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# WATER DIVERSION ANALYSIS USING WEAP MODEL IN AN IRRIGATION DEVELOPMENT PROJECT OF SRI LANKA

## D.S. Sampath[1]*, S.B. Weerakoon[1], B.K. Mishra[2] and S. Herath[2]

[1]*Department of Civil Engineering, Faculty of Engineering, University of Peradeniya, Sri Lanka*
[2]*Institute for the Advanced Study of Sustainability, United Nations University, Tokyo, Japan*
*\*pe.saliya@gmail.com*

The proposed Left Bank (LB) canal which is being constructed under the Deduru Oya reservoir project will supply water to augment 136 existing storage-based minor irrigation systems in the LB of Deduru Oya. The proposed irrigable area under the LB canal is about 3000 ha including both existing and proposed new development areas. This study is focused on the setting up of WEAP21 version 3.43 (Water Evaluation And Planning) model to study the water requirement from LB canal for the resilience of the irrigation development in the LB development area where water resources in the existing cascade systems and the diverted water from LB canal will be conjunctively used.

For each of the 136 rain-fed minor tanks that will be supplied water by the LB canal, the relevant catchment areas, storage areas, natural streams, land use patterns and cascades were identified for modeling the system. Topographic, geological and land use details were collected from the digital data of the Survey Department of Sri Lanka and Arc GIS 9.2 was used as a tool for spatial analysis. HEC-HMS (Hydrologic Engineering Center – Hydrologic Modeling System) version 3.0.1 was calibrated and verified for the Tittawella Tank, which is a minor tank in Kurunegala District and also for the Deduru Oya Catchment. HEC-HMS model was then used to develop a rainfall runoff model for each of the rain-fed irrigation tank catchments and the Deduru Oya reservoir catchment. Irrigation analysis in the LB development area was carried out using the WEAP model considering the available water resources in the existing cascade irrigation systems.

The LB development area would require a volume in the range of 38–62 MCM annually from the LB canal to supplement the LB irrigation demand of the existing and newly proposed development areas. With long term forecast rainfall data, the WEAP model can be used for predictability studies in the Deduru Oya LB development areas. The model developed is a useful tool for planning water resources development in the Deduru Oya reservoir project.