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# Impact of Watershed Development Programme in Telangana State – A Case Study of Karimnagar District

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**Abstract:** Watershed is a basin-like landform defined by highpoints and ridgelines that descend into lower elevations and stream valleys. Watershed development involves conservation, regeneration and judicious utilization of natural resources. It aims to bring about an optimum balance between the demand and use of natural resources so that they remain sustainable over time. Ex-post-facto research design was adopted for the study with the objective to find out the extent of participation of watershed farmers in Integrated Watershed Management Programme (IWMP) and to find out its benefits. Watershed advancement programs are being executed with a wide goal to improve financial states of the asset poor and impeded areas of provincial populace through preservation, recovery and sensible utilization of every regular asset, keeping in perspective on country advancement. Along these lines, this examination surveys the effect of watershed advancement programs on farming creation, yield, trimming design and editing force, domesticated animals populace, milk generation and feed and grain. For this, two regions were chosen from two watershed improvement programs based on greatest finished undertakings and most extreme secured region. Two miniaturized scale watersheds were haphazardly chosen from each region. Normal and rate strategies were utilized for examining the outcomes. In Telangana, the Drought Prone Area Programme (DPAP) and Desert Development Programme (DDP) are being implemented since 1995 in 7 districts. Watershed programmes are implemented in Mahabubnagar, Ranga Reddy, Medak, Adilabad, Khammam,Warangal and Nalgonda districts under DPAP.

**Keywords:** Watershed Programmes, Watershed, Integrated Watershed Management Programme, Telangana

## Introduction

In the existing day in India there are many serious problems combating the per capita, along with the issues i.e. decreasing cultivated land and sparkling enough water availability are the predominant along with soil erosion and land degradation which leads to create the threatens in the field of environment, food, social and financial protection in the country. In this juncture we know that land and water development can't be viewed independently both will enhance together for the sustainability of our united states in customary and rain fed areas in particular. In the country like India there are many watershed interventions tested in distinctive areas and discovered not possible i.e. without proper lively and hearty participation of the local community a long term and sustainable answer can't be possible for land and water assets development. Generally watershed interventions leads to sustainable development when both

the herbal assets like land and water improve together which able to grant a sustainable production system to the rain fed areas, even if a small herbal drainage system. So with above description here now needed a complete and a new paradigm for administration of land, water and other biomass resources with focusing on social and institutional aspects with following a "bottom-up" approach, in the same time with applicable planning and administration. With following this approach there are giant quantity of watershed programmes are now carried out for productivity enhancement.

The survival on earth essentially depends on two basic resources i.e soil and water being the two valuable gifts of the nature to mankind. Water is a prime, natural, indispensable and vulnerable resource which fulfils a number of significant functions. Despite its preciousness, water has remained as a neglected issue till today. We are faced with the critical question of how to provide stable supply of water for drinking and food production for an estimated population of about eight billion people by 2025. Agriculture is facing enormous problems in food production mainly due to scarcity of water. Though India is a water rich country, it has been reduced to a water insecure nation since half a century. The acuteness is such that there may be a water emergency era by 2025 where less than 1450 cu.m. of precipitation is considered critical for the human survival.

The natural resources like water and land are the most crucial input for bringing the ecological, social and economical revolution and also treated as catalyst for any types of development. With this value one of the most comprehensive planning is necessary to execute the watershed programmes properly at micro level because this is the foundation stone for any types of sustainable production system, also a proper conservation, and management is necessary. Now a days the importance of watershed management programmes increasing particularly as a system approach with the aim of improve the livelihood of people which is one of the millennium development goal along with conservation and regeneration of the natural resources. In the same time the present role and proper participation of local community is necessary to ensure the success and sustainability of watershed programmes which is also worldwide accepted.

During last two to three decades it was found that there were several innovative approaches and planning used with the aim of involving the local people in every phases of development, the approaches like: top-to-down, planning from below, bottom-to up, micro level planning as well as multilevel planning, amongst all bottom-to up planning is mostly used now due to two reasons i.e. firstly the development plan proposed here should desirable for the people and secondly the aim/objectives proposed must be related to the needs and interest of the local community, but the involving scenario is still now unchanged.

No doubt in the present over populated situation the intervention relating to natural resources are immense necessity, but the one type of interventions alone cannot sufficient for poverty elimination from our country this is because in the intervention area there are residing more number of households who are landless. So in this juncture special type of

interventions and approaches are needed to provide opportunity to use fairly the natural resources.

In this situation IWMP interventions now mostly helpful for small and marginal farmers as well as for landless and asset less workers with emphasizes different sectors like integration of natural resource management, productivity, better livelihood options & income through farming system which is the ultimate aim of watershed programmes in particular national development in general. The particular intervention focuses on water resources conservation in the implemented area, frequent monitoring the recharge structures, social management mechanism, sensitizing the users for proper utilization of available resources, sense of ownership along with efficient &effective operation& maintenance of innovative structures. Which will undoubtedly able to change the scenario of locality with particular reference to the economics, health and educational sectors?

Thus the ultimate objective of this programme is to develop natural resources based on sustainable productivity, improve standard of living of poor farmers and landless labourers and to restore the ecological balance along with the development of health and educational area. Keeping the above view, the massive watershed development programme for the rain fed area has been launched under different schemes.

## Environmental Impacts

The watershed development activities generate significant positive externalities which have a bearing on improving the agricultural production, productivity, socio-economic status of the people who directly or indirectly depend on the watershed for their livelihood. The environmental indicators include water level in the wells, changes in irrigated area, duration of water availability, water table of wells, surface water storage capacity, differences in the number of wells, number of wells recharged /defunct, differences in Irrigation intensity and Watershed Eco Index (WEI).

The impact assessment studies conducted across regions have revealed that watershed development activities generate significant positive impacts in the environment and the treatment activities help in conservation and enhancement of water resources. Most of the studies have reported that water level in the wells increased leading to expansion in irrigated area in the watershed. The increase in water level of the wells has been reported from 0.1 metre to 3.5 metres and this varied across seasons. Similarly, the expansion in irrigated area due to watershed development activities has been found from 5.6 per cent to 68.0 per cent across regions and seasons. The rainwater harvesting structures constructed in the watershed help in enhancing the surface water storage capacity. The structures like minor and major check dams, percolation ponds, farm ponds, and renovation of irrigation tanks help enhance the surface water storage capacity.

## Natural and Artificial Recharge

The rainwater harvesting structures like percolation ponds, check dams, tanks and farm ponds are expected to increase the groundwater recharge in the wells

located in zone of influence. Enough care should be taken to segregate the natural and artificial recharge. Experiences show that the total groundwater recharge in wells due to various structures is around 30 per cent. However, the natural recharge without any rainwater harvesting structures is reported to be about 10 per cent.

### Quality & Status of water harvesting structures

Harvesting the rain and runoff water is the prime objective of the watershed development programme. To do this, many structures of various types like check dam, nala bund, farm ponds, etc. needs to be constructed across the gullies of various orders. Quality and current status of water harvesting structures play a crucial role in generating impacts in a post project scenario. It helps us assessing the nature of project implementation. Further, unless the qualities of the structures are good, the desired results cannot be produced. Also these structures are expected to withstand the rough conditions. Thus the quality is essential to maintain status quo. Maintenance of water harvesting structures is significant to enhance storage capacity and also in certain cases the infiltration capacity. The structures also require periodical maintenance like plastering, pointing, and repairing to prevent cracks and leakages. Maintenance of storage capacity and infiltration capacity is essential in order to avoid water flow as a runoff.

### Community contribution to Watershed Development Fund (WDF)

For effective management of a watershed, WDF is established out of the contributions from the stake holders. The contribution should be a minimum of 10% of the cost of the work executed on private lands (5% for SC/ST) and 5% in case of common property. This fund should be utilized for maintenance of assets created on community land or for common use after completion of the project. Contribution is collected from the beneficiaries as it allows a sense of ownership over the assets created. It is also a reflection on their involvement in planning and execution of the watershed program.

### Green Manure

Green manure refers to plants (i.e. cover crops,) that are grown to improve or protect the soil. These plants tend to grow fast, cover the ground, and have deep roots, but are not left to flower or harvested for food. The deep roots bring – to the surface – nutrients that the plants with shallow roots cannot reach. Some of these plants also take nitrogen from the atmosphere and deposit this in the soil. By covering the ground, these plants also prevent the growth or spread of weeds, and can be used to break disease cycles; some have beneficial microbes. The plants can also be cut and placed on the compost heap. Whichever way, green manure increases the levels of organic matter in the soil. The commonly used green manure in the project area includes Sesbaenia, Mustard, Fenugreek, Fodder raddish, Forage/ Green pea etc.

### Objectives of the study

1. To discuss about the administrative implementation-chain and recent initiatives taken up and implemented by the Government of India for the effective implementation of the programme.

2. To assess the performance of the integrated watershed management programme during the year 2018-19.

## Methodology

The data sources used for this study are secondary in nature collected and compiled from reports of govt. of India and Telangana, various academic research journals, newspapers, online web articles.etc.

## Watershed Development Programmes in Telangana State

About the Study Area the State of Telangana was formed on 2nd June, 2014 as 29thState of the Indian Union by carving out ten districts from the erstwhile State of Andhra Pradesh. This State is the result of a half century long movement,on account of economic and cultural deprivation. The State falls under two agro climatic regions i.e., Northern Telangana and Southern Telangana regions. While the Northern Telangana region comprises the districts of Adilabad, Karimnagar, Nizamabad, Northern part of Medak, North West part of Warangal, South East of Nalgonda and Khammam, the Southern Telangana comprises Ranga Reddy, Mahboonagar, Nalgonda , North Western part of Warangal and Southern part of Medak district. While the average rainfall of Northern Telangana zone was 900- 1150 mm, the average rainfall of Southern Telangana zone was 700-900 mm.

In Telangana, the Drought Prone Area Programme (DPAP) and Desert Development Programme (DDP) are being implemented since 1995 in 7 districts. Watershed programmes are implemented in Mahabubnagar, Ranga Reddy, Medak, Adilabad, Khammam,Warangal and Nalgonda districts under DPAP.

Traditionally, the watershed approach was aimed at treating degraded lands with the help of low costs and locally accessed technologies such as in-situ soil & moisture conservation, afforestation etc by involving village communities in the implementation of watershed programme under DPAP and DDP to promote overall development of poorer sections of people inhabiting in the programme areas.

The approach basically followed was project based Ridge to Valley concept with the minimum unit of area being 500 hectares. The Watersheds Programme is being implemented in 94 Blocks in DPAP and in 16 Blocks in DDP. So far Government of India has Sanctioned 3882 Watersheds under DPAP and 906 under DDP covering an area of 19.41 lakh hectares and 4.53 lakh hectares respectively.

## Peoples Participation in Watershed Management

Like all other development programmes, watershed development also banks heavily on the participatory approach. Though, watershed development programme envisages an integrated and comprehensive plan of action for the rural areas, peoples' participation at all levels of its implementation is very important. It is so because the watershed management approach requires that every piece of land located in watershed be treated with appropriate soil and water conservation measures and used according to its physical capability. For this to happen, it is necessary that every farmer having land in the watershed

accepts and implements the recommended watershed development plan. As the issue of sustainable natural resource management becomes more and more crucial, it has also become clear that sustainability closely linked to the participation of the communities who are living in close association with these natural resources.

## Impact of Integrated Watershed Management Programme Karimnagar District

Under IWMP, a Dry Land Horticulture (DLH) activity was financed in Thimmapur mandal of Karimnagar district. This activity has helped in realizing the dreams of the farmers by creating sustainable livelihoods. Mango trees were planted under the project and intercrops were also cultivated in the mango orchards. Cotton crop was raised as inter-crop and the farmer could get a net income of Rs. 23,478/- during the first year. The Governments are attaching much importance to the criteria fixed for allocation of target area to sates under integrated watershed management programme, particularly the indicators like poverty index, percentage of SC/ST and marginal and small farmers, area under rain fed agriculture and extent of degraded land. However, the Government must think over to have equity approach" while sanctioning the projects and the soil and land degradation and moisture indices are to be given priority and to release the funds accordingly.

Weathered gneiss with schist occupies most of the southern parta under a thin cover of alluvium. In schists, phyllites and slates, the weathered zone extends to depths greater than granites and gneisses. Muscovite schist often grade into gneiss in these areas. These have well-developed foliations and irregular joints and are intruded by granite, amphibolite, pegmatite and quartz veins. The contact between these intrusives and schist, provide a good channel for ground water circulation

## Conclusion

Watershed is a basin-like landform defined by highpoints and ridgelines that descend into lower elevations and stream valleys. Watershed development involves conservation, regeneration and judicious utilization of natural resources. It aims to bring about an optimum balance between the demand and use of natural resources so that they remain sustainable over time. Along with above major impact the present watershed management programme has another major impact on changing the surface and groundwater availability during the summer season means in the critical period when there will be no rain in the area. Through the increased surface and groundwater the cropping system can be developed like increasing cropping system, land use system, involving livestock, horticulture, and vegetable production along with the major and valuable impact on the education and health sectors of that area. The watershed programme will impact as increasing productivity of crops which helps to increase the margin profit of the farmers. It also helps to combating the adverse impact of drought and any other natural calamity along with provides more water availability and mare fodder security in this scarcity time. Along with all these thing as the programme is integrated it has the great impact to change the educational scenario of that area and nearby areas as well as it also helps the peoples to aware about the

deferent diseases and develop the health situation of that areas.

The impact assessment studies of the watershed development programme prepared by the Department of Land Resources, Ministry of Rural Development (2018) for 16 states – Andhra Pradesh, Bihar, Chattisgarh, Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamilnadu, Uttaranchal, Telangana, Uttar Pradesh and West Bengal reveal that watershed development programmes had a positive impact on land use, irrigation, cropping pattern and productivity, fuel wood and fodder availability, livestock population, employment generation, farm income , the no. of persons living below the poverty line and capacity building and people's participation.

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