

## Enhancing Institutional Roles and Managerial Instruments for Irrigation Modernization in Sudan: The Case of Gezira Scheme

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**Abstract :** Calling to achieve Millennium Development Goals (MDGs) engaged with agriculture, i.e. poverty alleviation targets, human resources involved in agricultural sectors with special emphasis on irrigation must receive wealth of practical experience and training. Increased food production, including staple food, is needed to overcome the present and future threats to food security. This should happen within a framework of sustainable management of natural resources, elimination of unsustainable methods of production and poverty reduction (i.e. axes of modernization). A didactic tool to confirm the task of wise and maximum utility is the best management and accurate measurement, as major requisites for modernization process. The key component to modernization as a warranted goal is adhering great attention to management and measurement issues via capacity building. As such, this paper stressed the issues of discharge management and measurement by Field Outlet Pipes (FOP) for selected ones within the Gezira Scheme, where randomly nine FOPs were selected as representative locations. These FOPs extended along the Gezira Main Canal at Kilo 57 areas in the South up to Kilo 194 in the North. The following steps were followed during the field data collection and measurements: For each selected FOP, a 90° v- notch thin plate weir was placed in such away that the water was directed to pass only through the notch. An optical survey level was used to measure the water head of the notch and FOP. Both calculated discharge rates as measured by the v - notch, denoted as [Qc], and the adopted discharges given by (MOIWR), denoted as [Qa], are tackled for the average of three replicated readings undertaken at each location. The study revealed that the FOP overestimates and sometimes underestimates the discharges. This is attributed to the fact that the original design specifications were not fulfilled or met at present conditions where water is allowed to flow day and night with high head fluctuation, knowing that the FOP is non modular structure, i.e. the flow depends on both levels upstream and downstream and confirmed by the results of this study. It is convenient and formative to quantify the discharge in FOP with weirs or Parshall flumes. Cropping calendar should be clearly determined and agreed upon before the beginning of the season in accordance and consistency with the Sudan Gezira Board (SGB) and Ministry of Irrigation and Water Resources. As such, the water indenting should be based on actual Crop Water Requirements (CWRs), not on rules of thumb (420 m<sup>3</sup>/feddan, irrespective of crop or time of season).

**Keywords :** management, measurement, MDGs, modernization

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