Report of the Technical Committee on Drought Prone Areas Programme and Desert Development Programme

Ministry of Rural Development

April - 1994
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PREFACE

The Drought Prone Areas Programme (DPAP) and the Desert Development Programme (DDP) have been designed to restore ecological balance through soil and moisture conservation on watershed basis within the framework of area development plans. In practice, however, these Programmes have been implemented in a fragmented manner by different departments through rigid guidelines without any well-designed plans prepared on watershed basis by involving the inhabitants. Except in a few places, in most of the Programme areas the achievements have been dismal. Ecological degradation has been proceeding unabated in these areas with reduced forest cover, receding water table and shortage of drinking water, fodder and fuel-wood. Clearly, these Programmes have failed to neutralise the adverse impact of the overall processes of degradation on account of increased pressures on the fragile eco-systems from growing population, poverty and affluence. Inadequate attention to the development of infrastructure for generating income-earning opportunities by using indigenous resources and skills and the heavy subsidization of electricity resulting in pumping of water at a rate higher than the rate of recharge have also contributed significantly to the degradation of environment.

The Technical Committee is convinced that this process of degradation can be reversed by following appropriate strategies for the conservation of natural resources. The cases of outstanding success e.g. Ralegaon Siddhi and Adgaon in Maharashtra, certain tribal areas of Panchmahal in Gujarat, Mittemari in Karnataka and Jhabua in Madhya Pradesh, to mention only a few, reinforce this confidence. Planning on watershed basis through the participation of the people at all stages, active involvement of the voluntary organizations and coordinated effort by the administration have been critical in accounting for the success in such cases.

The Technical Committee has, therefore, recommended revamping of the strategy for the implementation of these Programmes. The works should hereafter be sanctioned on the basis of the action plans prepared on watershed basis instead of a fixed amount being allocated per block as at present. The beneficiaries in the watershed must be fully involved in the planning as well as implementation of the works through the Watershed Development Teams. Voluntarism in general should be encouraged within the framework of Panchayati Raj Institutions for undertaking these tasks and wherever voluntary organizations are forthcoming, the management of watershed development should be entrusted to them with the ultimate aim of handing over to them one-fourth of total number of watersheds for development. The resources for watershed development should be augmented substantially by pooling resources from other programmes being implemented by the Ministry of Rural Development e.g. Jawahar Rozgar.
Yojana, Employment Assurance Scheme etc. and by integrating them with DPAP and DDP. The Committee has also recommended suitable institutional mechanism for bringing about coordination between different departments at the central and state levels with a view to ensuring uniformity of approach in implementing similar programmes for the conservation of land and water resources. The Committee would like to emphasize that these Programmes by themselves cannot succeed in achieving the objectives unless they are backed by appropriate area development plans to ease pressure on natural resources by generating income-earning opportunities, particularly in the non-farm sector, and through appropriate pricing policies to discourage the overdrawal of ground water.

The Technical Committee has suggested criteria for identifying the eligible districts in the country for the Programmes on the basis of the moisture-index—an internationally accepted criterion for the identification of aridity. The eligible Blocks in these districts should be selected on the basis of the level of irrigation and slope of the terrain as enumerated by the Committee. The Committee is of the view that for combating drought effectively, all the villages in the selected blocks should be covered by these Programmes over the next ten years.

Training in the preparation of watershed development plans for the peoples’ representatives, activists of the voluntary organisations and for the functionaries from the administration at various levels is going to be critical for the successful implementation of this strategy. In the Committee’s view, the Ministry of Rural Development has to play a pivotal role in initiating and funding the training programmes to be undertaken by the various reputed institutions equipped for the purpose. The Ministry should also support research in technology bearing on watershed development in addition to initiating and supporting evaluation studies to be undertaken periodically by the reputed institutions. The Ministry’s leadership role would become extremely important in all such activities including administrative coordination at various levels. This is how effective decentralization of programmes at sub-state levels can be combined with overall guidance and leadership at the national level.

My colleagues on the Technical Committee made valuable contributions and actively participated at all stages of the work. Shri Shivraj Singh, Member-Secretary of the Technical Committee, shouldered the responsibility for organizing the work of the Committee. I would like to thank all of them for their cooperation.

C.H. Hanumantha Rao
Chairman
Technical Committee on DPAP and DDP

April, 1994
CHAPTER-1

INTRODUCTION

1.1 The Drought Prone Areas Programme (DPAP) and the Desert Development Programme (DDP) had been reviewed earlier by a Task Force headed by Dr. B.S. Minhas (1973); another Task Force headed by Dr. M.S. Swaminathan (1982) as well as by an Inter-Departmental Group in 1984. The last Committee, termed as National committee on DPAP & DDP was set up in May, 1988 under the Chairmanship of the Member, Planning Commission to appraise and review the Drought Prone Areas Programme and the Desert Development Programme. The Committee was initially headed by Dr. Y.K. Alagh, the then Member, Planning Commission, was later headed by Shri L.C. Jain, who took over as Member, Planning Commission in charge of the subject. The Committee submitted its Report in August, 1990.

1.2 The terms of reference of the Committee envisaged the appraisal of the impact of the work done under DPAP/DDP; identification of the weaknesses of the programmes and suggesting improvements; examining whether it is desirable to continue the Programmes in their present form and to spell out the contents of the strategy for the development of these areas; studying the coverage of DPAP/DDP and examining the need for inclusion or exclusion of areas and evolving suitable and well-defined criteria for measurement of drought proneness and desert conditions. The Committee, however, did not go into the specific terms of reference and had in fact, taken a view that it was not necessary for the Committee to deliberate on the various terms of reference as their approach was to decentralise the programmes by handing it over to the State Governments. The Committee had, accordingly, recommended that the Centrally Sponsored Schemes of DPAP/DDP may be transferred to the State Governments and merged with the State Plan and funds may be allotted in the Annual Plan outlay of the States. The Government of India, however, did not agree to the recommendation of the Committee and decided to continue these two programmes as Centrally Sponsored Schemes. It, therefore, became necessary to have a Committee to go into the technical parameters, requests from the States for inclusion and exclusion of areas from the coverage of the programmes and modifications, if any, in the guidelines to streamline the Programmes.

1.3 Accordingly, the Government of India decided to constitute a Technical Committee and a formal Resolution was issued in April, 1993 (Appendix I).
MEETINGS HELD

1.4 The Technical Committee held nine meetings and deliberated upon various issues. The details regarding the dates of the meetings and the issues covered are given in Appendix II.

FIELD VISITS

1.5 The Committee visited most of the Programme States to make on the spot evaluation of DPAP & DDP as per details given in Appendix III.

1.6 During these field visits, the Committee Members had discussions with State Governments/local officials, non-officials and beneficiaries of the areas. In Rajasthan, Minister in-charge of these programmes also had discussions with the Chairman and the Members of the Committee.

MEMORANDA RECEIVED FROM STATE GOVERNMENTS

1.7 In response to the requests from the Technical Committee, all the Programme States except Bihar furnished Memoranda reflecting their views on the terms of reference of the Committee for its consideration.

ACKNOWLEDGEMENTS

1.8 The Committee's deliberations with experts, scientists and NGOs were of immense help in formulating views on some of the important issues relating to the planning and implementation of these programmes. The Committee acknowledges with sincere thanks, the contributions from Shri J.C.Pant, Secretary, Agriculture, Government of India, Shri R.K.Rath, Former Chief Secretary(Orissa), Shri A.R.Bandhopadhyay, former Joint Secretary(Land Reforms), Government of India, Prof.V.L.Chopra, Director General, ICAR, Shri I.P.Abrol, Deputy Director General, ICAR, Shri Harnath Jagarath, Satguru Sewa Trust, Gujarat, Shri Annaji Hazare, Ralegaonsidhi(Maharahstra), Shri A.P.Fernandez, MYRADA, Bangalore, Shri J.P.Negi, Managing Director, HPMC, Shimla, Shri Rigzin Namgyal Kalon, Ex-MLA, Leh, Shri P.V.Shenoy, Director, Institute for Social and Economic Change, Bangalore, Shri Anil C.Shah, Agha Khan Rural Support Programme, Ahmedabad, and Dr.Anil Agarwal, Director, Centre for Science and Environment, New Delhi.

1.9 The Committee wishes to thank Shri B.N.Yugandhar, Secretary(RD), Ministry of Rural Development, Government of India, for the keen interest shown in the Committee's work and for providing the necessary facilities for its smooth functioning. Dr.D.Ramakrishnaiah, Deputy Commissioner, Rural Development provided assistance in the initial stages of the Committee's work. Shri Anil K. Ganeriwala, Deputy Adviser(Forestry), Ministry of Rural Development, provided assistance during the rest of the period. Shri K.S.
Dagar, Deputy Secretary (DPAP) prepared record of proceedings of the meetings of the committee. Shri S. Naik, Deputy Commissioner (DPAP) and Shri M. S. Chopra, Under Secretary (DPAP) provided general assistance in the Committee's work. The Committee is grateful to all of them for their dedicated work. The Committee would also like to thank Shri M. R. Khanduja, Research Officer (LR), Shri A. K. Jain, S. T. A., Smt. Lalitha Radhakrishnan, Stenographer, Shri Ashok Kumar, U. D. C., and Shri Kanhaya Prasad, L. D. C. who assisted Shri Ganeriwala in committee's work.
CHAPTER 2
HISTORICAL BACKGROUND

2.1 Substantial areas of our country periodically experience droughts leading to considerable loss of agricultural production and livestock wealth, besides causing misery to people inhabiting these areas. Large sums have been spent by the Government for providing relief after the occurrence of droughts. But, such expenditure has not helped solve the basic problem of increasing the productivity of these areas by conserving soil and moisture and thereby reducing the impact of the severity of the droughts to the human and cattle population. Ecological degradation on account of denudation of forests and excessive grazing has resulted in soil erosion and decline in the productivity of the land. Because of the increase in population, both human and cattle, even the marginal lands unsuitable for cultivation have been brought under the plough. Mitigation of distress caused by droughts were mainly restricted to adhoc relief works to create employment for increasing the purchasing power of the people which provided some immediate relief. Systematic efforts at long-term ameliorative measures to tackle these problems of drought started only after planning for economic development was launched in the country.

2.2 The first step towards a systematic effort to tackle the problem of drought and desertification was the establishment of a Research Centre at Jodhpur in 1952 to carry out research on certain core needs of desert areas such as sand-dune stabilisation, shelter-belt plantation, afforestation etc. In 1959, the entire responsibility for Research on arid areas was entrusted to the Centre which was then designated as Central Arid Zone Research Institute (CAZRI). During the Second and Third Five Year Plans, the problem of drought-affected areas was mainly sought to be solved by launching Dry Farming Projects, which spread over a few areas with emphasis on moisture and water conservation measures.

2.3 The origin of the Drought Prone Areas Programme can be traced to the Rural Works Programme launched in 1970-71 with the object of creating assets designed to reduce the severity of drought in affected areas. The Programme spelt out long-term strategy in the context of the conditions and potentials of the drought prone districts. In all, 54 districts in the country together with parts of another 18 districts contiguous to them were identified as drought-prone for purposes of the Programme. The Programme covered 12% of the country's population and nearly one-fifth of the area in the country. Labour-intensive schemes such as medium and minor irrigation, road construction, soil conservation and afforestation were taken up under this Programme. The Mid-Term Appraisal of the Fourth Plan redesignated the Programme as the Drought Prone Areas Programme.
2.4 The Fourth Plan continued to lay emphasis on dryland farming technology. For this purpose, All India Coordinated Research Project for Dryland Agriculture, later renamed as the Central Research Institute for Dryland Agriculture (CRIDA), was set up. 24 pilot projects were started to serve as training-cum-demonstration centres for application of technology relating to soil management, water harvesting, improved agronomic practices, drought-resistant crops etc.

2.5 The Programme in the Fifth Five Year Plan followed the strategy and approach of integrated area development laid down by the Task Force constituted by the Planning Commission in 1971 under the Chairmanship of Dr. B.S. Minhas, then Member, Planning Commission. The Task Force recommended that the Programme should be based on resource endowment analysis and potential for development of the project areas. It recommended that the Programme should aim at integrated development of agriculture with focus on conservation, development and utilisation of land, water, livestock and human resources in an optimum manner. The need to provide more stable income and employment to the weaker sections of the rural society was also emphasised.

2.6 In the Interim Report of the National Commission on Agriculture (1974) the hot desert areas were identified and it was suggested that a development programme consisting mainly of afforestation and livestock development should be taken up. In its final Report, the National Commission has suggested that the problem of the cold desert areas of Jammu & Kashmir and Himachal Pradesh should be studied in depth. The Desert Development Programme (DDP) was started in 1977-78.

2.7 The Drought Prone Areas Programmes and the Desert Development Programme were reviewed by the Task Force set up by the Ministry of Rural Development under the Chairmanship of Dr. M.S. Swaminathan. The Task Force in its Report in January '82, recommended certain modifications in the coverage of these programmes based on certain objective criteria evolved by it. While the on-going approach and strategy were reiterated, the scope and the objectives of the Programmes were re-defined. Emphasis was laid more on productive agriculture, dryland as well as irrigated, and vegetal cover. Infrastructure oriented schemes such as chilling plants, dairy units etc. were excluded from the purview of the Programme and greater stress was given on the strengthening of the land-based infrastructure including pasture and fodder resources. The DPAP was withdrawn from areas covered under DDP as the Programmes have similar objectives and contents. It emphasised the need for planning the Programmes on a watershed basis in an integrated manner. Thus, the objective of ecological restoration through proper land and water management was
emphasised in the Programmes. Instead of beneficiary oriented schemes, the Task Force recommended the provision of subsidy on predominantly area development schemes irrespective of the size of the holding and for schemes involving community participation such as farm forestry, water harvesting etc. The Task Force, however, suggested a general rate of subsidy, the larger holdings getting somewhat less than the smaller ones. For income generating schemes such as minor irrigation and land development, the Task Force recommended assistance to be limited to small and marginal farmers. Inter-sectoral priorities were also laid down.

2.8 The main thrust of the Programmes in the successive Plans continued to be income generating and infrastructure oriented schemes and the scope of the activities taken up under the Programmes became sufficiently wide to cover expenditures on staff and establishment, feed mixing plants, liquid nitrogen plants, veterinary hospitals and dispensaries, construction of road for transportation of milk, cross-breeding programmes, establishment of livestock and poultry farms, silk rearing units, ground water survey, purchase of rigs etc. In the process, it was observed that the Programmes deviated considerably from the avowed objective of ecologically integrated development of drought-prone and desert areas through drought-proofing and control of desertification.

2.9 The implementation of the Programmes were closely reviewed in June'87 by the Central Sanctioning Committee(CSC). The inadequate impact of these Programmes was attributed to the undertaking of wider range of activities which were neither properly integrated nor necessarily related to the core objectives of the Programmes. It was also felt that the low levels of investment in widely dispersed areas, implementation of schemes without proper feasibility studies, diversion of funds to unapproved schemes, high administrative expenditure etc. had diluted the focus of the Programmes. It was, therefore, decided to narrow down the range of activities under DPAP and DDP so as to sharpen the focus of the objectives to be achieved. It was decided that the main thrust of the Programmes should be on activities relating to soil conservation, land shaping and development, water resources conservation and development, and afforestation and pasture development. Since these activities are not only harmoniously related to each other, but together have the capability of making an impact on environment, it was decided that at least 75% of the annual allocation should be earmarked for these activities, while 15% of the funds were allocated for activities in minor sectors like animal husbandry, dairy development, sericulture, horticulture etc. which directly contributes to the basic objectives of the Programmes. A maximum of 10% of the annual allocation has been earmarked for project administration. A list of eligible and in-eligible activities was also prepared and used in the identification of programme works by the State Governments.

2.10 As regards the unit of planning and development, micro-watershed
was considered to be the most scientific basis for optimum utilisation of available resources, inspite of several operational problems. It was felt that earnest efforts should be made to implement programme activities in identified micro-watersheds.

2.11 The Annual Plans of the district under the DPAP/DDP were being approved by the Government of India till 1986-87. To quicken the process of clearance of these Plans from 1987-88 onwards, the authority to approve the district annual action plans has been delegated to the concerned State Governments. Accordingly, the district annual action plans are now being approved by the State Level Sanctioning Committee(SLSC) which is assisted by a Technical Sub-Committee which accords technical clearance to the sectoral schemes before the annual action plans are put up to the SLSC for approval.

2.12 At the time of taking a decision on the Report of the Task Force on DPAP & DDP, headed by Dr. M.S. Swaminathan. Government had indicated that the coverage of the two Programmes would be reviewed at quinquennial intervals. Various State Governments also made representations requesting inclusion of certain additional areas under these Programmes. Accordingly, a decision was taken in December '85, in principle, to set up a Committee to recommend inclusion and deletion of areas, appraise the work that is being done for drought-proofing and to suggest improvement in the content of these Programmes. However, it was only in May, '88, that a formal Resolution constituting the National Committee on DPAP & DDP was issued under the Chairmanship of Dr. Y.K. Alagh, the then Member(Agriculture), Planning Commission. It was later on re-constituted with Shri L.C. Jain, Member(RD), Planning Commission, as its Chairman.

2.13 The Committee reviewed the Programmes and identified deficiencies in their planning and implementation. In the light of the past experience of these Programmes, the Committee discussed future strategy of the Programmes and emphasised the need for new approach based on conceptual clarity of the goals to be pursued, capability of planning, methodology of implementation and involvement of people's representatives. The Committee also emphasised the approach of the Planning Commission under the Eighth Five Year Plan to provide greater scope for the people as well as Voluntary Organisations to articulate and stress their needs. The importance of decentralisation was highlighted. The Committee finally recommended the transfer of DPAP & DDP to the State Governments and suitable merger of these schemes with the State Plans. It was recommended that the Centre should continue to assist the States financially for the development of drought prone and desert areas in the Eighth Five Year Plan and funds for the purpose would be allocated to States directly by the Planning Commission for their annual plan outlays either in the form of a special area plan or as an additive to concerned sectoral outlays.
2.14 The Report of the Committee was examined by the Government and the recommendations about the transfer of the Programmes to the State Governments was considered carefully. In view of the decision of the Cabinet on the proposal made by the Planning Commission that the recommendations of the Narasimha Rao Committee, which suggested that DPAP & DDP will continue as Centrally Sponsored Schemes, should be accepted, the recommendations of the Jain Committee that DPAP/DDP may be transferred to the States was not agreed to. Thus the DPAP & DDP were continued as Centrally Sponsored Schemes.

2.15 Since the Jain Committee did not give any advice on the content of the programmes, and inclusion of additional areas which have been pending for a long time, it was decided to constitute a Technical Committee consisting of experts to go into the technical parameters, requests from the States for inclusion and exclusion of areas and modification, if any, in the programmes and their implementation.

2.16 While going through the evaluation of these Programmes, one can observe a lack of conceptual clarity about objectives to be achieved by these Programmes which probably led to shifts in the focus of the Programmes. Initially, the Programmes were confined to generation of employment and remunerative work, particularly during the Third Five Year Plan. In the Fourth Five Year Plan, while the focus continued on the provision of remunerative work to rural labourers, mitigation of scarcity conditions in drought-prone areas in the long-run also got added as an objective. The Mid-term Appraisal of the Fourth Plan shifted the emphasis from generation of employment to creation of durable assets. However, a major turning point in the objectives of the Programmes came through the recommendations of the Task Force headed by Dr. Minhas which concluded that DPAP as conceived and implemented was not likely to contribute to mitigation of drought and recommended the integrated development of drought affected areas. Thus, during the Fifth Five Year Plan, restoration of ecological balance through an integrated development on watershed basis with a view to insulating drought prone areas from the effects of recurring drought, became a goal. Later, the Task Force headed by Dr. Swaminathan reiterated and sharpened the emphasis on ecologically sustainable development as the objective of these Programmes. Some refinements were also made through the exclusion of infrastructure-oriented works from the purview of the Programmes. There was greater conceptual clarity in the Seventh Five Year Plan as far as objectives of the Programmes were concerned and the Mid-term Appraisal of the Seventh Plan(1988) which was influenced by the decisions taken by the Central Sanctioning Committee (CSC) in 1987, clearly spelt out drought proofing and control of desertification as the main objectives of the DPAP & DDP.
2.17 It would be seen from the above account that although the restoration of ecological balance continued to be the main objective of these Programmes, especially during the later years, a sharp and clear focus on achieving drought-proofing and controlling desertification was not properly articulated and enunciated, as a number of other objectives were also laid down along with restoration of ecological balance. Even the Task Forces headed by Dr. Minhas and Dr. Swaminathan, while spelling out clearer strategies and various elements of drought-proofing and ecological restoration, left ample scope for activities not directly contributing to drought mitigation. As a result, the direction of the Programmes got diluted depending upon various factors such as the perception of the State Governments, spending capabilities of sectoral departments and pressures exerted by different interest groups. Even deep bore-wells taken up for the benefit of individual farmers, pipelines laid out for supplying drinking water and rural electrification were justified as contributing to drought-proofing.

2.18 In the process, each activity under the Programme began to be implemented in an isolated and segmented manner and watershed as a unit of area development was completely lost sight of. The sectoral autonomy, devised for the purpose of overall development, slowly became an independent area of operation and completely diluted the concept of integrated watershed development as the key to restoration of ecological balance.

2.19 DPAP & DDP are additive to the normal developmental efforts in the Programme areas. With the limited allocation made available to the districts under DPAP/DDP, it could not be expected that these Programme would wholly cater to the developmental efforts of the district. Therefore, the programme guidelines stipulated that all other developmental programmes operating in DPAP/DDP areas both in the Central sector/State sector with their main focus on drought-proofing/control of desertification should be suitably dovetailed and integrated in the preparation of integrated watershed plans. But, in almost all the Programme areas, DPAP & DDP continued to be implemented independent of other developmental programmes leading to duplication of efforts and wastage of scarce resources. In some cases, it was even observed that the State Governments squeezed the normal allocation from the State Plan for DDP areas.

2.20 Besides the lack of adequate conceptual clarity and the consequent shifts in the objectives to be pursued under the Programmes, low priority assigned to these Programmes by implementing bureaucracy accounted for the dismal progress of the Programmes. DPAP/DDP were perceived to be against the immediate or short-term gains almost at every level and pulled away from the integrated approach to long-term drought-proofing of the area. The poor achievements of these Programmes show that even a well conceptualised development programme encounters difficulties unless concerted efforts are made for its proper implementation.
CHAPTER- 3

IMPACT OF DPAP/DDP - A REVIEW

3.1 An expenditure of Rs.1470.92 crores has been incurred under DPAP and Rs.468.50 crores under the DDP since inception of these programmes upto September, 1993. Major expenditure was incurred on activities such as soil and moisture conservation, water resources development, afforestation and pasture development while some expenditure was incurred on fisheries, animal husbandry, horticulture, dairy, drinking water supply etc.

The physical targets achieved under these programmes are summarised below:

<table>
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<tr>
<th>Sl.No.</th>
<th>Core activity</th>
<th>DPAP (000 hectares)</th>
<th>DDP (000 hectares)</th>
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<tr>
<td>1.</td>
<td>Land development and soil conservation</td>
<td>2740</td>
<td>122</td>
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<td>2.</td>
<td>Water Resources Development</td>
<td>902</td>
<td>57</td>
</tr>
<tr>
<td>3.</td>
<td>Afforestation &amp; Pasture Development</td>
<td>1647</td>
<td>234</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>5289</td>
<td>413</td>
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3.2 The area treated under DPAP so far comes to about 5 million hectares which constitutes only about 10% of the geographical area of the blocks selected for DPAP. The area treated under DDP comes to only about 0.4 million hectares which accounts for only about 1 percent of the total area in the blocks selected for DDP. Although it would be necessary to cover only a part of the area in the selected blocks for treatment under the Programmes, it is reasonable to conclude that a very large part of the eligible area still remains uncovered by the Programmes. It becomes obvious then that with such a small coverage, one cannot expect to make a real dent in the development of drought prone and desert areas.

3.3 Since the activities under DPAP/DDP are not spread over the entire length and breadth of the problem areas, but are restricted to identified smaller areas, it would be logical to expect the impact of these programmes only over such limited areas.
3.4 Despite the fact that the Drought Prone Areas Programme and the Desert Development Programme have been in operation for almost two decades, it has been observed that the Programmes have not made a substantial impact. On the other hand, it is widely believed that drought conditions in the country are increasing and ecological degradation is proceeding unabated especially in drought prone and desert areas. The main reasons for this degradation have been large scale denudation of forest cover leaving the land vulnerable to soil and water erosion. In Rajasthan, 18 drought years of different magnitudes have been observed in the past 32 years. Another study in Rajasthan reveals that, on an average, as much as 40.4% of precipitation or rain water goes untapped, and only 6.9% is used for recharging the ground water. In some districts of Tamil Nadu, water table is reportedly going down by 1 ft. every year. It has been reported to us that in the dark blocks in Uttar Pradesh where more than 75% of groundwater has been exploited and where rainfall level is 700 mm, as much as 50-70% run-off from rainfall is wasted.

3.5 Despite the fact that nearly 2,000 crores of rupees have been spent on these programmes since their inception and despite the recommendations of the Central Sanctioning Committee to commission evaluation studies from reputed non-official institutions, no such evaluation has been undertaken at the micro-level. Therefore, the Committee had to depend basically on field visits and discussions with the beneficiaries and officials at the field level for evaluating the performance of these programmes.

3.6 Of the many factors responsible for the unsatisfactory performance of the Programmes, the most important one is that under both the programmes, a wide range of activities not necessarily related to the core objectives were taken up in the past by spreading them thinly over a widely dispersed area. This tended to defuse focus on efforts to be made for achieving the core objectives of the Programmes. The attempt at mitigating the sufferings of the people were aimed at the provision of adhoc relief through income generating activities funded from the area development programmes without integrating such works with programmes for land and water conservation.

3.7 Though it has been accepted that watershed based integrated development programme is the basic means for drought mitigation and control of desertification, the programme works in the field have been undertaken more on sectoral basis and in isolated patches. Planning is still done on an adhoc basis merely by arithmatical consolidations of sectoral budgetary proposals. At the district level, efforts are rarely made to appraise the proposals received from various sectoral heads and to prepare integrated watershed development plans. There is also no attempt to co-ordinate different sectors in a manner that drought mitigation can be achieved. Lack of proper integration of various schemes both in the
central and state sectors and inadequate control that the Project Directors in charge of the Programmes have over the Line Departments resulting in their inability to play an effective role in multi-disciplinary planning have also contributed to the slow progress in programme implementation. The concept of integrated land and water management on watershed basis through active involvement of the people which alone could improve the environment and productivity of resources was not duly focussed. Although, the Central Sanctioning Committee in 1987 made an attempt to sharpen the focus of the Programmes by limiting to those activities which directly contribute to drought proofing and containing of desertification, the sectoral approach of working continued and watershed based planning and implementation could not make an effective beginning. However, the Committee notes with some satisfaction that some State have initiated steps to plan and implement the Programmes on watershed basis.

3.8 As per guidelines of DPAP & DDP, micro-watershed should be the management unit and in each selected block the micro-watersheds may be classified into high, medium and low priority areas according to their vulnerability to droughts. The highly vulnerable areas should be taken up for development on a priority basis. However, in actual practice, due to lack of adequate data and to pressures from vested interests, selection and finalisation of watersheds for development gets considerably delayed. There is no appropriate multi-disciplinary agency at the district, block and the watershed level to prepare integrated plans which could be taken up for implementation. Most of the schemes taken up are of adhoc nature and without due consideration of cost-benefit ratios. Essential data which are crucial for watershed planning are rarely available with the planners at the district and block levels. Perspective planning for micro-watersheds is seldom done and the plans are mainly prepared on annual basis. Also, the annual plan is prepared on the presumption that rainfall will not exceed the average rainfall of the area. Whenever there is a good rainfall, the administration is caught unprepared and finds itself unable to make use of the excess water available in the area. The excess of rain water runs off causing considerable soil erosion. In the absence of perspective planning, the outlays on drought relief are also not spent wisely on the construction of assets required for mitigation of drought.

3.9 For integrated development, it is necessary to dovetail other central and state schemes in each selected watershed. Pooling of funds and implementation of the Programmes planned for the area through a single multi-disciplinary agency has not been observed at many places. Various developmental programmes are taken up by Departments/Agencies in drought/desert areas which may even run counter to the objective of drought proofing or control of desertification. Thus, while some programmes may stress restoration of ecological balance, others such as promotion of tourism, industrialisation of the area etc. may cause influx of population
which may disturb the optimum land-man-livestock ratio and thereby disrupt the efforts towards restoration of ecological balance. So far, works have been taken up on community lands and the treatment of farmers’ fields was conspicuous by its absence in most of the States. Even improved crop production technologies were not visible in most cases. The main components observed in operation are rain water harvesting through minor irrigation works and afforestation. However, neither the catchment area nor the command area is treated for its sustainability in many cases. Afforestation programme has different connotations in different States. Individual stake holders are allowed to benefit from the Programmes in the form of collection of fuel-wood, fodder and small timber, but only in a few States. In most cases, choice of tree species is limited to the list approved by the State agencies. The farmers’ choice is very rarely considered. In regard to pasture development, there is very little effort to introduce good quality and nutritious grasses like Cenchrus and legumes like Stylosanthes hamata.

3.10 Maintenance of the assets created has suffered, especially in respect of water-harvesting structures. In several places, beneficiaries were not motivated to assume responsibility for maintenance after the works are completed even when the benefits accruing from such works are substantial. Moreover, the concerned departments do not have adequate provision for maintenance in their budgets. As a result, in a majority of cases visited by the Committee, the water harvesting structures were silted and otherwise damaged in less three years of their completion.

3.11 Except in rare cases, the participation of people was conspicuous by its absence either in the preparation of plans or in their implementation. The people were found to be passive at best and sceptical and even hostile, at worst. In quite a few cases, the structures created by the departments were demolished by the farmers, as, for example, in certain areas as many as 25 per cent of the bunds laid on the fields were demolished. However, where people have been motivated to participate from the inception, i.e., from the planning stage, their enthusiasm was visible and the structures were protected by them. Quite a few of the afforestation programmes in West Bengal and Orissa, for instance, demonstrate how people’s participation and their vigilance by providing social fencing can greatly contribute to the success of these programmes.

3.12 The issue of additionality aspect of these programmes also needs a special mention as this has been raised quite often in the past. Both these programmes were conceived of as integrated area development programme, with the long term objective of restoration of the ecological balance through optimum utilisation of natural resources. These were designed as an additionality to the existing sectoral schemes within the State Plans. In blocks which were identified as drought prone, 75 per cent of the funds
were earmarked for three major components namely, Land Shaping and Land Development including Soil Conservation, Water Resource Development and Afforestation and Pasture Development. Hence the expenditure under the three heads needs to be examined to ascertain the extent of additionality.

3.13 The PEO has recently completed an evaluation of the DPAP. The data for 12 selected districts indicates that DPAP funds have provided additional resources for each of the three components and that the non-DPAP funds flowed in larger amounts.

3.14 However, evidence from a PEO evaluation of the DDP in selected districts, reveals that for some activities in particular districts, the DDP funds are used as substitutes for sectoral funds which should normally flow from the budgets of the State Government. For instance, in Gujarat and Rajasthan over 70 per cent of the expenditure under animal husbandry was from DDP. In fact, in Rajasthan, 90 per cent of the expenditure under soil and water conservation and land development, and 96 per cent of the expenditure under forestry and pasture was from DDP. Even in Haryana, 60 per cent of soil and water conservation works were financed by DDP.

3.15 To the extent that DPAP and DDP funds are additive to normal sectoral funds for specific activities, which are important for drought-proofing, there is little problem. However, in the event that in particular districts, this additionality is not achieved, it is now possible to provide additional resources from other employment generation programmes of the Ministry of Rural Development. The resources available under the Employment Assurance Scheme (EAS) and the intensified JRY can be dovetailed with the DPAP and DDP within a watershed plan. In most of the DPAP and DDP areas these Schemes will operate. It can be stipulated that at least 50 per cent of these funds should be diverted towards the DPAP and DDP, for purposes of soil and water conservation and treatment within an identified micro-watersheds. This will enable the taking up of additional micro-watershed, within a block/district, than would be possible with the resources available for DPAP/DDP as such. Also, as these programmes are to be implemented by the DRDA, greater integration would be possible. For better coordination between different line departments, the details are spelt out later.

3.16 The Committee finds that despite these programmes, ecological degradation is continuing especially in drought prone and desert areas. Water table has gone down. Drinking water problem has not been solved. Forest cover has been depleted. Severity of drought has increased. Thus, ecological degradation in the dryland areas in the country today appears greater than a few decades ago. However, it cannot be concluded from this that the DPAP and the DDP did not make any contribution towards the mitigation of drought. Rather, the position would have been worse in
the absence of such Programmes. With larger coverage of area under the Programmes and with better planning and effective implementation of such Programmes, ecological degradation would undoubtedly have been less serious. It is clear, however, that the Programmes as they have been operating have failed to neutralise the adverse impact of the overall processes of degradation underway in these areas.

3.17 The degradation of environment in the dryland areas is basically attributable to the increasing biotic pressure on the fragile eco-systems in the absence of adequate investments and appropriate management practices to augment and conserve the land and water resources. Population growth and poverty on the one hand and the pressures of rising demand from affluence on the other have been exerting powerful pressure on the eco-systems. The macro-economic policies which provide inducement to the over-exploitation of natural resources, that is, at a higher rate than the rate of regeneration, are also responsible for denudation of environment. For example, in the dryland areas, the pumping of water has been proceeding at a faster rate than the rate at which groundwater is being recharged. This is on account of the availability of electricity at a flat rate regardless of the amount of electricity used for pumping water.

3.18 The breakdown of traditional institutions for managing common property resources and the failure of new institutions to fill the vacuum has also been responsible for the denudation of natural resources. The traditional community based institutions have given place so far to individualised or market-driven exploitation of natural resources without any regard for adverse externalities of such actions and to numerous official programmes for the development of land and water resources which are dependent almost entirely on the top-down bureaucracy with very little participation from the village communities.

3.19 The outstanding examples of success at Ralegaon Sidhi and Adgaon in Maharashtra, Kabbalnala and Mittemari in Karnataka and Jhabua in Madhya Pradesh show that drought can be beaten, provided concerted efforts for development on watershed basis are made with motivated and determined leadership from the administration and with the involvement of voluntary organisations together with the participation of local farmers who are willing to undergo sacrifices and share benefits. For example, a study by National Remote Sensing Agency, Hyderabad, reveals that due to intervention of check dams under DPAP in Jhabua district, the area of water bodies have increased significantly from 30.09 sq.km in 1987 to 38.72 sq.km in 1993. Similarly, there has been an increase in green cover from 297.01 sq.km to 484.99 sq.km over the same period.
CHAPTER - 4
FUTURE STRATEGY

4.1 Overview

4.1.1 One major lesson that has emerged from the experience of the working of DPAP and DDP is that these programmes failed to make the desired impact in areas treated not so much because of the wrong identification or inadequate allocation of funds, but mainly because of (a) poor and ad-hoc planning without any serious regard for watershed approach; (b) almost complete lack of people's participation; and (c) weak coordination between, and lack of integration among works undertaken by different agencies involved in operation. The Committee has kept this in view while making recommendations for future planning and implementation of the Programme.

4.1.2 Experience has also shown that the individual beneficiary-oriented programmes like JRY and IRDP have overtaken the area development programmes like DPAP and DDP in terms of the interest shown and attention given by the administration as well as the response from the beneficiaries. This may be explained by the fact that the former are disbursement-oriented and the benefits from these programmes are immediate whereas area development programmes have a long gestation period and require detailed planning through community participation.

4.1.3 As mentioned in the previous chapter, there are wider forces operating in the economic system which have an adverse effect on the rural environment, particularly in the dry areas. Without simultaneously addressing such issues it would be difficult to counter the processes of degradation through Programmes like DPAP & DDP alone. The movement for conservation of natural resources has to become sufficiently widespread by motivating the local inhabitants to participate in such activities. For this, conservation of natural resources has to be made privately profitable by providing necessary infra-structure, technologies and institutional back-up. Further, the pattern of socio-economic development and the set of macro-economic policies including the pricing of inputs which reduce pressure on natural resources, augment such resources by arresting their depletion are going to be critical for protecting the environment. The specific Programmes like DPAP & DDP can make a visible impact only in such a favourable macro-economic setting.

4.1.4 Besides, in the highly degraded eco-systems where the carrying capacity is very low, unless the natural-resource centred programmes like
DPAP and DDP are supplemented by other people-centred programmes to improve their livelihood and raise their awareness, it would not be possible to achieve the objectives of ecological conservation. This calls for a reorientation of approach and strategy for the development of ecologically vulnerable areas. In the first place, it has to be recognised that the people in such areas have developed over a period of centuries their own strategies to cope with the adverse consequences of droughts. Greater attention has to be given to peoples’ own strategies and their own indigenous technologies including the locally preferred plants so as to incorporate them in the Programmes to mitigate the rigours of drought. Thus, the focus has to shift to what these areas and the people inhabiting such areas have rather than merely focusing on what they do not have. For example, in desert area, animal husbandry has a comparative advantage so that investment in dairy development including improvements in breeding may reduce pressure on natural resources arising from increase in cropped area and number of cattle, even as they improve the livelihood of the people. Greater priority to drinking water, pasture development and fodder banks in such areas would serve the same objective. It has been observed that there has been a bias against these areas in respect of the provision of services under the Minimum Needs Programme. Provision of adequate infrastructure and other facilities would be necessary to attract and retain the talented professionals and administrative personnel to service the developmental and the Minimum Needs programmes.

4.1.5 Policies in the non-agricultural sector in such areas will have a close bearing on the protection of environment by reducing biotic pressure. For example, the availability of raw materials like wool, leather and hides and skins are abundant in such areas but those supplying such material get very little income mainly because of high price-spread and larger margins expropriated by the middlemen. Establishment of wool-processing units and tanneries in such areas can raise the employment and income for local people and thus reduce nomadism and migration which will have favourable impact on environment. Development of crafts and other income earning opportunities will have the similar effect of reducing nomadism. All this would require the development of infrastructure and research in the evolution of location-specific technologies based on indigenous innovations including the tapping of solar and wind energy abundantly available in such areas. This would require venture capital to support local innovations so that activities contributing to significant value addition could be introduced. These have to be backed by a credit plan as an integral part of area development plan. Credit policy so evolved has to be sufficiently flexible not only to allow group lending but also permit repayment schedules so as to take into account the gestation periods of different activities. People-centred approach would also imply the development of their capabilities through improved literacy and health-care, particularly for women, apart from training in useful skills.
4.1.6 The sum total effect of such a strategy would be to reduce biotic pressure on extremely fragile areas and improve awareness and resource-literacy for the protection of environment. In extreme situations it would also mean retaining people in the area with improved capabilities to be available for activities aimed at conserving the environment. The Committee would therefore like to emphasise that the overall development strategy in ecologically vulnerable area has to be informed by such concerns for the improvement in the livelihood of the people. In the absence of such a strategy, Programmes focussed on natural resource conservation *per se* would fail to achieve their objectives.
4.2 Planning & Implementation

4.2.1 The Technical Committee reiterates that harmonious management, development and utilisation of land, water and vegetation resources on watershed basis, and the creation of complementary opportunities for processing and marketing of value added goods produced in such areas should be the essence of these area development programmes. In desert areas where delineation of watershed is not possible due to impeded drainage system, Index Catchment and Cluster of Villages approach as currently followed in DDP areas is scientifically feasible and administratively functional. But, if the concept of watershed is to be followed, which signifies harmonious use of land and water resources rather than a mere geo-hydrological unit marked by drainage lines, even desert areas could be managed and developed following the watershed approach.

4.2.2 Watershed as a scientific unit has been accepted the world over for area development because of following advantages:-

1. Water resource utilisation which is most crucial in DPAP and DDP areas is best optimised through basin-wide management.

2. As the water resource component is analogous to the blood systems in animal bodies, it provide the best method to diagnose the state of natural resources in a given watershed.

3. Fluctuation in water regime is most widely inter-related to the other objectives of area-based development.

4.2.3 Since the objective of the watershed development is, ecological improvement and conservation of natural resources as well as socio-economic development of the local population, watershed management efforts must incorporate soil and water conservation and land use planning into a broader frame-work that takes into consideration not only physical inter-relationships but economic, social and institutional factors as well.

4.2.4 The benefits that would flow from the development of watershed in an integrated manner would include increase in sub-soil water regime, recharge of wells along the downstream of the watershed and augmentation of drinking water availability. The Agricultural production would be enhanced and there will be greater availability of fodder, fuelwood, small timber and raw material for rural industries. In the process some intangible benefits like institution building as people get together to manage the watershed, and increased bio-diversity of the watershed can also be expected.

4.2.5 The treatment plan for the watershed should include all categories of lands including private, village commons, Revenue and degraded Forest
Lands. As far as possible the selected watershed should be covering a village/hamlet. Even if the watershed is not in physical proximity of the village, the benefits from its development should accrue to the villagers. Appropriate arrangements should be made for distribution of benefits to the watershed community from the Government lands in the watersheds developed.

4.2.6 Careful selection of the watershed would be Central to the proper planning and implementation of the Programmes. Thus in any State first priority should be given to those districts that are prone to drought more severely. By adopting NCA (National Commission on Agriculture) recommendations, if drought is occurring in 40% years, such districts should get preference over those experiencing drought in 20% years. Once the blocks are chosen as per the criteria discussed elsewhere, different micro-watersheds of area not exceeding 500 hectares may be identified in each village of the block using remote sensing techniques. Then severity of degradation of the resource base may be assessed using remote sensing techniques with particular reference to soil erosion and depletion of vegetal cover. The already available data from the State Remote Sensing Agencies, NRSA, NBSS & LUP, CAZRI, CSSRI, CSWCR & TI may also be used for the purpose. Highly degraded areas may be chosen on a priority basis. Since it is proposed to cover each village in a block within 10 years, prioritisation may be made of the villages, preferably on cluster basis. This will enable better servicing facilities which include inputs alongwith credit, training to create awareness and assisting in preparing action plan for each micro-watershed.

4.2.7 If the degradation of the resource base is more or less similar in more than one micro-watershed, the following criteria may be used in selecting the priority watershed.

- Scarcity of drinking water.
- Larger population of SCs/STs.
- Preponderance of common lands.
- Watersheds where actual wages are significantly lower than the minimum wages.

4.2.8 The planning and implementation mechanism at watershed level is most crucial for implementation of the Programmes. The Technical Committee is of the view that watershed development programme should be implemented with the total participation of the beneficiaries. This can be ensured by having a watershed development team (WDT) whose General Body shall consist of all the adult members of watershed area. However, for operational convenience the watershed development team shall consist of 10 members of whom atleast 5 shall be women. The representation to SCs. & STs. in the watershed team shall be in proportion to their strength.
in the general body. The leader of the WDT shall be chosen by the General Body of the beneficiaries of watershed. Funds will be earmarked for watershed development and released to the watershed development team through the Panchayats or Voluntary Agencies as the case may be. The watershed development team shall render the accounts to Panchayats. It is also necessary to provide administrative and other support to the watershed development team. The team shall be assisted by 2 persons comprising of a village Level Extension Officer/Worker drawn from Agriculture/Animal Husbandry/Forest/Horticulture Department and, another preferably a Matriculate educated village youth selected by the beneficiaries of the micro-watershed. Wherever viable village bodies exist, one or two functionaries may be selected by the watershed development team. The village Youth shall receive a honorarium of Rs.500/- per month and the term of his appointment shall be two years.

4.2.9 In any given year, only a micro watershed with about 500 ha. will be taken up for management and development. The assignment of watershed functionaries shall take effect six months previous to the commencement of the year in which the watershed is taken up for development. The functionaries shall undergo a multi disciplinary training during the first three months and they will spend the next three months in survey and preparation of plan for implementation during the year of operation. The selected village Youth will also be given assistance to set up a Kisan Nursery to supply saplings to the villagers and he can also be decentralised seed producing farmer for the village. In short, the village Youth also will be a model demonstrative farmer supplying essential requirements like quality saplings and seeds to the villagers. The appointment of the selected Youth will continue for another six months after the year of implementation, to assist the Watershed Development Team in some of the essential items like immediate maintenance and settlement of accounts. It should be mandatory to make accounts public through the General Body of the WDT. Since the village Youth is also proposed for allotment of Kisan Nursery and Seed Production Activity, he can continue to serve the villagers and watershed community even after completion of watershed programames and also derive income to support himself.

4.2.10 The preparation of Watershed Development Plan and construction of structures, check dams etc. involve a higher level of technical knowledge, which may not be available within the Watershed Development Team or at the level of watershed functionaries. At present this technical assistance comes from the line departments of Agriculture, Forests, Minor Irrigation and Horticulture, which have to provide the technical assistance and supervision in addition to their normal duties in the non-watershed areas of jurisdiction. Since the proportion of area of jurisdiction outside
the selected micro watershed during a given year would be much more than the area covered by the micro watershed taken up for implementation, the time and attention of the regular Officers at block level of line departments would be devoted more for their normal duties than for watershed duties. Consequently, watershed programmes which are basically an exercise in convergence and concentration of larger funds in limited areas for development according to certain objectives suffer from want of desired time and attention from the field functionaries of line departments. Therefore, there is a need for providing assistance by a Multi Disciplinary Technical Team comprising of block level officers drawn from the above departments. While it would be not affordable financially to think of providing the services of block level field functionaries for each watershed, it may be a desirable proposition to create such Multi Disciplinary Technical Team of block level officers for cluster of watersheds and could be located in a centrally and accessible places like taluk or block headquarters to cater to the needs of the cluster of watersheds.

4.2.11 When droughts occur, large amounts are spent on relief works. Since these works are not planned in advance as an integral part of area development plans, sizeable amounts are spent on ameliorative measures of a short term nature which do not result in the creation of durable productive assets for mitigating the effects of drought. While finalising the plans of the concerned States, the Planning Commission should ensure, through appropriate mechanisms, that in drought prone areas, the relief works are integrated with area development plans designed to conserve soil and moisture through the development of watersheds and to generate other income earning opportunities on a sustained basis which alone can mitigate the adverse effects of drought on a lasting basis.
4.3 People's participation

4.3.1 Several studies as well as the first hand information gathered by the Committee during its visits and discussions have revealed that barring a few exceptions there have been no systematic efforts aimed at involving people of the areas concerned in preparing and implementing DPAP and DDP. It has also been found that even where voluntary organisations have been involved, the really genuine ones among them did not get the encouragement and opportunity they deserve. Under the programme administration, the power and authority for planning and implementation effectively vested with the State Governments and the District Administrations. Consequently, the programmes were conceived, evolved and implemented through bureaucratic mechanisms. For effectively ensuring people's participation in the implementation of DPAP and DDP, it is necessary to modify both the process of planning and implementation. Democratically constituted local self-Government institutions and Voluntary Organisations of the people would have to be mobilised and fully involved in shaping DPAP and DDP programmes taking into account the resource endowments and requirements of the areas. The authority and the responsibility to implement the programmes should unequivocally vest with the elected local Government institutions and Voluntary Organisations of people constituted for the purpose. Financial resources flowing from the Central and the State Governments for the programmes should be placed at their disposal. Thus, the responsibility for planning and implementing DPAP and DDP should be transferred to the democratically constituted local self-government institutions and to the Voluntary Organisations of people. Government functionaries at all levels should act as facilitators for implementing the people's programmes by providing the necessary technical inputs and supportive role of coordination.

4.3.2 As it would take some time for the democratically elected local self-Government institutions to take roots and the Voluntary Organisations of people to come up in many parts of the country, it may not be possible to effect total transfer of the DPAP and the DDP at this stage to them. For quite some time to come, Government Departments organised in the traditional mould, Panchayati Raj Institutions and Voluntary Organisations would have to assume varying degrees of responsibility, taking into account the prevailing local conditions in different parts of the country. For instance, it is conceivable that in certain areas Voluntary Organisations could play the leading role in evolving and implementing these programmes but in some other areas, they may be non-existent. Besides, on account of the deep-rooted traditions of bureaucratic implementation of developmental programmes and the ignorance and apathy of people, it would take quite some time for an appropriate development-oriented work culture involving Government functionaries, elected representatives of local self-Government institutions and People's Organisations to evolve and become
operational. During this intervening period of experimentation and transition, we should be prepared for shortcomings and failures in spite of regular reviews and midterm corrections.

4.3.3 The scope and contents of the DPAP and the DDP and the mechanism for their implementation are not widely known even to the beneficiaries of the areas in which they are being implemented. Hence, awareness-raising including dissemination of relevant information relating to the programmes is of prime importance. Voluntary Organisations are best equipped to undertake this task which is perceived to be the very basis for mobilising people’s participation in the implementation of these programmes.

4.3.4 Against the background of the foregoing discussions, the Committee is of the view that determined efforts and concrete steps are required to promote voluntarism in evolving and implementing DPAP and DDP. Initiatives are needed to catalyse promotional efforts towards this end by the State Level Committee. This would mean not only the involvement of the existing voluntary organisations who are genuine and competent, but creating conditions, through favourable policy and bureaucratic receptivity, for the proliferation of local groups consisting of motivated and dedicated people for undertaking such responsibilities. Hence, it would be desirable to move towards the goal of entrusting ultimately 25 per cent of watersheds to the voluntary organisations for the implementation of DPAP and DDP programmes. Keeping this objective in view, the Committee makes the following specific recommendations for facilitating effective people’s participation through Voluntary Organisations in the implementation of these programmes:

i) The State Governments concerned may constitute State Level Committees for the Promotion of Voluntary Action for DPAP and DDP. The Chief Minister of the State may Chair the Committee which may consist predominantly of representatives of established Voluntary Organisations and senior officers of the Government Departments concerned.

ii) The State Government concerned may give adequate publicity to DPAP and DDP and invite applications district-wise from Voluntary Organisations for taking up these programmes.

iii) Secretary of the Department of Rural Development may be the Member-Convener of the State Level Committee.

iv) The State Level Committee may from time to time approve the list of Voluntary Organisations which can be entrusted with the DPAP and DDP. The Committee may lay down the general guidelines for the functioning of Voluntary Organisations and also evolve appropriate policy measures for promoting voluntary action.

v) Wherever reputed Voluntary Organisations are forthcoming, imple-
mentation of 25 per cent of the DPAP/DDP watersheds in a district may be entrusted to them. A Committee at the district level under the Chairmanship of the District Collector consisting mainly of representatives of Voluntary Organisations may be constituted for the purpose.

vi) The District Level Committee shall encourage Voluntary Organisations to take up implementation of the programmes.

vii) The District Level Committee may approve the project proposals including the financial outlays of Voluntary Organisations for implementing the programmes. The project proposals may either be for awareness-raising/training the people and local functionaries for evolving and implementing the programmes or for the whole process of formulation and implementation of watershed-based plans involving the local people, especially the beneficiaries.

viii) Based on the decisions/recommendations of the District Level Committee, funds for implementing the programmes will be released to the Voluntary Organisations directly by the State Government/Zilla Parishad/DRDA, as the case may be. This arrangement could be formalised in the form of a Memorandum of Understanding broadly on the pattern being implemented by the Department of Agriculture & Cooperation in respect of Centrally Sponsored Scheme of National Watershed Development Programme for Rainfed Areas (NWDPRA).

ix) The Voluntary Organisations entrusted with the implementation of the project will be fully responsible for its completion in terms of the project proposals and shall submit audited accounts annually to the prescribed authorities. The VAs may be permitted upto 10 per cent of the project cost to man their staff.

x) For effective mobilisation of local people's participation in the programmes, the Voluntary Organisations shall constitute Watershed Development Teams for the implementation of the programme and shall share the accounts for the grants given for watershed development with the General Body of WDT.

xi) The functionaries of the line Departments of the Governments may extend their full cooperation, specially in providing the necessary technical guidance in the preparation and implementation of the programmes.

xii) The assets and benefits accruing from the programmes shall vest entirely with the beneficiaries/local communities which will be responsible for the proper maintenance of the assets created including plantations etc.

xiii) The District Level Committee may periodically monitor the functioning of the Voluntary Organisations in the implementation of the programmes and take appropriate action in order to ensure that the programmes are implemented in terms of the approved project proposals.
4.4 Programme contents

4.4.1 The main thrust in the programmes should be resource regeneration/conservation for sustainable development. The programmes should have all the ingredients on resource inventory and management. The components should not be pre-determined, as at present. There should be total flexibility in this regard and the actual choice of the components should emerge from the watershed plans prepared by implementing agencies including beneficiaries. Only the financial norms per hectare be fixed such that proportionate funding be allowed depending on the project and the evidence produced by the sponsoring agency. However, there should be a negative list i.e. activities to be discouraged, as approved by the District Level Committee.

4.4.2 The different processes of desertification and the measures to combat them are discussed in the Appendix to this Chapter. We give below some of the specific recommendations emerging from this discussion:

(i) It has been observed that large amounts are being spent on minor irrigation works. However, it should be restricted by stipulating that money not exceeding certain amount to be specified by the State Level Committee should be spent on minor irrigation works and in 500 hectare watershed, about 2 or 3 small structures may be allowed. Bigger structures and Kolhapur Type (K.T.) weir should be avoided under the Programmes.

(ii) With the minor irrigation works, the groundwater exploitation is expected to increase. However, its use should not be euphoric, but allow only to tap the rechargeable water without exploiting the static water. People’s participation will be helpful in this regard. Rice, sugarcane and other heavy duty crops should be strictly prohibited in these watershed areas.

(iii) The groundwater, in case of extreme drought should be only used for the existing orchards, if any, and be fully diverted as drinking water.

(iv) Renovation and maintenance of existing water harvesting structures in the selected watersheds may be allowed with only manual labour. No heavy machinery that displaces labour should be used for desilting etc.. However, it should be the policy of the State Governments to persuade the community to maintain the structures created under the programmes by handing over such assets to them.

(v) The maintenance of plantations may be permitted for 5 years in arid ecosystems whereas, in DPAP areas, the cost for maintaining plan-
tations will be provided according to the existing norms of 3 years.

(vi) The pricing of electricity should be rationalised with a view to discouraging overdrawl of groundwater. In this context, charges for electricity on the basis of consumption by the users as a whole could be experimented so that cost from individuals are duly recovered by the community.

(vii) In tribal areas where rainfall is comparatively higher, emphasis should be given on efficient water harvesting through minor irrigation works.

(viii) One of the means to ensure people's participation in the programmes is to secure some contributions from the beneficiaries in the form of labour or material. The implementing agencies should make conscious efforts to mobilise local people to make some contributions in the programme works.

(ix) Since replicability is the main criterion in the area development on watershed basis for sustainability, the approach should be simple, easily implementable and cost-effective.

(x) On the issue of subsidy, the Committee recommends that, since the activities will be taken up on a watershed basis and on all categories of land falling within the watershed area, there should be a uniform pattern of providing subsidy. In order to cover all the areas in the watershed, the subsidy on programme works should be given to all the beneficiaries irrespective of the size of the holding of the land owners. In general, subsidies should be limited to only those activities which have a long gestation period.
4.5 Integration with related programmes

4.5.1 The improvements in planning and implementation, promotion of people's participation and the programme-content recommended in the foregoing sections would call for integration of related schemes primarily within the Ministry of Rural Development and effective coordination with other Ministries implementing either identical/similar programmes or other programmes having direct bearing on water and land resource based activities.

4.5.2 At present, in the Ministry of Rural Development, the principles of allocation of funds and the procedures for approval, implementation and monitoring of projects under the DPAP, the DDP, and the IWDP are widely varying. As the logical corollary of our recommendation that the future strategies should be based on the integrated watershed development approach with effective people's participation and comprehensive programme content, it is necessary that the guidelines for the formulation of projects and the procedures for sanctioning, implementation and monitoring should be identical and in consonance with the basic approach advocated by us. Based on the integration of related schemes and harmonization of principles of allocation and procedures for sanctioning and implementation that we recommend, it should be possible to enhance the coverage of watersheds in the wasteland-dominant and the drought prone area districts.

4.5.3 The Ministry of Rural Development has substantially stepped up the outlay of rural employment generation especially through the JRY (2nd Stream) and the Employment Assurance Scheme (EAS). Nearly a sum of Rs.700 crores is being channelised under the JRY (2nd Stream) to 120 backward districts mostly falling within the wasteland dominant and DPAP areas. These funds are being spent on works/programmes planned and executed at the district level. The guidelines of the Ministry of Rural Development for these works accord high priority to the implementation of watershed treatment plans. Further, the 1994-95 Budget Estimates of the Ministry envisage an outlay of Rs.1200 crores under the EAS. All the DPAP and DDP areas are covered under the EAS. The guidelines of the EAS envisage that at least 60% of the expenditure should be incurred on works aimed at water and soil conservation and minor irrigation development. Therefore, if watershed based development projects are taken on priority basis for implementation under the JRY Second Stream and the EAS, substantial expansion of coverage of watersheds for treatment and development can easily be achieved.

4.5.4 Most of the programmes of the Ministry of Rural Development aim at development of backward areas such as the DPAP and for employment generation are funded through matching contribution by States. However, we notice that the wasteland development scheme of the Ministry does not
envision any matching contribution from States. Keeping in view the critical importance of regeneration of wastelands and prevention of further degradation of lands and the large magnitude of the problem, it is advisable that the States should also contribute a suitable matching share in wastelands development schemes as in the case of DPAP.

4.5.5 Thus by effectively integrating the guidelines and procedures for planning, sanctioning and implementation of related schemes under its administrative jurisdiction, the Ministry of Rural Development would be able to channelise substantial funds towards integrated development of watersheds as follows:

1. From the DPAP including States' share Rs.200 crores
2. From the DDP Rs.100 crores
3. From the IWDP (assuming 50% States' matching contribution) Rs.100 crores
4. From the EAS at least 40% funds as envisaged in the guidelines Rs.500 crores
5. From JRY Second Stream in 120 backward districts 50% Rs.350 crores

Thus, from the Centrally Sponsored Scheme of the Ministry of Rural Development alone, nearly a sum of Rs.1250 crores can be channelised for watershed-based development on the lines recommended earlier.

4.5.6 The Committee assumes that from the share of several States for their sectoral outlays regarding their own development plans for soil conservation, horticulture, groundwater development, minor irrigation etc. it should be possible to provide, plan and implement watershed development based programmes of at least a sum of Rs.300 crores.

4.5.7 The main factors found responsible for the unsatisfactory performance of the DPAP as mentioned elsewhere were the undertaking of activities unrelated to the core objectives and the use of DPAP & DDP allocations as substitutes for sectoral funds. Thus, despite the fact that nearly a sum of Rs.2000 crores has been spent on these programmes since their inception, coverage of area under comprehensive water and soil development plans have been only about 10% of the total geographical area of the blocks covered by DPAP. Adoption of the unified approach and integration of related programmes in rural development should, in our estimates, make available, at current level of funding, at least a sum of Rs.1500 crores every year for this important national work.
4.5.8 The integration of flow of funds available from different schemes and programmes of the Ministry of Rural Development should not, in our view, be left to the primary implementation level, namely, Watershed Committees or village level functionaries. The integration of schemes/programmes at the stage of planning and implementation, provision of funds, etc. should be done at the appropriate sanctioning levels, namely the DRDA or at the State Government. The funding of watershed-based area development schemes should be done comprehensively, based on the projects prepared and the treatment plans developed on scientific lines. The guidelines and procedures for sanction of projects, release of funds, implementation, monitoring etc. should all be uniform in order to facilitate funding and implementation based on project approach.

4.5.9 Ministry of Environment & Forests, Water Resources and Non-Conventional Energy Sources implement their schemes in DPAP and DDP blocks/districts which are either identical to the schemes, under these programmes or have direct bearing on them. Resources of these Ministries and Departments may be utilised as under:


3. Department of Non-Conventional Energy Sources for utilisation of Wind Energy Pumps and Solar P.V. pumps for lift irrigation and to assess the requirement of energy plantation on the basis of facility of bio-gas plants, smokeless chulhas and Solar Cookers presently available in the area and planned to be increased in future.

4.5.10 To follow up the Committee’s recommendations, the Ministry of Rural Development should take necessary steps for effective coordination between the different wings of the Ministry as well as between the concerned Ministries. The Ministry should also formulate guidelines for bringing about uniformity of approach between the programmes under different agencies and should commission training modules for the preparation of the watershed development plans.
4.6. Research & Training

4.6.1 Research

The Committee has visited ICRISAT, CRIDA, CAZRI, Arid Zone Forest Research Institute(AFRI), Jodhpur, and had interaction with Senior Scientists including the Directors of CAZRI and CRIDA. It is now quite evident that adequate research back-stop is available for area development on watershed basis in arid, semi-arid and dry sub-humid regions. ICAR system has also been testing their findings through 46 selected watersheds in different Agro-climatic Zones. A summary of the technical know-how available in this area which should be used extensively is given in the Appendix to this chapter.

4.6.2 Based on these R&D efforts, the Committee feels that a renewed thrust can be given in area development on watershed basis by:

(a) Creating awareness through training.

(b) Inducing the adoption of available technologies.

4.6.3 Research on development and further fine-tuning of technologies is a continuing process. We suggest that Ministry of Rural Development should support the Research Institutions for providing R&D back-up to these programmes.

4.6.4 Training

Awareness building is important because it leads to enhancement of productivity. During field visits, it became clear that many States are not even aware of the concept of watershed in the programme implementation of DPAP/DDP. This calls for training at various levels. It is also well recognised that in area development works, people's participation is a must. Since in terms of the recommendations of this Committee, projects are to be sanctioned on the basis of the detailed plans prepared on watershed basis, the Committee would like to emphasise that training at various levels for the preparation of watershed development plans is going to be critical for the successful implementation of the programmes. The Ministry of Rural Development has to play a pivotal role in organising such training by way of selecting appropriate institutions, funding them, developing course modules for the purpose and monitoring them.

4.6.5 We recommend that awareness should be created about the need for people's participation in such endeavour and about the concept of area development on watershed basis so that action plans for development of these areas can be prepared.

4.6.6 MANAGE, NIRD and some of the Voluntary Agencies are creating awareness on the need for people's participation. ICAR Institutions like
CAZRI, CRIDA, CSWCR&TI and some of the State Agricultural Universities are already imparting training in area development on watershed basis. The Committee recommends that these Institutions may be requested to impart the training on:

(a) the methods for ensuring people's participation.

(b) developing areas on watershed basis.

4.6.7 It is also suggested that training programme may be devised as follows at three levels:

i) District Administrators and Presidents/Chairmen of Zilla Parishads.

ii) Subject Matter Specialists of Line Departments.

iii) Functionaries from Voluntary Agencies and Beneficiaries.

4.6.8 Accordingly, the State Training Institutions along with NGOs may also be involved for imparting training to beneficiaries.

4.6.9 The Committee strongly recommends that funding for training should be met by Ministry of Rural Development and it should organise programme of training as suggested above, and monitor to ensure preparation of action plans for watershed development. States that need priority attention are Bihar, Uttar Pradesh, Madhya Pradesh and Orissa.
4.7 Criteria for Coverage and Allocation

4.7.1 As the present criteria of rainfall and percentage irrigation for identification of DPAP & DDP areas are only broad parameters, the Committee feels that a further refinement of the criteria based on latest technological data would help in focussing our efforts on a more scientific basis.

4.7.2 In the DDP/DPAP areas assured moisture availability is the major constraint. Thus the crop and livestock production systems are frequently affected, being more acute as the aridity increases. The moisture index (MI) has been used to assess the climatic zones. The MI = \(\frac{P - PE}{PE} \times 100\).

Where \(P\) = Precipitation

\(PE\) = Potential Evapotranspiration

and the zoning is done as follows:

<table>
<thead>
<tr>
<th>M.I.</th>
<th>Climatic zone</th>
<th>Per cent area</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; -66.7</td>
<td>Arid</td>
<td>19.6</td>
</tr>
<tr>
<td>-66.6 to -33.3</td>
<td>Semi-arid</td>
<td>37.0</td>
</tr>
<tr>
<td>-33.2 to 0</td>
<td>Dry sub-humid</td>
<td>21.1</td>
</tr>
<tr>
<td>0 to + 20</td>
<td>Moist sub-humid</td>
<td>10.2</td>
</tr>
<tr>
<td>+20.1 to + 99.9</td>
<td>Humid</td>
<td>7.8</td>
</tr>
<tr>
<td>100</td>
<td>Per-humid</td>
<td>8.3</td>
</tr>
</tbody>
</table>

4.7.3 In other words moisture inadequacy is felt more acutely in arid zone followed by semi-arid and dry sub-humid regions. From moist sub-humid zone onwards, the moisture is adequate for normal crop production.

4.7.4 While addressing the problem of desertification, which is diminution of productivity due to land degradation caused by human intervention and/or climatic change, the United Nations at Rio Conference rightly focussed on the arid, semi-arid and dry sub-humid ecosystems.

4.7.5 Thus, we propose now to include three eco-systems- arid, semi-arid and dry sub-humid - under DDP/DPAP instead of "desert" and "drought prone" areas as at present. The coverage under these three eco-systems is shown in the map at Annexure-IV.
4.7.6 The main objectives of drought mitigation and desertification control under DPAP and DDP, in a way, are inter-related. As the aridity increases, desertification also increases. This is due to the highly fragile nature of the arid eco-system and increased biotic pressure. However, irrigation moderates the biotic pressure as the carrying capacity of the land would be enhanced. While considering the irrigation as a criterion, we are aware of the fact that irrigation is useful in bringing stability in production of crops and livestock. Further, it is a fact that as the rainfall increases, the need for irrigation to bring stability/sustainability becomes less important. In other words, while in arid eco-system more irrigation is needed, in dry sub-humid region its need would be less for sustainability.

4.7.7 Keeping these facts in view, we propose the following criteria insofar as irrigation is concerned for different eco-systems on district basis:

<table>
<thead>
<tr>
<th>M.I. (Moisture Index)</th>
<th>Programme</th>
<th>Ecosystem</th>
<th>% irrigated area</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; - 66.7</td>
<td>DDP</td>
<td>Arid</td>
<td>50%</td>
</tr>
<tr>
<td>-66.6 to -33.3</td>
<td>DPAP</td>
<td>Semi-arid</td>
<td>40%</td>
</tr>
<tr>
<td>-33.2 to 0</td>
<td>DPAP</td>
<td>Dry sub-humid</td>
<td>30%</td>
</tr>
</tbody>
</table>

4.7.8 We suggest that those arid and semi-arid districts where area irrigated constitutes more than 50% and 40% of the net cultivated area respectively may be totally excluded from the programme, whether DPAP or DDP. Similarly the dry sub-humid districts where more than 30% of the net sown area is irrigated may also be excluded. In both the above categories of districts no block need be selected for the programme because the income earning prospects through intra-district migration would be significant and thus the biotic pressure on the fragile eco-system, if any, would be considerably reduced.

4.7.9 Since we propose to identify the blocks as basic units for development, we suggest the eligible blocks in the eligible districts may be enlisted. In these blocks suitable watersheds have to be developed following the prioritization described earlier. The Committee recommends that the Ministry of Rural Development may obtain the necessary information on percentage of irrigation at the district and block level and select the districts and blocks which are to be brought under the purview of these programmes on the basis of the scientific and internationally accepted criteria discussed above. Keeping in view the budget constraints and the requests of the State Governments especially in the case of DPAP, where 50% of the total allocation is borne by the States, the Committee suggests that an exercise may be done by the Central DPAP Division for moderating the coverage of the Programme. But, the Centre as well as the State Governments should
endeavour to bring all the districts to be finalised as recommended by the committee, under the coverage of these programmes with increased allocation and exclusion of saturated blocks at a later stage. However, we recommend that existing allocations being made to the States should be protected, i.e., no State should get less than what it is getting at present, consequent to the application of formula recommended by us.

4.7.10 Coming to a block for inclusion in the DPAP/DDP within eligible districts, we propose that the blocks should be selected as per the following norms in the approved list of districts.

<table>
<thead>
<tr>
<th>Ecosystem</th>
<th>Percentage of irrigation (Eligible for inclusion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arid</td>
<td>upto 30</td>
</tr>
<tr>
<td>Semi-arid</td>
<td>upto 20</td>
</tr>
<tr>
<td>Dry Sub-humid</td>
<td>upto 15</td>
</tr>
</tbody>
</table>

4.7.11 The Committee feels that some exceptions have to be made in specific cases. They include:

a) As DPAP/DDP programmes are aimed at drought mitigation as well as desertification control, in districts where irrigation is marginally higher than stipulated i.e. upto 55%, the blocks having serious resource degradation may be included. A case in point is Sri-Ganganagar district in Rajasthan.

b) Similarly, in non semi-arid/dry sub-humid districts where the irrigation is less than 10% and/or resource degradation is due to high slopes (6 to 30%), such blocks also may be considered. Examples are as follows:

<table>
<thead>
<tr>
<th>State</th>
<th>Districts</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uttar Pradesh</td>
<td>Almora, Pauri Garwal, Pithoragarh, Tehri-Garwal</td>
<td>10% and less irrigation</td>
</tr>
</tbody>
</table>
c) Further, less developed areas as in Vindhya and Bundelkhand regions may be included as qualified districts to select eligible blocks.

d) The State Government of Rajasthan has drawn the attention to the problems caused by the movement of sand and heavy sand deposits on agricultural fields and water bodies in the fringe of DDP districts. The State Government has given a list of 20 blocks in 5 districts of Sirohi, Udaipur, Rajsamand, Ajmer and Jaipur for special consideration by covering them under DDP. While agreeing with the idea of the treatment of fringe areas which will be much helpful in the treatment of desert, the Committee recommends that in the beginning, 3 blocks of Ajmer viz. Pisangan, Srinagar and Kishangarh may be covered on a priority basis, under the Desert Development Programme. Further, the Committee suggest that Planning Commission may examine the issue of sand movement in detail in such fringe areas and consider rendering appropriate assistance to combat sand movements and also to cope with the consequences of sand deposits.

4.7.12 As per the present classification, if any of the existing districts become ineligible, the present programme may be allowed to be continued until it is completed, but without any new programme being taken up.

4.7.13 In each selected block, every village will be covered with 500 hectares area on a watershed basis and within a period of 10 years all the villages may be covered by covering 1/10th of the number of villages in each year. This should provide the basis for allocation of funds to the States and Districts under the programmes. The integrated development project for each village should serve as a catalyst and a model for furthering the cause of sustainable use of resource base.

4.7.14 The Committee recommends that funding from 1995-96 has to
be on project basis only. Thus the new programmes shall come into force from 1995-96 onwards.

4.7.15 It should be our endeavour to complete each 500 hectare watershed in one year only. If, for some reasons, there is some spill over, it should be completed in the following year, preferably before the on-set of the monsoon.

4.7.16 Funding Pattern

<table>
<thead>
<tr>
<th>Ecosystem</th>
<th>Major problem</th>
<th>per hec (average)</th>
<th>micro watershed of 500 ha (500 hec.) (Rs.)</th>
<th>GOI:State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot sandy Arid (DDP)</td>
<td>i) Sand movement</td>
<td>5000</td>
<td>25.0</td>
<td>100 :—</td>
</tr>
<tr>
<td></td>
<td>ii) Degraded pasture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>iii) Receding groundwater</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>iv) Extreme moisture stress</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hot Arid (DDP)</td>
<td>i) Receding groundwater</td>
<td>4500</td>
<td>22.5</td>
<td>75:25</td>
</tr>
<tr>
<td></td>
<td>ii) Degraded pastures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>iii) Extreme moisture stress</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>iv) Soil erosion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cold Arid (DDP)</td>
<td>i) Deforestation</td>
<td>5000</td>
<td>25.0</td>
<td>100 :—</td>
</tr>
<tr>
<td></td>
<td>ii) Poor water management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>iii) Lack of efforts on vegetable and fruit production</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semi-Arid (DPAP)</td>
<td>i) Receding groundwater</td>
<td>4000</td>
<td>20.0</td>
<td>50:50</td>
</tr>
<tr>
<td></td>
<td>ii) Increased moisture stress</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>iii) Soil erosion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>iv) Lack of vegetal cover</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. Dry sub-
humid (DPAP) i) Moisture stress 3000 15.0 50:50
ii) Soil erosion
iii) Lack of vegetal cover

6. Dry sub-
humid (DPAP) i) Serious soil erosion on slopy catena (Hill region) 4000 20.0 50:50
ii) Moisture stress
iii) Lack of vegetal cover

4.7.17 The above norms represent per hectare averages for the whole of individual watershed. The actual expenditure per hectare could vary significantly between different activities and different areas in the same watershed.

4.7.18 We feel that the criteria of coverage and the allocation recommended by us in 4.7 and the criteria for selecting priority watersheds mentioned in 4.2.6 and 4.2.7 would be appropriate in determining the area not only on scientific and internationally accepted basis, but also on the basis of the needs and demands from different areas. After taking into consideration all the representation and suggestions made by the States for inclusion and exclusion of areas, the criteria of selection made by us would largely fulfil their aspirations, in addition to conforming to the scientific criteria. We further feel that the precise identification of districts and blocks on the basis of these criteria can easily be worked out by the Ministry of Rural Development with suitable expert assistance from Planning Commission, Ministry of Agriculture and other specialist agencies.
4.8 Administrative Structure

NATIONAL LEVEL

4.8.1 There are different Ministries / Departments namely, Agriculture, Rural Development, Environment and Forests which are dealing with activities relating to development of watersheds under different schemes such as the National Watershed Development Programme for Rainfed Areas, Drought Prone Areas Programme (DPAP), Desert Development Programme (DDP) and Integrated Wasteland Development Project (IWDP). As the basic objectives and programme components of these watershed-based area development schemes are more or less the same, logically, they should be integrated into a well-conceived and structured scheme to be implemented by one of the appropriate Ministries/Departments. However, as such an integration may not be immediately feasible, the Committee recommends the constitution of National Policy Making and Review Committee on Watersheds under the Chairmanship of Member, Planning Commission, in-charge of Rural Development in order to bring about coordination and unified approach in the implementation of watershed based area development schemes by different Ministries/Departments. The Committee may have the following membership:

- **Member, Planning Commission, in charge of Rural Development**
  **Chairman**

- **Secretaries of Rural Development, Agri. & Coopn., Environment & Forests Departments, dealing with implementation of watersheds.**
  **Members**

- **Secretaries of other related Departments like Secretary, Animal Husbandry, Finance, Space and Additional Secretary in-charge of Wasteland Development.**
  **Members**

- **Selected APCs/Dev. Commissioners/Secretaries, Rural Development Departments in the States.**
  **Members**

- **Director General, ICAR.**
  **Member**

- **A representative from the CSIR**
  **Member**

- **Selected experts in the field of Dryland Development and those representing NGOs.**
  **Members**

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4.8.2 For facilitating the effective functioning of the National Policy Making and Review Committee, it is necessary to have a nodal department which would service it and coordinate activities amongst the various departments concerned. Taking into account not only the volume of funding available for watershed programmes but also for other employment and poverty alleviation programmes which are sought to be converged for the implementation of the watershed projects, the Committee is of the view that the Department of Rural Development should function as the nodal department.

4.8.3 Within the Ministry of Rural Development itself, there is need for integration/coordination of the activities relating to the DPAP, the DDP and the IWDP which are implemented by different divisions. The Department should evolve suitable mechanism for ensuring uniformity of approach in the implementation of watershed-based area development programmes under different schemes. As many schemes/activities like those relating to Animal Husbandry and Dairying, Afforestation, Agriculture etc. which have critical bearing on watershed-based area development programmes come under the administrative control of other Ministries/Departments, it is necessary for the Department of Rural Development to achieve a certain level of coordination with them. Therefore, it is suggested that the Department of Rural Development may constitute a Coordination and Review Committee with the representatives of other departments dealing with activities relating to watershed-based area development.

STATE LEVEL

4.8.4 The same divergence of departmental dealings relating to watershed development is witnessed in the States also. While there have been a few examples of unified approach at State level as in the case of Karnataka with the State Level Dryland Development Board and in Maharashtra with exclusive Soil Conservation and Water Conservation Department, in most of the States, the programmes are implemented by the Departments concerned at State level. Therefore, in order to bring about coordination, constitution of State Level Implementation and Review Committee is recommended as follows:

Chief Secretary Chairman
APC/Development Commissioner Vice-Chairman
Secretaries and Heads of all Members
related Departments.

Vice-Chancellors of Members
Agri. Universities.
Directors of Central Research Institutes, if any, located in the State dealing with Dryland Research.

3 Experts in the field of Watershed Development and those representing NGOs.

Members

4.8.5 As on the lines of the National Committee, the Department of Rural Development at the State Level could be the Nodal Agency to service the State Level Committee.

4.8.6 Though substantial amount of funding is passing through State Rural Development Department to District Level and below, the State Department has only to look to different line departments like Agriculture, Animal Husbandry, Minor Irrigation and Horticulture for expertise at the State Level in the formulation of plans and effective supervision over implementation. At least in States with substantial allocation for DPAP, DDP and IWDP, the Nodal Department at the State Level should be assisted by a Multi Disciplinary Team consisting of senior officers of the rank of Additional Director/Joint Director from Departments of Agriculture, Forests, Horticulture, Animal Husbandry and Minor Irrigation. To assist in planning exercises, it would be desirable to coopt an expert either from the State Planning Department or an eminent Professor in Agricultural Economics from State Agricultural University, as is the case in respect of Karnataka, where the State Dryland Development Board is assisted by a Professor from the State Agricultural University.

DISTRICT LEVEL

4.8.7 At the District level, while the Department of Agriculture implements NWDPRA and River Valley Project Watersheds, the other watershed programmes like DPAP, DDP and IWDP, are implemented through the District Rural Development Agency. At present, there is no multi disciplinary team at the district level to assist the DRDA in monitoring the watershed development programmes, except for an Assistant Project Officer dealing with the subject. Therefore, it is recommended that there should be a Multi Disciplinary Team at District Level headed by Additional Project Director for watersheds. The officers representing different disciplines, such as, Agriculture, Horticulture, Animal Husbandry, Forests and Minor Irrigation will constitute the Multi Disciplinary Team. The Additional Project Director could be drawn from the Department which has predominance in the district in terms of activities in watershed development. The District Level Multi Disciplinary Team shall be responsible to guide the preparation of watershed development plans at watershed level, scrutinise them and accord administrative sanction as per the procedure prescribed. The Multi Disciplinary Team at the district level
should also oversee the implementation of the programme and review for proper implementation. However, the District Level Multi Disciplinary Team will be viable and within the cost norms only if the area covered by the project extends at least to 6 to 8 blocks. In cases of just one or two blocks covered by the project in any district, the District Level Multi Disciplinary Team of the neighbouring district can extend the necessary technical supervision.

WATERSHED LEVEL

4.8.8 The constitution of Watershed Development Teams has already been explained in Chapter 4.2.
4.9 Monitoring and Evaluation

4.9.1 The role of Ministry of Rural Development would now be to fund the programmes as stipulated and monitor them to ensure that the basic strategy i.e. planning and implementation on watershed basis is being followed. It should also monitor the availability of necessary training inputs, initiate and fund research for evolving location-specific technologies by building upon local innovations. In order to strengthen the monitoring mechanism, suitable committees of senior officers at District level, State level and National level may be constituted.

4.9.2 We have been handicapped in obtaining data on the performance of these programmes due to the absence of evaluation studies. Considering the large amounts which will be allocated to watershed development programmes including DPAP/DDP, it will be necessary to organise independent evaluation studies on a large scale and on a regular basis through reputed, independent and autonomous institutions including NGOs by adequately funding them. These evaluation studies should be field-oriented, qualitative in nature and analytical and not just data collection exercises. The benefits accruing to the watershed community as a result of developmental efforts under the programmes should be the thrust of these studies. This may also require participation of concerned researchers and analysts in the preparation of action plans for the development of watersheds.
a- Processes of Desertification and the Remedial Measures

The processes of desertification may include:

1. Degradation of vegetation.
3. Salinization and water logging.
4. Technogenic process (e.g., Mining, Industrial effluents)
5. Groundwater depletion.
6. Sustained production of crops and livestock.

These processes (1, 2, 3 and 5) can be classified as slight, moderate, severe and very severe for purposes of funding. Technogenic processes need total funding as they cause a very severe damage to the environment.

Degradation of Vegetation

It occurs with overgrazing or felling of trees in community lands. In the arid ecosystem agro-forestry is a common practice, but as on time all bushes like zizyphus have vanished and some trees like khejri only are left. Thus we need to mount two types of programmes. Firstly the community pasture or for that matter even beed (fallow) land of farmers need be put to more productive pasture/silvipasture systems. The community pasture also need water points to be developed or renovated, if existing. Secondly the tree planting within arable fields should be encouraged. Protection of community pasture has to be done by trench-cum-mound with due plantation of trees. Barbed wire fencing must be discouraged.

The trees in the silvi-pasture systems as well as on arable lands have to be necessarily of the choice of the beneficiaries. They should be multi-purpose and provide income to the local people besides providing fodder to the livestock. Introduction of horticultural plants with crops/grasses also should be allowed.

Accelerated Wind/Water Erosion

The community lands need permanent vegetation and could be covered under the above programme. More often the wind erosion effects are seen elsewhere. For example, the cause for sand movement could be
due to overgrazing or reduction in vegetal cover, but its effect could be seen as deposition on agricultural fields, settlements and roads/railways. So the cause has to be tackled first. Evidently this calls for sand dune fixation and vegetation of the causative area. A few farmers already take up some of the following measures.

* Field bunds with or without waste wiers
* Perennial vegetation on field bunds
* Small stone checks across rills in fields
* Sub-dividing land holdings into smaller fields
* Diversion of drains for safe disposal of runoff from upper reaches.

Further, to improve moisture availability the farmers practise some of the following practices.

* Deep ploughing in summer
* Sowing across the major slope
* Furrowing and cross ploughing in a standing crop
* Shallow inter-culture or tied ridging
* Compartmental bunding
* Short term or rainy season fallowing

Thus we are not in zero-state insofar as soil and water conservation is concerned. This, then calls for an analysis of the state-of-the-art and the subsequent measures needed to achieve the perfection.

**Waterlogging and salinization**

These phenomena are more prevalent in the River Valley Projects and should be dealt with separately. However, salinity/sodicity could be a problem in these three ecosystems. Problem could arise out of salt affected soils (saline/Sodic) or use of salt/high RSC waters. The treatments needed are different for different situations. They include:

1. Draining out salts by warping or providing sub-surface drainage.
2. Use of amendments like gypsum.
3. Choice of crops to live with the problem at moderate levels of salinity/sodicity.
These problems have to be solved on area basis and not on individual basis. Thus, unless all the affected farmers agree and participate, the reclamation should not be funded.

**Technogenic Processes**

At least two processes need to be included in this programme. They are mine spoil rehabilitation and use of industrial effluents.

(a) **Mine Spoil Rehabilitation**

The mining is an important economic activity. Mining is done for metallic minerals, non-metallic or industrial minerals, fuels and building stone.

Mining activity changes the ecology of the area very rapidly. The low grade ore and other overburdens are deposited as large heaps of more than 10 m height with irregular configuration. The dump site cannot sustain any vegetation due to lack of soil. Existing material is almost inert. Such overburdens need rehabilitation through vegetation. The techniques vary with the type of overburden and the rainfall. The government have regulations set for mine spoil rehabilitation, but rarely followed. Recently, the government mining companies are attempting to rehabilitate these overburdens. Some technologies are available and some are being generated.

In Thailand, such overburdens are rehabilitated by NGOs or contractors after levying the necessary charge on the mines. Perhaps a similar approach should be taken up by us. In any case the overburdens have to be vegetated, as otherwise they prove an irritant to the neighbouring productive lands.

(b) **Industrial effluents**

The effluents from different industries have different problems. The three associated factors with effluents of textile industry are colour, sodicity and salts. These waters are best used for growing trees in the light soils after neutralising sodicity with gypsum and adding about 5.0 kg of FYM to each pit for tree establishment.

**Rainwater harvesting for recharging ground water**

There are several innovative processes available for rainwater harvesting to recharge groundwater. The main approach is through structures like check dams/gabion structures and gully plugging. Next come percolation tanks, farm ponds, pickups, sunken ponds and "Aad-bandh"/"Khadin"/"Bandh".
Whenever such constructions are made, arrangements must be made to see that the farmers participate in their location, maintain them after construction is over. At best there could be a supervisory role for the extension staff in their maintenance.

The above mentioned structures are meant primarily to tackle the runoff either in the ephemeral streams or surface runoff collected in cultivated areas by various structures. Most of them are community works and structures like farm ponds are individual oriented. All these works should be on budget and actual cost be approved based on project proposals.

Recent developments like converting tanks into percolation tanks by plugging the sluices and desilting the tank bed also should be funded on budget. Renovation of small tanks by desilting, but through manual labour, encouraging the farmers to use the silt as manure could be a part of the programme. Cost should be shared.

It is matter of concern that all these structures might soon become dysfunctional due to lack of treatment of the catchment area. Further the tube-wells may go dry very soon as they have not been planned on a long term basis keeping the recharge capacity in view. These require to be looked into in greater detail. The Ground Water Departments of the respective states may take up some case studies along with Research Organisations like WALAMTARIS, Indian Institute of Technology (Madras and Bombay) and other organisations dealing with hydrological aspects, particularly ground water recharge, using tracer, if needed.

However, a well or tube-well today is very expensive and it cannot be dug just for using water for say five years or so. So awareness has to be created and a consensus be developed for the use of harvested rainwater in any area. It is well known that legislation would not work in our country particularly with reference to ground water use. But, farmers, if aware, would definitely agree for sustained use of water both in terms of number of wells and also in terms of crops and cropping patterns. This is besides treatment of the catchment area.

Sustained production of crops and livestock

So far the missing link in the DDP/DPAP is the thrust on production of crops and livestock. They were taken for granted as the programmes of the regular line departments. In all the field visits it was abundantly clear that there was no input from either of the departments. This could be due to the fact that the agencies are under the control of different authorities. This needs immediate correction at the district level.
What could be appropriate is some critical interventions from DPAP/DDP funds. Among others they may include:

1. Contingent crop planning including seed banks.
2. Diversification in farm activities (e.g. sericulture, horticulture, fish farming)
3. Critical irrigation.
4. Compensatory programme
5. Health care of livestock
6. Extended supply of fodder
7. Fodder banks
8. Non-conventional energy resources
9. Woodlots for fuel

1. **Contingent crop planning including seed banks**

   Droughts being common, contingent cropping is a must in the DPAP/DDP areas. For this purpose seed banks have to be taken up on a pilot scale in the watershed areas. Drought occurrence is more as the rainfall decreases. For instance, in Jodhpur/Bellary region there would be drought in 5 out of 10 years as against 2 out of 10 years in Hyderabad region. Seed banks to cover delayed sowing may be developed on pilot scale to cover 1/3rd arable areas in low rainfall and 1/5th area in medium rainfall areas. The seed acquired, if unused, may be disposed off as grain and the difference in price underwritten at project cost.

2. **Diversification in farm activities**

   This is already attempted by some States. It should be universalised. Such an activity weans away farmers from maintaining larger herds of livestock.

3. **Critical irrigation**

   The rainfed crops, if provided with critical irrigation lead to quantum jumps in yields. For instance, it is known that 1.0 cm irrigation per hectare yields about 200 kg of cereals or 100 kg of pulses and oilseeds. But what is needed is lining of the field channels to reduce conveyance losses as the water is being provided from a source like well on a contingent basis and not necessarily every year. The lining costs have to be borne by the project.
4. **Compensatory programmes**

When the aberrations in rainfall are serious, crops fail and some compensatory programmes have to be taken up to partly offset these losses. They may include sowing of crops with late rains or water. It could also be achieved by diverting water from ephemeral streams during September in most places, when rains are somewhat assured and the streams have certain flow. Such diversion to levelled fields adjacent to the streams is a practice available in arid areas of Israel as well as West Rajasthan (e.g., Rela farming in Jalore district). This should be encouraged and costs borne when taken up in the watershed project.

5. **Health care of livestock**

There are already certain programmes on health care of livestock. There is a need to ensure that such a facility is available in the project area. However training through SAUs may be attempted.

6. **Extended supply of fodder**

Establishment of fodder yielding trees in pastures, arable lands as well as community lands would provide the much needed fodder for extended periods. This should be funded under the programme. Similarly chaff cutters should be encouraged for better and fuller use of the fodder resources that originate from arable crops.

7. **Fodder banks**

The individual farmers are already stocking fodder for their livestock. But under extended drought, fodder would be critical even with them. Even in normal years as the aridity increases fodder is scarce. So a mechanism to develop fodder banks must be taken up on experimental basis. It could be with "Goshalas" in arid ecosystem through NGOs.

8. **Non-conventional energy resources**

One of the causes for desertification is large-scale felling of trees for fuel wood/charcoal. Introduction of non-conventional energy resources should either be done at project cost or through a tie-up with the Department of Non-Conventional Energy Sources (DNES).

9. **Woodlots for fuel**

In the meanwhile deliberate attempt should be made to establish woodlots on perpetual basis to meet the fuel needs from the generated sources with felling trees from arable lands or silvipasture systems.
b- Special Programmes for Cold Desert Areas

Insofar as cold arid ecosystem is concerned, the research support is far less adequate. The area includes Ladakh in Jammu and Kashmir and Spiti Valley of Lahaul and Spiti districts besides Pooh sub-division of Kinnaur district in Himachal Pradesh. They constitute 12.64 Mha.

Presently, the programme for the cold deserts includes:

* Afforestation with fast growing MPTs
* Soil conservation against wind erosion
* Develop irrigation potential
* Develop local livestock
* Improve horticulture, agriculture and fisheries

While executing the programme in Spiti, Rs.16,000/ha was spent on remodelling 51 irrigation channels, and Rs.56,000/ha was spent on afforestation with poplar and willow. The research support on other items was less adequate from the local Agricultural/Forestry Universities. The need for a focus on vegetables, vegetable seeds fruit trees (apple and apricot) is felt.

In an excellent review shri J.P. Negi, Managing Director of H.P., Horticultural Produce Marketing and Processing Corporation Ltd., pointed out the reasons why DDP did not yield the desired results. Some of the reasons given by him are as follows:

* The Schemes were handed over to Panchayats who did not have the needed local expertise.
* The ground realities were not seriously considered while developing the programmes.
* The research back-stop was inadequate.
* Establishing poplar and willow in the afforestation programme did not benefit the local people as a source of income.

A good training component to create awareness, involving local people through participatory approaches, energising the related local
universities to sharply focus their research on vegetables, horticultural plants and production of vegetable seeds besides identifying better ways of water management in the existing irrigation channels is needed. Further, precious indigenous plants like Juniperus macropoda, Hippophae (Seabuck thorn), Ephedra gerardiana, Hyoscyamus niger, Capparis spinosa, Rose webbiana, Rheum moorcroftianum and Ribes orientale which have both medicinal and economic value should be encouraged in the afforestation programme. They would bring income to local inhabitants.
c. Research Towards Sustainable Development In DPAP/DDP Areas

Renewed efforts in evolving technologies for mitigating drought and desertification control were taken up by the Government of India from early seventies through various R&D efforts. Some of the highlights are indicated below:

i) For drought mitigation, analysis of the rainfall on weekly basis was done keeping the evapotranspirational needs and soil-water relationships in view. The assured moisture supply periods, also known as crop growing periods, have been identified on a district/block basis. This helps in right choice of crops and cropping systems in a given region.

ii) Droughts are common and their vicissitudes increase as the rainfall decreases. The type of aberrations and the correctives for such maladies have been identified on agro-ecological basis. Most important requirement is seed-banks to meet aberrations in rainfall.

iii) Provisions of a critical irrigation wherever possible should be attempted as the pay-off is very high being 200/kg/ha/cm for cereals and 100 kg/ha/cm for pulses and oilseeds.

iv) Fodder becomes extremely scarce in drought, particularly in arid areas. The principle of silvipasture/agroforestry with MPTs is more relevant for extended fodder supply in such regions. The pastures can also be improved by proper soil working and using improved seed of both grasses and legume fodders. There is a need to provide these seeds to the users on a bigger scale.

v) Compensatory programmes to cover the inadequate production of foodgrains and fodder have been evolved. Among others they include contingent cropping, use of irrigation at critical crop growth periods of crops thereby reducing the number of irrigation to crops, conjunctive use of canal and ground water etc.

vi) A good weather code is a MUST so that we can keep adequate reserves of both foodgrains and fodder to mitigate drought years.

vii) In degradation control, several options are now identified. Some of these include means to live with the problem and some to correct them on annual or permanent basis. Some are expensive and some are cheaper.
viii) Besides terraces/bunds for soil conservation against water erosion now emphasis is on use of vegetative means in conjunction with reduced interventions through mechanical means. The emphasis is shifting to the indigenous technologies as the start point in such endeavours. Community participation is sought in their sustainability.

ix) For tackling wind erosion, sand dune fixation and shelter belts are developed. Tractorisation leading to increased soil loss due to wind erosion has become a matter of concern. Strip cropping is suggested with strips of crops and grasses to mitigate this problem.

x) Proper land use is one of the important requirements for sustainable land use. But with changing cultures and aspirations, the land use is also changing. As many as 75 per cent of farmers are small and marginal. They largely own poorer lands. And 85-95 per cent of them only grow staple crops to meet their food needs, whether the land is suitable or otherwise. Presently agro-forestry is considered as an alternative for such situations.

xi) Among the wastelands, the lands owned by absentee land lords warrant protection through permanent vegetation like silvipasture systems.

xii) Groundwater is precious. More often it is used like the canal water for growing high duty crops. The need for shifting to low duty crops is amply demonstrated and even accepted. Shifting to mustard from wheat in Rajasthan is a case in point.

xiii) Recharging ground water is considered more efficient than creating minor ponds for surface irrigation. Several approaches are now available. Among others they include percolation tanks, check dams, gully plugging, sunken ponds, converting small irrigation tanks to percolation tanks by plugging the sluices etc.

xiv) But what is happening is euphoric use of the groundwater as there is a perceptible enhancement in ground water recharge at the beginning. That this leads to over exploitation and unsustainability was amply brought out in several case studies. What is to be done is proper monitoring of the ground water recharge and limit its exploitation to avoid use of static water. This calls for a general agreement amongst the users.

xv) As means of alternative income generation, several options have been identified. Horticulture, brackish water fish farming, sericulture etc. are examples.
xvi) Livestock is more important in arid ecosystems. Primary emphasis is on assured fodder supply and improving local breed by supplying improved rams, bucks or bulls.

xvii) Improvement of fodder value with chaff cutters is well appreciated and needs encouragement wherever fodder development has been achieved.

xviii) The need for alternative sources of energy, particularly in arid ecosystems is highlighted. There are ways and means available today. All possible thrust need be given to adopt them at the village level where today the primary source of fuel is trees. And felling of trees is most undesirable.

xix) Resource literacy and functional literacy are the need of the hour. But we are not starting at zero point. There is adequate indigenous knowledge available. Thus involvement of the user/stakeholders is a MUST in developing sustainable action plans. Participatory Resource Appraisal and other approaches in this regard being practised should be encouraged.

xx) The importance of training need not be overemphasised. It is proved that awareness per se enhances productivity by 50-100 per cent. And continuous monitoring and assessment is needed in implementation of any action plan. Such an endeavour helps in mid-course corrections, if needed. They may mean adequate flexibility at the operational level.

Finally it is now quite clear that any area development programme has to be on a watershed basis which is a holistic and integrated approach. This involves the users and the various governmental/voluntary agencies. In other words, we cannot have a capsule developed from above for a sustainable action plan. It has to be built from the ground level.
CHAPTER - 5

SUMMARY

5.1 Despite the fact that the Drought Prone Areas Programme and the Desert Development Programme have been in operation for almost two decades, it has been observed that the Programmes have not created a substantial impact. On the other hand, it is widely believed that drought conditions in the country are increasing and ecological degradation is taking place unabated especially in drought prone and desert areas. The main reasons for this degradation have been large scale denudation of forest cover leaving the land vulnerable to soil and water erosion.

(Para 3.4)

5.2 Of the many factors responsible for the unsatisfactory performance of the Programmes, the most important one is that under both the programmes, a wider range of activities not necessarily related to the core objectives were taken up in the past in a widely dispersed area. This tended to defuse focus on efforts made for achieving the core objectives of the Programmes.

(Para 3.6)

5.3 Planning is still done on an adhoc basis merely by arithmetical consolidations of sectoral budgetary proposals. At the district level, efforts are rarely made to appraise the proposals received from various sectoral heads and to prepare integrated watershed development plans. .... The concept of integrated land and water management on watershed basis through active involvement of the people which alone could improve the environment and productivity of resources was not duly focussed. .... However, the Committee notes with some satisfaction that some States have initiated steps to plan and implement the Programmes on watershed basis.

(Para 3.7)

5.4 There is no appropriate multi-disciplinary agency at the district, block and the watershed level to prepare integrated plans which could be taken up for implementation. Most of the schemes taken up are of adhoc nature and without due consideration of cost-benefit ratios. Essential data which are crucial for watershed planning are rarely available with the planners at the district and block levels.

(Para 3.8)
5.5 Maintenance of the assets created has suffered, especially in respect of water-harvesting structures. In several places, beneficiaries were not motivated to assume responsibility for maintenance after the works are completed even when the benefits are accruing from such works are substantial. Moreover, the concerned departments do not have adequate provision for maintenance in their budgets.

(Para 3.10)

5.6 Except in rare cases, the participation of people was conspicuous by its absence either in the preparation of plans or in their implementation. However, where people have been motivated to participate from the inception, i.e. from the planning stage, their enthusiasm was visible and the structures were protected by them.

(Para 3.11)

5.7 Population growth and poverty on the one hand and the pressures of rising demand from affluence on the other have been exerting powerful pressure on the eco-system. In the dryland areas, the pumping of water has been proceeding at a faster rate than the rate at which groundwater is being recharged. This is on account of the availability of electricity at a flat rate regardless of the amount of electricity used for pumping water.

(Para 3.17)

5.8 The outstanding examples of success at Ralegaon Sidhi and Adgaon in Maharashtra, Kabbalnala and Mittemari in Karnataka and Jhabua in Madhya Pradesh show that drought can be beaten with concerted efforts for development on watershed basis and active participation of local farmers willing to undergo sacrifices and share benefits.

(Para 3.19)

5.9 Conservation of natural resources has to be made privately profitable by providing necessary infrastructure, technologies and institutional back-up. Further, the pattern of socio-economic development and the set of macro-economic policies including the pricing of inputs which reduce pressure on natural resources, augment such resources by arresting their depletion are going to be critical for protecting the environment. The specific Programmes like DPAP & DDP can make a visible impact only in such a favourable macro-economic setting.

(Para 4.1.3)

5.10 Greater attention has to be given to peoples' own strategies and their own indigenous technologies including the locally preferred plants so as to incorporate them in the Programmes to mitigate the rigours of drought. Provision of adequate infrastructure and other facilities would be
necessary to attract and retain the talented professionals and administra-
tive personnel to service the developmental and the Minimum Needs
programmes.

(Para 4.1.4)

5.11 Establishment of wool-processing units and tanneries in such areas
can raise the employment and income for local people and thus reduce
nomadism and migration which will have favourable impact on environ-
ment. Development of crafts and other income earning opportunities will
have the similar effect of reducing nomadism. All this would require the
development of infrastructure and research in the evolution of location-
specific technologies based on indigenous innovations including the
tapping of solar and wind energy abundantly available in such areas. ..... These have to be backed by a credit plan as an integral part of area
development plan.

(Para 4.1.5)

5.12 The Technical Committee reiterates that harmonious management,
development and utilisation of land, water and vegetation resources on
watershed basis, and the creation of complementary opportunities for
processing and marketing of value added goods produced in such areas
should be the essence of these area development programmes.

(Para 4.2.1)

5.13 The treatment plan for the watershed should include all categories
of lands including private, village commons, Revenue and degraded Forest
Lands. As far as possible the selected watershed should be covering a
village/hamlet.

(Para 4.2.5)

5.14 The Technical Committee is of the view that watershed development
programme should be implemented with the total participation of the
beneficiaries. This can be ensured by having a watershed development
team(WDT) whose General Body shall consist of all the adult members of
watershed area. However, for operational convenience the watershed
development team shall consist of 10 members of whom atleast 5 shall be
women. The representation to SCs. & STs. in the watershed team shall
be in proportion to their strength in the general body. ..... The team shall
be assisted by 2 persons comprising of a Village Level Extension Officer/
Worker drawn from Agriculture/Animal Husbandry/Forest/Horticulture
Development and, another preferably a Matriculate educated village youth
selected by the beneficiaries of the micro-watershed.

(Para 4.2.8)
5.15 In any given year, only a micro watershed with about 500 ha. will be taken up for management and development. The assignment of watershed functionaries shall take effect six months previous to the commencement of the year in which the watershed is taken up for development. The functionaries shall undergo a multi disciplinary training during the first three months and they will spend the next three months in survey and preparation of plan for implementation during the year of operation. .... It should be mandatory to make accounts public through the General Body of WDT.

(Para 4.2.9)

5.16 While it would be not affordable financially to think of providing the services of block level field functionaries for each watershed, it may be a desirable proposition to create such Multi Disciplinary Technical Team of block level officers for cluster of watersheds and could be located in a centrally and accessible places like taluk or block headquarters to cater to the needs of the cluster of watersheds.

(Para 4.2.10)

5.17 While finalising the plans of the concerned States, the Planning Commission should ensure, through appropriate mechanisms, that in drought prone areas, the relief works are integrated with area development plans designed to conserve soil and moisture through the development of watersheds and to generate other income earning opportunities on a sustained basis which alone can mitigate the adverse effects of drought on a lasting basis.

(Para 4.2.11)

5.18 Awareness-raising including dissemination of relevant information relating to the programmes is of prime importance. Voluntary Organisations are best equipped to undertake this task which is perceived to be the very basis for mobilising people’s participation in the implementation of these programmes.

(Para 4.3.3)

5.19 Determined efforts and concrete steps are required to promote voluntarism in evolving and implementing DPAP and DDP. .... This would mean not only the involvement of the existing voluntary organisations who are genuine and competent, but creating conditions, through favourable policy and bureaucratic receptivity, for the proliferation of local groups consisting of motivated and dedicated people for undertaking such responsibilities. .... It would be desirable to move towards the goal of entrusting
ultimately 25 per cent of watersheds to the voluntary organisations for the implementation of DPAP and DDP.

(Para 4.3.4)

5.20 The state Governments concerned may constitute State Level Committees for the Promotion of Voluntary Action for DPAP and DDP. The Chief Minister of the state may chair the Committee which may consist predominantly of representatives of established Voluntary Organisations and senior officers of the Government Departments concerned

(Para 4.3.4(l))

5.21 A Committee at the district level under the chairmanship of District Collector consisting mainly of representatives of Voluntary Organisations may be constituted for the purpose.

(Para 4.3.4(v))

5.22 The District Level Committee may approve the project proposals including the financial outlays of Voluntary Organisations for implementing the programmes.

(Para 4.3.4(vii))

5.23 Based on the decisions/recommendations of the District Level Committee, funds for implementing the programmes will be released to the Voluntary Organisations directly by the State Government/Zilla Parishad/DRDA, as the case may be.

(Para 4.3.4(viii))

5.24 The components should not be pre-determined, as at present. There should be total flexibility in this regard and the actual choice of the components should emerge from the watershed plans prepared by implementing agencies including beneficiaries.

(Para 4.4.1)

5.25 It should be the policy of the State Governments to persuade the community to maintain the structures created under the programmes by handing over such assets to them.

(Para 4.4.2(iv))

5.26 In order to cover all the areas in the watershed, the subsidy on programme works should be given to all the beneficiaries irrespective of the size of the holding of the land owners.

(Para 4.4.2(x))
5.27 If watershed based development projects are taken on priority basis for implementation under the JRY Second Stream and the EAS, substantial expansion of coverage of watersheds for treatment and development can easily be achieved.

(Para 4.5.3)

5.28 Keeping in view the critical importance of regeneration of wastelands and prevention of further degradation of lands and the large magnitude of the problem, it is advisable that the States should also contribute a suitable matching share in wastelands development schemes as in the case of DPAP.

(Para 4.5.4)

5.29 From the Centrally Sponsored Schemes of the Ministry of Rural Development alone, nearly a sum of Rs. 1250 crores can be channelised for watershed-based development.

(Para 4.5.5)

5.30 Adoption of the unified approach and integration of related programmes in rural development should, in our estimates, make available, at current level of funding, at least a sum of Rs. 1500 crores every year for this important national work.

(Para 4.5.7)

5.31 The integration of schemes/programmes at the stage of planning and implementation, provision of funds, etc. should be done at the appropriate sanctioning levels, namely the DRDA or at the State Government.

(Para 4.5.8)

5.32 To follow up the Committee's recommendations, the Ministry of Rural Development should take necessary steps for effective coordination between the different wings of the Ministry as well as between the concerned Ministries. The Ministry should also formulate guidelines for bringing about uniformity of approach between the programmes under different agencies and should commission training modules for the preparation of the watershed development plans.

(Para 4.5.10)

5.33 We suggest that Ministry of Rural Development should support the Research Institutions for providing R&D back-up to these programmes.

(Para 4.6.3)
5.34 Since in terms of the recommendations of this Committee, projects are to be sanctioned on the basis of the detailed plans prepared on watershed basis, the Committee would like to emphasise that training at various levels for the preparation of watershed development plans is going to be critical for the successful implementation of the programmes. The Ministry of Rural Development has to play a pivotal role in organising such training by way of selecting appropriate institutions, funding them, developing course modules for the purpose and monitoring them.

(Para 4.6.4)

5.35 We propose to include three eco-systems - arid, semi-arid and dry subhumid - under DPAP/DDP instead of "desert" and "drought prone" areas as at present.

(Para 4.7.5)

5.36 We propose the following criteria insofar as irrigation is concerned for different eco-systems on district basis:

<table>
<thead>
<tr>
<th>M.I. (Moisture Index)</th>
<th>Permissible Programme</th>
<th>Ecosystem</th>
<th>% Irrigated Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; -66.7</td>
<td>DDP</td>
<td>Arid</td>
<td>50%</td>
</tr>
<tr>
<td>-66.6 to -33.3</td>
<td>DPAP</td>
<td>Semi-arid</td>
<td>40%</td>
</tr>
<tr>
<td>-33.2 to 0</td>
<td>DPAP</td>
<td>Dry sub-humid</td>
<td>30%</td>
</tr>
</tbody>
</table>

(Para 4.7.7)

5.37 We suggest that those arid and semi-arid districts where area irrigated constitutes more than 50% and 40% of the net cultivated area respectively may be totally excluded from the programme, whether DPAP or DDP. Similarly, the dry sub-humid districts where more than 30% of the net sown area is irrigated may also be excluded.

(Para 4.7.8)

5.38 The Ministry of Rural Development may obtain the necessary information on percentage of irrigation at the district and block level and select the districts and blocks for the programmes in accordance with the formula recommended by us.

(Para 4.7.9)

5.39 We propose that the blocks should be selected as per the following norms in the eligible districts.
Ecosystem | Percentage of irrigation (Eligible for inclusion)
--- | ---
Arid | upto 30
Semi-arid | upto 20
Dry sub-humid | upto 15

(Para 4.7.10)

5.40 In non semi-arid/dry sub-humid districts where the irrigation is less than 10% and resource degradation is due to high slopes (6 to 30%), such blocks also may be considered. Examples are as follows:

<table>
<thead>
<tr>
<th>States</th>
<th>Districts</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uttar Pradesh</td>
<td>Almora, Pauri Garhwal, Pithora-garh, Tehri-Garhwal</td>
<td>10% and less irrigation</td>
</tr>
<tr>
<td>Andhra Pradesh</td>
<td>Srikakulam</td>
<td>High slopes (6-30%)</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>Baster</td>
<td>-do-</td>
</tr>
</tbody>
</table>

(Para 4.7.11(b))

5.41 While agreeing with the idea of the treatment of fringe areas which will be much helpful in the treatment of desert, the Committee recommends that in the beginning, 3 blocks of Ajmer, Viz. Pisangan, Srinagar and Kishangarh may be covered on a priority basis under the Desert Development Programme.

(Para 4.7.11(d))

5.42 In each selected block, every village will be covered with 500 hectares area on watershed basis and within a period of 10 years all the villages may be covered by covering 1/10th of the number of villages in each year. This should provide the basis for allocation of funds to the States and Districts under the programmes.

(Para 4.7.13)

5.43 The Committee recommends that funding from 1995-96 has to be on project basis only. Thus the new programmes shall come into force from 1995-96 onwards.

(Para 4.7.14)
5.44 The Committee recommends the constitution of National Policy Making and Review Committee on Watersheds under the Chairmanship of Member, Planning Commission, in-charge of Rural Development in order to bring about coordination and unified approach in the implementation of watershed based area development schemes by different Ministries/Departments.

(Para 4.8.1)

5.45 Taking into account not only the volume of funding available for watershed programmes but also for other employment and poverty alleviation programmes which are sought to be converged for the implementation of the watershed projects, the Committee is of the view that the Department of Rural Development should function as the nodal department.

(Para 4.8.2)

5.46 It is suggested that the Department of Rural Development may constitute a Coordination and Review Committee with the representatives of other departments dealing with activities relating to watershed-based area development.

(Para 4.8.3)

5.47 In order to bring about coordination, constitution of State Level Implementation and Review Committee is recommended under the Chairmanship of Chief Secretary.

(Para 4.8.4)

5.48 At least in States with substantial allocation for DPAP, DDP, and IWDP, the Nodal Department at the State Level should be assisted by a Multi Disciplinary Team consisting of senior officers of the rank of Additional Director/Joint Director from Departments of Agriculture, Forests, Horticulture, Animal Husbandry and Minor Irrigation.

(Para 4.8.6)

5.49 It is recommended that there should be Multi Disciplinary Team at District Level headed by Additional Project Director for watersheds. The officers representing different disciplines, such as, Agriculture, Horticulture, Animal Husbandry, Forests and Minor Irrigation will constitute the Multi Disciplinary Team. .... The District Level Multi Disciplinary Team shall be responsible to guide the preparation of watershed development plans at watershed level, scrutinise them and accord administrative sanction.

(Para 4.8.7)
5.50 The role of Ministry of Rural Development would now be to fund the programmes as stipulated and monitor them to ensure that the basic strategy i.e. planning and implementation on a watershed basis is being followed.

(Para 4.9.1)

5.51 It will be necessary to organise independent evaluation studies on a large scale and on a regular basis through reputed, independent and autonomous institutions including NGOs by adequately funding them.

(Para 4.9.2)
RESOLUTION

The Drought Prone Areas Programme (DPAP) and the Desert Development Programme (DDP) have been under implementation for several years. In order to make these programmes more meaningful and lay stress on their objectives, the programme contents have been narrowed down and greater stress is laid on those sectors which hold the key for rejuvenation and development of natural resources in the programme areas. It is, therefore, expected that the programmes would have made some appreciable impact at least in some areas in terms of spread of irrigation and complete drought proofing/control of desertification so that these areas could have qualified for deletion from the programme assistance. On the contrary, several State Governments have been pressing for inclusion of more areas under DPAP & DDP in addition to the areas already covered under the programmes. It is, therefore, felt that the criteria of identifying areas for inclusion under the programmes perhaps need refinement so that only those critical areas which really need assistance under the programmes could be taken up. Many of the State Governments have also been demanding for enhancement of the assistance provided for project administration and also pressing for inclusion of several activities for implementation under the programmes which so far have been considered ineligible.

2. To sort out the issues highlighted above, it has been decided to set up a Technical Committee to review and recommend suitable measures for improvement. The composition of the Committee will be as follows:

1. Prof. C. H. Hanumantha Rao,
   Former Member, Planning Commission,
   New Delhi
   Chairman

2. Prof. Anil Gupta,
   Centre for Management of Agriculture,
   IIM, Ahmedabad
   Member
3. Shri T.K.A. Nair,
   Additional Secretary,
   Department of Wastelands Development,
   Paryavaran Bhavan, CGO Complex,
   8th Floor, Lodi Road, New Delhi
   Member

4. Dr. J. Venkateswarlu,
   Director,
   Central Arid Zone Research Institute,
   Jodhpur.

5. Shri Vijay Verma,
   Secretary, Forests & Environment,
   Government of Rajasthan,
   Jaipur

6. Shri M.L. Mehta,
   Addl. Secretary,
   Ministry of Home Affairs,
   Government of India,
   North Block, New Delhi.

7. Shri S. Subramanian,
   Additional Commissioner,
   (SC and Land Planning),
   Department of Agriculture &
   Cooperation, Ministry of
   Agriculture, Krishi Bhavan,
   New Delhi.

8. Dr. M.K. Mathur,
   Joint Adviser (Agriculture),
   Planning Commission,
   New Delhi

9. Shri V.S. Sampath,
   Commissioner,
   Agriculture,
   Government of Andhra Pradesh,
   Hyderabad.

10. Shri V.K. Chaudhry,
    Secretary, Department of Rural
    Development,
    Government of Madhya Pradesh,
    Bhopal
3. The terms of reference of the Committee will be as under:

(a) To review and suitably modify the existing criteria for identification of areas to be covered under DPAP and DDP so that areas acutely affected by drought and desertification are included and those which are not acutely affected are excluded.

(b) To review the programme contents, methodology of planning, scale and pattern of funding and the administrative structure of DPAP & DDP at Central, State, District and watershed levels and recommend appropriate modifications wherever necessary and suitably modify the present list of eligible and ineligible activities.

(c) To examine the possibilities of integrating DPAP & DDP with related area development programme such as National Watershed Development Project for Rainfed Areas(NWDPRA), National Wastelands Development Programme(NWDP), Poverty Alleviation Programmes and Minimum Needs Programme etc. and recommend a suitable strategy for such integration.

(d) To examine and identify relevant technologies for dryland farming especially those relating to cropping pattern and vegetative barriers and recommend directions of research and procedures for transfer of available technology to DPAP & DDP areas.

(e) To recommend measures intended to promote the role of Watershed Committee, Pani Panchayats, NGOs etc. in order to encourage widespread participation of people and ensure greater accountability of funds and sectoral departments to peoples' representatives.

(f) To examine the modalities to ensure that the DPAP/DDP Programme
resources are not only integrated with other Area Development and Beneficiaries Oriented Programmes but are also used as supplementary and additional funds and not as substitution for flow of existing Programme Funds.

4. The Chairman shall have powers to co-opt any other official/non-official Members for effective functioning of the Committee.

5. The Committee will submit its final report within six months from the date of its Constitution.

6. For attending the meetings of, or for tours and visits by the Committee, the Official Members will draw TA/DA from their respective departments. The non-official members will be compensated as per the Consultancy Rules applicable in Government of India.

7. These orders issue with the approval of Prime Minister/Minister, Rural Development.

Sd/-

(K.S.Dagar)

Deputy Secretary to Government of India.
RESOLUTION

Please refer to the Resolution of even number dated the 29th April, 1993 on the subject of setting up of a Technical Committee to review the Drought Prone Areas Programme (DPAP) and the Desert Development Programme (DDP).

In para 2 of the above Resolution at Sl.No.8, the designation and address of the Member of Shri V.S.Sampath may be read as follows:

    Shri V.S.Sampath,
    Managing Director,
    A.P. Oil Seeds Growers Federation Ltd.,
    Parishram Bhavan, 9th Floor,
    Fateh Maidan Road,
    Hyderabad-500 029.

The Chairman of the Technical Committee has co-opted Shri R.N.Mehrotra, Additional Commissioner (SWC), Ministry of Agriculture, Room No.104, B-Wing, Shastri Bhavan, New Delhi-110 001 as a Member of the Committee.

This issues with the approval of the Chairman, Technical Committee on DPAP & DDP.

Sd/-

(Dr.D.Ramakrishnaiah)
Deputy Commissioner

Copy to Chairman and All Members of the Technical Committee.
<table>
<thead>
<tr>
<th>S.No.</th>
<th>Date</th>
<th>Issues covered</th>
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<tbody>
<tr>
<td>1.</td>
<td>21st May, 1993</td>
<td>Considered terms of reference, brief review of the Programmes and working out of modalities of the Committee’s functioning. Evaluation studies on the subject were requested for facilitating discussion in subsequent meetings.</td>
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<tr>
<td>2.</td>
<td>29th June, 1993</td>
<td>The Central DPAP Division was requested to collect component-wise/sector-wise data for both financial and physical progress of the Programmes and circulate to the Committee Members. Sub-Groups were formed to make field visits. The meeting of knowledgeable persons from DPAP and DDP areas was sought to be convened to get a feedback from them.</td>
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<tr>
<td>3.</td>
<td>6th &amp; 7th December, 1993</td>
<td>Interaction with State Government representatives during Central Sanctioning Committee meeting to get a feedback from the representatives of the Programme States. In the meeting with scientists, experts and NGOs, who have been associated with these programmes, the issues relating to strategy, programme contents, coverage, planning and implementation, research and training support and involvement of NGOs were discussed in detail.</td>
</tr>
<tr>
<td>4.</td>
<td>23rd December, 1993</td>
<td>Preparation of a broad outline of observations and recommendations based on field visits and Memoranda received from State Governments.</td>
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</table>
The Member Secretary was requested to make a draft paragraph outlines based on the recommendations and observations of Members for discussion in the next meeting.

5. 18th January, 1994

Interaction with more NGOs.

Criteria for delineation of areas was discussed. Role of Non-Governmental Organisations in developmental activities with reference of Panchayati Raj Institutions was discussed.

6. 4th & 5th February, 1994

Taking final view about Committee’s impressions regarding the achievements of these programmes and on each of the major issues mentioned in the terms of reference.

Drafting of notes on various aspects of the Programmes were assigned to Members.

7. 15th & 16th February, 1994

Discussion on various draft notes prepared by Members.

8. 28th Feb. to 2nd March, 1994

Discussion on draft notes of the report continued.

9. 22nd and 23rd March, 1994

Finalisation of the Report.
<table>
<thead>
<tr>
<th>S.No.</th>
<th>Names of States</th>
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<tbody>
<tr>
<td>1.</td>
<td>Gujarat</td>
<td>2nd to 5th September, 1993</td>
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<td>2.</td>
<td>Haryana</td>
<td>20th to 21st September, 1993</td>
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<td>3.</td>
<td>Andhra Pradesh &amp; Karnataka</td>
<td>19th to 26th September, 1993</td>
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<td>4.</td>
<td>Jammu &amp; Kashmir</td>
<td>4th to 8th October, 1993</td>
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<td>5.</td>
<td>Madhya Pradesh</td>
<td>18th to 21st October, 1993</td>
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<td>7.</td>
<td>West Bengal</td>
<td>6th to 8th November, 1993</td>
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<td>8.</td>
<td>Maharashtra</td>
<td>9th to 11th November, 1993</td>
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<td>9.</td>
<td>Tamil Nadu</td>
<td>26th to 30th November, 1993</td>
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<td>10.</td>
<td>Rajasthan</td>
<td>12th to 16th January, 1994</td>
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<td>11.</td>
<td>Visit to NGOs</td>
<td>12th to 25th September, 1993</td>
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