Performance Evaluation of Gully control Measures implemented at Karamarda Watershed, South Jigjiga District, Somali Region

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Abstract

Land degradation in the form of soil erosion is a serious global, regional, national, and local challenge to agricultural productivity and overall economic growth for which immediate and long-term control mechanism is momentous by using various interventions including physical structures like check-dams and weir structures. Such interventions require continuous evaluation of theirbiophysical, technical, and socio-economic performance. Hence, study was aimed to evaluate the biophysical and technical performance of the gully control measures implemented at Karamarda watershed, South Jigjiga district. Due to lack of sufficient bench mark data the study subjected to use a participatory approach of data collection through field measurement and observations, focus group discussions, and key informants' interviews (KIIs). In addition, performance indicator criterion approach was applied. The study revealed that the amount of soil deposited behind the structure's ranges between0.2-0.90 m and 0.4 -1.5 m depth in hilly grazing land and cultivated land respectively. in addition,crop yield was increased by 15%. Similarly, surface water availability, moisture retention, and vegetation cover were increased. Furthermore, the soil erosion was decreased and gullies stabilized and changed into cultivated land. However, ground water utilization showed no change indicating that there was no wells and irrigation schemes available in the study area. From the technical parameters, vertical interval between every two successive check-dams exceeded the standard mean layout that showed p-value of 0.002. Moreover, there was limitation of repair, maintenance, and management of the implemented structures in the study area. Based on the finding of this study, the implemented Control measures were effective if properly managed and maintained.

Key words: *land degradation, performance evaluation, gully control measures, Karamarda watershed, Eastern Ethiopia.*