

Investigation of the impact of water abstraction for maize crop irrigation on quantity of water in  
Mkindu River

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Owing to agriculture activities along the rivers by irrigation from the rivers, Most of the rivers become dry before completion of the cultivation period due to water required for irrigation to be much more than the river flows. The study area was Mkindu Found at Mvomero district which experiences water scarcity during cultivation period. In order to deal with this scarcity, this research aimed at investigating the impact of water abstraction for irrigation of maize at Mkindu and suggesting other sources of water for supplying water during cultivation period. To achieve this goal of investigation of the impact of water abstraction for maize crop irrigation, CROPWAT Model and HBV rainfall runoff Model were employed CROPWAT Model was used for determination of irrigation water required for maize at Mkindu in which  $1.913\text{m}^3/\text{s}$  were obtained as maximum irrigation water required. HBV rainfall runoff model was used for generating flows by using 56 years record length rainfall data. Times series of monthly flows were established from generated daily flows and environmental flows (EFs) regime (monthly EFs) were subtracted. The obtained flows after subtraction of environmental flows were used for determination of impacts of irrigation water abstractions on Mkindu river flows. The results obtained showed at mid stage of cultivation period, maximum river flow is  $0.911\text{m}^3/\text{s}$  while irrigation water required is  $1,913\text{m}^3/\text{s}$ . this result showing negative difference which means maize irrigation is not satisfied and the river will dry. Therefore a reservoir of  $953,751.46\text{m}^3$  was recommended to be constructed so as to store water during high flow season and to supply at mid stage of maize cultivation.