WATER ACCOUNTING FOR MENIK GANGA BASIN

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An account of water is very useful in estimating its present use and future availability in a basin. Such estimates are often necessary for strategic planning and management of water. Besides, it helps in design and operation of various development activities in a basin, specifically bringing out the on-site and off-site impacts of water resources development.

A study is carried out to gain an improved understanding of the water availability, water use, depletion and productivity in the Menik Ganga (river) basin located within Uva Province of Sri Lanka covering the districts of Badulla and Moneragala and a small part of Hambantota. Total catchment area of the basin is 1287 km^2 with an average annual rainfall of 1429 mm. The Menik Ganga rises in uplands, 1600 m high from where it flows approximately 116 km to the coast. Average annual rainfall in the basin varies enormously, from over 2500 mm in the headwaters, to less than 1000 mm at the coast.

The water accounting in the basin is based on a water balance approach. Major components of the water balance are; (a) *Gross inflow*, (b) *Water depletion – (both beneficial and non-beneficial)*, (c) *Committed water*, (d) *Uncommitted outflow*, and (e) *Available water*. Annual water balance covers the period from 1983 to 2001. Basic data used for model include meteorological data, land use pattern, drinking and industrial water demands, etc.

Gross inflow to the Menik Ganga basin is 1852×10^6 m^3 and total depletion from it is 1317×10^6 m^3. Thus, the estimated depleted fraction of the available water is 0.71. Therefore, 29% of the water in the basin (535×10^6 m^3) is available for further use. The process fraction of the depleted water is estimated as 0.30. This means that about 70% is evaporated from non-crop vegetation including forest. Results indicate that at present, about 367×10^6 m^3, a considerable amount of water available for utilization within the basin flows out to the sea without being used. The study establishes how a water accounting may be systematically applied to gain a valuable understanding of the availability of water resources in a basin and to design and operate fresh water related development activities in it scientifically to have best use of water.