Chapter - VII
Conservation and Management of Water Resource
CHAPTER VII

CONSERVATION AND MANAGEMENT OF WATER RESOURCES

VII.1 INTRODUCTION

The physiological existence of man and that of every other living organism depends upon the availability of water and many of man's food producing activities like irrigation, fish production etc. Though water is not inexhaustible it is uneven in distribution in space and time in relation to its quantity and quality. Therefore there is the need to handle this resource carefully.

The demand for water is bound to increase in the years to come as nation marches ahead to increase the standard of living of people. Owing to the rapid growth of world economy and civilization the need for the development of water resources has now become more urgent than ever before.

The socio-economic growth of the country, particularly in respect of rural areas, depends primarily on the continuing conservation and effective utilization of our water resources. India has been largely dependent on rains, which has resulted in uncertainty of cultivation in a dominantly agricultural country. Thus to face drought and famine the water supply systems were devised and practiced from the earliest times.

Planning and management of water resources is of great significance. Water management is a practice which include the integrated processes of
intake, conveyance, regulation, measurement, distribution, application and use of water to farms and for domestic purposes with proper control. reclamation of water logged and flood effected areas, construction of check dams etc.

Water resources are always referred to in relation to an area and include all water for the time being contained in any source of supply in the area. Development of water resources is defined as orderly marshalling of water resources to promote human welfare at minimum expenses of human and natural resources and contribute to national objectives. Water resources are limited in relation to the evergrowing needs for its use. They must, therefore be conserved and their planning must be aimed to obtain optional benefits for their development. Water management should be demand management oriented rather than supply management.

Planning and conservation of water resources should therefore include use of surface and ground water management. It depends on the combination of naturally occurring water conditions and water-related needs of the population as determined by the prevailing socio-economic conditions. Under favorable water resources conditions or low levels of socio-economic development, water management may not be a significant activity but under unfavorable conditions the situation is just reverse.

Management of water resources is essentially the application of knowledge to improve the conditions of water for socio-economic development. The quality of management is directly dependant on the state
of knowledge and the diffusion among these involved in the management processes. The existence of adequate knowledge within water management agencies must be supported by general awareness of water management.

VII.2 THE WATER RESOURCES MANAGEMENT

Any water resource planning has to take into consideration the effective use of rainfall and various losses of water on farms and irrigation channels through soil percolation.

Most of researches have laid emphasis on the utilization of floodwater. The pattern and intensity of rainfall of the region is well known. During period of rains, the water requirement decreases up to minimal limit and one can store excess rainwater. In the dry season, with intense heat and decreases in availability of rain water and water requirement is high. The flow of small streams, leaving aside, big stream have some discharge at that time also and one can succeed in maintaining that small flow through small check dams constructed across the river at certain distances so that they serve as small reservoirs throughout the river course. This water can be transferred to those areas where there is no discharge in streams or to areas which have no canals irrigation especially, in Bailhongal, Athani and western parts Chikodi and Hukkeri talukas of Belgaum district.

VII.3 FROM DEVELOPMENT TO MANAGEMENT

The challenge facing ground-water in India is the shift development i.e. additional extraction activities to management concerns which are of fundamental importance to resource sustainability. The emphasis on
management needs does not imply that ground water resources in India are fully developed. Additional extraction could still be supported in a few localities. However focus on development activities must be balanced by management mechanisms to achieve a sustainable utilization of ground water resources.

At issue also is the appropriate role for the government in the various activities of the sector. Most ground water development has been accomplished successfully though the private investment of millions of farmers (MOWR, 1996). Although it is facilitated by the provision of institutional and subsidized energy supplies. Ground water development will thus likely to continue in most regions by farmers who now understand the benefits of ground water irrigation. In contrast direct government involvement through the development of public tube-wells, though costly, has achieved little success and currently contributes a very minor fraction of the total area irrigated with ground water. While continued availability of credit may be important to maintain, particularly for poor formers, who need to replace or upgrade existing wells, large scale direct government support for groundwater development is unnecessary to day.

Protection of drinking water sources, pollution control, water recharge, and environmental concerns such as overdraft and associated water quality problems are the key issues need to be addressed. Overdraft is, however only a fraction of the management challenge associated with ground water. Large areas particularly in the command of surface irrigation systems,
suffered from water logging. Seasonal fluctuations, and the impact of development on the environment and non-agricultural users can be major problems even where overdraft of water logging is absent. Seasonal fluctuation in the water table can affect shallow wells, low seasonal flows in surface streams and pollution loads, this can have a major impact on the availability of drinking water, particularly on the poor, and on the environment. Non-point source pollution from agriculture and other sources combined with point-source pollution represents major challenge for groundwater management (MOWR 1996). These issues will apparently require leadership and facilitation primarily from the government. Unless management capacity is developed, the resource base will be undermined with major impacts on the environment, domestic users, agriculture and industry. Governmental efforts thus need to shift from development to these far more complex management needs.

The combination of challenges now emerging necessitates a broad based approach to ground water management. To date, most management responses to overdraft have focused on supply side solution such as ground water recharge. Although recharge activities are important and should be enhanced, they represent an extremely limited aspect in much broader array of potential interventions. On the supply side, conjunctive management approaches involving the operation of surface systems can improve the availability of both ground and surface water. Over all, however, demand-side interventions is if not greater, improvements in irrigation efficiency,
expansion of low water intensity cropping patterns, and encouragement of municipal and industrial water conservation, need to be core components of programmes to manage scarcity. Overall water management approaches need to focus on the interlined hydroalic and use systems as a whole rather than primarily on supply side aspects.

Similar broad approaches are needed to monitor and address environmental impacts and concerns, such as water logging and pollution. These need to be integrated effectively into ground water development and management approaches. These systematic environmental implications however should not be neglected by concentrating narrowly on overdraft of water logging. In addition, It is important to recognize the high level of variability in management needs, which can differ fundamentally even between adjacent areas. Further more, impact evaluation needs to be focused at the system as well as the local level.

Aside from these issues, existing organizations lack capacity in key management areas. Management is not primarily a technical challenge but depends heavily on social, economic, legal and their considerations. At present most ground water organizations are dominated by engineers. Even in the technical areas, most of capacity in the Central Ground Water Board is concentrated on exploitation and basic resource monitoring not on the types of system analysis essential for management. An additional constraint is the lack of integrated approaches or effective communication between the various
water and environmental organizations. Without effective institutional
various implant on integrated approach, and sustainable management.

Effective management will also require strong data collection and
analytical input. Description of ground water availability and the functioning
of hydrologic systems under pin major investment programs and
management decisions systematic approaches to management require a solid
legal framework if they are to be implemented. Ground water legislation will
ultimately be essential for management. There is, however, little anonymity
regarding the further such registration should review of legislative issues is
essential.1

VII.4 CONJUNCTIVE USE OF SURFACE AND GROUND WATER
RESOURCES

Conjunctive use of surface and ground water resources involve the
operation of these resources in a way which enhances their combined output.
Stable and regulated water supply is possible only when the water source
is unfailing, but such condition is not always met in irrigated system having
surface water when the source gets dried up when the monsoon is
inadequate. When the monsoon is normal as far as the total rainfall is
concerned and is fluctuating as far as incidence of rain fall over the period of
crop season is concerned, regulated water supply is affected thus
dependability of source of demand management is low. These difficulties can

1 Ground water Regulation and Management, India water Resources Management South Asian Rural
be overcome by conjunctive use of surface and ground water in the irrigation system.

Conjunctive operation of surface and ground water resources results in more economic yield by providing more water at a lower cost as well as in guaranteeing an adequate water supply of water.

Development of ground water resources not only meets the deficiencies of surface water supplies during drought but also supplements to a large extent.

VII.5 CONSERVATION OF WATER RESOURCES

Conservation is the use of natural resources for the greatest, good use for the larger time', We know that about 71 per cent of earth's surface is covered with water but most of it is not usable. The distribution of usable water which is hardly 0.5 per cent of the earth's total volume of water shows a great variability in time and space. The variability is well exposed in India with a monsoonal rainfall regime. Water surface as well as water deficit conditions occur the country during the same year. Generally, a particular area may successively suffer from drought and flood problems during same year. Therefore conservation of water resources is of great significance for the development of an area in a social-economic -ecological frame. Beyond all plans and programmes.