

Urban Development between 1981 and 2002 in the Mzinga Valley - Dar Es Salaam

Dar Es Salaam

Geographic Overview



Legend

- Built-up area 1981
- Built-up area 2002

Satellite Data: Quickbird
 Acquisition Date: 25. Feb. 2007
 Raster Resolution: 0.6 meters
 UTM Grid: 1 kilometer interval
 Geographic Grid: 1 minute interval
 Projection: Universal Transverse Mercator (UTM)
 UTM Zone: 17W, 35
 Meridian of Origin: 33 degrees 00 minutes E of Greenwich
 Latitude of Origin: Equator
 Horizontal Datum: WGS84
 Vertical Datum: Mean sea level
 Spheroid: WGS84

Disclaimer

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Project Information

The map is providing additional information to support the project named Wastewater irrigated agriculture as a mean to alleviate poverty. The case of Dar es Salaam City. Residents of Dar es Salaam use wastewater, which includes industrial and domestic effluent for informal irrigation due to shortage and high cost of freshwater resource. Better understanding of the current practices with wastewater in agriculture, possible health risks and the role of this resource in the livelihood of the residents of Dar es Salaam is of paramount importance for both sustainable land management and sustainable human development. This

project aims at quantifying the extent and significance of wastewater use in agriculture in Dar es Salaam as one of the means to alleviate poverty. The project serves as an opportunity to identify and/or improve cost effective technologies for management of wastewater to minimise the negative impacts of wastewater use in agriculture.

The project is part of the Eastern and Southern Africa Partnership Programme (ESAPP) funded by the Swiss Agency for Development and Cooperation (SDC).

Map authors: Sandra Eckert, Geoprocessing Unit, CDE, University of Bern.

Data sources

Satellite data used: Digital Globe Quickbird 2 imagery and aerial photography. Aerial photography provided by ITC, Faculty of Geo-information Science and Earth Observation.

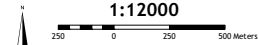
Methodology

The two built-up layers were derived from b/w aerial photography acquired in 1982 and satellite data of

Quickbird 2 acquired in 2007. An anisotropic rotation-invariant built-up presence index [1] was applied to delineate urban and non-urban regions. The main component of the PanTex workflow computes the contrast textural statistic based on the grey-level co-occurrence matrix (GLCM). The PanTex method is based on image texture and therefore is advantageous for multisensor and multitemporal image analysis. The results provide structural information on the urban regions, including buildings, open spaces and, partially, roads. The final binary built-up mask is produced by interactively changing a threshold value that delineates the image into built-up and non built-up areas. The derived information layers were further improved by applying a vegetation index for the 2007 data and manual editing.

[1] Peareid, M.; Gerhardinger, A.; Kaytakire, F. A robust built-up area presence index by anisotropic rotation-invariant textural measure. IEEE JSTARS 2008, 1, 180-192.

Satellite image courtesy of Digital Globe, acquired 27. February, 2007.



University of Bern
 Centre for Development and Environment
 Geoprocessing Unit
 Haldenstrasse 10
 CH-3012 Bern, Switzerland

