port from the rest of the country for days and even weeks. Regional centres such as Nyala in the west and Juba in the south are more than 2,000 kilometres from the Red Sea coast, and even Khartoum and the irrigation schemes of the Gezira, which together generate the greater part of the national commercial product, are 800 kilometres away (fig. 1). Basic transport costs are therefore high.

Long-distance truck haulage to Port Sudan is limited by poor roads and climate - tracks are closed by the separate rainy seasons of the coast and the interior - and is largely confined to carriage of high cost durable imports such as tyres, tea and cloth. Rail links have also become increasingly inadequate. There is a marked seasonal traffic peak because the main export crops - cotton, groundnuts, oil seeds and, in some years, sorghum - all become available for transport between November and March, while for the rest of the year capacity is under-utilised. At the same time, expansion of the railway network in the 1950s together with completion of several major agricultural schemes in the 1960s placed an increasing burden on the whole network, and especially on the two lines to the coast (20). These remain single tracks with passing points at the stations - in itself responsible for long delays - and the 200 kilometre stretch between Haiya Junction, where the whole network focusses, and Port Sudan has become a major bottleneck.

With a view to spreading load more evenly throughout the year, cotton now receives priority on the railways and most is usually cleared before the rains break in June. Grains and groundnuts, which are less easily damaged by prolonged storage, are held back in specially constructed sheds and silos at up-country stations until December, that is almost a year after being harvested (21). Present plans to further improve traffic flows include construction of a pipeline from the Port Sudan oil refinery to the capital and, with Chinese assistance, extension of the Khartoum-Wad Medani highway first to Gedaref, centre of an important grain producing district, and eventually to Port Sudan (22).

Even after this ambitious project is completed, however, much of the country away from railway and river will remain served only by rough tracks cut through bush and scrub by adventurous drivers. The more important tracks across the clays are occasionally graded, but with heavy use they soon become corrugated and are officially closed to movement during the rainy season (July-September) to prevent rutting. In contrast, routes across the sands are at their best after rainfall: once dry, they become very loose, the consequent drag trapping vehicles and raising fuel consumption. Relaxation of colonial labour requirements has also led to the deterioration of local roads since independence, particularly in hill districts. Demanding physical conditions greatly reduce the working life of vehicles, and generally limit road transport to small lorries of seven to ten ton capacity capable of crossing narrow gullies, even where more economical thirty ton units would otherwise be suitable. It is still argued that in many districts the level of economic activity does not warrant the expense of road improvement, ignoring the fact that lack of dependable transport services is itself an important contributor to rural underdevelopment. Thus processing factories established at rural sites in the 1960s - for milk at Babanusa and for fruit and vegetable products at Wau and Karima - have operated at unprofitable levels partly because of the physical difficulties involved in collecting produce and distributing finished products (23).

Continuing political instability over the last decade has also retarded transport growth. Although Sudan borders eight states, only surface connections with Egypt have never been interrupted. To some extent similarities of economies and levels of development restrict opportunities for trade with western, eastern and southern neighbours, but legitimate commerce across these frontiers is now well below the volume of the 1950s when it accounted for 10 per cent of foreign trade (24). Border disputes, connected with Sudanese sympathy for Moslem dissidents in Chad and Ethiopia and the long rebellion in southern Sudan, disrupted routes which in some cases predated colonial rule. Major policy changes and the ending of hostilities in the south are now being followed by renewed attempts to revive inter-territorial communications with suggestions for a rail link to the Central African Republic, the re-opening of navigation to the Ethiopian river port of Gambela, and consideration of an all-weather road direct to Kenya.

At the same time transport links are being restored in the three southern provinces after a long period of local dissidence which stemmed in part from the region's isolation. Movement within the south has always been hindered by swamps rivers and forests, and ties with the north have been tenuous. Nearly two decades of conflict and neglect saw roads become overgrown and bridges destroyed, while the main river channels were obstructed by sunken steamers and clogged with water hyacinth. In spite of considerable reconstruction since regional autonomy for the south was implemented in March 1972, poor transportation still seriously hampers any significant move towards economic development. The region as a whole remains one of the least accessible parts of Africa. Most material coming through Port Sudan and from the north is routed by rail and river, and is subject to long delays, taking up to nine months to reach Juba, the regional capital, from Port Sudan. The antiquated steamers which ply up the Nile require twelve to fourteen days for the 1,300 kilometre voyage from Kosti to Juba, and on arrival food cargo is often rotten after lying for several weeks in leaking barges (25). Rail and road transport from Mombasa through Kenya and Uganda is more efficient and, on balance, probably cheaper, but for reasons of national pride and foreign exchange costs use of this route is largely confined to aid material donated from abroad. There is thus a continuing scarcity of such basic commodities as sugar, flour, salt and oil fuels even in the southern towns. Construction of a permanent bridge across the Nile at Juba has removed a major bottleneck in the regional road network, but transportation outside the main towns is still severely restricted by poor roads and, in particular, by fuel rationing, inhibiting the revival of cash cropping and encouraging the persistence of local isolationism.

Although conditions in the south are, to some extent, a special case, difficulties and shortages of transport remain one of the greatest geographical problems facing Sudan, and one for which there are no ready solutions.

Notes

1. O.G.S. Crawford, *The Fung Kingdom of Sennar*, Gloucester, 1951, particularly Chapters 3-5 and 8.

2. They included Berenice, 'Aydhab, Halaib, Suakin, Bādi, 'Aqīq, Mandalum, Dahlak and Adulis: J.W. Crowfoot, 'Some Red Sea Ports in the Anglo-Egyptian Sudan', *Geographical Journal*, 37 (1911) pp. 523-550; G.W. Murray, 'Aidhab', *Geographical Journal*, 67 (1926), pp. 235-240; Y.F. Hasan, *The Arabs and the Sudan*, Edinburgh, 1967, pp. 63-89.

3. R.L. Hill, *Egypt in the Sudan, 1820-1881*, London, 1959, particularly Chapters 5, 6 and 10.

4. R.L. Hill, 'The Suakin-Berber Railway, 1885', *Sudan Notes and Records*, 20 (1937), pp. 107-124.

5. For an account of transport developments in the colonial period, see R.L. Hill, *Sudan Transport: A History of Railway, Marine and River Services in the Republic of the Sudan*, London, 1965.

6. D. Roden, 'The Twentieth Century Decline of Suakin', *Sudan Notes and Records*, 51 (1970), pp. 1-22.

7. R.O. Collins, *Land Beyond the Rivers: the Southern Sudan, 1898-1918*, New Haven, 1971, Chapter 1.

8. J. Oliver, 'Problems of the Arid Lands: The Example of the Sudan', being Chapter 15 of *Land Use and Resources: Studies in Applied Geography*, Institute of British Geographers, Special Publication No. 1, 1968, p. 237.

9. Sudan Government, *Report on the Administration of the Sudan for the Years 1939-1941 (inclusive)*, Khartoum, 1950, pp. 151-152, 162, 185-186, 193; *Report on the Administration of the Sudan for the Years 1942-1944 (inclusive)*, Khartoum, 1950, pp. 178, 183.

10. *Ibid.*, p. 177.

11. Sudan Government, *Report on the Administration of the Sudan in 1950/51*, Khartoum, 1955, p. 58.

12. Republic of the Sudan, *The Ten Year Plan of Economic and Social Development, 1961/62 - 1970/71*, Khartoum, N.D., pp. 126-134.

13. *Ibid.*, p. 36; *Africa South of the Sahara, 1972*, London, 1972, p. 795.

14. Sudan Government, *Report on the Administration of the Sudan in 1947*, Khartoum, 1949, pp. 112-113.

15. Thus in November 1973, seven shipping lines in the U.K./Sudan Conference added twenty per cent to cargo freight tariffs to Port Sudan because of slowness in discharging vessels there: *The Times*, London, October 29th 1973.

16. *Africa South of the Sahara*, 1974, London, 1974, p. 832.

17. For further discussion of these problems, see J. Oliver, 'Port Sudan:

the Study of its Growth and Functions', *Tijdschrift voor Economische en Sociale Geografie*, 57, (1966), pp. 58-60.

18. K.D.D. Henderson, *Sudan Republic*, London, 1965, p. 147.

19. *African Development*, London, April 1973, p. 70.

20. These problems were envisaged in the Ten Year Plan: Republic of the Sudan, *The Ten Year Plan etc.*, pp. 128-129.

21. The Democratic Republic of the Sudan, *Economic Survey 1968*, Khartoum, 1969, p. 44.

22. *Arab Report and Record*, Issue 16, 16-31 August 1972, p. 409; *African Development*, London, June 1973, p. 59; C. Legum, E. Clements and R. Synge (eds.), *Africa Contemporary Record: Annual Survey and Documents 1971-1972*, London, 1973, pp. B111-B113.

23. O. Aguda, 'The State and the Economy in the Sudan: from a Political Scientist's Point of View', *Journal of Developing Areas*, 7 (1973), pp. 444-445.

24. See the Republic of the Sudan, *Annual Foreign Trade Report*, Khartoum, for years 1956-1959, Table V.

25. The present river fleet has a freight capacity amounting to only one-third of Juba's needs: R. Vulkeley, 'Year of the Bridges', *African Development*, January 1974, p. S23.

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