

RESEARCH PAPER

Flood control for sustainable development in upper Krishna river basin

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ABSTRACT

Ecologically, Krishna is one of the disastrous rivers in the India, flowing fast and furious, often reaching depths of over 23 m, causing heavy soil erosion during the monsoon season. The Krishna and its river systems potentially store tremendous wealth for the region, and yet, at the same time, this very same potential turns destructive with fatal regularity in the form of floods. The upper basin of Krishna, Koyna, Warna, and Panchganga receives enormous amount of rainfall during the monsoon every year and has a very profound impact on the ultimate quantum of water resources in downstream areas causing a devastating flood. A large number of human lives and property are lost in the district in Maharashtra and the adjoining districts of upstream and downstream of the Alamatti dam in the state Karnataka. The Central Water Commission has classified river basins in this region (Sangli and part of Solapur) as Upper Krishna (NW) 15A, Upper Krishna (East Yerala) 16A, Upper Krishna East Agrani (16B), and remaining Bhima (downstream of Ujani including Man (18B)). This paper focuses on study to divert abundant water from sub-basin 15A to Sub-basin 18B by gravity (diverting water from upper river Krishna to sub-basin of Man to Jath, Atpadi, Talukas of Sangli district and Sangola taluka of Solapur district.) through tunnels. It is proposed to divert water only in flood situations, and to feed existing water resources and small storages in Man sub-basin, which will help to minimize flood hazards and loss of property. This study was carried out by field survey, remote sensing and GIS techniques. In field survey actual ground levels, high flood levels and topography were studied to locate flood tunnel inlet and outlet. Satellite imagery substantiated to calculate areas under benefits and economic aspect of the proposal.

Key Words : Flood tunnel, Remote sensing, GIS, Flood control, Sustainable development, Ecologically.

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Krishna flows with abundant water and flood passes through Sangli district in Maharashtra state, but at the same time the Yerala, the Agrani and the Man - tributaries of Krishna remain dry Fig. 1(a), (Fig. 5). This natural geographical and metrological inequality forces local administration to act for flood protection works on one side and scarcity relief works on other side at the same time. Every year due to heavy rainfalls in Sahyadri ranges in the months of June and July, flood situation occurs in Palus, Walva, Shirala, and Miraj talukas on the banks of Krishna. At the same time, water supply for drinking water in Jath, Kavathe, Mahankal, Atpadi, and Sangola talukas is supplemented by water tankers. This diversity is within radius of 50-100 km. Upper Krishna 15A sub-basin is having abundant water (availability 18,307 m³/ha), while Yerala 16A, Agrani 16B and Man are having water availability 1,19,252 m³/ha and 1,657 m³/ha, respectively (Maharashtra Water and Irrigation Commission Report (1996). Thus, 15A is having abundant water, while other three are highly water deficit sub-basins. It could be seen that the water availability alongside of river Krishna is about 45 and 35 times that of Yerala basin and Man basin, which is hardly

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