

IMPACT OF LAND USE CHANGES AND WETLAND DEGRADATION ON WATER CASE

OF UPPER KINAWATAKA WETLAND, KAMPALA UGANDA

BY

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Abstract

Kinawataka wetland is an important ecosystem that plays a vital role in pollution and flood control as well as maintaining ground water supplies and quality in the Lake Victoria basin. However, this wetland has undergone severe ecological degradation in form of intensified agriculture, climatic change, industrial pollution, and other anthropogenic activities. The objectives of this study were to (a) Determine the change in land use/land cover within Kinawataka wetland and the trend of its degradation from 1994 – 2014 (b) assess the changes in the quality of water flowing into and out of Kinawataka wetland.

The land use/cover change in the wetland surrounding and the wetland's degradation trend was assessed by analyzing a series of landsat images (1994, 2004 and 2014) using supervised classification. The impact of wetland vegetation degradation (land use/cover change) on the quality of water flowing in and out of Kinawataka wetland was assessed by comparing the water quality results obtained during the study to secondary water quality data for Kinawataka wetland obtained from Wetland Resources Management Directorate. The contribution of each of the different land

use activities around the wetland to the loads of contaminants in water into and out of the wetland was assessed and its performance in retaining contaminants was also assessed.

The study revealed that there was an increase in built up area (from 54% to 66%), agriculture (from 14% to 18%) and industries (from 9% to 12%) between 1994 and 2014, from 1994 to 2014, the intact wetland had decreased by 46%, constituting degradation from 49% to 95%. Comparison of 2014 water quality results with secondary data revealed high concentration of total nitrogen, total dissolved solids and total phosphorus in the stream flowing out of upper Kinawataka wetland with all values above the maximum permissible levels set by NEMA. Results of the study also revealed that the wetland retention of most of the contaminants was far much below those recorded by other researchers. The reduction in size of the wetland in the last 20 years caused mostly by industrialization, agriculture and settlement was associated to the deterioration of the quality of water flowing into and out of Upper Kinawataka wetland.