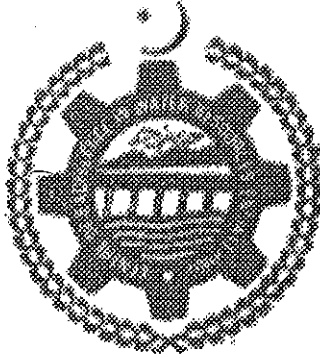


THESIS

**RISK ASSESSMENT AND MANAGEMENT STUDY OF
MANGLA DAM RAISING PROJECT**



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ABSTRACT

RISK ASSESSMENT AND MANAGEMENT STUDY OF MANGLA DAM RAISING PROJECT

Risk assessment and management for dams is a very complex problem. It is because dams constitute the biggest construction projects and have long term repercussions. A host of issues ranging from social to environmental, hydrologic to structural, construction to failure are involved. These issues carry significant risks which can effect the project in positive and negative manner. The best approach to tackle such problems is to formulate an effective risk management strategy wherein risks are identified before hand, evaluated, mitigated and a risk management strategy formed for every likely risk. If the risks are not given due consideration then the end results may be catastrophic.

The objective of this study is to better understand the risk assessment techniques for dam and give its practical demonstration. Another objective is to investigate in depth the environmental, social and water related risks due to Mangla Dam Raising Project. All these issues are subject of much debate. Hence results obtained in this study will help to see these issues in proper perspective.

The general methodology adopted is to identify broad categories for risk management study. The techniques used for risk identification included consultation of check lists for risk compiled form previous experience, interviews with key project participants, and brain storming with project team. Then within each category risk variables list is drawn and each identified risk is analysed and evaluated in detail. Risk mitigation and aversion options are discussed. Risks are given a rating and their

management strategy formulated. The study also discusses both positive and negative risks to help in forming a balanced opinion.

It is concluded that the Mangla Dam Raising Project poses various social and environmental risks. These risks though small in magnitude have the potential to affect the project or delay its completion. In this study a wide range of these risks have been evaluated and it is found that these risks are manageable. This can be achieved by due compensations and taking proper mitigation measures. The resettlement and compensation cost will consume about half of project cost.

The most important risk is of assured water availability or chances of filling the dam. The study has discussed historic inflows, reservoir operations and sedimentation losses to arrive at a rational understanding of situation. The raising versus no raising scenario is discussed which establishes that Mangla Dam will gain another lifeline by timely raising. In addition, precious water wasted in floods can be utilized for storage. Various supply and demand scenarios have been evaluated to arrive at a rational estimate of reservoir filling. It is found that chances of raised Mangla Dam filling are once every two years under normal years considering 5% increase for future demands.

The results of this study are encouraging and may be helpful to planners working on the project. The study also lays down the principles for risk assessment and management which can be used in further studies.