

Combating Land Degradation and Droughts

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The process of degradation of fragile drylands affects 25 per cent of the earth's land area and threatens the livelihoods of 900 million people in one hundred countries. Desertification affects one-sixth of the world's population. 800 million people live without adequate food resources in these drylands.² The problem is particularly endemic in India.

Droughts have been a major impediment in India's development, a country heavily dependant on monsoon rains to annually replenish its water sources. A poor monsoon caused draught like situations in 77.6 per cent of India's geographical area at least once or twice in every five years. Forcing people to sell their livestock and leave their homes, droughts cause large-scale misery in the lives of the poor and the marginalised. Combating the effects of drought often precipitates into larger crisis, as drought relief operations struggle to provide wage employment, drinking water, food, fodder and often wage employment to those affected. The drought in 1999–2000 affected around 100 million people and 3.4 million cattle.³

A drought is not just a natural calamity; it is also the result of a process of systematic neglect of the drylands and its inhabitants, their knowledge systems and their livelihood needs. A

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² UN, *Convention on Desertification*, (Brazil: UNCED, Rio de Janeiro, June 1992)

³ Government of India, *National Report on the Implementation of the United Nations Convention to Combat Desertification* (New Delhi: Ministry of Environment and Forests, 2000)

continual erosion of the productive capacity of the natural resources in these dry regions in making them much more vulnerable to the vagaries of droughts. The dry regions constitute a large part of the poverty geography of India; the livelihood requirement of the poor and the health of the ecosystem are more closely entwined in these regions.

In 1995 the Watershed Guidelines brought about a much-needed shift in policy by advocating a people-centred, participatory watershed development approach to combat this problem. In spite of the impressive achievements in watershed development as a result, there is still no appreciation of the security concerns of the poor with regard to food, fodder, drinking water and wage employment. Current efforts are unidimensional, being limited to soil and water conservation alone.

At the macro-level, there is no synergy of policies with conservation efforts. The sort of support systems that created the ‘Green Revolution’ in agriculture have bypassed the drylands. There are virtually no agricultural subsidies, input arrangements, extension machinery, credit facilities, procurement and marketing mechanisms in these areas.⁴ The Government-promoted Public Distribution System disburses rice, a water-intensive crop to the exclusion of hardier coarse cereals, the nutritive, staple food for the poor. Land consolidation for contract farming and export-oriented corporate agriculture is now being projected as a panacea to all dry land ills, and a new ‘paradigm’ in Indian dryland agriculture. But what stakes do the inhabitants of these areas have in these ‘paradigms’?

Investments on water for ushering in Green-Revolution-like islands of unsustainable prosperity in the dry regions is being given priority over securing a steady supply of drinking

⁴ B.N. Yugandhar. “Policy Imperatives for Watershed Development.” In *Social and Institutional Issues in Watershed Management in India*. Philippines: OIKOS, and International Institute of Rural Reconstruction, 2000.

water and protective irrigation to every poor household. National food security is prioritised over the need for local food security, as epitomised by the construction of large dams. In the process of envisioning the larger picture, policy planners have lost sight of a basic precept: that by improving the quality of the productive assets owned by poor farmers and by protecting their entitlements the country will benefit enormously both socially and agriculturally.

In its search for an appropriate and comprehensive approach to this problem, the paper analyses the contradictions between state efforts in combating droughts and land degradation and macro-policies and processes. By emphasising the linkage between livelihoods and land degradation, it also tries to establish that the promotion of 'local' food security should play a central role in tackling the problem of land degradation and droughts.

The paper attempts to map the contours of such an approach by drawing heavily from field experiences that show that arresting land degradation, establishing the rights of the poor farmers over land and other natural resources, increasing productive capacities, managing and sharing the benefits of natural resources to protect the sources of livelihood of these farmers and reducing their vulnerability to frequent droughts much form the basis for the development of the drylands. For these efforts to succeed hand over control of resources and processes of development to those who stand the most in need of these will be a major challenge. It is within this framework that the paper explores the options for future.

The commitments outlines in Agenda 21 during the Earth Summit at Rio de Janeiro in 1992 and the upcoming World Summit on Sustainable Development form a wider context for this analysis.

I.1 National Commitments at the Earth Summit

Chapter 12 of Agenda 21 in particular provides clear guidelines for combating desertification. It urges an understanding of the connections between poverty, livelihoods and land degradation, and recommends a people-centred approach towards containing land degradation and desertification worldwide.

Meaning of Terms

For the purposes of convention, desertification means “land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities”. Combating desertification includes activities which are part of an integrated development of land in the above areas for sustainable development which are aimed at prevention and /or reduction of land degradation, rehabilitation of partly degraded land and reclamation of desertified land.

Land degradation means a loss of biological or economic productivity in rain-fed lands. This may result from soil erosion, deterioration of physical, chemical, and biological or economic properties of soils and the long-term loss of natural vegetation.

Arid, semi-arid and dry sub-humid areas refer to those areas in which the ratio of annual precipitation to potential evapo-transpiration falls within the range of 0 : 0.5 to 0 : 65. For the sake of convenience, the terms ‘drylands’ or ‘dry regions’ are used to refer to the arid, semi-arid and dry sub-humid regions of the world.

Agenda 21 advocated 1) strengthening knowledge bases and monitoring systems, 2) intensified soil conservation, afforestation and reforestation activities, 3) strengthening integrated development programmes for the eradication of poverty and promotion of alternative livelihood

systems, 4) developing antidesertification programmes and integrating them into national development plans, 5) developing comprehensive drought preparedness and relief schemes and 6) encouraging popular participation in and education on these problems.

Following a call at the Earth Summit, the Convention to Combat Desertification (CCD) came into force in 1996. The Convention established a framework for national, regional and sub-regional programmes to counter degradation of drylands. It committed its signatories to a 'bottom-up' approach involving local communities, and called upon the international community to mobilise "substantial financial resources" and transfer of antidesertification technologies from the developed to the developing countries. There are currently 176 signatories to the CCD.⁵

India ratified the Convention in 1996 and brought it into effect in March 1997. The Ministry of Environment and Forests (MoEF) functions as the country representative for the CCD. It is also in charge of the formulation and implementation of the National Action Plan(NAP), a body whose activities are overseen by a twenty-member National Steering Committee chaired by a Special Secretary in the MoEF. Four working groups provide the inputs that go into prioritising the projects contained in the NAP.⁶ Considering the magnitude of the problem of land degradation in India, a coordinated effort and significantly enhanced budgetary support will be required to make any significant impact on combating drought-like situations. The provisions of the CCD at the international level and the formulation of the NAP at the national level are expected to play a major role in mobilising the required resources.

Most of the degraded land is outside the reserve forests. Ministry of Agriculture and the Ministry of Rural Development manage the two major land development programs in the

⁵ IISD, *Earth Negotiations Bulletin* 4, no. 160 (2001,2000):

⁶ GOI, *National Report*.

country. It is therefore, important for the CCD process should be centred around these ministries, to make a significant impact on various actors and scientific establishments like Indian Council of Agriculture Research, working in these issues.

I.2 Drought and Land Degradation in India: An Overview

Table 1 outlines the percentage of geographical area under each of the six climatic zones in India based on the Moisture Index. The non-availability of water for normal crop growth is more acute in arid, semi-arid and dry sub-humid regions, in that order. These regions constitute nearly 77 per cent of the total land area in India, and are consequently more prone to land degradation and frequent droughts.

Table 1 *Climatic Zones in India*

Climatic Zone	Percentage of Geographical Area
Arid	19.6
Semi-arid	37.0
Dry sub-humid	21.1
Moist sub-humid	10.2
Humid	7.8
Per-humid	8.3

Source: Government of India, Report of the Technical Committee on Drought-Prone Areas Programme and Desert Development Programme (New Delhi: MoRD, 1994).

A widespread drought is said to occur when more than 20 per cent of the geographical area of a country is affected. India has witnessed a widespread drought every five years in the last 123

years.⁷ Poor or no rain for more than two consecutive has a devastating impact. Inevitably, the number of people affected by droughts is consistently increasing—from 15 to 50 million during the 1960s to 100 million during the recent drought in 1999–2000. The drought in 1987 that occurred after three consecutive years of failed rains affected 300 million people across the country.⁸

The dry regions of India contain a majority of the country's poor farmers. Inadequate rains and droughts affect them the hardest, forcing them to sell their land and livestock, and increasing the burden on women for sourcing scarce food, drinking water, fodder and water, fodder and wage employment. Widespread hunger during droughts raise the incidence of disease, indebtedness and, at times, starvation deaths. The resulting cycle of poverty inhibits any hope of capital formation, let alone a growth in agriculture in the dry regions.

Whereas droughts occur at specific periods, land degradation is a continuous process. Soil erosion, reductions in forest cover, overexploitation of groundwater, changes in cropping systems, loss of crop diversity and increasing population pressures have increased the vulnerability dryland ecosystems to any change in environment.

Estimates of the magnitude of land degradation in India vary considerably: whereas one estimate puts the figure at 107.43 million ha (or 32.75 per cent of the total geographical area)

⁷ K S Sivasami, "Droughts and Rainfall Patterns 1877–1999," *Economic and Political Weekly*, 24 (2000):

⁸ R Bhushan, "Mirage 2000," *Outlook*, 8 May 2000.

affected by various forms and degrees of land degradation,⁹ another estimate by the National Remote Sensing Agency, estimates it at 75.70 m.ha.¹⁰

Degraded forest areas constitute 16.30 m.ha and non-forest degraded areas account for 44.39 m.ha.¹¹ Of the estimated total of 75.50 m.ha, about 58 m.ha are treatable and can be restored to original productivity levels. In 1993 only 5.70 m.ha were reported to have received any restorative treatment.¹² If one million hectares are successfully every year, treated, it would still take more than fifty years to resuscitate all the affected areas. Such is the magnitude of the problem can be appreciated by the fact that even.

I.2.1 Analysis of Government Efforts

Ironically, the first Governmental effort in soil conservation started in 1962-63 with the River Valley Projects, which aimed at arresting siltation and thereby protecting the large dams that Jawaharlal Nehru euphemistically called the temples of modern India. These programmes largely borrowed their designs and technologies from the Tennessee Valley Project in the United States.

From the unidirectional River Valley Projects of the 1960s, the emphasis on soil conservation has radically shifted to a multidimensional and integrated approach in 1990s, largely in recognition of the linkages of poverty with land degradation and the necessity for

⁹ GoI, National Report.

¹⁰ Mohan Kanda, ed, *Vasundhara: An Anthology of Land Resources in India* (New Delhi: Department of Land Resources, Government of India, 2000).

¹¹ Kanchan Chopra, "Management of Degraded Land," in *Vasundhara: An Anthology of Land Resources in India*, ed. Mohan Kanda (New Delhi: Department of Land Resources, Government of India, 2000).

¹² Government of India, *Report of the Technical Committee on Drought-Prone Areas Programme and Desert Development Programme* (New Delhi: MoRD, 1994).

community action for the success of any such venture. The following table presents the chronology of state-initiated alleviation programme and their shifting emphasis over the years.

Table 2 *Chronology of State Action on Droughts, Desertification and Land Degradation*

Year	Programmes & Reviews	Action
1962–63	River valley Projects	Arrestment of siltation in large dams.
1970–71	Rural Works Programme	Deployment of drought relief funds through wage employment in the areas chronically affected by drought for creating assets designed to reduce their severity.
1972	Drought Prone Areas Programme (DPAP)	Area approach, implemented by line departments. Scattered interventions.
1973	Task force headed by Dr B S Minhas	Integrated area approach, with greater provision for stable incomes and employment opportunities to the weaker sections of the affected population.
1977–78	Desert Development Programme (DDP)	Prevention of desertification and rehabilitation to those areas reclaimed from the desert.
1982	Task Force headed by Dr M S Swaminathan	Exclusion of income-generation and infrastructure-oriented schemes like chilling plants. Greater stress on land-based infrastructure. Watershed management as a basis for planning. Beneficiary-oriented approaches to area development. Subsidies extended to all farmers.
1987	Central Sanctioning Committee	Emphasis on only soil and water conservation, land development, afforestation and pasture development. To be sectorally implemented by various line departments and scattered efforts.
1994	Technical Committee on DPAP and DDP	Recommendation of an integrated and people-centred watershed development approach.

Taking cognisance of several successful experiments by NGOs and the Indian Council for Agricultural Research (ICAR) in late 1980s the Technical Committee revamped previous strategies and brought about a paradigm shift in policy thinking on land degradation and droughts. It recognised that the livelihoods of the people inhabiting fragile, moisture-stressed ecosystems had to be protected.¹³

Following the report of the Technical Committee the DPAP, DDP, the Integrated Wastelands Development Programme (IWDP) and employment generation programmes like the Employment Assurance Scheme (EAS) and IJRY were brought under a common Guidelines for Watershed Development in 1994. Coming into operation in 1995, the guidelines have made a fundamental difference in the way drought-alleviation programmes have been implemented. Though there is no explicit link between the two, guidelines has proved to be an operational model of the commitments and spirit of Agenda 21.

The Guidelines for Watershed Development brought about three fundamental changes in approach—bottom-up rather than top-down, integrated rather than sectoral and long-term rather than short-term. It radically altered policy planning by stressing on

- Organising communities and strengthening their institutions to plan and manage their own development.
- An integrated approach to the treatment of a well-defined micro-watershed area of around 500 ha from ridge of valley, and duly recognising indigenous technical choices
- People's contributions to ensure their continuing stakes in the process and also the sustainability of the infrastructure developed.

¹³ C H Hanumantha Rao, "Watershed Development in India: Recent Experiences and Emerging Issues," *Economic and Political Weekly*, (2000):

- A focus and prioritisation for the poor and the women, and an equitable sharing of benefits
- Increased capacities to access income-generation opportunities
- Convergence of programmes that can build upon the regenerated resources and organised strength of the communities.

All area development programmes are now implemented according to the watershed development approach.

There are currently 961 blocks in 180 districts in sixteen states under the DPAP. Similarly, 232 blocks in 40 districts in seven states are covered under the DDP. The coverage under the Integrated Wastelands Development Programme extends to 216 districts in twenty-eight states. The total area of drylands under development by the DPAP, DDP and IWDP is about 9.7 million hectares. In addition, an area of 6.4 million hectares was taken up for development prior to March 1999 under the Employment Assurance Scheme.

I.2.2 Mapping Success

The several success stories that resulted from these path-breaking the initiatives showed that “those who cared for the raindrops reaped a big harvest.”¹⁴

The Watershed Development approach transformed life in Jhabua district in Madhya Pradesh, till recently a typical example of degraded land. Rejuvenation of wells, food and fodder

¹⁴ Anil Agarwal et al., *Making Water Everybody's Business: Practice and Policy of Water Harvesting* (New Delhi: Centre for Science and Environment, 2001), 363.

surpluses and falling migration rates were indicators of its success.¹⁵ Analysing the differential in the impact of droughts on aided and non-aided villages in Gujarat, Anil Shah termed the changes as an “eloquent silent revolution”.¹⁶ Availability of drinking water, low levels of crop failure, availability of fodder increase in milk yields and more importantly, employment and food security were observed in the aided villages even during a severe drought year.

Substantial increases in groundwater levels, irrigated areas and crop intensity were widely reported in several places in western India, Andhra Pradesh and Madhya Pradesh.¹⁷ There was no doubt that the overall impact of the watershed development approach was positive and substantial compared to the period before the implementation of the new guidelines.¹⁸ Several studies have shown its positive impact on crops in the form of intensity, yields pattern changes. The benefit to cost ratio of a watershed-approach project has stabilised at around 1 : 75,¹⁹ making it the “cornerstone of rural development in India”.²⁰

The emphasis in the guidelines on a participatory approach to watershed development projects has resulted in a reasonably successful shift away from the tunnel vision of government-run departments to broad-based people’s platforms in the targetted villages. It has also resulted in modern soil and water conservation technologies being successfully integrated in the projects, as

¹⁵ Saxena, N C “Rehabilitation of Degraded Land through Watershed Development in India”. In *Social and Institutional Issues in Watershed Management in India*. Philippines Oikos and IIRR, 2000.

¹⁶ Anil Shah, *The Eloquent Silent Revolution* (Ahmedabad: Development Support Group, 2000).

¹⁷ A Shah and Memom, *Watershed Development Project in Gujarat: A Quick Review* (Ahmedabad: Gujarat Institute of Development Research, 1999).

¹⁸ Hanumantha Rao, “Watershed Development in India,”

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²⁰ Shah, Mihir. “Rethinking Watershed Strategy.” *The Hindu*, 29 January 2002.

a consequence of which there is better soil conservation, groundwater recharge and all the ensuing benefits.

I.3 Micro-Perceptions and Macro-Policies: Emerging Issues

Notwithstanding the impressive achievements in the watershed development approach the question to be asked is—*are these achievements adequate to secure and improve the livelihoods of the vast majority of the poor, who are the most vulnerable to droughts and land degradation?* The answer to this question will form the benchmark of its success.

Viewed from this perspective, certain Micro-level issues and a lack of synergy between macro-policies and the stated objectives of drought alleviation seem to be a problem that is still to be addressed.

I.3.1 Micro-Perceptions on drought-proofing measures

Notwithstanding the directive that investments in watershed development programmes should include the poor and result in an equitable sharing of benefits, projects are still mostly confined to soil and water conservation measures and plantation activities. Rejuvenation of drylands is largely perceived as a ‘land-based’ programme, with the implicit assumption that groundwater recharge as a result of soil and water conservation will automatically result in better livelihoods for those who live there. Investments are made without any prioritisation for the poor, and are totally insensitive to the reality of caste and class structures of the villages. The dominant, landed groups almost always take control of a project as of right, to the exclusion of poor. Very often the selection of watersheds itself is biased and inequitable, again marginalising the poor.

The poor often own low productive and degraded lands on the slopes, which are usually overrun with wild plants and pitted with stones. The project budgets, procedures and prescribed

technology options usually lack the flexibility in accommodating the investments required for treating these sub-critical lands. The incidence of migration, leaving the land fallow, is higher in such marginal landholdings of the poor. Such lands are most often bypassed by the watershed development projects—either not treated at all or inadequately covered. Ironically, even a minor treatment to such land increases its productivity manyfold, extending cultivable areas and the crops' ability to withstand gaps in rainfall by increasing the soil's moisture-retaining capacity. This provides high levels of food security to the poor, as the Kothakunta watershed project demonstrated.

Case Study I: Inclusive Processes: The Kothakunta Watershed Project

This project was an independent initiative undertaken by the Rayalaseema Watershed Development Programme and facilitated by Janajagruti, an NGO based at Kadiri in the Anantapur district of Andhra Pradesh. The district receives the lowest rainfall in the state, and is frequently subjected to droughts.

The Kothakunta watershed extends over 670 acres of land and contains five hamlets. It has 112 households of which 80 per cent belong to a scheduled tribe called the Lambada. About 54 per cent and 88 per cent of the total households own less than 3 and 5 acres of land respectively. Most of the watershed area was composed of degraded land, and more than 80 per cent of the households used to migrate seasonally before the commencement of the project.

Work on watershed development started with empowering the community, with a special focus on women. Combining the farmers' own technical knowledge and experience with external advice, the entire 670 acres of land was treated, starting at the ridge. Earth and stone *bunds* were constructed in the farm lands and rock-fill dams and gully checks were built in the drainage courses. Apart from restoring the breached water-harvesting structures, four new containers were

also constructed. The clearance of stones and boulders in many marginal lands increased the net cultivable area substantially. The project then provided for the application of tank silt and farmyard manure for restoring the productivity of the degraded lands, investing Rs 2,494 per acre for such comprehensive treatment. The range of investments was arrived at by a participatory method, and enough flexibility was built into the programme for different activities. People established their stakes in the land by contributing to 50 per cent of the cost of the structures on private land and 25 per cent in common property resources.

The project made a point of keeping women at the centre of all decision-making processes. Special efforts were made to develop their leadership qualities and to ensure their representation in all committees. The needs of single women were identified and addressed. Thrift and credit groups were formed and their participation and stake in all the initiatives were clearly established. Facilitated by Janajagruti, the women's groups started protecting 210 acres of common property after its necessary land treatment. Clear norms were established for its protection and individuals were appointed to keep guard. With proper lobbying, the community also managed to secure usufruct rights from the local revenue office. Regenerating fast, the land soon contained more than thirty species of trees; fodder also began to be harvested regularly from this land.

As a result of the land treatment and water-harvesting structures, groundwater levels increased significantly. The eleven defunct open wells were operative once again. After long debates within the community, a uniform distribution of bore-wells points across the watershed was agreed upon. Eleven bore-wells were dug with the help of the state's wells programme, and electrified with the help of the Irrigation Development Corporation. Four to five farmers shared each bore-well. Strict norms for the proper management of water were established, viz., that a

200 m distance between bore-wells be maintained, water-intensive crops such as paddy and sugarcane not be grown and only half the acreage of *kharif* crops be irrigated in the *rabi* season for growing food crops. With these restrictions in place, all except six households in the watershed area could get irrigation to at least a part of their landholdings. In this way, the community could sustainably tap most of the water regenerated by their own efforts. A subsequent study showed that groundwater buffers now stood at 30 per cent. Food security was ensured even during periods of drought, as limited protective irrigation was available to most of the households in the village.

As a result of these activities, the lives of the people in this watershed area changed dramatically. With ample availability of grazing land, fodder and biomass, the livestock population doubled from 980 in 1995 to 1824 in 2000. The productivity of the land increased substantially. With some part of the land under protective irrigation, food security also increased. Cultivation of more than 130 acres of land in the *rabi* season increased cropping intensity and also provided substantial wage incomes during the lean season. This had a tremendous impact on migration, with no household now needing to migrate as compared to large-scale seasonal migrations earlier. Even during the drought year of 1999–2000, nearly 125 acres of land were cultivated while the fields of the neighbouring villages went fallow. Men and women now get equal wages not only in project work but also in regular agriculture.

At the heart of such a transformation in people's fortunes was a belief in their abilities and institutions. Investments in capacity building, flexibility in time frames to suit individual and group capabilities and sensible budgets helped people to help themselves. Decision-making and implementation responsibilities were mostly in the hands of the community, with the NGO

acting as a facilitator. Such control and ownership over their own resources helped the community to grow out of their earlier poverty towards a relative prosperity.²¹

Once the resources regenerated, the NGO facilitated a process of equitable sharing amongst the community. Group bore-wells, promoted with clear norms for their use, ensured that every household got at least some part of their landholding irrigated. The focus of the intervention had been to plan and ensure a base-level food security for all. Because of the inclusive processes, the poor were also able to contribute significantly to this effort. Thus, the community as a whole was able to break off the shackles of its destitution.

Rights on Regenerated Water

As this case study showed, recharging groundwater is a major component of any attempt at land treatment. Increasing groundwater levels has inevitably led to an increase in irrigated areas through wells and bore-wells.²² Studies indicate the access to irrigation is central to the impact of watershed interventions,²³ that households and that ready access to irrigation had helped in containing migration among 83 per cent of households with an average land-holding of five acres.²⁴

²¹ Sheik Anwar, *Royalaseema Watershed Development Programme: Annual Report* (Secunderabad: Centre for World Solidarity, 2000); Rukmini Rao, "Ensuring Gender Justice and People's Participation in Watershed Management" (paper presented at the National Workshop on Watershed Approach for Managing Degraded Lands in India: Challenges for the 21st Century, New Delhi 1998); Field study by author.

²² Hanumantha Rao, *Watershed Development in India*.

²³ John Kerr et al., *The Role of Watershed Projects in Developing Rainfed Agriculture in the Indian Semi-Arid Tropics* (New Delhi: Indian Council for Agricultural Research, 1998).

²⁴ Amita Shah, "Water Scarcity Induced Migration: Can Watershed Projects Help?" *Economic and Political Weekly*, 36, no. 5 (2001):

The downside of this picture is that the benefits of increased irrigation through groundwater recharge usually remain confined to a small number of farmers who already have, or can invest in, wells or deep bore-wells. Private investments in deep bore-wells matching project investments on land treatment are commonly observed in watershed programmes.²⁵ In essence, these few appropriate the most water regenerated by public investments. Cultivation of water-intensive crops like paddy and sugarcane in the drylands is a cynical and inefficient use of a scarce resource. Yet about 73 per cent of sugarcane in Maharashtra is grown in the DPAP blocks!²⁶

With this uncontrolled appropriation by a few of water regenerated through public investments for the common good, the desired objective of making an area drought-proof suffers in two ways. Firstly, It is the poor, and the women among them, who are especially vulnerable to droughts. Though land treatment improves crop tolerance to gaps in critical rainfall periods, it is access to protective irrigation that provides a measure of security against gross failures in rainfall. Depriving access to protective irrigation to at least a part of the dryland holdings of the poor would still keep them vulnerable and their livelihoods insecure. Secondly, competitive digging of deep irrigation bore-wells often depletes the painstakingly created groundwater buffer to the extent of precipitating a drinking water crisis during summer, forcing women to walk long distances to fetch potable water.

Equitable water budgeting, therefore, is a crucial missing element in watershed development programmes. Since food security is linked to ensuring provision of “limited water

²⁵ Watershed Support Services and Activities Network, *Process Evaluation Study: Ranga Reddy and Nalgonda Districts* (Secunderabad: WASSAN, 2001).

²⁶ P Sainath, *Everybody Loves a Good Drought* (New Delhi: Penguin 1996).

to a large number” of poor farms and farmers,²⁷ this lacuna calls for a degree of rethinking on groundwater legislation for ensuring that the benefits are not abused. The Kothakunta watershed project resoundingly demonstrated the feasibility of such an outcome, and is a shining example of how the principles of equity play a role in drought alleviation.

Regenerating Livelihoods through the Commons

Common-Property Resources (C-PR) play an important role as a natural cushion to distressed livelihoods during periods of drought. Based on data from eighty villages across the country, one study estimated that products of the commons accounted for 14 to 23 per cent of household incomes in the sample villages.²⁸ The rural poor collect the bulk of their fuel supplies and fodder from these commons. Very often, productions in C-PRs and private lands complement each other. Most of these C-PRs are largely degraded in terms of their product flows into the livelihoods of the poor. C-PRs constitute the larger part of the upper slopes of a watershed area. While most projects provide a high concentration of investments in private lands C-PRs are usually grossly neglected. A survey of thirty watershed-developed areas in Andhra Pradesh estimated the investment in C-PRs at 25 per cent of the total; and even that was mostly spent on the repair or construction of drainage lines.²⁹ The Kothakunta watershed project demonstrated that communities can be organised to protect C-PRs and that a little investment yielded greater

²⁷ Amita Shah, “Water Scarcity Induced Migration”.

²⁸ N S Jodha, “Management of Common Property Resources in Selected Dry Areas of India”, paper presented at the seminar on Approaches to Participatory Development and Management of Common Property Resources, Institute of Economic Growth, New Delhi, 10 March 1989).

²⁹ WASSAN, *Process Evaluation Study*.

long-standing benefits both in terms of regenerating the ecosystem and also in assisting the livelihoods of poor.

At the micro-level the case study on the Kothakunta watershed showed that there are certain critical parameters that must be met for a programme to achieve its stated objective of making an area drought-proof to the extent that livelihoods are largely unaffected even in times of low rainfall. This can be achieved by involving the poor and the women in every aspect of a project. Flexible budgets, a focus on investments in sub-critical land belonging to the poor, evolving appropriate norms for the management and use of resources and providing subsidised investment opportunities to the poor to access regenerated water resources are also critical to the success of any drought-proofing project. But bringing about such a reorientation in the mainstream watershed development programmes is bound to be a major challenge.

I.3.2 Macro-Issues

The above section adequately established the centrality of the livelihood concerns of the poor in arresting land degradation. Despite the shift in emphasis towards people-oriented policies, governmental efforts to promote soil conservation are not making a significant impact. This section details how macro-policies and processes are out of sync ongoing with micro-efforts.

Ecosystem Regeneration: Linkages and State support. It is well known that a delicate balance exists in all of nature, but degradation of catchment areas that the balance also affects humankind is often forgotten. The experiences of the Tarun Bharat Sangh (organised working group) in rejuvenating the Ruparel River in Rajasthan clearly demonstrated how intimately the lives of a people are entwined with the flow of a river. Case study 2 illustrates the point that restoring access and control over natural resources to a community that lives in close contact with nature is the key to regenerating a wounded ecosystem.

Case Study II: Rjuvenating Rivers and Livelihoods: The Eco-Links

The river Ruparel supports the livelihoods of several communities in the Alwar district of Rajasthan. The villagers' attempt at taking control of the resources on which their livelihoods depended was supported by an independent organisation called the Tarun Bharat Sangh (TBS).

The TBS first mobilised the villagers to restore a johad, a traditional water harvesting structure, in Gopalpura village. The state irrigation department soon declared the structure illegal, but had to withdraw their opposition to it in the face of the people's protests. In fact, till today, all the structures built by the villagers and the TBS are 'illegal': by the Irrigation and Drainage Act 1957 GORaj, section 55, any diversion of water without the prior permission of the Government is illegal and liable for imprisonment! Following the successful example of Gopalpura, large-scale community mobilisation efforts took place throughout the district. About 1105 johads were restored in 315 villages well organised by now and grown in confidence, the various village communities now took up other issues. With so many johads restored and new ones constructed, the Ruparel River came back to life in 1994. This revival transformed the ecology, economy and lives of the people in the river basin. Those who had left the village after the river dried up now began to return to their villages. Drinking water was now easily and plentifully available. "Now, thanks to the johads around the village, that four hour ordeal has been reduced to just fifteen minutes," said a woman who used to trek far distances to fetch water.

As the river resuscitated, aquatic life to started to flourish. The villagers nurtured its development and banned fishing in the region. Ironically, the government, which had at every level been an impediment in local efforts at river rejuvenation, now sought to collect revenue by giving a fishing licence to a commercial fishing company. It threatened the people who opposed such a move with legal action if they tried to prevent such a thing from happening. But,

emboldened by their successful stand against the government in the case of the johads, the villagers took on the government in this issue as well, and won their case. A study on the Ruparel phenomenon indicated that “self-reliance and independence of the community were paramount in the development process”. Observing the impact of mining on their water, forest and wildlife resources, they agitated for the closure of the mines, and were successful once again.

When certain essential issues such as locating wood fuel and grazing grounds came up, the communities decided to reserve designated lands for grazing, protection of trees and regeneration of forests. Like the bad fairy in a story book, the state government once again intervened, declaring the land demarcation for the protection of trees illegal. In the long legal battle that ensued, the people finally won and had their way. Their efforts had a positive impact in hither to unimaginable ways; not only did agriculture and animal yields increase substantially, but education for school-going children improved and evils like child marriages, and incidents like drunkenness reduced considerably. “The communities found that one problem is related to the other, and finding a solution to one means finding solutions to other.”

“We aroused the potential of the communities to think, decide and act. Their self-esteem had been suppressed and we knew that once this potential had been unleashed, their self-esteem would return, said Rajendra Singh, the chief architect of this movement.³⁰

The case study of the Ruparel River and the communities of the river basin shows how closely man and nature are linked. The regeneration of one led to the regeneration of the other. The ecosystem and the livelihoods of the people have to be considered part of a whole and dealt

³⁰ M Khalakdina, *The Promotion of Community Self-Reliance* (Ahmedabad: Oxfam India Trust, 1998); Vir Singh, *Rejuvenating the Ruparel River* (Alwar: Tarun Bharat Sangh, n.d.); M Shrotriya, *Regenerating of forest* (Alwar: Tarun Bharat Sangh, n.d.).

with comprehensively. Establishing the right of communities to maintain and protect the resources they depend on is crucial to this process. Inevitably, such a devolvement of rights will result in a struggle with opposing forces initiated by vested interests and almost always backed up by the state machinery.

At the case study showed the efforts of the villagers to regenerate their resources would often result in conflict with the state and its laws. If communities are not to lose faith in the processes of government, laws must be changed to strengthen and support pro-active community action. It is increasingly important for macro-policies and processes to work in tandem with ground-level aspirations.

Untenable Trends: Water for Profits vs Water for Food Security Water requirements for drought-proofing measures are often confused with irrigation for ushering in Green-Revolution-like agriculture in the dry regions.³¹ Instead, water is required for providing a degree of livelihood stability to the vast majority of vulnerable communities spread across the drylands. This means access to drinking water for humans and cattle, and protective, life-saving irrigation for crops to ensure a minimum level of food security. Creating islands of prosperity does not really address the problem of creating 'local-level' food security in these regions. The continuing debates on the efficacy of big dams need to address the issue of whether they are to be an investment option in securing the livelihoods of the majority of the poor across the region or the means to create oases of prosperity for the minority. In other words, are the priorities of current policies tilted towards attaining national food security in terms of buffer stocks of food grains rather than enabling local-level self-dependence?

³¹ Agarwal, *Making Water everybody's Business*.

This would seem to be so if instances like the Kuppam project in Andhra Pradesh are touted as “paradigms of success” and an answer to what Indian agriculture is looking for. What stakes does a poor household have in these ‘paradigms’?

Case Study 3 Contract Farming in the Drylands: The Kuppam Project

The Large-Scale Advanced Farm Project, also known as the Kuppam Project was started as a showcase for high-tech, intensive, export-oriented contract farming, with technological support from Israel. This project was meant to demonstrate the potential of high-tech contract farming as a solution to the travails of dryland agriculture in Andhra Pradesh. The demonstration project was contracted to BHC Agro (India) Pvt Ltd. Started in 1997 in two villages in Chittoor district, this project is now in its third phase.

The project was operationalised on 170 acres of land belonging to farmers who formed a cooperative society. The technology necessitated using deep bore-wells dug to a depth of over 600 feet (local practice is to go up to maximum depth of 250 feet), sophisticated drip-irrigation systems, heavy machinery and crop planning with a focus on commercial and export-oriented crops. The farms became highly mechanised. The state government invested Rs 4.46 lakh (Rs 446,000) per acre (compare this with Rs 1,920 per acre investment in the Kothakunta Watershed programme), which was a total subsidy. As the field bunds were erased, farm identities were completely lost. Having leased their lands to the firm, the farmers now found themselves engaged as labourers in the project. At the very outset, this demonstration-model farm was not the golden dream it had promised to be!

In the second phase of the project (2 KR Project) was implemented on 1519 acres spread over fifty-four villages with technical support from Japan. This time the field boundaries were

kept intact and farmers were allowed to cultivate their fields. However, only farmers who already had (or were able to get) a well or an electrified bore-well were selected. The average expenditure (again subsidised by the government) was Rs 1.61 lakh (Rs 161,000) per acre. BHC Agro provided technical support at the rate of about Rs 55,000 per acre consultancy charges. Green peppers, gherkins, pickling onions, baby corn, and other exotics were cultivated on this land. The second phase concluded in 2000, but no official data is yet available on the economics of the project.

The third phase of the project (3 KR Project) is to operate on a 50 per cent subsidy from the SGSY programme of the central government, while the rest of the Rs 15.7 crore (Rs 157 million) total subsidy will be serviced through Rs 15.7 crore total subsidy bank loans with a total estimated investment of about Rs 40,000 per acre. Potatoes, mulberrys, onions, beans, chillies, etc., are proposed to be grown exclusively for large cities like Bangalore and Hyderabad, and also for export. Information on other implicit subsidies (like electricity) is not available. This project aims at covering 10,000 acres at total estimated cost of Rs 46.5 (Rs 465 million). The government is using all the available 'development machinery' to lure farmers to this project; in spite of hefty subsidies (Rs 20,000 per acre, compared to less than Rs 1,920 per acre in the Kothakunta Watershed programme), soft loans, promises of land being levelled, etc., the response has been poor. Many marginal farmers are justly worried about the impending debt burden such a project would place on them.

Instituted primarily to 'maximise profits', the Kuppam projects put the land to intensive cultivation without first preparing it in any way. No investments were made on water harvesting. Deep ploughing, application of heavy doses of fertilisers and chemicals, tapping ever-deeper aquifers and intensive cultivation are inevitably going to push the land to the brink. Furthermore,

the farms produce exclusively for external markets. With food crops anyway out of reach, even crop residues that support livestock are not available.

There are no official figures available as the project data is shrouded in secrecy. While several media reports are pointing to its failure, some researchers have argued that it is giving around a 35 per cent rate of return.

Incredibly, the Kuppam project, which is totally irrigation dependent, is being touted as a model for all dryland areas. Though the economic viability and security of the project is still to be seen, its own unsustainability and adverse impact on the lives of other farmers in the region is beyond question. Promoting water-intensive agriculture on a large scale in limited pockets of degraded land will have an adverse impact on the ecosystem of the entire area. Does this model ensure a greater degree of control in the hands of the small and marginal farmers over their own resources and livelihoods to ensure their sustainability? The answer is a resounding “No”.³²

Increasingly, export-oriented high-tech farming is being projected as a miracle cure for all dryland problems. While government come up with huge subsidies and support systems to promote technologies and concepts that uphold globalisation processes, they do not do the same for promoting low-cost, sustainable technologies for local-level agriculture. It is a skewed sense of priorities that positions ‘rates of return’ and ‘viability’ over ‘livelihood opportunities’, ‘food security’ and ‘greater ability to withstand droughts across all regions and classes’.

³² P A Chowdhary, et al., *Report of the Farmers’ Commission of Experts on Agriculture in Andhra Pradesh* (Hyderabad: Vyavasaya Parirakshana Aikya Porata Vedika, 2002); WASSAN, media reports and personal discussions; K R Chowdry, et al., *Contract Farming at Kuppam: Signals from the Israeli Technology Demonstration* (Hyderabad: A P Coalition in Defence of Diversity, 2000).

Despite the fact that water is the scarcest of all natural resources in the drylands, the corporate agriculture as in the Kuppam project draws huge quantities of groundwater in spite of deploying drip-irrigation systems. It depends upon deep, heavy-duty bore-wells to draw water from deeper aquifers, thereby reducing any possibility of water reserves for times of droughts. By sucking out even these meagre reserves, already afflicted small farms and nearby villages lose what little they had. Heavy machines tearing up the earth and doses of chemical loads also contribute to a further degradation of the ecosystem.

The disparities in state subsidies between drylands and irrigated lands (whether outside or within the drylands) are enormous—varying from Rs 1,920 per acre in the Kothakunta Watershed programme to Rs 20,000 per acre for Kuppam-like projects and Rs 40,000 per acre for lands irrigated by large dams; this is not even considering the input subsidies on fertilisers, price supports, electricity, etc.

The choice of markets introduces another set of vulnerabilities in addition to droughts, as the crops grown are dependent on markets in unknown territories and the choice of crops being dependent on media manipulated consumer choices in bear no relation to the local food requirements.

Food Security – National or Local?

Dryland farming has been systematically neglected. The agricultural sub-systems like research, input arrangements, price supports, etc., are almost non-existent for these areas. At best, benefits of these inputs are limited to pockets within the dryland regions which are usually large landholdings owned by farmers who have secured access to irrigation.

Equally ignored have been the types of crop grown in the drylands. Coarse cereals are the staple diet for a majority of the poor in these regions. This food is nutritionally rich and

balanced; and the corps are best suited to the region, surviving at low moisture levels as they have a high drought tolerance.

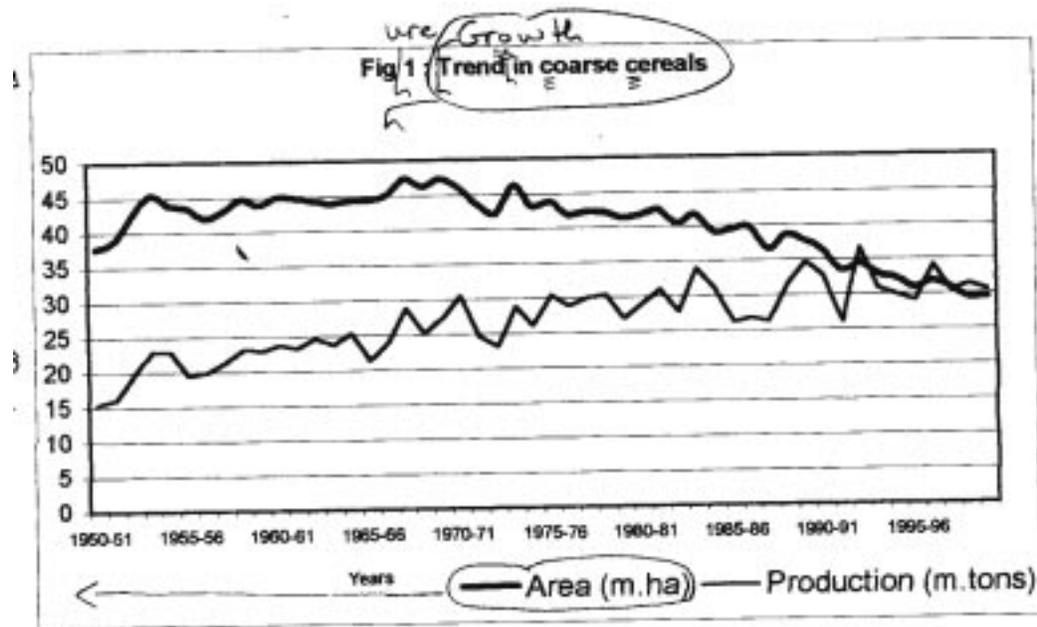


Figure 1 Growth Trends in Coarse Cereals

Despite this neglect, figure 1 shows an increase in production even against the overall decline in the cultivation area under coarse cereals. The following table shows that coarse cereals have held their own against more popular crops like rice and wheat.

Table 3 Production, Area and Yield of Rice, Wheat and Coarse Cereals

Crop	Production		Area		Yield (Kg/ha)		Irrigated Area (%)	
	(million tonnes)		(million ha)					
	I	II	I	II	I	II	I	II
Rice	23.5	73.7	30.5	42.3	771	1741	32.3	45.2
Wheat	6.4	55.1	9.8	23.0	655	2397	31.5	78.4
Coarse cereals	16.8	26.3	38.8	33.8	433	778	8.5	9.3

Note: I=1949–50, II=1991–92.

During the period, there was a decline in the absolute area under coarse cereals. The percentage area under irrigation for rice was nearly five times that of coarse cereals. Despite these adverse factors, the yield increase in coarse cereals (345 kg/ha) was 36 per cent of the yield increase in rice (970 kg/ha) during the forty-two years from 1950 to 1992. Discounting high water-consumption levels, increased area under irrigation, subsidies in irrigation, fertilisers and price supports and the massive investments on rice research, the yield gains in coarse cereals can be said to be substantial.

Table 4 shows the impact of the Green Revolution on the growth of coarse cereals. During the pre-Green Revolution period (before 1965), the growth rate in yield of coarse cereals was higher than that of wheat, and the area under these crops was also increasing. Notwithstanding the subsequent bias against coarse cereals, they had still registered a significant growth rate in yield during the post-Green Revolution period, an indication for the market potential for coarse cereals. However, the decline in the cultivable area under coarse cereals is continuing as a result of governmental indifference towards these crops.

Table 4 All-India Compound Growth Rates (Percentage Per Annum) of Area, Production and Yield

Crop	1949–50 to 1964–65 (Pre-Green Revolution)			1967–68 to 1980–81			1980–81 to 1991–92		
	A	P	Y	A	P	Y	A	P	Y
Rice	1.33	3.49	2.13	0.76	2.22	1.46	0.55	3.69	3.13
Wheat	2.68	3.99	1.27	2.94	5.64	2.61	0.33	3.59	3.25
Coarse cereals	0.90	2.23	1.32	-1.03	0.62	1.67	-1.68	0.06	1.77

A=Area, P=Production, Y=Yield

Source: V M Rao, "Agriculture Development with a Human Face: Experiences and Prospects" Economic and Political Weekly 31, no.6 (1996):

To appreciate the vital importance of securing local-level food security one has to understand the importance of food security to say, a worm's-eye view. Most of the agricultural labour in the drylands usually own some land. Seasonal migration in the hot, dry summers is the only recourse for many of these people. The number of inter-state distress rural migrant workers in the country is estimated at a staggering 10 million. The time they spend in their own villages, observed a study "is aimed at keeping them alive until the next recruiting season, often with the help of advances of money by the recruiting agents, and while on migratory work the time is spent on keeping them alive until they return to the village".³³ In view of this situation, reclaiming even one acre of dryland to its former productivity would provide food security for an entire family for nearly four months, assuming a 4 quintal yield of sorghum per acre and a consumption level of about 75 kg per a family of five for that period. It is for this reason that benefits need to be calculated in terms of extra meals produced. A minimum requirement of two protective irrigations during the summer for even half an acre under dry crops would almost double production and, more importantly, secure it from the vagaries of rainfall failures. Most essentially, this would deliver food grains straight to the hearth of the household, without requiring inputs in transportation and other costs.

The importance of examples like the Kothakunta Watershed programme has to be also understood from this perspective; with land treatment, the yield of bajra increased from 5 to 8

³³ Sankaran, S R. "Rural Poor and Public Action: Some Issues" (C V Subba Rao Memorial Lecture, A P Economic Association's XIII Annual Conference, Nagarjuna University, 10-11 December 1994.

quintals and 125 acres were under cultivation even during a drought period, and there were no distress migrations.

It is estimated that India needs an agricultural growth rate of 4.0 to 4.5 per cent to reduce poverty significantly.³⁴ Having said that, however, much would depend on the quality and geographical spread of this growth rate. To make a significant dent in poverty, investments in research, inputs in improving land productivity and price support systems for coarse cereals in drylands need to be prioritised vis-à-vis investments in large-scale, narrow-focussed irrigation projects or Kuppam-like high-tech agricultural schemes.

The recent crisis of starvation deaths amongst the rural poor despite mounting food stocks with the Food Corporation of India is a tragic pointer to the unviability of present agricultural policies. Thirty per cent of the annual production of rice and wheat is locked up on government stocks and not available for consumption. This is because India spends around Rs 22,000 crore (Rs 220 billion) on food and fertiliser subsidies. Ironically, a large part of this subsidy is meant for maintaining price incentives for rice and wheat.³⁵ Price supports for rice and subsidies in fertiliser and electricity are the major reasons for increasing cultivable areas under paddy even in dryland regions. Paddy is a highly water-intensive crop; whatever recharge of groundwater would get quickly exhausted with even a small increase in area under paddy, cultivated, most often, by a better-off farmer.

Incentives like these are not available for coarse cereals like sorghum, finger millet, etc. The Public Distribution System (PDS) only handles rice and wheat to the exclusion of any coarse

³⁴ R Radhakrishna, "Agricultural Growth, Employment and Poverty: A Policy Perspective" *Economic and Political Weekly* (2002):

³⁵ "Stock Responses Create Food Mountains," *The Economic Times*, 18 February 2002.

cereals, resulting in changing food consumption habits and further dampening the market demand for them. These shifts in consumption patterns are also threatening the nutritional security of the poor people as the consumption is very low in case of coarse cereals do not require a variety of unaffordable accompanying foods, which is not the case in rice or wheat.³⁶

The PDS is a high-powered policy instrument. Could PDS be made to work for arresting land degradation and securing food and nutritional security for the poor in the drylands? Perhaps, if the Deccan Development Society's experience in an alternate public distribution system is any example.

Case Study IV: Policies for Reviving Degraded Lands: An Alternate Public Distribution System

Creating favourable economic and policy supports for promoting suitable crops and crop patterns for the dry regions is a challenging task. The Alternative Public Distribution System through the Community Grian Fund programme of the Deccan Development Society (DDS) is one such attempt. The programme started in 1995 and was sponsored by the Government's Ministry of Rural Areas and Employment.

Zaheerabad in Medak district is typical of many of the dry regions in Andhra Pradesh. Large areas lie fallow, and encroaching agribusiness corporations are alienating small and marginal farmers. The DDS has been working in this region since 1985, helping dalit women gain self-reliance and food security by working through their sanghs.

The area of the programme covered 2,650 acres of poor dalit farm households located in thirty-two villages. In each of these villages 80 to 100 households were helped financially to

³⁶ Deccan Development Society "How Can We Make PDS Work for the Poor." In *Annual Report* (Hyderabad: Deccan Development Society, 1988).

reclaim 1.5 acres of fallow land per member to cultivate jowar, a coarse cereal. Investments in the forms of loans at Rs 2,600 per acre were made for three years for land treatment, application of manure and other inputs for cultivation.

The concept of a PDS was linked to this fallow land development. The investments were to be returned by the beneficiaries, who became PDS members, over a period of five to six years in the form of pre-fixed quantities of grain at pre-fixed rates—150 kg in the first year, 200 kg in the second and third years and 150 kg in fourth and fifth years, all at the rate of Rs 3 per kg. The total money value of the returns amounted to Rs 2550 per acre.

Gains in 30 villages

- Fallow reclaimed: 1000 ha
- Extra Sorghum produced: 800,000 kgs
- Extra meals produced 3000000
- Extra wages produced – 75,000
- Extra fodder for 6000 heads of cattle
- Extra meals per family –1000

The quantity of food grains thus collected every year per village of approximately 100 members amounted to 150 quintals in the first year and 200 in the second. This collection was treated as a Community Grain Fund from which the PDS members could withdraw their requirements. It was estimated that 25 kg of jowar would be needed per family per month. These yearly grain collections were sufficient for providing subsidised grain to 100 families for the six months of the lean season, when food scarcity was the most severe.

The issue price of the grains (supplied through the Community Grain Fund) to the PDS members was decided at Rs 2 per kg. Since the procurement price for the loan component of jowar was Rs 3 per kg, this scheme provided a subsidy of Rs 150 to each member every year the sangam women decided on which families were eligible for receiving PDS grain through PRA exercises. Different coloured cards were distributed to the eligible members, which allowed them to buy different quantities of PDS grain. A sub-committee of the village sangam managed the entire range of operations, viz., fallow land reclamation, crop raising, storage, beneficiary identification and PDS distribution.

By fixing the rates of jowar at the very beginning ensured the availability of grain at fixed rates for over five years. The money collected in this manner was invested in reclaiming other fallow lands, thus perpetuating a cycle of fallow land reclamation and wage employment. Over time, these cycles of investments generated wage employment higher than the initial project investment itself!

The DDS also promoted organic cultivation natural pest management practices for these traditional crops, besides a crop insurance scheme for covering risks of pest attacks. To create a market demand for such crops, a federation of village sangams opened a shop in Zaheerabad that trades exclusively in the coarse cereals produced by sangam women. This shop purchases grain during the harvesting season and sells it back to them during the lean season. The regular sangam meetings are the bulk market outlets.

Multiple support services to promote sustainable farming practices among the poor is the only equitable way for reviving drylands. Amidst a larger state apathy towards this view, the DDS experience shows how simply and efficaciously this can be done.³⁷

³⁷ DDS, "How Can We make PDS Work for the Poor,"

Though the original objective of the PDS was to distribute food grains at an even price of food grains, all over the country, over time it came to be seen as an instrument for poverty alleviation.³⁸ A targetted Public Distribution System (TPDS) was introduced in 1997 for directly allocating food grains to the states on the basis of their population below the poverty line. The quota was recently revised to 20 kg of cereals per family per month or 240 kg of cereals per family per year. It is amply dear from the figures as well as from experiences such as the Kothakunta watershed programme and the Zaheerabad PDS project that a small investment in dryland reclamation and rejuvenation will be of far more benefit to the poor than the often mismatched and invariably insufficient handouts like the TPDS. For majority of the poor who own one or two acres of land, a one-time investment in improving their land productivity would grant them the means to provide adequate, nutritious food on a sustainable basis for them and their families. Not only would they lead healthier, more stable lives but would also grow in stature and self-esteem. It is important in this context to envisage and enforce appropriate macro-policies that are in synergy with micro-level initiatives for re-invigorating these fragile ecosystems.

I.4 Conclusions

The narrow perspective of soil and water conservation as a solution to drylands is limiting the scope of national efforts to combat land degradation. Instead, focussing on essential livelihood issues will inevitably result in a far better approach to this problem, and one which has a better chance, too, at succeeding. Such a focus would automatically bring about the necessary change in the designs of programmes and the structure of its investments towards increasing food

³⁸ Kannan, K P et al., "Concerns on Food Security." *Economic and Political Weekly* 35, no. 45 (2000):

production in the landholdings of poor. This 'bottom-up' approach would enable more practical efforts to deal with land degradation while simultaneously addressing the core of the problem of poverty.

There is also a crying need for synergising macro-policies with micro-efforts. Reorienting and integrating agricultural support systems with conservation efforts is absolutely essential. Case-sensitive technologies that aid local crops while promoting food, drinking water, fodder and livelihood securities to poor must be identified and supported, even as legislation must come into force to prevent unsustainable activities like paddy cultivation into drought-prone areas. State efforts and inputs should not go into processes like contract or corporate farming, as the poor have virtually no stakes in these approaches. On the contrary, government investment should flow into programmes that ensure the security of the vast millions who have nothing to lose but their chains.

In doing so, the Government should re-examine its own often archaic and people-biased laws. People's initiatives to nurture and revitalise the natural resources that sustain them should be encouraged and supported, not stifled and opposed at every turn.

Having instituted, on the whole, a fairly successful people-centred Guidelines for Watershed Development in line with the commitments in Agenda 21, India should make use of the CCD and the upcoming World Summit for Sustainable Development at Johannesburg to mobilise the required resources with a renewed commitment to the cause of land revitalisation for the alleviation of poverty in the country.

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A Ravindra Babu is working on issues related to droughts, water resources and watershed development. He is presently working with Watershed Support Services and Activities Network (WASSAN), a support organisation for work on livelihood development programmes and sustainability in watershed management. He works closely with various grass roots NGOs, providing technical and analytical support services in development planning and natural resources management with a focus on livelihood issues. He is also working on developing relational database management systems for participatory NRM and impact assessment frameworks for community-based natural resources management programmes. He has a master's degree in Agricultural Economics and a M Phil in Applied Economics.