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Flood control in Chindwin river basin, Myanmar

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Flood control measures are protection of embankments, river channel improvement, flood retention basins, flood ways, flooding basins and reservoir operation. In this research, the development scale for the Tamanthi multipurpose project is studied taking into consideration the flood control. The reservoir operation study of the Tamanthi project is carried out. Cascade reservoirs such as Tamanthi, Mawlaik and Shwezaye projects are under planning projects in Master Plan Study of multipurpose development projects of Chindwin River basin which is situated in Northern West of Myanmar.

The present condition of the Chindwin river basin is featured by its abundance of river water, large difference in rainfall, runoff and water level in a year, difficulty in navigation because of shallowness in the dry season and swift currents and whirlpools in the rainy season, insufficiency of water and electricity for pump irrigation in the dry season, chronic flood damages in the rainy season, exhaustive river maintenance works, and so on. All these facts seem to suggest that annual regulation of the river flow in this river basin is essential. River water regulation through the well arranged multi-purpose development program would provide a number of benefits in terms of flood control, navigation, irrigation, hydropower generation and so on.

1000-yr flood is estimated using flood frequency analysis. In order to ensure necessary flood control capacity in the reservoir, it is proposed to lower the reservoir operating level to the flood season operating level at the beginning of the flood season. Target water level method is applied in this study. Three scenarios such as lowering of operating level such that a 10%, 20 % and 30 % peak-cut of a 1000 year flood were considered. Four extreme flood hydrographs were selected for this flood control. For each hydrograph after enlarging the maximum discharge to the design flood discharge, necessary flood control capacity for different flood peak-cut ratios were computed. The higher the flood peak-cut ratio is, the smaller the expected flood damages are, but at the same time, the higher the risk of water shortage in the dry season becomes. Twenty percent peak-cut of 1000-yr flood is recommended as the practical option for the time being.