

A Review of the History and Development of The Kenyan Geodetic Reference Frame

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SUMMARY

Kenya lies within the Eastern region of Africa and being a colony of Great Britain a lot of early survey work within the country was carried out by the Directorate of Overseas Surveys. The major triangulation networks in Kenya were established by different organizations with different objectives. Moreover, these networks use different datums and coordinate systems based on their needs. This resulted in different coordinated systems being adopted.

Around 1980, the need for a unified reference frame for Africa was realized through the African Doppler Survey (ADOS) project that ended in 1986 however without fully achieving its objectives because of technical challenges. Kenya as one of the participants in this initiative did not therefore benefit from this project to harmonize its disparate coordinate system.

In the year 2000, the United Nations Economic Commission for Africa (UNECA) initiated the establishment of a unified African Geodetic Reference Frame (AFREF) based on a network of permanent geodetic GNSS receivers (CORS). AFREF was conceived to unify the patchwork of geodetic reference frames and vertical datums in the 54 countries in Africa to make it easier to co-ordinate planning and development activities within countries and across national boundaries.

As part of the AFREF, three CORs stations in Kenya contributed data in the computation of the initial AFREF Epoch. In order to link AFREF to the local Geodetic Reference Frame in Kenya the Ministry of Lands and Physical Planning has constructed eighteen Zero order network stations (passive) that were observed and computed in 2012 to define the Kenya Geodetic Reference Frame (KENREF) which is linked to AFREF.

Currently, the Ministry of Lands is densifying the geodetic control network by use of rooftop CORS

(20 stations have been installed although they have not been commissioned). It is envisaged that these stations will be linked to KENREF and consequently AFREF. At the same time, there are more than five privately owned CORS networks that are in operation in Kenya.

Harmonization of the geodetic reference frame for Kenya is key in aiding land administration especially the implementation of NLIMS as well as implementation of infrastructure project in Kenya.

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