

Irrigation Potential Assessment for Eastern Ganga Canal, India Using Geographic Information System

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Abstract : The present study deals with the results of the Ortho-rectified Cartosat-1 PAN (2.5 m resolution) satellite data analysis for the extraction of canal networks under the Eastern Ganga Canal (EGC) command. Based on the information derived through the remote sensing data, in terms of the number of canals, their physical status and hydraulic connectivity from the source, irrigation potential (IP) created in the command was assessed by comparing with planned/design canal-wise irrigation potentials. All the geospatial information generated in the study is organized in a geodatabase. The EGC project irrigates the command through one main canal, five branch canals, 36 distributaries and 186 minors. The study was conducted with the main objectives of inventory and mapping of irrigation infrastructure using geographic information system (GIS), remote sensing and field data. Likewise, the assessment of irrigation potential created using the mapped infrastructure was performed as on March 2017. Results revealed that the canals were not only pending but were also having gap/s, and hydraulically disconnected in each branch canal and also in minors of EGC. A total of 16622.3 ha of commands were left untouched with canal water just due to the presence of gaps in the EGC project. The sum of all the gaps present in minor canals was 11.92 km, while in distributary, it was 2.63 km. This is a very good scenario that balances IP can be achieved by working on the gaps present in minor canals. Filling the gaps in minor canals can bring most of the area under irrigation, especially the tail reaches command.

Keywords : canal command, GIS, hydraulic connectivity, irrigation potential

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