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Performance Evaluation of Small Scale Irrigation Schemes By Using Process and Comparative Indicators: Case Study on Golina and Kokono Small Scale Irrigation Schemes, North Wollo Zone, Amhara Region, Ethiopia

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Abstract

The study was conducted to evaluate the performance of two small scale irrigation schemes at north Wollo zone, Amhara regional state using process and comparative performance indicators. The irrigation schemes were Golina and Kokono with command area of 400ha and 80ha respectively. Primary data collection includes measuring discharge at diversion weir, soil moisture before and after irrigation and depth of water applied. The secondary data collection includes determination of crop types, total yields, farm gate prices of irrigated crops, area irrigated per crop per season, and cost of production. The two schemes were compared using minimum sets of comparative performance indicators which include agricultural, water use and physical performance indicators. The process indicators (conveyance, application and storage) were used to check the performance of the two schemes. From the analyses of the internal performance indicators, the conveyance, application, storage and overall efficiencies were found to be 76.58%, 52.51%, 48.38% and 40.21% for Golina scheme and 38.02%, 65.93%, 44.89% and 25.07% for Kokono scheme respectively. From the analysis of comparative indicators, the outputs per cropped area were found as 1111.67 and 753.38 us$ ha^{-1}, the value of the outputs per command area of schemes were 2166.37 and 768.44 us$ ha^{-1}, the output per unit irrigation supply of 0.11 and 0.1us$$m^{-3}$, output per water consumed was 0.2 and 0.18 us$ m^{-3} for Golina and Kokono respectively. The water use performances of the two schemes were compared, RWS found to be 1 at both schemes and RIS was found as 4 and 1.7 at Golina and Kokono. The irrigation ratio of Golina was found to be 0.974 and that of Kokono was 0.51. In general, based on the assessment carried out, Golina scheme performed better than Kokono scheme.

*Keywords***:** Golina; Kokono; Irrigation; Performance; Indicators; Scheme

1. Introduction

Agriculture is regarded as the backbone of Ethiopian economy and a key driver of its long term growth and food security. It directly supports 85 percent of the population constitutes 45 percent of gross-

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