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UNITED NATIONS
ECONOMIC AND SOCIAL COUNCIL



Distr.
LIMITED
E/CN.14/CART/305
4 October 1972
Original: ENGLISH

ECONOMIC COMMISSION FOR AFRICA

Third Regional Cartographic Conference
for Africa

Addis Ababa (Ethiopia) 30 October - 10 November 1972
Provisional agenda item 4

REPORT ON CARTOGRAPHIC ACTIVITIES IN KENYA*
1966 - 1972

Report submitted by the Government
of the Republic of Kenya

I. GEODETIC SURVEYS

Triangulation and Trilateration

Since the 1966 report (E/CN.14/CART/150) the breakdown from primary to secondary control in the Machakos District which is to the east of Nairobi has been completed and thus provided control for large-scale mapping for registration of titles to land in the District. Similar breakdown in other parts of Kenya, e.g., Nyanza Province in the Western Kenya, Turkana and West Pokot Districts in the Northern Kenya, and in parts of Central and Coast Provinces has been carried out.

The British Army this year as part of their training, has provided a vital primary control connexion along the eastern side of Lake Rudolf and across the lake as well. They have during the same exercise provided some control from which to revise some six 1:100,000 sheets covering the same area from air photographs obtained during the same period.

The Survey of Kenya personnel have also carried out many schemes of triangulation and trilateration to control the settlement and adjudication mapping at 1:2,500 and 1:5,000.

Precise Levelling

During 1970-1971, a line, approximately 150 miles in length was levelled to connect Kisumu on Lake Victoria to the Tanzania System thus providing another comparison between the East African System.

* By the Survey Department of Kenya.

The aim in connecting the three systems, i.e., the Tanzanian, Kenyan and the Egyptian - through Uganda, is to establish one East African datum instead of the three and the Tanga datum of Tanzania is likely to be adopted as it is the best sited and the most stable.

The precise levelling programme has been carried out with instruments fitted with parallel plate-micrometres, giving readings to 0.001 ft. on standardized invar staves. Circuits closures obtained are within the limits prescribed by the International Union of Geodesy.

Gravity Observations, Magnetic Survey and Seismology

There has been very little activity on the above subject during the period 1966-1972 although the University of Nairobi is still maintaining a continuous recording at a magnetic and seismological station.

Computing

The Survey of Kenya (SK) has since 1966 acquired a Canola 160 and a Hewlett-Packard 9810A desk-top electronic computers to add to the Friden EC.130 it had. The SK has also successfully converted the ICL 1,500 programmes for the large computers to the ICL 1,900 series and has acquired or designed programmes for various standard processes (e.g., aerial triangulation) to be used on the ICL 1,900 series and the Hewlett-Packard desk-top computer. Naturally, the ordinary hand operated calculator has not been left out of the SK list of computing machines.

II. INTERNATIONAL BOUNDARIES

At the beginning of this year the Ethiopian and Kenya Governments mounted a boundary inspection party comprising two surveyors from each country. The inspection was in accordance with the Kenya/Ethiopia boundaries and as a result of the inspection the two governments are sending some surveyors in November this year to repair or re-establish the damaged or missing boundary beacons.

Arrangements are also in hand for the demarcation of parts of Kenya/Uganda boundary and for clearing parts of Kenya/Tanzania boundary.

III. TOPOGRAPHICAL MAPPING

1:50,000

The series comprises some 320 sheets, $\frac{1}{4}^{\circ}$ (15') square, out of which 102 sheets are contoured at 50 ft. V.I. and 42 sheets are now contoured at 20 m V.I. Work is also in hand for the contouring of some 39 sheets by the Canadian Government on technical aid. New revised editions are prepared by the D.O.S. and SK at the rate of 20 sheets a year.

1:100,000 scale

With the publication in 1968 of the 11 sheets which were in hand at D.O.S. in 1966, the whole country is now fully covered by basic medium-scale mapping. The British Army personnel have carried out some initial work this year from which to revise six sheets of this series. Seven sheets have also been reprinted by SK.

1:250,000 scale

Of the 41 sheets maintained by SK, 17 sheets were revised and 24 reprinted since 1966.

1:1,000,000 scale

The SK is still maintaining the two-sheet map of Kenya and more use is being made of this series as a basis for other maps such as the administrative, antiquity and prehistoric sites, route and hunting maps. Revision work on the I.M.W. series is also in hand.

Special Maps

The following have been published since 1966:

Proposed Economic Development of Kenya	(by SK)
Nairobi National Park 1:25,000	(by SK)
The Tourist Map 1:2,000,000	(by SK)
East African Safari Rally Route	(by SK)
Hunting Map 1:1,000,000 Edition Two	(by SK)
Nairobi and Environs 1:100,000 Edition Two	(by SK)
Mount Kenya 1:25,000 Edition Two	(by SK)
Tsavo West National Park 1:250,000	(by SK)
Territorial Sea 1:250,000	(by SK)
East Africa 1:2,500,000	(by SK)
Mombasa 1:14,000 Edition Three	(by SK)

Other Publications

National Atlas of Kenya - A third edition was published in 1971. This new edition has been completely re-organized and rewritten.

Gazetteer

- Negotiations are in hand to publish a second edition of the Kenya Gazetteer from the revision copy of the first edition published by the United States Board on Geographical Names, and maintained by SK.

Map Catalogue

- The Survey of Kenya publishes a revised edition each year.

Administrative Boundaries

Eighty-one map sheets of the 1:50,000 series and ten map sheets of the 1:250,000 series have, since 1966, been printed with boundary overprint.

IV. AERIAL PHOTOGRAPHY

The Survey of Kenya uses its own Wild RC8 aerial camera and trained camera crew to obtain photography using a local charter firm's Cessna aircraft.

Most of the photography is still at a contact scale of 1:12,500 and is taken for the purposes of land adjudication, boundary surveys for titles, land settlement mapping, road planning, water development planning, agricultural schemes development planning, urban re-development and extension planning, general topographical mapping, etc. Large-scale mapping at 1:500 is also in hand for the Nairobi City proposed road developments.

The air survey section is equipped with the following:

5 Wild A8 Stereoplotters	2 Plugs
1 Wild A7	1 EK 5
1 Wild B8	1 EK 2
1 Stereo-micrometre	1 Nistri
1 Santoni III	3 Kelsh
2 Cordinatographs	3 Mirrow Stereoscopes
1 Galileo SS3	1 Wild RC8 aerial camera

With the exception of two officers on technical aid, all machine operators are Kenyans.

V. REPRODUCTION AND PHOTOGRAPHIC EQUIPMENT

There has been no additions to the number of equipment the Survey of Kenya had in 1966 although there is much need for an additional lithographic printer. The Department is, however, self sufficient in the printing of maps and associated documents.

VI. CADASTRAL SURVEYS

The two systems under which the cadastral surveys are carried out are still the same as outlined in pages 6 and 7 of the Report E/CN.14/CART/150. The legislation and the survey methods are also still the same.

Surveying for title mapping in settlement schemes has been completed for titles covering some 130,000 hectares since 1966 and a further area covering some 370,000 hectares has been mapped for the planning of the settlement schemes in the same period.

Adjudication surveys have been completed and registration completed for 387,000 parcels covering some 1,560,000 hectares, which is within the recommended target of 260,000 hectares a year.

VII. TRAINING

The technician training courses for survey assistants which were operated at the Survey of Kenya Training School are now operated by the Kenya Polytechnic for technicians from all government departments. The SK Training School still

operates training courses for the cartographers and some advanced courses for some survey assistants. Some survey assistants have been pursuing studies for the Kenya Land Licence and only one has qualified since 1966.

The professional training for surveyors outside the Survey of Kenya is now operated by the University of Nairobi only, where B.Sc. Eng. (Survey) degree is awarded. All those who had been sponsored to study overseas have now returned with either a B.Sc. Eng. (Survey) degree or the A.R.I.C.S. or are still studying for the latter.

No technological training outside SK has been arranged for photogrammetrists and photo-lithographers but plans are in hand for the training of cartographers to be operated at the Kenya Polytechnic.

VIII. INTERNATIONAL CONFERENCES AND AGREEMENTS

The Heads of the three East African Survey Departments (Kenya, Uganda and Tanzania) continued with their regular meetings and eleven meetings have been held since 1966 during which general mapping problems facing the three countries have been discussed beside the statutory matters relating to the examinations of the East African Land Surveyors' Certificate.

Kenya still operates map exchange agreements with the other East African countries and other countries outside East Africa although the agreements would appear not to be working well with some countries outside East Africa.

Delegates from SK have attended the following conferences since the Second United Nations Regional Cartographic Conference for Africa:

Military Survey and Mapping Conference, London	August 1967
Military Survey and Mapping Conference, London	August 1971
Commonwealth Survey Officers Conference, Cambridge - - - - -	August 1967
Commonwealth Survey Officers Conference, Cambridge - - - - -	August 1971
International Congress of Surveyors, Wiesbaden	September 1971
First United Nations Conference of Standardiza- tion of Geographical Names, Geneva - -	September 1967
Second United Nations Conference of Standardi- zation of Geographical Names, London - -	May 1972
Eleventh International Congress of Photo- grammetry, Lausanne - - - - -	July, 1968
EAC Seminar on Cadastre, Addis Ababa - -	November/December 1970
Inter-African Committee for Maps and Surveys, Lagos - - - - -	July 1972
International Society of Photogrammetrists, Ottawa - - - - -	July/August 1972

Note :

Maps attached to this report will be issued as Addendum I to this document.