

IAF SYMPOSIUM ON INTEGRATED APPLICATIONS (B5)  
Integrated Applications End-to-End Solutions (2)

Author: Mr. Wondwossen Mindahun

Ethiopian Space Science and Technology Institute (ESSTI), Ethiopia, wondu1212@gmail.com

Mr. Natnael Agegnehu

Ethiopian Space Science and Technology Institute (ESSTI), Ethiopia, natiag035@gmail.com

Mr. Andnet Nigussie

Ethiopian Space Science and Technology Institute (ESSTI), Ethiopia, andinigussie@gmail.com

GPS SUPPORTED ASSESSMENT INTEGRATED WITH GIS SERVICE AREA NETWORK  
ANALYSIS OF HEALTHCARE INSTITUTIONS OF BASONA WERANA WEREDA IN  
COMPARISON WITH DEBRE BERHAN TOWN, ETHIOPIA

**Abstract**

The research is entitled with GPS Supported Assessment Integrated with GIS Service Area Network Analysis of Healthcare Institutions of Basona Werana Rural Wereda in Comparison with Debre Berhan Town, Ethiopia. Basona Werana wereda is found in the southernmost part of Amhara Regional State approximately 130kmrs to the North of the Capital City Addis Ababa and Characterized by few plateaus and gorgeous topography at average altitude of 2600m above MSL. The Population of the rural Wereda as estimated by Ethiopian Central Statistics Agency (CSA) for the 2019 is 138,264 thousand and 115, 815 thousand in urban. The study is principally aimed to assess the spatial location using Global Positioning System (GPS) equipment as well as study the Access and Service range of health institutions from lower level Health Posts (HPs) to higher level Referral Hospitals (RHs) in both Zonal Town Debre Berhan and the surrounding Rural Community of Basona Werana Wereda which are owned both by government and privates. The study is particularly, intended to identify the X and Y coordinates of currently working institutions; to build a network data-set in network analysis module in the Geographic Information System (GIS)software packages; to perform service area analysis by integrating the customers, health services and road network data-set; to show how much portion of the population is enclosed by the services within specified distance; to show population part in service scarce areas beyond the specified distance and finally to suggest locational solutions to weaknesses whenever exist in the location of institutions in comparison with local population residences. The methodological procedure encompasses adjustments of data before use for the analysis, data processing, analysis and final result. It could become possible to identify the spatial locations of the health institutions in Basona Werana Wereda and Debre Berhan Town as well as residential in both this districts, built network data set, generated iterations of service area analysis and as a result higher Clinics, Health Centers and hospitals are significantly and fully provided for urbanized population of Debre Berhan Town where as they are rare in the rural population of Basona Werana Wereda. There is also absence of road and transport facilities in rural area to access the sparsely established institutions and as a remedy the study suggests that government shall use such scientific study techniques together with its Health Policy Implementation.