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Water Availability Study for River "Ganga (Bhimgoda To Narora)

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ABSTRACT

Water availability of the Upper Ganga basin between Bhimgoda and Narora has been analysed, with the existing diversion works and those under construction in the Uttar Pradesh (U.P.) State. The analysis is performed using a river basin simulation model with a weekly operation period. The river basin simulation model SIMYLD developed by Texas Water Development Board,(presently known as Texas Department of Water Resources) USA is capable of modelling multi storage or non-storage river basin systems, including the institutional framework. In the study area, the Upper Ganga Canal and Lower Ganga Canal are under operation. Along with these two canals, there are three more canals known as Eastern Ganga Canal, Madhya Ganga Canal and Parallel Lower Ganga Canal under construction to make use of the excess monsoon flow available. These three new canals are envisaged to irrigate Kharif paddy for hundred days starting from the last week of June. Therefore, in order to realistically simulate the performance of the diversion system in this geographical region the water rights structure must, in some fashion, be included in the modelling effort. SIMYLD, through its general quasi optimization capability allows for priorities or ranking of preferences of water diversions which may reflect the historical legal preferences existing or easily and quickly modified to reflect some new preferential scheme. It has an optimizing capability which is an extremely important attribute of the desired model and provides a detailed analysis of the distributional aspects of water transfers within a river basin.

Here it is considered that the existing diversion canals, the Upper Ganga Canal and the Lower Ganga Canal, are perennial and those under construction the Eastern Ganga Canal, Madhya Ganga Canal and the Parallel Lower Ganga Canal are meant for meeting the Kharif paddy demand for hundred days. Import from Ganga basin through the Ram Ganga Feeder to this system, that augments the supply at Narora head works, is included in this study on a weekly time basis. Considering the existing water rights and the topographical limitations a relative rank is fixed to meet the demands at various locations then the system is operated and analysed.