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IMPACT OF WATERSHED DEVELOPMENT PROGRAMME IN KURNOOL DISTRICT (A SOCIOLOGICAL STUDY)

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INTRODUCTION

This background paper draws together information concerning watershed management, water supplies and rural development on Andhra Pradesh. It does not aim to be comprehensive but, instead, to give the major features of these issues.

Semi-arid south India, especially Karnataka and Andhra Pradesh, has a lot in common too. The granites, the red soil tracts and the black soil tracts, paddy and groundnut, the tanks and other water harvesting structures (kuntas), the sparse tree cover, and the old dug wells which were traditionally good sources of water and the newer borewells (with their high failure rates).

In the arid and semi-arid regions, precipitation is generally lower than potential evaporation, non-uniform in distribution, resulting in frequent drought periods during the crop growing season and usually comes in intense bursts, resulting in surface run-off and uncontrolled rill and gully erosion. In the cool winter areas, as in the Mediterranean type of climate, precipitation is less than 300 mm, part of which is lost to evaporation and run-off. The amount stored in the root zone is well below crop water requirements. In dry (semi-arid) tropical areas, such as the Sahel zone in Africa, although mean precipitation is relatively higher (500mm), a larger portion of precipitation is lost to evaporation.

A large part of the rainfall returns to the atmosphere directly by evaporation from the soil surface and also a part of that infiltrated into the soil to a small depth evaporates into the atmosphere with no benefits. The part that flows as run-off, if not intercepted, goes to slumps, losing its good quality and evaporating; it may even flow into the sea.

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The principle of agricultural rainwater harvesting is based on the concept of depriving part of the land of its share of precipitation, which is usually small and non-productive, and giving it to another part to increase the amount of water available to the latter part, which originally was not sufficient and to bring this amount closer to the crop water requirements so that an economy in agricultural production can be achieved. Such concentration of precipitation in a smaller area is called water harvesting (WH) and may be defined in various ways such as:

Critchley and Siegert (1991) simply define Water Harvest as 'collection of run-off water for its productive use'. For Reij et al. (1988), it is a hydroagronomic term covering a whole range of methods of collecting and concentrating various forms of run-off. The concept of Water Harvest, as described above, is different from the traditional soil and water conservation practices in which no part of the land is purposely deprived of its share of water. Soil-water conservation practices aim at preventing surface run-off and keeping rainwater in place, whereas WH makes use of and even induces surface run-off.

In the water harvesting process the run-off-producing area is adjacent to the cropped area, and part of the land and most of the precipitation water will become productive. More importantly, agricultural production becomes possible and the water harvesting systems might be for a single purpose or for multi-purpose and built to serve domestic, agricultural, animal or environmental uses.

Only about 14 percent of rural households haved access to piped water schemes to meet drinking and domestic water needs. Most use water from tubewells or open wells, while a small minority use tanks and springs. Hence there is a high dependence on groundwater for drinking and other domestic purposes. Nearly 90 percent of rural households collect water from community sources, which are often remote and suggesting that a substantial amount of time and effort goes into water collection in rural AP. By 1993, only about 60 percent reported access to safe drinking water. And only 11 percent had these sources within their own premises.

STUDY AREA

The study area is Kurnool district located in one of the drought-prone districts of Rayalaseema region of Andhra Pradesh. The main focus in the study area is on the Watershed Development Programme implemented by District Water Management Agency

(DWMA) and the NGOs. While India is considered to be rich in annual rainfall and total water resources, water is spatially and temporally unevenly distributed. Andhra Pradesh is one of the states with less-than-average rainfall, while within the state, Kurnool district is registered as the annual average rainfall of 560 mm. The area is one of undulating topography, poor soils and a generally low resource base. Over the years population pressure has added to the problems of this region characterized by high fragility and low carrying capacity. Moreover, of late, rainfall has become more erratic with its distribution, becoming unfavorable for crop calendars. Though average rainfall over the last 100 years appears to be stable or increasing, rainfall in the crucial months like July (showing of groundnut which is typical crop) has declined. Its geographical disadvantage provides little scope for surface irrigation facilities. As a result, Kurnool has the proportion of area under irrigation (14.6%) in the state. Kurnool district accounts for 5.58 per cent of the state's population and 7.95 per cent of the geographical area. The incidence of gender discrimination is expected to be relatively more acute here because of its low level of development.

OBJECTIVES

Kurnool district is the specific objectives of the study are as follows.

1. To know the importance of watershed development programme.
2. To discuss the origin and growth of watershed development programme
3. To understand the socio-economic profiles of the sample farmers and sample watershed villages.
4. To analyze the impact of water harvesting structures promoted under watershed development programme on sample beneficiary farmers.

For selecting the sample from the universe for this study, stratified and purposive sampling

THE RURAL ECONOMY

Agriculture is the mainstay of the rural economy in AP and Karnataka, and agriculture related activities support the largest proportion of people and provide the largest share of total income to the people. But rice mills, flour mills, and oil presses sit side by side with motor repair shops, provision stores, drug stores and small hotels in the small rural towns. There are also granite and limestone mines in these parts, which provide employment to local labour but export the produce. By and large, private enterprise is dynamic in these

rural towns. Transport industries are therefore important, but road links are not always good.

Local produce markets in district towns and tashil towns are often controlled by market operators, and there are established codes of conduct which ensure the exploitation of those who either don't know or do not have the 'clout' to get a good deal. Commission agents buy produce on auction, and small farmers who venture to sell directly here have little negotiating power and have to take the offered price. Larger farmers have the leverage to negotiate good price with commission agents, often withholding their produce from the market till they get the right price (most usually done in cotton). Others may be able to market in other towns for better prices (e.g., Bangalore farmers sold their tomatoes in Kurnool market during the cyclone of 1999 which destroyed a large part of the AP crop).

WATERSHEDS IN INDIA

Approximately 170 million hectares in India are classified as degraded land, roughly half of which falls in undulating semi-arid areas where rainfed farming is practised. Long-term experiments by a number of research organisations in India in the 1970s and 1980s confirmed that the introduction of appropriate physical barriers to soil and water flows, together with revegetation, could generate considerable increases in resource productivity. These, in turn, stimulated the formulation of a number of government projects, schemes and programmes in support of micro-watershed development. In India, micro-watersheds are generally defined as falling in the range 500-1000 ha. A mini watershed comprises a number of micro-watersheds and covers around 5000 ha. A macro-watershed is equivalent to a river basin and may encompass many thousands of hectares. The micro-watershed concept aims to 'establish an enabling environment for the integrated use, regulation and treatment of water and land resources of a watershed-based ecosystem to accomplish resource conservation and biomass production objectives." (Jensen et al., 1996).

Over the last decade, the Government of India has set aside substantial budgetary provisions for micro-watershed rehabilitation and development. This initiative underpins a shift in agricultural policy, which acknowledges the neglect of rainfed and common areas during the period of the 'green revolution', and accepts a link between the degradation of rainfed areas and poverty of large numbers of people.

RECENT CHANGE IN FOCUS

The various schemes of watershed based development (see Table below) have a slightly different focus: the National Watershed Development for Rainfed Areas (NWDPRA) focuses mainly on the rehabilitation of agricultural land, the Integrated Wasteland Development Propgramme (IWDP) on wastelands; the Employment Assurance Scheme on employment-creation opportunities; and Drought Prone Areas Programme (DPAP) and the Desert Development Programme (DDP) are determined by agro-climatic conditions. After 20 years of efforts in poverty alleviation and drought mitigation, the government constituted several committees, culminating in a technical committee headed by Dr. C.H. Hanumantha Rao in 1993 to make specific recommendations on the implementation of the Drought Prone Areas and the Desert Development Programmes with a watershed approach. The committee submitted its recommendations in 1994. Based on these recommendations, a new set of Guidelines for Watershed Development (GOI 1994) were formulated by the Ministry of Rural Development. These came into effect on 1 April 1995 and now apply to all the Ministry's watershed projects. Now generally known as the 'Common Guidelines', they mark the beginning of a new era in public-sector rural development programmes. They envisage a 'bottom-up planning' approach, working where possible through NGOs and with community participation as a central principle. The guidelines set up a cost norm of Rs.4000 per hectare for each watershed of about 500 hectares.

The latest step is the definition of the Common Approach to Watershed Development, by the four Central Government Ministries implementing watershed-based programmes in the country – the Ministry of Agriculture and Cooperation (MoAC), the Ministry of Rural Development (MoRD), the Ministry of Environment and Forests (MoEF) and the Ministry of Water Resources (MoWR). But the grand culmination of this 'single window' approach – discussed and initiated at the 1998 Workshop on Wasteland Development in India12 – the new Guidelines are yet to come into force.

WATER HARVESTING THROUGH WATERSHED PROGRAMME

In India, watershed management is an important rural development strategy, particularly in rain fed areas characterized by low-productivity in agriculture, degraded natural resources and widespread poverty. A watershed is a geographical area, which drains into a common point, and where soil and moisture is conserved in situ. While watershed development has

been implemented since before independence, interest in this area has grown in recent years. Millions of people depend on fragile agriculture and natural resources and there is a huge demand for techniques that can lead to sustainable management of land and water. In such a context, watershed development has become quite necessary. The process of collecting natural precipitation from prepared watersheds for beneficiary use.

- Collecting and concentrating various forms of run-off from precipitation and for various purposes.
- The process of concentrating precipitation through run-off and storing it for beneficial use.

The watershed approach encourages the promotion of co-operation between upstream and downstream stakeholders – in an effort to minimize conflicts over land and water. Plans must make sense both economically and environmentally – to contribute for poverty reduction and improve the functioning of the watersheds – particularly to restore the recent widespread reduction in groundwater levels in semi-arid areas. The watershed approach also provides clarity in determining the economic importance of water-related ecosystem service (e.g. increasing water yield, improving water quality, reducing sediment delivery to a reservoir). The approach can be used at a range of spatial scales, from micro-catchments upwards.

IMPACTS OF GOVERNMENT PROGRAMMES

While it is true that watershed-based rural development projects have been formulated with the honourable aims of improving the natural resource base, agricultural production and alleviating rural poverty, these have not always been achieved.

Adverse effects on rural poverty?

Watershed-based rural development programmes have been criticised for not reducing rural poverty. Not only are they biased towards benefiting the landed (who can take advantage of the additional water and productivity enhancements that are the main thrusts of the programme), but have also been accused of actually working against the livelihoods of the poor. In the name of afforestation, panchayat lands have been handed over to government forest department staff – displacing the landless poor who leased the land to grow low-yielding rainfed crops. Goats of the poor have been banned from entering newly-planted private and public plantations. Increased agricultural productivity because of

successful project interventions has led to cultivation expansion at the cost of small tenant farmers. It has also led to increased encroachments onto public land, again at the cost of the goats who are denied access to previously public grazing land.

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