

THESIS

DIAGNOSTIC ANALYSIS OF INDIGENOUS HYDROPOWER
PLANT CASE STUDY AT YAKHA CHINA STREAM,
KUMRAT VALLEY, DIR



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By

Ibrahim Rahim Mian
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University of Engineering and Technology, Lahore, Pakistan.

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ABSTRACT

Northern areas of Pakistan are endowed with vast hydropower generation potential. The proposed project has been designed on a stream in the Kumrat Valley (Dir). Kumrat Valley has numerous streams having adequate discharge and sufficient heads that can be easily harnessed to produce electricity. The proposed project has been designed to be installed at Yakha China stream. The flow data of the stream was collected from SHYDO's (Peshawar office). A survey of the stream was undertaken to mark appropriate points for positioning of the power plant. Such points were marked which had large heads because greater the head, more is the capacity of the plant.

A favorable point on the bank of the Yakha China Stream was located, that. The head obtained at this point is 30 m resulting in power generation of 33 KW. The width of the stream at this point is 3.30 m. The design discharge was determined to be 0.53 cumecs. After determining these parameters, design of civil components was undertaken. The weir was constructed of naturally available material to avoid cost. The power channel dimensions were decided to be 2 ft x 2 ft. Forebay was designed according to the design discharge. Penstock diameter was kept to be 13 inches. Cross flow turbine was recommended to be used. Electrical components were also selected according to the specifications of the plant.