Chapter – V

Summary and Conclusion
SUMMARY AND CONCLUSIONS

The present study is evaluative in nature and specifically intends to look into the impact of a recent program, watershed development women forum Mohila Mandal Samakya of Orvakal Mandal, Orvakal. Watershed development has been introduced as a solution to the growing ecological degeneration and it promotes such action suitable for regenerating the ecological balance in the specific area. The programme emphasizes on the participation of the people in optimum utilization of natural resources as well as in their conservation. Socio-economic development of the participants is an integral part of the watershed development programme.

Watershed has been defined as a geographical unit consisting of a water point and it drains and the land and around it (CSWCRTI 1987). Hence, it can be considered as an ecological unit dealing with land and water usage (Chopra, and Kadaikudi, 1987). In detail it can be considered as an area consisting of water runoff into drains and the aerial expanse of land surface where the rainwater evaporates or percolates (Jaiswal and Purandare, 1995).

The attempts are made to improve the land, water, and other resources in an area through watershed programmes in India for the last six decades. Initially the effort was started with Damodar Valley Corporation in 1949. The early efforts included watersheds of a very large area consisting of catchment, distribution and utilization of water. The approach needed large scale planning, huge resources and gigantic effort. The impact of this approach was limited at local level and hence attempts were made subsequently to limit the area to a manageable size and to plan the programme as per the local requirements.
The emergence of drought prone area programme in early seventies focus the attention of the people on the local drought situation. The drought programmes not only aimed at providing immediate relief in the form of food and employment but also started the process of reversing the drought by long term ecological restoration programme. It is in this process that small areas have been identified for controlling the spread of drought. Since 1984 emphasis was thus laid on development of drought areas on watershed development basis.

A committee was appointed in 1993 to inquire into the constraints of watershed development programme and to suggest suitable remedies, under the leadership of Prof. C.H. Hanumantha Rao. The committee recommended for the active involvement of people in watershed development through watershed association and watershed committees. The committee also recommended for limiting the area of operation under watershed development for about 515 hectares.

The new watershed development programme came into being with effect from August, 1993. It has emphasized not merely on land and water development works but also on afforestation, animal husbandry and adoption of appropriate technology. To sustain the programme after withdrawal, watershed development fund is being established using the local contributions. Permanent structures are created as part of the programme for the users so as to enable them to continue the effort. Self-Help Groups are being formed, educated and trained with an intention of promoting socio-economic development on the initiative of the people themselves.
STUDIES ON WATERSHED DEVELOPMENT

The studies on watershed development are concerned with various components of micro-watersheds as well as with the impact of the programme. Growing to the components Murthy (1987), Bharad et. al (1991), Jaiswal (1995), and Purandare (1996) have emphasized on the need for strengthening the people, their institutions and levels of their participation in watershed development. Transfer of technology for the benefit of the people was another aspect stressed by them.

As far as development of land in watershed area. Singh (1996) expressed that soil conservation and dry farm technology are to be given prominence in the development programme. Bharad et al (1991) felt that the land development should take into account the physical, chemical and biological factors.

Prevention of soil erosion has been stressed by Hedge (1990). To him, about 6000 million tons of soil is eroded in the country every year. The land is losing about 9 million tons of nutrients annually. Hence, soil erosion control has been recommended by Hedge as the first priority of watershed development.

Purandare and Jaiswal (1995) indicated the level of water management as the best index for the watershed development. The imbalances to hydrologic cycle are said to be on account of improper water management by Murthy (1987). Accordingly it has been observed that efforts in watershed management must pay attention to the tapping of rain, surface and ground water properly for increasing moisture and water contents in the area.
S.L. Seth (2000)\textsuperscript{31}, in his paper on Watershed Management in India, stated that watershed management would remove hunger and poverty and watershed management would restore ecological balance, provide green cover over denuded areas, bring in more rains and improve environment.

J. Bhagyalakshmi (2001)\textsuperscript{18}, in her article entitled Water harvesting for drought-prone areas listed the benefits of water harvesting methods.

Shashi, L.Kolavalli and John Kern (2002)\textsuperscript{40} completed a study on Mainstreaming participatory watershed development based on a survey of 36 project villages in five states namely Andhra Pradesh, Karnataka, Maharastra, Orrissa and Rajasthan and stated that there was no shared understanding of the meaning of participation.

R.P. Singh (2004)\textsuperscript{43} attempted to examine the performance of watershed programme managed by Government Organization (GO) and Non-Government Organization (NGO) in adopted areas of Ranchi district and West Singhbhoom districts of Jharkhand. The study suggests that in order to evolve participation at local level within watershed area publicity material may be used and training programmes should be organized at the village level to acquaint the farmers the knowledge about latest improve technology and their advantage. Overall the performance of non-government organization was found to be better than the government organization.

Satyasundaram (2005)\textsuperscript{45}, in his paper on Water resource management in India, explained the role of water management in the development of India. He stated that ground water had played a prominent role as a primary source of domestic water
supplies in rural and urban areas. The study also states that there is a great need for famen's participation in irrigation management.

Livestock in rural areas is a source of energy, employment and income. However, unless the livestock is adjusted to the requirements of environment, it contributes in a negative way. The livestock farming in the watershed area should take into account the availability of fodder, grass and water. Ryan et al (1982) observed that by introducing modern methods of animal husbandry, the existing resources could be effectively used for managing 30 percent to 70 per cent of additional livestock without disturbing the eco-system.

In a study on the impact of the watershed development, Ksheersagar and Ghodake (1991) observed that extension of cropping technology would result in enhancing the productivity of the crops three to four times. Besides improving the productivity, the modern crop technology would also help in reducing the cost of production significantly.

In a study of an experimental watershed, Sarin and Ryan (1983) observed that irrespective of the rain fall, the farm profitability was enhanced to a significant level by using improved technology.

The studies mentioned above mostly stressed on the development in qualitative terms. They also pointed out that peoples' participation as the most significant factor contributing for the success or failure of the programme. Kurnool district has been facing the problem of the drought for the last 60 years. The incidence of drought has been constantly growing and the area affected by drought is also on the
rise year after year. The initial attempts at drought control failed due to lack of participation of the people. From drought, the district is forced to face the problem of desert, it is in this context the present study is taken up.

OBJECTIVES OF THE STUDY

The present study aims at understanding the impact of watershed development programme undertaken by Mohila Mandal Samakya, Orvakal Mandal in a drought prone area of orvakal village. The specific objectives of the study are:

1. To review the overall features of watershed development programme in India.
2. To understand the salient features of a watershed area in the drought prone locality.
3. To examine the role of the Implementing Agency (MMS) in promoting watershed development.
4. To measure the impact of the given watershed programme on the people especially with reference to employment and income generation.
5. To study the water of programme implemented in watershed.

METHODOLOGY

The study is taken up in Kurnool District of Andhra Pradesh. The district is divided into six Multi Discipline Team Areas. Presently, the watershed development programme is being implemented in all MDT & areas. The MMS Orvakal has implemented four watersheds in orvakal agricultural field. Orvakal watershed-1 is one among them for this study.
Orvakal is a typical watershed area in the district and it has been implemented during the years 2002-2007 and hence presents an ideal situation for an evaluative study.

Case study technique has been adopted for understanding the orvakal watershed. Information on the project has been obtained from the records of watershed committee as well as the sponsoring Mahila Mandal Samakya, Orvakal. The watershed area records have been compared with the responses of the people to measure the changes that occurred in the village in aspects related to land, water, crops and livestock. Information from the participants, numbering 164 has been obtained by administering schedules. Interviews with the watershed committee members and project officials also helped in collecting the data.

MAHILA MANDAL SAMAKYA, ORVAKAL

Mahila Mandal Samakya is a networking of MMS of village organizations of village organizations involved in rural development since 2000. It was started by a group of young self Help Groups led by Mandal Samakya leaders. It is registered organization working for the cause of women empowerment. Particularly women development.

Development of the rural poor, has been the primary objective of MMS orvakal. Its target population comprises of mostly the poor drawn from scheduled castes and schedules tribes and backward communities. Emphasis on the development of women and children is given by MMS orvakal. The major programes of the MMS include community organization, thrift and saving, awareness building, health, and vocational training and employment generation and ecological restoration in its area.
MMS orvakal has been working in about 23 villages and its efforts were financed by DRDA and DWMA of Kurnool it was able to generate near one crore so far for its development programmes of which about one crore was contributed by District administration of Kurnool.

In the recent past, MMS orvakal identified ecological restoration as its one of the functional areas it believes that poverty, unemployment, and ignorant are on account of the ecological degradation. Hence, it is concentrating upon restoring ecological balance as a solution to all other socio-economic and environmental problems.

MMS orvakal has been propagating environmental awareness and education among the people. By establishing a central nursery, it is in a position to supply the saplings to the people and to the sister MMS in the area for plantation in the communities and community lands in the project area.

Micro Finance and promotion of Self Help Groups, conducting capacity building among the women and awareness generation activities are the other areas of this Mahila Mandal Samakya.

PROFILE OF ORVAKAL WATERSHED-I

The orvakal watershed was initiated in early 2003 by MMS orvakal. The project survey was taken up through participatory rural appraisal and technical survey was initiated with the help of local people. The MMS has extended financial assistance to conduct this survey.
Orvakal watershed-1 consists of a total area of 515 hectares of land covering part orvakal village. The present study is confined to only this sector. The land in this watershed is divided into three groups. The group 1 lands are situated between the hills and the plains. They are brown-red and block cotton soils with very little top soil. As they are exposed to severe water run-off, to prevent further erosion measures such as, bunding, furrowing across the slopes, land leveling etc., have been identified for development.

Group II lands are in the inter section of the hill slopes. This area is subjected to drastic soil erosion, ravaged by water, wind, human and over grazing of animal. The treatment suggested for this area includes gully plugs, check dams and construction of water storage tanks in the farms and plantation on the bunds of the agricultural bunds.

Group III lands consist of mostly hilly and rocky terrain with a slope of around 9.5 per cent. As they contribute for soil erosion and water run off, this area needs measures to check water flow through vegetative and earthen works. Plantation on the ridges of the hills is suggested under this watershed programme.

PROGRAMME IMPLEMENTATION

Watershed programmes were started through intensive awareness and education campaigns. MMS orvakal used the village development bodies, such as Sanghams for the poor and the women for carrying out awareness. In the second phase, watershed committees were constituted independently for the part of village under watershed-1 after enrolling the beneficiaries as members of the watershed
association. The leaders of the association were given intensive training in watershed development and were directed to educate their respective members.

Once the watershed association and the committees were formed and stabilized, MMS started micro-planning for the watershed development through PRAs and identified the components of action to be taken up. In carrying out the land and water development activities, preference was given for the land less. While the land less were able to procure employment, through watershed development programme. The small and marginal farmers have actively participated in this programme, reclaimed the wastelands and enhanced the soil and moisture contents in this area.

**IMPACT OF WATERSHED DEVELOPMENT**

164 families constituted the members of the watershed association at orvakal and derived the benefits. They belong to mostly uneducated and lower socio-economic strata. The watershed association and watershed development committee took a very active part in implementing the watershed development programme about 75 per cent of the people took active part while only 25 per cent were passive participants.

The members of the watershed committee played an active role in financial management, project planning, and project direction. Among the others nearly 40 per cent each were engaged in mobilization of the people and in implementing the programmes. Nearly 89 per cent of the people were extremely happy with their involvement, seven per cent were satisfied with their role and only 3.2 per cent were not satisfied with the level of their involvement in project implementation.
Land development measures covered 45 per cent of the total land area. The development programmes included land leveling, land terracing (54 acres), stones and boulders removal (61 acres), and about 7.8 kms of farm bunds were laid in this region. Altogether 138 acres of land was brought under cultivation through reclaiming the waste and unused lands.

In all 48 gully plugs, covering a total length 648 meters, were taken up to prevent soil erosion and denting. 15 check dams were constructed resulting in creating a water storage capacity of 1.8 sq. kms. area. Two water ponds were created besides desilting 328 sq. ft. of the irrigation tank. Canals of 1.4 kms length were re-laid.

The land and water development measures resulted in recharging two surface wells and 18 bore wells. The ground water table increased by 13 ft. Nearly 51 acres of land was brought under irrigation additionally.

There was a significant improvement in the extent of crop productivity on account of the water development programmes. The productivity raised was to the extent of 39 per cent in groundnut, 58 per cent in pulses, and 112 per cent in paddy. The red gram production showed a phenomenal growth of 169 per cent.

There was a significant improvement in the livestock situation in the post watershed development period. The number of cows and sheep went up by more than 190 per cent. Buffaloes registered 50 per cent increase and the poultry recorded 37 per cent growth.

The programme generated plenty of employment opportunities for the beneficiaries. In all 12704 man days were created through land and water
development works. The afforestation programme was successful not only in generating 1384 ma days but also in the plantation of 55000 saplings.

Orvakal watershed development reveals a story of success of the people and the voluntary action in restoration of ecological balance as well as in promoting sustainable development. It has been a practical example and served financial and training needs of village organizations as well as self help group members.

During the course of data collection and in the interaction phase with the people, their representatives and the functionaries involved in the watershed development, the observations made also indicated a few deficiencies. Lack of support from the government line departments and the government officials for the effort was the foremost among them. The Self help Groups formed during the project implementation phase are yet to gain recognition and support from the DRDA. The land reclaimed from the community wasteland are yet to be distributed among the people.

It is heartening to note that the watershed association and watershed committee are still actively involved in the maintenance of the check dams, gully plugs and water ponds because there have been created them selves. Even after conclusion of the project, the watershed committee took up the deslillation activity in the irrigation tank and express their willingness to make it regular practice when ever it gets silted.

Orvakal watershed thus proved to be an effective programme in the development of land, enhancing the water table of the area, raising crop productivity,
improving animal husbandry and in generating employment assets, income for the benefit of rural poor. Awareness generation on environment and capacity building in using natural resources available in the area for better living.