CHAPTER 6

SUMMARY AND CONCLUSIONS

6.1 GENERAL

The present study was conducted in different distributaries of LBP representing the head, middle and tail reaches to understand the performance of the main system. The results of the specific issues studied in detail were analysed and interpreted to document the present status of performance. The main issues assessed in this study which is a combination of performance of irrigation system, water quality issues and crop selection and performance of irrigation structures along with the management of Farmers’ Council with conflict resolution strategy could yield a better solution for the improvement of the irrigation system. The conclusions thus arrived are presented in this chapter in the following sections.

6.2 EVALUATION OF IRRIGATION SYSTEM PERFORMANCE

The Standardized gross value of production per unit cultivated area, unit command area, unit irrigation supply and unit water consumed are assessed as quite good in the Lower Bhavani project with the highest output assessed during the year 2005-06 was followed by 2004-05 and 2006-07 accordingly. The marginal farmers in the study area are unable to switch over to modern mechanization for carrying out the post harvest process. The cost of labour was high and the marginal farmers are unable to afford this demand and their expenditure exceeds the income resulting in heavy loss even though the market price of turmeric increased tremendously. Due to these reasons, in
some areas the farmers move to some other cropping pattern which results in less cultivable area for internationally tradable crop. The rapid growth of industries is also one of the indirect reasons for low agricultural productivity noticed at few locations. These industries afford good wages and certainly the agricultural labour switched their mode of working towards the industries.

Since seepage is another major component in water use efficiency like any other system, the specific reach of the canal lining that contributes for the overall improvement in the performance of irrigation system is considered for evaluation. The benefit cost ratio of canal lining for the Kugalur and Kavindampadi distributaries in head reach seems to be economically good, as the benefit exceeds 50 percent more than the actual investment whereas the benefits from middle reach distributaries such as Thindal, Poondurai, and from tail reach distributaries such as Mangalampatti and Anjur works out to 40 and 30 percent respectively. The variation in the acquired benefits shows that major part of canal lining works is done in head reaches are more beneficial than middle and tail reaches in LBP.

In the water quality investigations, it is inferred that the ground water in the Lower Bhavani command area happened to be contaminated mainly because of the increasing tannery factories, paper and dye industries in large numbers that could accumulate over a span of years. These industries release their effluent to the nearby water courses and by this process the pollutants are carried to other parts of the command area. The areas near by the Lower Bhavani Canal have low contaminant level since the canal would flow for about six months every year. This would enhance recharge to ground water thereby the pollutants get diluted. Whereas in the other part of the command area, such as Bhavani and Erode taluks, the pollutant levels are still high due to discharge of effluents in River Cauvery which has no continuous flow in all the years.
Therefore, the agricultural areas would become less suitable for cultivation since these pollutants with high concentrations in the irrigation water can affect the plant growth, causing root zone salinity and sodicity problems which in turn could reduce the yield. These tend to change the cropping pattern accordingly. The simulation of the ground water quality for the upcoming years shows that the contaminant level will increase and if the present conditions remain unchanged, in future the irrigation water would be heavily contaminated and the usage of it by crop for its growth will be greatly reduced resulting in reduction of yield.

6.3 ASSESSMENT OF SUITABILITY OF IRRIGATION WATER

The water used for irrigation was assessed using water quality indices and WATSUIT model. Using water quality indices like SAR, RSC and other parameters, the assessment of water samples of study area was done. Concentration of various salts present in the samples was given as input to WATSUIT model and the results suggest that there are no problems related to infiltration and reduced hydraulic conductivities for use in the field. The results also suggest the change in crops to be cultivated in the study area according to the changing quality of irrigation water, apart from the traditional crops. The current water quality status prevailing in the study area with respect to the above issues is analysed and documented.

6.4 COMPARISON OF PERFORMANCE OF IRRIGATION STRUCTURES

Irrigation structures play a major role in controlling and diverting the water flow. The structure must be in good condition to control the flow of water. So their performance is to be evaluated periodically for the efficient functioning of the irrigation system towards an improvement of the irrigation
system. The performance of the structures in the selected distributaries was evaluated by comparing the actual flow with the design flow. The data collected from PWD in the LBP command area gave complete information about the two distributaries and prove as a source for design data required for making general assessment of water delivery performance of the irrigation system.

A walk through survey along the entire study distributaries gave knowledge about the physical condition of the irrigation structures. At the Tail (Chennasamudram) distributary, thirteen structures are showing poor performance, in that five structures are damaged and suggested for repair works and fourteen structures are conveying more discharge than the design discharge. This creates a situation that the operators should take more attention to these structures in controlling the discharge since maintaining correct flow in these fourteen structures would permit downstream side of the canal to receive the correct flow and perform well.

The irrigation structures in head (Kavindampadi) distributary are performing well than the structures in Tail (Chennasamudram) distributary and more attention is required to improve performance of the structures located at Chennasamudram distributary where large deviation in discharge has been recorded. The sensitivity analysis also showed that at the head (Kavindampadi) distributary, the structures are performing well and attention is needed at the tail reach structures to improve their performance.

6.5 FUNCTIONING OF FARMERS COUNCIL AND CONFLICT RESOLUTION

The registered Farmers’ Councils have been postured number of questions through a well-planned questionnaire. These questions were treated as indicators on the social side in order to assess the performance of farmer’s
council for their role in improving the irrigation system performance. The conclusions drawn are indicated below.

a) The Farmers’ Council meets once in a month.

b) There are about 44 Farmers Councils were established at distributary level and about 29 Farmers’ Council have enough resources for undertaking maintenance works in their irrigation systems.

c) Farmers Councils have no support of women and none of the Farmers’ Councils have invested their surplus resources in irrigation infrastructure facilities for the use of farmers.

d) Twenty-nine farmer councils have conflicts and are discussed and settled then and there and about 15 Farmers’ Council have conflicts in irrigation management.

e) No women farmers were inducted as office bearers in any of the Farmers’ Council.

f) Water distribution is the only aspect where a conflict arises in the village.

g) In order to resolve the conflicts between the farmers, the Farmers’ Council has appointed a Neerkatti for the respective distributaries. The maintenance works undertaken by the Farmers’ Council are lining and construction of channels.

h) Farmers’ contribution in decision making was rated poor and the labour problem seems to be severe in the LBP command.
Almost half of the farmers in LBP face one or other problem regarding irrigation issues. 18% of farmers say that FC has a major role in conflict resolution. According to 18% of farmers water is a major and often encountered problem. Only 14% of farmers believe that water conflicts still prevails in LBP. Farmers face a lot of other problems and these problems are not due to the poor functioning of Councils. A good number of farmers are satisfied with the involvement of the Farmers’ Councils in the conflict resolution as shown in Figure 6.1.

![Changes seen after the functioning of FC](image)

**Figure 6.1  Changes (responses) seen after the functioning of Farmers Council**

The Farmers’ Councils even though is not satisfactory in all aspects, but are able to solve the basic needs of the farmers. They could help the farmers by making water available, and preventing occurrence of water conflicts. They could overcome the prevailing situation of not getting water for longer periods of time. The functioning of Farmers’ Organization could not satisfy all the farmers in all the aspects. As they focus only on the water
related issues, they could bring solution in a best way. They were able to bring satisfaction to the farmers in all the decision making, resource mobilization, communication and conflict resolution aspects of functioning. Even some of the Farmers’ Organization also focused on other problems of the farmers like demanding a better price for sugar cane.

The results of the study assessed the improvement in performance of the LBP system through measuring eight indicators. The intervention measures implemented over time are seven; two in the nature of physical intervention (Maintenance of structures and lining of canals), three Operational changes in irrigation (Rotational water supply, Conjunctive water use, modern crop production methods) and two Socio-economic measures (changes in cropping pattern and development of Farmers’ Councils).

The impact of these intervention measures was assessed by a rating score matrix of Intervention measures vs Performance indicators, the cells of which show the degree of improvement attained. The effective functioning of the Farmers’ Council in many of the distributaries, especially in the head reaches, the cropping pattern change effected in tune with the changing socio-economic conditions noticed in the command area emerged as best measures that enhanced the performance of the irrigation system in LBP. Therefore, among the intervention measures implemented in this system, the effective functioning of Farmers’ Council and rehabilitation of sensitive structures identified and making suitable training for their operation emerged as very useful measures and may be considered by the Government for adoption in other irrigation systems of the State.

The overall performance of LBP can improve, if maintenance of main delivery structures is given importance and streamlining of their operation is done, seepage loss which goes upto 40% is reduced by suitably lining critical sections and resolving the disparity between the head and tail reach of the distributaries of the project.