Remote Sensing Based Study for Flood Protection; Action Plans For Krishna & Thungabhadra Rivers in India

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A comprehensive study of recent floods occurred along Krishna and Thungabhadra rivers in Andhra Pradesh has been carried out using Indian Remote Sensing (IRS) satellite data. Based on visual interpretation of satellite imagery in conjunction with ground information, detailed geo-morphological and geo-hydrological evaluation of the Krishna basin has been carried out to delineate the boundary of flood risk zones, understand the reasons, and suggest flood prevention/ protection measures. Flood risk zones have been identified mainly in three sectors -1) Mantralayam to Alampur sector along Thungabhadra river, 2) Ravirala to Ibrahimpatnam sector along Krishna river, 3) Vijayawada to Puligadda sector in Krishna islands. In all three zones, a total of 131 villages, 3 pilgrim centers and 2 major cities have been identified as flood affected. Since, the pilgrim centers namely- 1) Mantralayam 2) Alampur and 3) Amaravathi are the places of sanctity and historic importance, they can not be shifted though they are located just on the river banks. Hence, as a long term flood protection measure, construction of flood banks supported by RCC/ C.C walls have been suggested. Kurnool city is located at the confluence of Thungabhadra and Handri rivers having the risk of flooding from both the rivers. Hence, a 4.5 Km., long flood bank supported by RCC/C.C wall on the river side is suggested along Thungabhadra River. For Handri river which flows through center of the city, a flood diversion channel is suggested bypassing Kurnool city. Alternately, construction of a reservoir across Handri river is also suggested for storing and gainful utilization of flood waters and an appropriate site has been identified where the river flows across a strike ridge. In Vijayawada city for protecting a large number of houses and huts from chronic floods, construction of a 6.5 km long flood bank on the northern side and 1.5 km long flood bank along southern side of Krishna river supported by RCC/ CC walls have been suggested. The remaining 131 villages have been grouped in to - a) chronically flood affected, b) moderately flood affected and c) rarely flood affected categories. In the chronically flood affected zones, for 28 villages, shifting to safer places is suggested and for another 20 villages a common flood bank is suggested. For 25 villages which are located along the boundary

of flood risk zone and falling in the rarely flood affected category partial shifting is suggested. Construction of flood protection bunds are suggested for the remaining 57 villages. Wherever, the villages are located close to the river, masonry walls are suggested on the river side to ensure protection to the flood bunds. Deposition of sand/silt has resulted in chocking of Krishna, and Thungabhadra rivers courses in certain zones, reducing the river flow vis-a-vis increased flooding. These zones contain good quality sand which has great demand in construction industry. An estimated sand reserve of 450 MCM, up to 2m depth, valued at Rs 2184/- crores is available in these zones. Using satellite data suitable sites have been identified for construction of major/medium dams across Thungabhadra, Hagari and Handri rivers for flood prevention. To reduce the risk of flooding a number of small and medium irrigation/ flood control tanks are suggested in the catchments of Thungabhadra, and Handri rivers under NREG scheme.