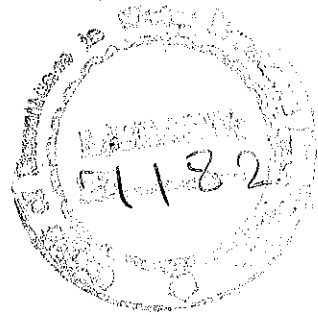
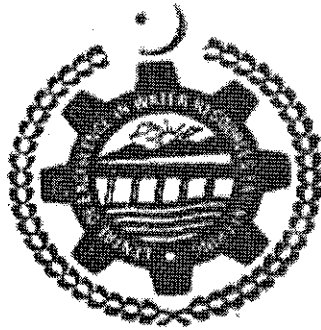


THESIS

**COST/ BENEFIT ANALYSIS OF LOW AND HIGH EFFICIENCY
IRRIGATION SYSTEMS OF IRRIGATED AREA TO BE DEVELOPED
UNDER PROPOSED HINGOL DAM PROJECT IN BALOCHISTAN,
PAKISTAN**



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ABSTRACT

Agriculture, especially irrigated agriculture, plays a vital role in the economy of Baluchistan province of Pakistan. However, the area under crops has not increased in accordance with the increase in population in the past few decades. In order to feed the increasing population, irrigated farming is the prime sector in the province which can meet the livelihood of the present farming community. This study deals with cost benefit analysis of low and high efficiency irrigation system of irrigated area under the proposed Hingol dam project in Baluchistan.

Three scenarios regarding irrigated area, cropping pattern and cropping intensities have been analyzed for detailed analysis. In the first scenario, culturable command area (CCA) of 65000 acre and the cropping intensity of 200% was tested under drip irrigation system whereas in the second scenario, CCA of 31850 acre was calculated under conventional irrigation system keeping the crop intensity constant. In the third scenario, CCA was kept 65000 acres and 110% cropping intensity was used under conventional irrigation system.

To ensure the water supply throughout the year against the demand, reservoir operation study was carried out for all three scenarios. The spreadsheet operation model based on EXCEL was developed for reservoir operation study of the Hingol dam reservoir considering various possibilities of irrigation demand, shortages, spillages and different conservation levels.

Results of reservoir operation study depict maximum benefits for conservation level of 179 ft and dead storage level of 151 ft for all three scenarios. For this

reservoir configuration, there is no major variation in releases against demand, evaporation losses and spillages for all three scenarios.

For economic and financial analysis studies, the selected scenarios were tested keeping in view the command area, cropping intensity, project benefits as well as the project costs. Economic measures like economic internal rate of return (EIRR), net present value (NPV) and benefit cost ratio (BCR) have been worked out to examine the economic feasibility of the project. The results reveal that the project is economically viable as it yields the EIRR greater than opportunity cost of capital i.e. 12 percent. BCR is also more than one and NPV at 12 percent discount rate is also positive. The project under all three scenarios ensures adequate returns to the economy as a result of investment of precious resources. Results of both economic as well as financial analysis indicate that the project is feasible under all three scenarios however the financial analysis suggests that scenario-1 is more viable than the remaining two scenarios provided the funds from donor agencies are available and payback period is short.