

Planning and Management of Surface Irrigation in Drought Prone Areas

Ashok K. Mitra

**INSTITUTE OF POLITICS AND ECONOMICS
PUNE 411004**

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FOREWORD

Irrigation projects have to be planned and operated to meet the national goal relating to efficient and equitable water supply from the system keeping in view the socio-economic, environmental and other relevant factors. In keeping with this broader objective, there is a need for laying stress on economic efficiency in planning, implementation and management of irrigation projects so that the projected benefits are actually realised by the agriculturists. It is against this background that the Steering Committee appointed by the Government of India in May 1981, to consider modernisation and improvement in the existing surface irrigation system, decided to carry out specific studies into the problem areas in the existing irrigation projects in operation.

The study of Mula Irrigation Project in Maharashtra was entrusted to the Water and Land Management Institute, Aurangabad. The study entrusted was in the nature of an evaluation study envisaged to identify the problems of irrigation planning and management involving both technical, technological aspects of irrigation development as well as socio-economic aspects of such a development. The present study was undertaken by the Institute at the instance of the Water and Land Management Institute, Aurangabad as a part of the total evaluation study. We are grateful to them for financial and other support provided to us for this study.

The study enquires into the aspects of planning and implementation for the fuller and timely development of the irrigation system as well as the aspect of management of water distribution and its use for fuller and efficient utilisation of the potential created under the system.

The study points out that the extent of under-utilisation is overestimated by the conventional procedure of estimating it by expressing area actually irrigated as a percentage of potential irrigable area based on project cropping pattern. Taking into account the water actually released during the year, it shows that while water available for irrigation is more or less entirely used up, the area actually irrigated is much smaller than what was expected to be irrigated based on project cropping pattern.

Improvement in the management of water distribution is sought to be brought about through the introduction of the Rotational Water Supply. The study shows that for the Rotational Water Supply to be successful not only is a technically sound distribution network necessary, but effective organisations of the irrigators below the outlet are also necessary for operating such a system.

Long gestation period in developing full potential of the system because of inadequate planning has led to cost

escalation which could have been avoided. A cost benefit exercise carried out for the project shows that extending irrigation over wider area in the canal command by growing seasonal crops instead of sugarcane on more than stipulated area, may not only increase the gross area irrigated, spread over wider area under canal command, but may also improve the benefit-cost ratio of the project.

The study highlights how the delay in the construction of distribution network even after full storage had been created not only led to cost escalation but also to a lop-sided irrigation development, because distribution network only in the upper reaches of the main canal was completed. This resulted into a lower benefit-cost ratio and also encouraged the farmers in the upper reaches of the main canal to grow heavy water using perennial crops like sugarcane and to use water wastefully, contrary to the objective of the project which was to provide protective irrigation over as wide an area as possible.

The conclusions arrived at in the study are of considerable relevance to the planning and management of surface irrigation in water scarce regions like Maharashtra and it is hoped that the study would be found useful in evolving some guidelines in modernisation of the existing new systems and in undertaking future projects.

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V.S. Chitre
Director

2 November, 1987

PREFACE

Fuller and timely development of any irrigation system and its fuller and efficient utilisation, based on the objectives with which the irrigation project is undertaken, are the most important aspects of planning, implementation and management of the irrigation projects.

Timely and fuller development of irrigation system implies development of the full storage (head works) and that of the entire distribution net work within the stipulated period. The obvious consequences of long gestation period are that in the interval between initiation and completion the cost of construction and operation are likely to increase well beyond what was planned and that in the interval the original objectives may be lost sight of.

Fuller and efficient utilisation of irrigation potential developed implies bringing the entire irrigable command area under irrigation based on the stipulated cropping pattern. Again, the obvious consequences of underutilisation of irrigation potential may not only be the adverse effect on the projected benefits from the irrigation system but may also be less than full realisation of the objectives of extending the benefit of irrigation to as large a number of farmers as possible.

For timely and fuller development of an irrigation project proper planning and implementation are the most important aspects and for fuller and efficient utilisation of the potential created proper management of the water distribution and its use are the most important aspects.

In our study we have looked into and analysed both these aspects with a view to examine the nature and extent of the adverse consequences of long gestation period and of underutilisation of irrigation potential, if any, as well as to examine the manner in which water is supplied and used and the factors that determine these and may be responsible for such consequences.

The study was undertaken at the instance of the Water and Land Management Institute (WALMI), Aurangabad. We are grateful to the WALMI for extending financial and other supports to carry out this study.

In completing this study I have had the benefit of receiving detailed comments and suggestions on the earlier draft from Professor Nilakantha Rath. I record my sincere thanks to him for sparing his time for this purpose.

I have also benefited from the discussions I had with Shri H.V. Dhamdhere, (the then) Director of the WALMI. I also express my sincere thanks to Shri P.V. Purandare of the WALMI for extending full support and cooperation at every stage of the work. His contribution in explaining

some of the technical details has been of immense value in preparing this study.

My thanks are also due to Shri N.D. Kamble for carrying out the field work in time and to Shri S.S. Kulkarni for timely help with the tabulation work.

I am also grateful to the concerned officers and staff of the Irrigation Department for their unstinted cooperation and help.

Lastly I owe a debt of gratitude to the Administrative Staff for typing the study report in time and making it available for circulation.

Ashok K. Mitra

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