

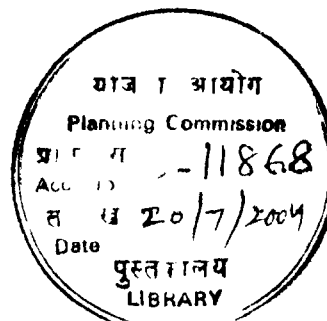
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STUDY OF DESERT DEVELOPMENT PROGRAMME



(1988-89)



**PROGRAMME EVALUATION ORGANISATION
PLANNING COMMISSION
GOVERNMENT OF INDIA
NEW DELHI
1993**

Preface

At the instance of the Planning Commission, the Programme Evaluation Organisation (PEO) undertook the study of the Desert Development Programme (DDP) with the main objectives of studying the overall impact of the DDP on strategy in terms of area development approach and its linkages with other related programmes, administrative and monitoring arrangements at different levels, the extent of people's participation, and suggest measures for improvement in implementation of the Programme.

2. The study was conducted in all the five states, where the programme had been in operation. In all, a sample of nine (9) districts was selected from both the hot and cold desert areas, viz., Rajasthan (4), Haryana (2), Gujarat (1), Jammu & Kashmir (1), and Himachal Pradesh (1).

3. Desert is construed as a large tract of barren land, often covered with sand, which is devoid of water and vegetal cover. Owing to unfavourable geo-climatic conditions, such areas remained as backward in many respects. Among others, the degraded environment from ecological point of view and the hardships of the people living in these areas were the main concerns which

necessitated State intervention in introducing an area development Programme (DDP) which was launched as a centrally sponsored scheme in 1977-78 with the prime objective of controlling desertification and restoration of ecological balance. This objective was sought to be achieved through the activities, such as: afforestation (with special emphasis on sand dune stabilisation), shelter belt plantation, grass land development, soil and moisture conservation, and water resources development. The Programme has been in operation in 131 Blocks of 21 Districts falling in the 5 above mentioned States. The study has covered a reference period from 1977-1978 to 1987-88.

4. The design, instruments, etcetera, of the study were discussed in a meeting of the Technical Advisory Group under the Chairmanship of Dr. Raja J. Chelliah, the then Member, Planning Commission. The details of design were worked out in a Sub-Group headed by Shri M.G.Sardana, the then Director General (CSO). Two workshops for orienting the field teams were organised at Shimla (for cold Desert Areas) and at Jodhpur (for hot Desert Areas). The field work was initiated in August, 1988 and completed in February, 1989. The report was drafted in 1992 and has now been revised in the light of the comments received, in June, 1993, from the Rural Development Division of the Planning Commission.

5. Some of the main findings of the study are highlighted as under:

- (i) Besides uncontrolled and overgrazing of livestock, the growing demand for fuel and fodder arising out of the increased human and livestock population were observed to be the main causal factors for depletion of vegetal cover and degradation of environment, which would have a strong bearing on the fragile eco-systems of the desert areas. In order to overcome this menace, the study has suggested that non-conventional energy especially solar, bio-gas, and wind as alternative sources for fuel requirements may be tapped, and accordingly, a viable technology with its universal applicability through research may be evolved. Further, propagation of silvi-culture for pasture development on scientific lines may extensively be introduced.
- (ii) The integrated micro-watershed approach to area development was observed to have not made much headway. It is suggested that micro-watershed approach as a basic unit of planning for area development should be made an integral part of the strategy for comprehensive project planning and its integrated implementation.
- (iii) In the absence of proper appreciation for an integrated planning, the implementing agencies tended to treat the DDP as a normal scheme without realising its supplemental role in the overall development of the desert areas.
- (iv) The people's participation so vital as has been envisaged in the Programme, was found missing in formulation and implementation of the Programme at the grass-root level. It is suggested that greater awareness about the usefulness of the Programme be created and the participation of the local people, the village panchayats, and the voluntary organisations ensured.
- (v) The monitoring aspect of the Programme was found to be weak and the visits of senior officers from the Central as well as the State Governments were observed to be few and far between. Therefore, to streamline the

present status of monitoring, the physical monitoring through field visits and inspections may be reinforced, which would go a long way in improving the implementation of the Programme.

7. The preliminary draft report was prepared by Shri Y.K.Gupte, the then Dy. Adviser and revised by Shri N.C.Bhardwaj, the then Consultant. The report in the present form has been finalised by Shri Amar Singh, Dy. Adviser (Agricultural Economics) with the active cooperation of Sarva Shri Debabrata Das and Puran Singh, Dy. Advisers. The expertise of the PEO and the efforts of the Project Team enabled the completion of the study.

8. The contributions of my predecessors: Dr. K.C. Seal, Dr. (Mrs.) R.Thamarajakshi, and Shri A.K. Saikia in conceptualising, developing the design, and initiating the study are thankfully acknowledged.

9. Constant encouragement received from Shri Pranab Mukherjee, Deputy Chairman, Planning Commission and guidance from Shri A.K. Dasgupta, Special Secretary, Planning Commission were of immense value in completing this assignment.

10. It is hoped that the report would be useful to all concerned

B.N.SAHAY
Adviser(Evaluation)

NEW DELHI
August 30, 1993.

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Chapter I

INTRODUCTION

Desert Areas of the Country are one of the backward areas identified for special attention to be paid to their speedy development. These areas are faced with certain peculiar problems inhibiting the process of development. On account of difficult physiography, varying agro-climatic conditions and distinct socio-cultural features, the desert areas have remained backward. The need to place the emphasis on desert area development had emerged from the growing concern over inter-regional disparities in terms of resource endowments, fragile eco-systems and hardships of the people living in the desert areas. The Fifth Five Year Plan (1974-79), envisaged that the "realisation of the growth potentials of the backward areas should be taken up on a priority basis in order to give practical shape to the ideals of egalitarianism and social justice." (P.282 Vol.I)

1.2 Keeping in view the peculiar geoclimatic conditions prevalent in the desert areas, a special Desert Development Programme (DDP) was initiated in 1977-78 as a Centrally Sponsored Scheme to provide counter protective measures against the aforesaid problems of the desert areas. The programme covered both the hot arid zone in the States of Rajasthan, Haryana and Gujarat and the high altitude cold desert in Himachal Pradesh and Jammu and Kashmir.

Genesis of the Programme

1.3. Before Independence, no organised and systematic steps were taken to tackle the problems of desert. The first significant step towards the development of such areas was taken in 1951-52, when the Union Government appointed an ad-hoc Committee of Experts to advise on development of Rajasthan desert. A Centre to study the problems of desert was set up at Jodhpur and sometime later, an arid zone project was launched with UNESCO aid. The Jodhpur Station was later renamed as the Central Arid Zone Research Institute (CAZRI). A Committee, known as 'Kidwai Committee', set up by the Union Government in 1964, recommended the launching of Pilot Projects which could provide the basis for a better and integrated programme for desert development. The Task Force on Integrated Rural Development headed by Dr.B.S.Minhas, in its report of June, 1973, while recommending a nine point strategy for ecologically integrated development of drought prone and desert areas, did not consider it necessary to have a separate programme for desert areas as most of the elements were common.

1.4. The Interim Report of the National Commission on Agriculture, submitted in March, 1974, identified the hot desert areas and suggested that a development programme consisting mainly of afforestation and live-stock development should be taken up. In its final Report in 1976 (Volume XIII), the Commission had also suggested, inter-alia, that the problems of the cold desert in Ladakh Valley of Jammu and Kashmir and the Lahaul and Spiti Valleys and Kinnaur region of Himachal

Pradesh, should be studied in depth. On the recommendations of the National Commission on Agriculture(NCA), the Desert Development Programme was launched in the country in 1977-78.

Coverage Under the Programme

1.5. Based on the recommendations of the NCA, the Desert Development Programme (DDP) was initiated in 132 blocks in five States, covering both hot and cold desert areas. The progress of DDP was reviewed by the Task Force headed by Dr. M.S.Swaminathan in its Report (1982). The Task Force had recommended an intensive programme that would progressively eliminate desert characteristics and had also suggested some changes in the coverage. Of the 132 Blocks under DDP, the Task Force recommended exclusion of 4 Blocks in Jammu and Kashmir and 3 Blocks in Gujarat. It also recommended the inclusion of Pooh sub-division of Kinnaur district in Himachal Pradesh, thereby bringing down the total DDP Blocks to 126.

1.6. The recommendations of the Task Force were reviewed by the Inter-Departmental Group in December, 1984. In its Report, the Group had recommended the development of 131 Blocks in 21 districts of 5 States under DDP during the Seventh Five Year Plan by reinclusion of the four blocks of Kargil district in Jammu and Kashmir, excluded by the Task Force, and one more Block in Gujarat. Thus, the programme, since the beginning of the Seventh Plan, is being implemented in 131 blocks of 21 districts in 5 States. The present coverage under DDP is given below:

<u>ZONE/STATE</u>	<u>No. of Districts</u>	<u>No. of Blocks</u>
<u>Hot Arid Zone</u>		
1. Gujarat	2	9
2. Haryana	4	26
3. Rajasthan	11	84
<u>Sub-Total</u>	<u>17</u>	<u>119</u>

High Altitude Cold Desert

4. Himachal Pradesh	2	2
5. Jammu and Kashmir	2	10
<u>Sub-Total</u>	<u>4</u>	<u>12</u>
<u>Grand Total (DDP)</u>	<u>21</u>	<u>131</u>

1.7. State, district and block-wise coverage under the programme is given at Appendix I. The programme covers an area of about 3.62 lakh sq. km. with a population of about 15 million (1981 census), constituting about 42 percent of the area and 16 per cent of the population of the 5 States in which the programme is in operation. The details of the total area and population identified for coverage under the programme may be seen at Appendix II.

Objectives, Approach and Strategy of the Programme

1.8. The DDP aims at integrated development of the desert areas by increasing the productivity, income level and employment opportunities for its inhabitants through optimum utilisation of land, water, livestock and human resources. The main thrust has been on arresting desertification through activities which would restore ecological balance and stabilise sand dunes,

like, plantation of shelter belts, development of pastures, soil and water conservation, etc. The detailed approach and strategy for the development of desert areas have been given in Seventh Five Year Plan (1985-90). The major activities given priority under the programme were:

- (1) Afforestation, with special emphasis on shelter belt plantation, grass land development and sand dune stabilisation;
- (2) Measures aimed at conservation of surface water and recharging of ground water aquifers;
- (3) Efficient Water Management through appropriate construction of water harvesting structures;
- (4) Rural electrification for energising tube-wells and pump sets; and
- (5) Development of agriculture with emphasis on dryland farming, horticulture, animal husbandry and dairying.

1.9. The programme had been under constant review by the Central Sanctioning Committee of the Department of Rural Development. It was recognised that there had been no perceptible impact in arresting desertification in areas where DDP was being implemented. There was also a widely shared impression that sand dunes were increasing and desert was advancing. The Department of Rural Development felt that lack of impact could largely be attributed to taking up of a wide range of

activities which were neither properly integrated nor necessarily related to the Central core objectives of the programme. The other contributing factors included (1) low investment in a widely dispersed area, (2) diversion of funds to unapproved scheme and (3) high administrative expenditure. Since no sectoral priorities were laid down and the activities that could be covered under the programme were so broad based that the planning authorities at the district and state levels, took it as an additional source of funding for the area development, losing sight of the very objectives of the programme. The integrated approach of development was also not followed. Instead of taking concrete projects for desert development and restoration of ecological balance, major operative expenditure was incurred on staff, buildings, chilling and dairy plants, establishment of livestock and poultry farms, etc. Thus, in the process the programme deviated from its course of integrated development. Considering these facts, the Central Sanctioning Committee in its meeting held in June, 1987 had taken some important decisions to revamp the Desert Development Programme. The concerned State Governments were informed to take necessary action as follows:

- (1) The range of activities under the programme was to be narrowed down to sharpen the focus on the objectives. The major thrust would be on soil conservation, land shaping and development, afforestation and pasture,

fodder and grassland development. These activities would account for at least 75 per cent of the annual allocations.

- (2) Weightage required to be given in allocation of funds would be as under:

(a) Land Development, Moisture Conservation, etc.	15%
(b) Water Resources Development	20%
(c) Afforestation and Pasture Development	40%
(d) Other activities (animal husbandry, etc.)	15%
(e) Project Administration	10%
- (3) A number of schemes for development of infrastructure, dairy development, cattle breeding farms, veterinary hospitals, and schemes for ground water survey, lift irrigation, etc., were no more to be taken up under the programme. Such schemes need to be taken up under the normal sectoral State Plan.
- (4) A list of eligible and ineligible schemes for the programme was approved for guidance. (list at Appendix III).
- (5) The ceiling of 18 per cent expenditure on staff and establishment was brought down to 10 per cent.
- (6) Maintenance of assets created under the programme should be the responsibility of the State Governments as it would not be possible

to make special provision for it under the programme.

(7) A manual incorporating the guidelines on formulation, implementation and monitoring of the programme would be brought out soon.

(8) The existing formats for progress reporting were revised seeking more details. In place of the existing three periodical returns, there would be seven.

Desert Areas: Characteristics, Problems and Prospects

1.10. Desert areas, both in hot and cold regions, have their own characteristics and problems which are responsible for their backwardness and regional imbalance. For understanding their problems in a better perspective it will be worthwhile to give an account of such areas.

Hot Desert

1.11. The north-western hot arid zone of India, including the Thar Desert, occupies 28.6 million hectares which is about 9 per cent of the country's total area. Annual rainfall ranges from 500 mm in the east to less than 100 mm in the extreme west, compared to a potential evaporation of 1580 to 1700 mm. Limited quantities of ground water are available to cater to human and livestock needs. Ground water together with diverted surface water from the Indus Basin is used to irrigate only about 7 per cent of the arid area of Rajasthan.

1.12. The National Commission on Agriculture in its Report Volume (XIII(1976)), had highlighted the

characteristics of the desert areas as follows:

"Apart from scanty and erratic precipitation, the desert areas are characterized by high temperature and hot desiccating winds, shifting sand dunes and sand casting on cultivated fields , roads and railway tracks, lack of perennial streams and sweet water aquifers. Ground water is available only in some pockets and that too, being saline, is not always fit for consumption or use in cultivation. Vegetation in these areas is poor and over exploited. Owing to deficiency of soil moisture, the suitable land available for cultivation is limited and there is preponderance of cultivation on unsuitable and marginal lands. Coarse grains are generally produced but the returns from land are low. These areas have also a high concentration of livestock since the population prefers mixed farming to supplement their meagre returns from crop production. The pressure of the livestock population had led to overgrazing of the range lands. All this has resulted in severe depletion of the vegetal cover, serious erosion problems and rapid deterioration of the resource base of the desert, thereby disturbing the ecological balance. Frequent

failure of crops and lack of water and vegetation compel migration of human and livestock population in large number in search of food and fodder. Nomadism is an important feature of the desert economy. These factors have made the desert area backward in development and increased regional imbalance." (Part XIII Page 121-122)

1.13. Arable farming is the dominant land use. In the tracts receiving over 250 mm rainfall, cultivated areas varies from 60 to 87 per cent of the land surface and the net cropped area from 40 to 73 per cent, the rest being as fallow land. In the more desiccated tracts, grazing is the major land use, except in the north-western parts which are irrigated by Indus basin waters.

1.14. The trees, shrubs and grasses are well adapted to arid zone conditions. They are deep rooted, tenacious enough to survive extended droughts and yet efficient in gaining biomass during favourable periods. The grazing lands are, by and large, in a degraded state due to overgrazing.

Sand Dunes

1.15. Shifting sand dunes presents quite a problem, particularly in the vicinity of settlements and towns. Studies made by the CAZRI on moisture regime and surface instability have provided the basis for an integrated approach to dune stabilisation and its subsequent use. In low rainfall areas, social and protected forestry is

an effective means of contributing to the local economy and the improvement of environmental conditions. The absence of environmental concern and economic pressure are the main reasons for reduction in woody vegetation, compounded by the shortage of seedlings and lack of appropriate planting techniques.

1.16. Following are some of the major problems related to the hot arid zone development as highlighted in the research works carried out at the Central Arid Zone Research Institute(CAZRI):

- (1) Farming in the arid zone is essentially mixed, with most farming households maintaining sizeable herds of livestock, sustained on crop residues and on natural vegetation on fallow and cropped lands;
- (2) Besides low productivity, the present land use and management are found to be over exploitative of the natural resources. These have set in the process of accelerated wind erosion and shifting sands;
- (3) Nearly 70 per cent of underground water in the region is brackish to highly saline;
- (4) Because of biotic pressures, arable farming over the years has been extended to lands which are soil or climate-wise only marginally suited to such activity. Farming on dune lands and in any low rainfall and windy tracts of Barmer and Jaisalmer districts has exposed these lands to a severe process of degradation;

- (5) The ecological system of the region is very fragile. Once the vegetation gets removed through overuse, the lands never recover and get converted into a barren stretch;
- (6) Population growth rates are very high in the arid zones;
- (7) Animal Husbandry has an important role in the economy of this arid zone. During the period 1956-1983, there has been a large increase in all the major types of livestock and particularly so in the case of sheep, goats and buffaloes; and
- (8) CAZRI has developed a technology for improved management of agricultural and pasture lands including stabilisation of sand dunes. "KHADIN" system of farming, a specialised system developed for use of highly saline water, is the other striking feature of desert farming.

Cold Desert

1.17. The total geographical area of the cold desert in Himachal Pradesh and Jammu and Kashmir is 126.40 thousand sq. km. which is 45.5 per cent of the total area of the two States. These areas are inhabited by 0.15 million people, accounting for 1.5 per cent of the total population of these states. The density of population as per 1981 census, comes to 1.19 persons per sq. km. The population is sparse and largely with a low level of education. The agricultural season is very

short, usually limited to a few months from May to October. In view of the high altitude, extreme cold and deficiency of precipitation, the choice for improved agricultural practices is also very limited. Likewise, there is also a problem of utilisation of water through the streams and glaciers which are at great heights. The infrastructure facilities, like, communication, transport and electric supply are almost non-existent in the region. The main characteristics and problems of the cold desert are as under:

- (1) These areas experience almost Arctic type cold during winter, when the minimum temperature falls as low as $- 25^{\circ}$ C. (It drops down upto $- 40^{\circ}$ C at Daras in Ladakh). During the summer months, the diurnal temperature goes as high as 43° C. Annual rainfall varies from 100 to 300 mm;
- (2) The net sown area accounts for less than 0.2 per cent of the total geographical area ;
- (3) Millets and a few other coarse grains are the main crops of these areas. At certain places, wheat and vegetables are also grown in small quantities;
- (4) Since these areas are deficient in rainfall, the entire area under cultivation is irrigated, mostly by surface channels diverting the water from springs, streams and rivers ;

(5) Rearing of livestock is an important occupation. These areas have a large population of sheep and goats; and

(6) Among others, the depletion of vegetal cover in the desert areas is largely attributable to the overgrazing of animals, which restricts the growth of plant species and their further rejuvenation process.

Evaluation of the Programme

1.18. At the instance of the Planning Commission, the Programme Evaluation Organisation (PEO) undertook the study of the Desert Development Programme in August, 1988. As a consequence, the scope and objectives of the study, the sampling design, instruments of observation, etc. were discussed in the meeting of the Technical Advisory Group constituted for the purpose before these were finalised and adopted for the study. A list of members of the Technical Advisory Group is given at Appendix V.

Objectives of the Study

1.19. The objectives of the study were as follows:

- (1) To study different schemes taken up to check desertification, restoration of ecological balance, etc., under the Desert Development Programme and assess their overall impact on the development of the area with reference to the objectives of the programme;
- (2) To study the effectiveness of the strategy adopted in terms of area development approach

and their linkages with other related programmes;

- (3) To study the administrative and monitoring arrangements at different levels in implementing the programme;
- (4) To study the difficulties encountered and extent of people's participation in implementing the programme and suggest measures for improvement;
- (5) To study how the schemes under DDP are formulated and whether they contain measures for short-term and long-term integrated development of desert areas on the basis of watershed development and management. Also, as to how far the information obtained through soil and topographic surveys, hydrological surveys, aerial photo-interpretation of the satellite imageries, etc., have been utilised for preparing development schemes; and
- (6) To study the status of maintenance of assets created under the programme.

1.20 The DDP is an additive to normal efforts being made Under the State Sectoral Plans and Special Programmes. Since a sizeable amount of investment has been made in the Programme, it was thought worthwhile to find out the additionality of DDP in financial terms vis-a-vis State sectoral schemes under core sectors.

Sampling Design

Selection of Districts

1.21. In the hot desert areas covered under the programme, it was decided to select 4 out of 11 districts in Rajasthan, 2 out of 4 districts in Haryana and one of the two districts in Gujarat. In Jammu and Kashmir and Himachal Pradesh, which are having two districts each under DDP in the cold arid region, one district in each state was selected.

1.22. For the selection of districts in Rajasthan and Haryana, annual rainfall was taken as the basis. The 11 districts of Rajasthan were classified into four rainfall zones and one district was selected from each zone. Likewise, for Haryana, the four districts under DDP were arranged into two rainfall zones and one district was selected from each zone. The selected districts in Rajasthan are Jaisalmer, Barmer, Jodhpur and Jhunjhunu. In Haryana the two selected districts are Hissar and Rohtak. In Gujarat which has only 2 districts under DDP, viz., Mehsana and Banaskantha and, since Mehsana had only a small coverage, it was decided to select Banaskantha district.

1.23. In Himachal Pradesh only two districts, viz., Lahaul and Spiti; and Kinnaur are covered under the programme. While in Lahaul and Spiti district the programme was started in 1977-78, in Kinnaur district it was started only in the year 1982-83. Since only one of the two districts was to be selected, Lahaul and Spiti district was selected for the study.

1.24. In Jammu and Kashmir also only two districts, viz., Leh and Kargil in Ladakh region are covered under DDP and one was to be selected. Till 1981, Kargil was part of Leh district and some of the Blocks, which are now included in Kargil district, were earlier in Leh district and included under DDP. On the recommendations of the Task Force (Swaminathan Committee - 1982), except the Zaskar Block of Kargil district, other Blocks were excluded from the programme. It was only after a gap of few years, that other Blocks of Kargil district were again included. In view of all this, Leh district, where DDP is in operation since inception, had been selected.

1.25. Thus, the nine districts selected for the study were as under:

<u>State</u>	<u>Selected District</u>
1. Rajasthan	1. Jaisalmer
	2. Barmer
	3. Jodhpur
	4. Jhunjhunu
2. Haryana	1. Hissar
	2. Rohtak
3. Gujarat	1. Banaskantha
4. Himachal Pradesh	1. Lahaul and Spiti (Spiti Sub-Division)
5. Jammu and Kashmir	1. Leh

Knowledgeable Persons Schedule

1.26. It was emphasised that there should be an effective people's involvement in planning and execution of schemes under Desert Development Programme to get satisfactory results. As such, to find out the awareness of the local people about the functioning of Desert Development Programme, their involvement, if any, and their impressions about the effectiveness of the programme, a schedule for 'Knowledgeable Persons' was designed and it was decided to canvass 15 such persons from different categories in each selected district. However, in Jammu and Kashmir only five Knowledgeable Persons could be canvassed.

1.27. On the basis of the above sampling design, 5 States, 9 Districts (7 from hot arid zone and 2 from cold arid zone) and 125 Knowledgeable Persons were selected for the study. A resume of the coverage is as follows:

1.	States	-	5
2.	Districts	-	9
3.	Knowledgeable Persons (MP/MLA/Panchayat Pradhan etc.)	-	125

Instruments of Observation

1.28. A common set of guide points was developed for interviews with the State, District and Project level officers implementing the programme. A schedule was especially designed for canvassing the 'Knowledgeable Persons' (MP/MLA/Panchayat Pradhan)

Besides, a set of 15 proformae was used for collection of data at the State, District and Project levels. To sum up, the following instruments of observation were used in the study:

1. Guidepoints for interview with State, District and Project level officers;
2. Schedule for knowledgeable Persons; and
3. A set of 15 proformae for collection of data at the State, District and Project levels.

Organisation of the Study

1.29. For acquainting the field teams and to have some interaction with the State officials connected with the implementation of Desert Development Programme, it was decided before launching the study in the field to organise two training workshops, one for the cold arid regions and the other for hot desert. For cold arid regions, the workshop was organised at Shimla which, besides PEO officers, was also attended by Himachal Pradesh State Government officials dealing with Desert Development Programme at the State and Project levels. The second training workshop for hot desert areas was organised at Jodhpur (Rajasthan). Besides PEO officers who were to be involved in the study, the Desert Development Commissioner of Rajasthan and other State Government officials dealing with different sectoral schemes covered under Desert Development Programme were also invited to interact on various aspects of planning and implementation of the

schemes under Desert Development Programme. There were nine Field Teams who collected the data for the study in the field. A list of field teams may be seen at Appendix VI.

1.30. The objectives of the evaluation study and different instruments of observation were explained to the participants. The meeting with the Rajasthan State Government officials was very useful as they explained the role of Desert Development Programme in the development of the desert area over the years, the manner in which the different sectoral schemes implemented and the problems faced by them.

1.31. Since Desert Development is an area development programme, it was decided not to canvass the households. The study was conducted in the field during August, 1988 to February, 1989 and the reference period of the study was 1977-78 to 1987-88.

Chapter II

ECOLOGICAL BALANCE

The Programme aimed at controlling desertification and restoration of ecological balance in the desert areas. These objectives were sought to be achieved through activities taken up, such as: afforestation (with special emphasis on sand dune stabilisation), shelter belt plantation, grass land development, soil and moisture conservation and water resources development. An attempt has been made to find out as to how far Desert Development Programme has helped in improving the situation.

Ecology

2.2 Ecology can be defined as a branch of biology that studies the relationships between organisms and their total environment, both animate and inanimate. Ecology consists of several eco-systems for the preservation of earth and the living organisms on it and an eco-system is the basic ecological unit made up of a community of organisms interacting with their inanimate environment. In this manner, none of the elements in the net work is useless or purposeless and each one of them is inter-dependent and helps to regulate the balance of the eco-system. However, there have been changes in the balance of various eco-systems which brought about changes in the surface of the earth.

This change eliminated certain flora and fauna which failed to adapt to the changing ecology.

2.3 The mutually supportive role of all living things is, therefore, considered an important factor for a balanced social and harmonious existence. However, because of increasing population and other factors, the basic natural resources were exploited without replacement, which disturbed the eco-systems and their balance.

2.4 The ecology of a desert region is said to be fragile and this fragility is defined as a process which brings about certain basic changes converting a relatively favourable environment into an unfavourable one. This process involves the working of climatic, edaphic (pertaining to soil) and biotic (pertaining to life) factors over a period of time resulting in the formation of an ecologically fragile zone. The Thar desert of Rajasthan and its adjoining areas come under the influence of Tropic of Cancer and, thus, the prevailing ecology of this region restricts the growth of green vegetation. The condition of cold desert of Jammu & Kashmir and Himachal Pradesh is also not very different. The low temperature and lack of soil moisture in these areas make the tree growth and human settlement very difficult.

Causes of Ecological Imbalance

2.5 Some of the important causes responsible for ecological imbalance are given below:

1. Deforestation and Harming other Natural Vegetation

2.6 It is a recognised fact that forests depredation and harming of green vegetation either through felling of trees or other factors, have had a very adverse effect on the ecology of a region. For improving the ecology in the desert areas, afforestation is essential as forests help in improving it in more than one way. Forests and green vegetation improve the climate, conserve soil moisture, check soil erosion and improve the overall ecological conditions for better development of the area and its flora and fauna. Trees purify the atmosphere, which is vital for healthy living.

2.7 For the nine selected districts in five states, the area under forests for two periods of time i.e. 1976-77 (before launching of DDP) and 1987-88 (latest available) was collected. The following table (2.1 on next page) gives the area under forests for the two periods, percentage increase/decrease and the percentage area under forests to the total geographical area in the selected seven not desert districts:

Table 2.1: Area under Forests in Hot Desert Districts.

State/District	Area under Forests (in '000 hects.)		Percentage of area und forests to tota geographical area.		
	1976- 1977	1987- 1988	Percentage increase/ decrease	1976-77	1987-88
1.	2.	3.	4.	5.	6.
<u>Gujarat</u>					
Banaskantha	44.6	51.2	14.8	5.5	6.4
<u>Haryana</u>					
Hissar	12.4	9.8	-21.0	2.0	1.5
Rohtak	0.4	0.4	0.0	0.2	0.2
<u>Rajasthan</u>					
Barmer	14.2	23.9	68.3	0.5	0.8
Jaisalmer	52.9	16.6	-68.6	1.4	0.4
Jhunjhunu	34.8	35.0	0.6	5.9	5.9
Jodhpur	2.0	6.6	230.0	0.1	0.8

2.8 It is clear from the above table that the area under forests as a proportion to the total geographical area is very small in all the districts. In 1976-77, it varied from 0.1 per cent in the case of Jodhpur to 5.9 per cent in Jhunjhunu district and even after a decade, there was a little increase only in the case of three districts. As against the accepted

green cover ratio of 33 per cent as a National Policy, the ratio according to the latest available figures for the country is only around 10 per cent. This is very disturbing. In the case of the selected desert districts, however, this ratio was much below the national figure. The table 2.1 shows that instead of the expected increase, because of DDP, in two of the seven districts there was a decline in the area under forests and in only four there was an increase, including Jhunjhunu where the increase was only marginal. Jaiselmer, which is the most arid district with annual rainfall of only 164 mm, the decline in the forest area was from 52.9 thousand hectares to 16.6 thousand hectares - a decrease of over 68 per cent.

2.9 In the Cold Desert districts while reliable information about forest area for Spiti Sub-Division was not available, for Leh district of Jammu and Kashmir, it was available only for 1987-88. The area under forests in the district was 2900 hectares constituting only 6.4 per cent of the total geographical area.

2.10 Considering the importance of afforestation including shelter belt plantations, social forestry, etc., in improving the ecology and development of the desert areas, maximum weightage has been given to this sector and the implementing agencies are required to spend 40 per cent of the Desert Development Programme funds on afforestation and other allied activities.

2. Excessive Human and Livestock Population

2.11 The increase in the human and livestock population, especially in desert areas which have very limited resources, is another important cause for ecological imbalance. The following table gives the population figures for selected hot desert districts for 1971 and 1981 census periods, the decennial growth and the density of population :

Table 2.2 : Population Growth in the Selected Hot Desert Areas

State/ District	POPULATION(in lakhs)			Density of population per sq.km (1981)
	1971	1981	Decennial Growth (%)	
1.	2.	3.	4.	5.
Gujarat				
Banaskantha	12.65	16.68	31.86	131
Haryana				
Hissar	11.61	14.97	28.94	238
Rohtak	5.84	6.59	12.84	307
Rajasthan				
Barmer	7.75	11.19	44.38	39
Jaisalmer	1.67	2.43	45.51	6
Jhunjhunu	9.29	12.12	30.46	205
Jodhpur	11.53	16.68	44.67	74

2.12 In Jaisalmer, which is very sparsely populated with density per sq. km. as the lowest at 6, the decennial growth rate was the highest (46%). For Barmer and Jodhpur districts, the growth rate was around 45 per cent with density at 39 and 74 per sq.km. respectively. The national growth rate figure for the ten year period was 25 per cent. For all the selected districts except Rohtak(Haryana), the growth rate was higher than the national average.

2.13 In the cold desert districts as well, where the density of population is still lower as compared to hot desert areas, the position was not different as is evident from the table below.

Table 2.3 : Population Growth in the Selected Cold Desert Areas

State/District	POPULATION(in '000')			Density of population per sq.km(1981)
	1971	1981	Decennial Growth(%)	
1.	2.	3.	4.	5.
<u>Himachal Pradesh</u>				
Spiti Sub-Division (Lahaul & Spiti)	7.2	10.4	44.44	1.4
<u>Jammu & Kashmir</u>				
Leh	51.9	68.4	31.79	1.5

2.14 In Spiti Sub-Division of Lahaul & Spiti district of Himachal Pradesh, where the density of population was less than 2, the decennial growth rate

was highest with 44 per cent, which was the same as for the most arid districts of Rajasthan. In Leh district with density of population at 1.5 per sq. km., the percentage growth rate for the ten year period was 32, which was higher than the national growth rate.

Animal Population in Hot Desert

2.15 Animal Husbandry has an important role in the economy of most of the desert regions. In fact, it is considered as more important than agriculture, because agriculture depending on rains, which may not be adequate or even timely, is so uncertain. The farming households generally keep a sizeable herd of livestock as a subsidiary occupation. A large number of other households in more arid regions depend solely on livestock rearing. There has been a large increase in their number, particularly sheep and goats, which is considered as one of the important causes for ecological degradation.

2.16 The following table (2.4 on next page) gives the population of cattle and buffaloes, sheep, goats and the total livestock in 1982 and percentage increase over 1977 for the selected seven districts in hot desert States.

2.17 As revealed in the table 2.4, sheep and goats together formed the largest group in livestock population in the selected districts of Rajasthan. As per 1982 livestock census, this group constituted as high as 79.3 per cent in Jaisalmer district, followed by

76.7 per cent in Barmer, 74.3 per cent in Jodhpur and 64.5 per cent in Jhunjhunu. Jhunjhunu, which is not as arid as the other three districts, had a substantial number of cattle and buffaloes (31.8%). As far as the

Table 2.4 : Livestock Population in the Hot Desert Districts

(No. in lakhs)

State/Dist- ricts	Cattle and Buffaloes		Sheep & Goats		Total Live- stock	
	1982	% increase over 1977	1982	% increase over 1977	1982	% increas over 1977
1.	2.	3.	4.	5.	6.	7.
Gujarat						
Banaskantha	4.75 (50.5)	12.0	3.76 (40.0)	-1.8	9.40 (100.0)	7.8
Haryana						
Hissar	6.05 (71.6)	6.1	2.02 (24.0)	21.0	8.45 (100.0)	10.9
Rohtak	2.51 (78.4)	-1.2	0.48 (15.0)	29.7	3.20 (100.0)	0.6
Rajasthan						
Barmer	5.33 (16.4)	27.8	24.92 (76.7)	27.3	32.48 (100.0)	28.3
Jaisalmer	2.62 (16.1)	111.3	12.93 (79.3)	16.0	16.30 (100.0)	25.4
Jhunjhunu	3.74 (31.8)	8.7	7.59 (64.5)	31.3	11.76 (100.0)	21.4
Jodhpur	6.26 (23.5)	3.3	19.82 (74.3)	12.2	16.67 (100.0)	9.2

Note : 1. Figures in brackets are percentages to total livestock.
2. Animals, like ; Horses, Donkeys, Mules, Camels, etc. included under total livestock.

total number of livestock in 1982 is considered, it was the highest in Barmer district with 32.48 lakh with an increase of over 28 per cent during the five year period. The next in order of number was Jodhpur with 16.67 lakh livestock population, though the percentage increase amongst the districts of Rajasthan over the five years was the minimum at 9.2 per cent. Jaisalmer district, which is most arid and covers the largest area in Rajasthan (38415 sq. km.), had a total livestock population of 16.30 lakh with an increase of over 25 per cent during the five year period.

2.18 The unchecked increase in the number of livestock, especially of sheep and goats, no doubt, may be hampering the efforts in improving the ecology, but it needs to be handled with care with improved breeding programme through which the number of animals could be reduced by providing improved breeds with better output of milk, wool and meat.

2.19 In the selected districts of Gujarat and Haryana, cattle and buffaloes are in large number as compared to sheep and goats, because aridity is less and irrigation facilities are relatively better. In Banaskantha

district of Gujarat, the increase in the total livestock population over the five year period was not significant being only 7.8 per cent. However, when looked at different groups of livestock, there was substantial increase in the number of cattle and 'other', whereas, there was a decline in the number of sheep and goats.

2.20 In the selected districts of Haryana, where dairying is an important occupation, the number of cattle and buffaloes is much larger than other animals including sheep and goats. As per 1982 livestock census in Hissar district, out of the total livestock of 8.45 lakh, cattle and buffaloes accounted for about 72 per cent. Of these, the share of buffaloes was 42 per cent. The share of sheep and goats together was 24 per cent and there was a substantial increase of 21 per cent in their number over 1977. In the case of Rohtak district, figures were collected for the areas covered under DDP. In Rohtak, which is not very far from Delhi, dairying is an important occupation. Of the total livestock of 3.20 lakh in the DDP area, 49 per cent were buffaloes and over 29 per cent were other cattle, thus together, they accounted for over 78 per cent. Sheep and goats together had a share of only 15 per cent.

Animal Population in Cold Desert

2.21 The position of livestock population in the selected cold desert districts is given in the

following table.

Table 2.5 : Livestock Population in the Cold Desert Districts

(No. in '000')

State/District	Cattle & Buffaloes		Sheep & Goats		Total Livestock	
	1982	% increase over 1977	1982	% increase over 1977	1982	% increase over 1977
1.	2.	3.	4.	5.	6.	7.
Himachal Pradesh						
Lahaul & Spiti	2.5 (17.12)	42.9 (17.4)	8.4 (57.5)	-17.9	14.6 (100.0)	-7.
Jammu & Kashmir						
Leh	27.0 (13.3)	19.9 (9.84)	151.3 (74.6)	-11.2	202.3 (100.0)	-7

Note : Figures in brackets are percentages to total livestock

2. Animals like; Horses, Mules, etc. included under total livestock.

2.22 Like arid districts of Pajasthan, in the cold districts of Himachal Pradesh and Jammu & Kashmir also, the number of sheep and goats as compared to other livestock was more. In Leh district in 1982, this number was three-fourths of the total number, while in Lahaul & Spiti it was about 58 per cent. For Lahaul & Spiti district while goats and sheep together accounted for 58 per cent of the total animals, these shared 31 and 27 per cent respectively. However, on comparing the 1982

population with 1977, this showed a decline in both the States. The decrease was 18 per cent in Lahaul & Spiti and 11 per cent in Leh. The main reason for this decrease in the number of sheep and goats in the two States, was greater emphasis on the improved breeds, like, Pashmina goats, Marino and Karakul sheep, which are more paying. The Table 2.5 also shows that there was a decline in the total number of livestock in both the selected districts during the five year period, the decline being 7 per cent for both.

3. Increasing Demand for Fuel and Fodder

2.23 Increase in demand for fuel and fodder is another important cause for ecological degradation, which in fact, emerges as a result of increase in human population at a much faster rate in the desert areas, the demand for fuel and timber has been increasing. The continuous felling of trees for firewood is a major factor for disturbing the ecological balance. For tackling this problem, the social forestry and farm forestry programmes are needed to be taken up with full vigour with effective participation of local people. Under social Forestry programme, suitable varieties of trees are planted on common lands so that local people benefit by their use. If firewood and timber are available to the village people from the common land, the forest areas will remain undisturbed. However, this programme has not been so successful because of various reasons.

2.24 For meeting the increasing demand for fuel in such areas, besides making the social forestry programme successful, there is a need for providing the non-conventional sources of energy, like, installation of bio-gas plants and use of solar energy, which would greatly help in reducing the consumption of firewood. It is unfortunate that very little is being done to harness these energies in the desert areas.

2.25 As has been seen that both the human and livestock population have increased over a period of time except a decrease in livestock population in the case of cold desert districts. This indicates that efforts should be made to improve the quality of live stock through improved breeding and persuading the animal owners to reduce the number of live-stock with them for their proper upkeep. Efforts have to be made simultaneously to raise the level of productivity of existing pastures and grazing lands. Arrangements have also to be made for making the fodder available to them through fodder banks during lean months. Uncontrolled grazing has also to be curbed with active participation of the people and Pastures developed on scientific lines with increased carrying capacity. The introduction of silvi-pastoral system of grazing, supply of seeds of improved variety of grasses, legumes, fodder crops, etc., should be encouraged under the programme.

4. Net Sown Area

2.26 To see the changes in net sown area, the data on relevant aspects were collected for the selected districts for four intermittent years starting from 1976-77, the year before the inception of DDP, and 1987-88, the year of study.

2.27 The following table gives the percentage of net sown area to cultivable area in the hot desert districts:

Table 2.6 : Percentage of net sown area to cultivable area

State/District	1976-77	1984-85	1986-87	1987-88
1.	2.	3.	4.	5.
<u>Gujarat</u>				
Banaskantha	84.0	NA	NA	NA
<u>Haryana</u>				
Hissar	94.5	92.4	95.9	77.3
Rohtak	96.4	97.9	98.8	87.8
<u>Rajasthan</u>				
Barmer	69.7	72.2	63.2	25.9
Jaisalmer	77.0	47.9	54.0	NA
Jhunjhunu	95.0	91.6	92.2	86.1
Jodhpur	53.9	54.4	60.7	48.8

2.28 The above table reveals that the net sown area as a percentage of cultivable area has decreased

during the year 1987-88 as compared to the year 1976-77 in the selected districts of Haryana and Rajasthan. This may be largely explained the drought conditions prevailed during the year 1987-88.

2.29 It is generally held that the area under cultivation should increase after implementation of the DDP works, especially the water resources development, but this did not hold true for the selected districts of Haryana and Rajasthan. As it is clear from table 2.6 that instead of rising trend, the pattern of net sown area as a percentage to cultivated area is not uniform during all the relevant periods under study. Thus, it is indicative of the fact that the programme has not made much dent in this direction.

2.30 For the selected cold desert districts, neither the data was available nor a definite trend was discernible.

Measures To Check Ecological Degradation

2.31 The measures generally recommended for controlling ecological degradation and imbalance are :

1. Afforestation and Green Vegetation

Ecological balance can be restored by protecting and promoting natural vegetation as also artificial regeneration through new plantations for afforestation. For plantation, appropriate selection of species for different local needs, like; fodder, fuel

and timber are to be carefully considered especially for social and farm forestry and sand dune stabilisation.

2. Agriculture including Soil Conservation and Land Development.

The increasing human population has resulted in encroachment on forest and grazing lands for crop production. This tendency has to be curbed through upgrading the fertility of land already under cultivation through soil conservation and other biological measures. Dryland farming techniques are also to be propagated.

3. Animal Husbandry and Dairy Development

The increase in the livestock population is to be checked through breed improvement and gradually culling out the poor breed stock. The area under permanent pastures and grazing lands, which is very limited at present, has to be increased and developed.

4. Irrigation Potential

Increasing irrigation potential is an important measure for improving the ecology. Ground water surveys for augmenting water resources and harnessing the irrigation potential for its proper utilisation in agriculture and its use for drinking is required. Construction of water harvesting

structures for arresting run off water for moisture conservation and construction of khadins for better cultivation are other measures required in this direction.

5. Creating Employment Opportunities

As a measure of development, more employment opportunities to the rural people in the form of fruit and vegetable plantations, wherever possible, development of cottage industries, labour employment on forestry plantation works and other construction works carried out under the Jawahar Rozgar Yojana and other programmes of the State Government departments should be provided.

6. People's Involvement

People's involvement through their participation is necessary for almost all the activities undertaken under the programme. In the case of tree plantation, for example, people could be consulted on the species to be used depending on the local needs of fuel, fodder and timber. Also, their participation could be sought in raising nurseries for augmenting departmental supply of saplings, for which cash incentives could be provided to them. Their participation and cooperation could also be sought in animal husbandry programmes through

emphasis on the need for having improved breed animals in preference to their number, support for controlled grazing pastures, preference for stall feeding of animals, etc. For protecting ecology, regulated grazing and equitable sharing of the permissible fuel and fodder from the plantations on common lands developed under DDP, etc., are required. There is also a need to organise men and women as voluntary groups in different areas, like, the 'Chipko Movement' (hug the trees) of the hill areas of Uttar Pradesh for the protection of trees and to support other measures taken in this direction. The Vishnoi Community of Rajasthan is also protecting kherji (acacia) trees which provide fuel and fodder to the people of desert areas. Such groups could be organised in other areas as well. If people are consulted and involved in decision making, they generally take more interest and would consider the programme as their own.

2.32 The first four of the above mentioned measures cover the core sectors which are generally recommended for improving ecology and development of the desert area with varying degree of emphasis on individual sectors, depending on the needs and

potentialities of a hot or cold arid region.

2.33 The following important observation of some experts on ecological development of a desert area is worth mentioning :

"Any change brought in the desert is highly unstable, because any shortcoming in the import to change the variable or withdrawal of the input will cause the situation again to revert back to the desert ecology as before. The edaphic and biotic changes can be brought in by introduction of technology for improvement of desert, but this is to be continuously and consistently adhered to for a long period till a climatic diversity takes place to stabilise the introduced variable for the total and permanent changes in the ecology of the area".

2.34 The above observation is pointer to the fact that halted and half-hearted measures for restoring the ecological balance of the desert areas will not serve the purpose. All the required measures have got to be taken up together in a consistent, integrated and long term basis to effect a sustained and lasting improvement of the desert areas. While preparing an area development plan, all the resources whether from the State Sectoral Plan or from the additional DDP funds, have to be pooled together for effective implementation. The use of DDP funds in isolation on specific schemes

without proper integration with other necessary development programmes is not likely to bring out the desired results. How far DDP has been able to achieve the desired objectives as an additive programme in different states is discussed in the subsequent relevant Chapters.

Chapter III
ADMINISTRATIVE SET UP AND
MONITORING ARRANGEMENTS

In this Chapter administrative set up at different levels, i.e., State, District and Block adopted in different States for planning and implementation of schemes under the programme; staff sanctioned and in position and other related matters have been discussed.

3.2 In Gujarat, Haryana and Rajasthan, there is no separate agency for implementing the programme. The District Rural Development Agencies (DRDAs) serve as nodal agencies for rural development programmes, including the DDP and get different schemes implemented through the respective line departments. In Himachal Pradesh and Jammu and Kashmir, however, the Project Agencies in the districts covered under the programme are registered bodies, having some technical staff of their own which they get on deputation from other departments. Some of the works are executed by this staff and for others they depend on the line departments of the State Government.

I. Administrative Set Up

Hot Desert States

Gujarat

3.3 In Gujarat, the Secretary-cum-Commissioner, Rural Development, is the overall incharge of the Desert Development Programme alongwith other rural development programmes at the State level. He is assisted by Additional Commissioner(s) and Deputy Commissioner(s). In June, 1981, the Government of Gujarat constituted a State Level Coordination Committee (SLCC) for approving, supervising and monitoring the implementation of the DDP and DPAP plans. The Committee was reconstituted in May, 1985 with Secretary, Rural Development as its Chairman. In April, 1987, the SLCC was abolished and the Government decided to use State Project Approval Board (SPAB) for the purpose. The Chief Secretary was the Chairman of this Board with the Secretaries of the concerned Departments as Members. Later on in January, 1988, a Technical Committee of Experts was set up to assist the SPAB in technical aspects of DPAP/DDP schemes. The meeting of the SPAB was held as and when needed. However, projects/plans were normally submitted to the Chief Secretary (Chairman of Technical Committee of Experts) through respective Secretaries and Secretary (Planning) for clearance.

3.4 At the district level, there is one Governing Body of DRDA which looks after the DDP alongwith other rural development programmes. This body is headed by the District Development Officer and Director, DRDA, is

its Member Secretary. The Governing Body meets once in three months, while the working Committee meets every month. The progress of implementation of all the development programmes including DDP is discussed in the meeting. The administrative set-up at the State level is expected to give policy direction to the implementing agencies at the district level. District Planning Boards in the State have played a prominent role in all the development activities in the district. The executive head of the Board is the District Development Officer who is also the Chief Executive Officer of the District Panchayat. At the Taluka level, the Taluka Development Officer (TDO) is responsible for implementation of various development activities. The TDO is assisted by the VLWs and Talatis at the village level.

3.5 It was observed that for implementing the works under DDP, no separate staff had been provided. They deployed their own staff meant for regular departmental works and sometimes gave priority to DDP works over their own. It was reported that departments, which were starving for funds and works, had definitely gained by getting additional funds under DDP and utilised their staff in a better way.

Haryana

3.6 In Haryana also, there are no separate administrative arrangements for implementation of DDP at the state level. The Secretary, Rural Development is the overall incharge of the programme. There is one Special Project Cell (SPC) which is headed by a Joint Secretary-cum-Director. The cell is common for all

development and poverty alleviation programmes in the State. It was reported that recently one post of Additional Director has been created to reduce the work load of the Director. Some of the schemes would be looked after by him.

3.7 At the State level, one State Level Sanctioning Committee under the Chairmanship of the Chief Secretary has been functioning. Secretaries/Heads of different line departments associated with the Desert Development Programme are members of this Committee. The Committee considers different schemes under the Action Plan put up by the DRDAs for DDP and gives its approval for implementation. The Committee generally meets once a year.

3.8 In both the selected districts, viz., Hissar and Rohtak, the District Rural Development Agency (DRDA) is the nodal agency for the DDP at the district level. It gets the programme implemented through various line departments. There is a Governing Body of DRDA in each district which is headed by the Deputy Commissioner. Additional Deputy Commissioner-cum-Chief Executive Officer, DRDA is the Member Secretary of the Governing Body. Representatives of the Government of India and the Heads of various Development Departments in the district, MPs and MLAs are the members of the Governing Body. The Annual Action Plan is prepared by the DRDA in consultation with the representatives of the people and officers of the Development Departments in the districts, which is put up before the Governing Body for approval. After its approval, the same is sent to the

State Level Sanctioning Committee (SLSC) for final approval. The schemes are implemented only after the approval of SLSC. The Governing Body at the district level meets every quarter.

3.9 As far as the role of the Block Development Agency in implementing DDP is concerned, it was observed that their involvement was limited to obtaining resolutions from Village panchayats for plantation works on panchayat lands. Even this has been curtailed as the staff of the forest department were entrusted with the work of identifying lands for plantation. However, it is felt that Block Agency, which has a team of extension workers and generally have a rapport with the village people, should be adequately involved especially for the schemes under agriculture, forestry and pasture development.

Rajaethan

3.10 In Rajasthan, the DDP alongwith other special rural development programmes is administered, controlled and monitored by the Special Schemes Organisation (SSO) which functions under the Department of Special Schemes and Integrated Rural Development headed by a Secretary. At the State Level, there is one State Level Planning and Development Coordination Committee which is headed by the Chief Secretary. This is a high profile Committee which covers almost all the departments of the Government including those covered by the Special Schemes Organisation and all Secretaries are its members. This Committee meets quarterly and reviews the progress of different departments and looks into their

coordination problems. Besides, there is also a State Level Sanctioning Committee which is also headed by the Chief Secretary and it meets once a year for approving the Annual Action Plan of the districts. The Secretary, Special Schemes and IRD, is the administrative head at the State level but at the field level, the programme is controlled and administered by the Desert Development Commissioner, who is assisted by the Collector-cum-Chairman of DRDA and Additional Collector (Development)-cum-project Directors of all DRDAs looking after the implementation of this programme. Earlier the Desert Development Commissioner was responsible only for the DDP in the State, but now he is DDC-cum-Commissioner Jodhpur Division. The DDC coordinates, monitors and supervises the work of both DRDAs and the concerned line departments. Being the Revenue Commissioner as well, he is able to control and coordinate the programme in a much better way.

3.11 In Rajasthan also, the programme is implemented at the district level by the Additional Collector-cum-Project Director of DRDA through different line departments. The DRDA keeps an overall control on the implementation of various schemes included under DDP. In all the four selected districts, viz., Barmer, Jaisalmer, Jhunjhunu and Jodhpur, the Project Director, DRDA is the incharge at the district level. He is assisted by district heads of the concerned departments involved in the implementation of DDP. Each DRDA has a Governing Council which is headed by the Collector-cum-Chairman and the Project Director is the Member Secretary. Other members of the Council are the

district heads of the concerned departments, MPs, MLAs, Zila Parishad Pramukhs, Panchayat Samiti Pradhans, etc. In Barmer, 2 representatives of the weaker sections and voluntary organisations were also included in the Governing Council. This Council approves the Action Plan before it goes to the State Level Sanctioning Committee for its final approval. The progress of the work and problems faced in implementation are discussed in the meetings of the Governing Council. The District Council is supposed to meet quarterly, but in the few selected districts, it met on an average, three times a year.

3.12 It was reported that there was no problem of inter-sectoral coordination in the implementation of various schemes as the Chief Minister or the Minister concerned himself took care of this aspect in his review meetings. The Chief Secretary and Secretary(SSO) also reviewed the programme in their regular meetings which were also attended by DRDA officials. At the DRDA level there is also provision for sectoral monthly meetings where problems of coordination are discussed and efforts made to solve them.

3.13 The role of the Block Agency in the implementation of DDP in Rajasthan was very limited till 1986-87. However, from the year 1987-88, their role widened as the programmes, like, Cattle Drinking Water (construction of tanks) and fodder development on wastelands were implemented through the Block Agency. It was also decided that 50 per cent of the outlay going to forestry under DDP will be given to various Panchayats.

Samitis. With all this, the role of the Block Development Agency had certainly improved.

3.14 Thus, in all the three states, namely; Gujarat, Haryana and Rajasthan, the programme is being administered at the State level by the Department of Rural Development and at the district level by the DRDAs, though the schemes were actually executed through line departments. The involvement of the Block Agency has been increasing, especially in Rajasthan, which appears to be an improvement and other states should also examine the possibility of their adequate involvement in the programme.

Cold Desert States

Himachal Pradesh

3.15 In Himachal Pradesh, the Desert Development Agency has been constituted at the State level with Minister of Rural Development as Chairman and the Director, Department of Rural Development as the Project Coordinator. The Director is assisted by a team of nucleus staff comprising one Project Economist, one Assistant Project Officer and some ministerial staff. The main function of the Agency is to coordinate the activities with the Government of India.

3.16 A State level Coordination Committee has also been constituted with Minister incharge of Rural Development as its Chairman. Other members include heads of the concerned Development Departments, representative of the Government of India, the concerned MPs, MLAs and the Vice Chancellors of the Agriculture and Horticulture Universities in the State. The

Director-cum-Special Secretary(RD) serves as the Member Secretary. The Committee meets once a year and approves the Annual Action Plans of the two desert development projects in the State and reviews their progress.

3.17 In this State one each Sub-Division/Block is covered in the two districts of Lahaul & Spiti and Kinnaur. In Spiti Sub-Division of Lahaul & Spiti, the programme was started in 1977-78, but the Pooh sub-division of Kinnaur district came in its fold only in 1982. For our study Spiti was selected. At the District/Block level there is one Governing Body. The Deputy Commissioner of the district is the Chairman and the Additional Deputy Commissioner incharge of the sub-division serves as the Co-Chairman. Other members of the Governing body are all the concerned Block level officers, MLA of the area and some other non-official members as representatives of the people. The main functions of the Governing Body are to identify the areas for taking up works, look into the problems of implementation and to review the progress. It was reported that though the body is required to meet twice a year, generally it meets once a year. At the Project level(Block), the Additional Deputy Commissioner, who is incharge of the programme, is responsible for execution of all the works, except irrigation in Spiti(Kaza Project, which are implemented through the Irrigation and Public Health Department. In Pooh Project, irrigation schemes are implemented by the Irrigation and Public Health Department and afforestation works by the State Forest Department. Schemes other than these are

generally implemented with the help of the Project staff taken on deputation from other State Government departments.

Jammu and Kashmir

3.18 In Jammu and Kashmir, at the State level, the Department of Agriculture and Rural Development with Commissioner-cum-Secretary as its head is looking after the programme. He is assisted by a Special Secretary and a Deputy Secretary. There is no exclusive administrative set up for this Programme. There is a State level Sanctioning Committee with the Commissioner, Planning as its Chairman. All the heads of the line departments involved in the implementation of this programme and the Finance Secretary are members of this Committee. The Committee meets once a year to review the progress of work and to approve the plan of work for the next year which is then forwarded to the Central Sanctioning Committee for its final approval. Under the revised guidelines, however, the schemes costing less than Rs. one crore can now be sanctioned by this Committee.

3.19 At the district level, there is a Governing Body, which is headed by the District Development Commissioner, with Project Officer of the Desert Development Agency as its Member Secretary. The district heads of all the development departments and local NP and MLAs are its members. Normally, the Committee meets twice or thrice a year. The programme is executed through various development departments, like, Forest, P.W.D., Animal Husbandry, Agriculture, Horticulture, Fisheries, etc. The District Development

Commissioner as the Chairman of the Governing Body coordinates the work of different line departments, though for the day to day work the Project officer is responsible.

3.20 At the Block level, no administrative arrangements existed as there was no implementation of the programme as such at that level. However, it was reported that these agencies were involved in undertaking minor irrigation and some afforestation work through the District Panchayat Officers-cum-Assistant Commissioners(Development). In fact, it is felt that there was a need for involving the Block Agency more intimately in this programme, because they had the necessary extension staff to educate people about ecology and the village level workers who could be involved in plantation and other works more successfully.

DDP Staff Position

3.21 As mentioned earlier, the execution of schemes under DDP was being carried out by the various line departments with the help of their own staff and the DRDA functions only as a nodal agency. At the DRDA level, some staff, like, Project Economist, Research Officer, Investigator and some other technical staff required for scrutiny of Schemes, finalisation of Action Plan, preparation of progress reports, etc., are posted. Depending on the amount of work, some staff for DDP administrative work is posted at the State level as well. The position of staff as it existed during the period of study in different states has been as follows:

Gujarat

3.22 It was reported that for the implementation of DDP, no separate staff had been posted at any level. For execution of works, the line departments received funds from the DRDA and deployed their own staff for its execution.

Haryana

3.23 Owing to the larger coverage and more administrative work some technical staff were posted at the state level. Besides some Secretarial and Accounts staff, 3 posts of Project Officers of different disciplines, one Animal Husbandry Expert, one Expert in Forestry and 2 posts of Research Officers were provided at the State level. Of these, except the Research Officers, all others were in position. This staff also assisted the Special Project Cell set up at the State level to monitor and supervise the various programmes of DDP.

3.24 At the DRDA level, some technical posts were provided for DDP, but according to the Chief Executive Officer, DRDA, Hissar, 10 per cent funds allowed for meeting the project administration cost were not enough. Moreover, a part of these funds was passed on to the State level project administration to meet the expenditure on the Special Project Cell for DDP. As such the DRDAs are not able to fill the posts sanctioned by the Government of India. In Hissar, the technical staff posted at the DRDA were, 2 Assistant Project Officers, one Project Economist, one Technical Assistant and one Investigator. In Rohtak, where only a part of

the district was covered under DDP, besides the Chief Executive Officer (CEO), there was one Assistant Project Officer and one Investigator. It was also reported that in Rohtak only one-third of the expenditure on the CDD and the Assistant Project Officer was booked under DDP and the rest was debited to other schemes. This sort of arrangement was being carried out in other areas also.

Rajasthan

3.25 In Rajasthan, at the State level, the DDP is administered, controlled and monitored by the Special Schemes Organisation which is headed by a Secretary. In addition, there is one Special Secretary (SSO) and one Deputy Secretary (SSD). As per the available information, the staff sanctioned and posted in the Project Formulation Cell of DDP, which functioned under the SSO, are as under :

Joint Director (Statistics) -1, Deputy Director (Statistics)-1, Deputy Director(Eval.)-1, Executive Engineer-1, Project Officer (Sheep)-1, Project Officer (A.H.)-1, Project Officer (Coop.)-1, Assistant Director (Statistics)-1, Assistant Engineer(Power)-1, Inspector (Coop.)-1, Statistical Assistant-4, Research Assistant -2 and Investigator-2. Since the staff were posted at Jaipur, there was no problem of filling up the posts.

3.26 At the Regional level, in the office of the Desert Development Commissioner at Jodhpur (who is also the Divisional Commissioner) there is one Additional Commissioner(Desert Development), one Joint Director, and one Deputy Director(Statistics) with the usual supporting staff. There is one post of Superintending Engineer, Desert Development also. No problem of staff

was pointed out both at the State and Regional level.

3.27 The position regarding staff was somewhat different in the selected districts, especially in Jaiselmer and Barmer. Because of the extreme climatic and other difficult conditions, the staff are not willing to be posted in these areas and if they are posted, they try for their re-transfer to better places. With the result that a number of posts remained vacant. The following table gives details of technical posts sanctioned at the DRDA level in the selected districts and the number in position at the time of the study:

Table 3.1 : Staff Sanctioned and in Position for DDP at the DRDA Level

Staff	District/DRDA			
	Barmer	Jaiselmer	Jhunjhunu	Jodhpur
1	2	3	4	5
1. Addl. Project Director	1 (-)	1 (-)	1 (1)	1 (-)
2. Deputy Director (Stat.)	1 (1)	1 (1)	-	1 (1)
3. Project Economist	1 (-)	1 (1)	1 (1)	1 (1)
4. Statistical Asstt.	3 (2)	2 (1)	2 (2)	2 (2)
5. Statistical Inspector	2 (-)	4 (-)	1 (1)	1 (1)
6. Asstt. Conservator of Forest	1 (-)	-	-	-
7. Computer	3 (1)	1 (1)	-	1 (1)
8. Asstt. Engineer (Agr.)	1	-	-	-

Note : Figures in brackets indicate the number in position.

3.28 In Barmer district, the post of Additional Project Director, Project Economist, Assistant Conservator of Forests, one post of Statistical Assistant and both the posts of Statistical Inspector were lying vacant.

3.29 In Jaisalmer, which has the most difficult conditions, amongst of the technical posts, the post of Additional Project Director and all the four posts of Statistical Inspectors were lying vacant. The effective postings are either of new appointees, promotional postings, postings of personnel belonging to Jaisalmer district or postings ordered as punishment. The district also lacked in housing, educational and other facilities which discouraged people to readily accept postings to this area.

3.30 Jhunjhunu is less desertic than other districts and conditions were comparatively better. The technical staff were, by and large, in position.

3.31 In Jodhpur, which is the headquarters of the Desert Development Commissioner, the post of Additional Project Director was lying vacant for the last several years. There were frequent transfers of the Project Directors of the DRDA and during a period of 16 months, four officers had worked on this post. This frequent shifting of the Head of the DRDA and the absence of Additional Project Director adversely affected the smooth functioning of the programme.

Himachal Pradesh

3.32 The State Level Coordination Cell at Shimla is headed by the Director-cum-Special Secretary (RD) to look after the Desert Development Programme. He is

assisted in this work by a Joint Director. The technical staff provided from DDP funds comprise one Project Economist, one Assistant Project Officer and one Investigator.

3.33 The staff position in the cold desert areas was different from the hot desert districts. While in the hot desert areas very limited staff on DDP strength was posted at the DRDA level for planning, coordination and compilation work, in the cold desert areas, the agencies, which were registered bodies, could get departmental staff on deputation for direct execution of works and as such the number of sanctioned posts in these areas was much larger. A list of technical staff sanctioned and in position in Spiti Project on the date of visit is as follows:

Name of Post	No. Sanctioned	No. in Position
1. Project Director	1	1
2. Project Economist	1	-
3. Asstt. Project Officer	1	1
4. Statistical Asstt.	1	1
5. Agriculture Inspector	1	1
6. Agrl. Sub-Inspector	3	-
7. Range Officer	1	1
8. Forest Guard	10	8
9. Deputy Range Officer	3	1
10. Veterinary Stock Asstt.	5	1
Total	27	15

3.34 In addition to the Project Director, Project Economist, Assistant Project Officer and Statistical Assistant, which are common for both hot and cold regions, the other posts mentioned in the above list belong to Agriculture, Forest and Animal Husbandry sectors. The above list also shows that a number of posts were lying vacant. Of the 27 sanctioned posts, as many as 12 or 44.4 per cent were vacant. In these difficult areas, which remain cut off for about six months, it is always not possible to get suitable staff on deputation for a definite period and as a consequence the work suffers. Even the Project Economist, who is one of the key men in the Project, was not in position.

3.35 It was observed that while tree plantation work under DDP was being carried out with the help of the Project staff, the irrigation and other construction works were entrusted to the Irrigation and Public Health Department of the State for execution on work deposit basis for which they charged 17 per cent service charges in addition to the cost of works. This was an expensive proposition and the Project authorities wanted that if some engineers were posted to the project on deputation basis like other staff, the irrigation works could be completed well in time and certainly with less cost. This was a matter which needed serious consideration. It was noted that in Jammu and Kashmir minor irrigation works were being carried out by the Block Agency and the cost involved was much less as compared to Himachal Pradesh.

Jammu and Kashmir

3.36 In Jammu and Kashmir, there are no staff exclusively for DDP at the State level. As far as the staff strength is concerned, it was the highest in the two Agencies of Leh and Kargil. In the selected Leh district, the total staff strength in the Desert Development Agency was about 100, of which on the date of visit about 15 per cent were lying vacant. Besides the staff for project administration, the technical staff taken on deputation from other departments were from Agriculture, Animal Husbandry, Irrigation, etc. The maximum number of vacancies was reported in respect of Agriculture staff. Of the total 26 sanctioned posts of different categories, as many as 16 were not in position. Two posts of Soil Conservation Assistants and 8 posts of Field Assistants were vacant. Under Project Administration, besides the Project Director, Desert Development Agency, there was one Project Economist, one Statistical Officer and one Senior Assistant. All these officers were in position at the time of visit.

3.37 There were, however, adverse comments about the working of Desert Development Agency, Leh. The District Development Commissioner, Leh, who is the Chairman of the Governing Body, was also not happy about the working of the Agency. It was felt that there was no need for having an independent agency with so much of staff when most the work under DDP was being executed through the line departments. It was also reported that Project Officers were taking arbitrary decisions and the expenditure on some of the items, like, sprinklers for

irrigation, major irrigation works, green houses, was not justified. These lapses may be because of internal administrative problems, but there appear be a case for a thorough study into the working of two agencies in Jammu and Kashmir to see as to how the staffing pattern adopted was justified.

Problems of Staff and Suggestions

3.38 Of the three hot desert States, no report regarding postings and transfers of staff was reported in Gujarat and Haryana. In Rajasthan, however, which covers the maximum desert area of the country, a number of problems were reported. Firstly, because of extremely difficult and hostile conditions prevailing in some of the districts covered under DDP, no one was willing to be posted to those areas. Secondly, in such areas accommodation arrangements and educational facilities for children were awfully inadequate. As such, postings to these areas were usually either by fresh appointment or Promotion or as Punishment. In a few cases, persons preferred their postings if they belonged to the desert areas. Such areas were generally considered as family stations.

3.39 In the cold desert states of Himachal Pradesh and Jammu and Kashmir, the problem regarding availability of staff was reported more from the former. The conditions in both the States are difficult, because of some provisions in the Service Rules in Jammu and Kashmir, one has to serve in difficult areas for a period of at least two years in one's service career. Because of this and some extra financial benefits for serving in such areas, some people are always available

for posting. In the case of Himachal Pradesh, however, though there is a provision for some special allowances⁴ for serving in difficult areas besides the deputation allowance, there is no compulsion as such. It was felt that considering the problems of these areas where the staff were forced to maintain two establishments, some extra monetary gains were not enough incentives to attract deserving people.

3.40 For overcoming difficulties faced with regard to postings to the difficult desert areas, it was suggested by the officials that some attractive financial and other incentives, like, weightage at the time of promotion, etc., be provided to the staff serving in such areas. The period of service in the difficult areas should not be more than three years and after that the person may be given station of his choice. Moreover, efforts should be made to provide adequate accommodation, educational and medical facilities to the staff serving in such areas. All these demands are justified for successful running of this programme.

Expenditure on Project Administration

3.41 For the implementation of DDP, there is a provision of 10 per cent expenditure for establishment cost. It was reported that till 1986-87, the project administration expenditure or establishment cost was allowed upto 18 per cent of the total DDP funds which was reduced to 10 per cent under the revised guidelines of 1987. The expenditure is for establishment cost of DDP at the State and the DRDA/District level. In the

case of Rajasthan, there is a Desert Development Commissioner's office at the middle level also. Besides the establishment expenses for DDP in these offices, sectoral line departments, which actually implement different schemes under the programme especially in the hot desert States, are also allowed some establishment charges as part of the total costs. Such charges, however, were generally included in the overall cost of works and not shown separately. Because of this, the information on project administration expenditure collected for States and the selected districts did not give the true picture. The figures given in the tables (3.2, 3.3 and 3.4), in probability, indicate only the establishment expenditure at the State, Regional and District level for the agencies that control the programme. The establishment cost charged by the line departments was not separately reported and as such not included under the total expenditure on project administration.

3.42 For Gujarat, no expenditure on this item was reported for the period before the Sixth Plan. As mentioned earlier, no separate staff for DDP were reported either at the State or at the DRDA level. The table 3.2 on Gujarat and Haryana shows expenditure on this item during different periods.

(Table 3.2 on next page)

Table 3.2: Expenditure Incurred on Project Administration

(Rs. in lakhs)				
State/ district	Before Sixth Plan (1970-80)	Sixth Plan (1980-85)	Seventh Plan (1985-88)	Total Expd. upto (1987-88)
1	2	3	4	5
Gujarat	0.00 (0.00)	27.50 (4.54)	27.98 (5.51)	55.48 (4.00)
Banaskantha	0.00 (0.00)	23.81 (6.22)	16.23 (4.18)	40.04 (5.19)
Haryana	9.20 (2.69)	64.72 (4.71)	87.72 (10.04)	161.64 (6.24)
Hissar	3.11 (2.71)	15.85 (3.91)	19.12 (7.10)	38.08 (4.83)
Rohtak	1.41 (5.65)	16.43 (5.43)	15.85 (12.32)	33.69 (7.39)

Note : Figures in brackets are percentages to total expenditure under all sectors.

3.43 Gujarat State, which covered two districts under DDP, reported an expenditure of Rs.55.48 lakh upto 1987-88 which was 4 per cent of the total expenditure on all sectors. No expenditure on project administration was reported during the period before the Sixth Plan but during the Sixth Plan and three years of the Seventh Plan, it was 4.5 per cent and 5.5 per cent of the total expenditure. The position regarding percentage expenditure was not very different in the selected

Banaskantha district except that during the Sixth Plan most of the expenditure under this head was incurred on this district (of the total expenditure of Rs.27.50 lakh for the State, the share of Banaskantha district was Rs.23.81 lakh). This expenditure appears to be very high, especially when no separate staff for DDP were in position.

3.44 In the case of Haryana, the total expenditure on this item was Rs.161.64 lakh which was over 6 per cent of the total DDP expenditure in the State. The percentage expenditure was 2.7 during 1977-80 in the State which increased to 4.7 per cent during the Sixth Plan and to over 10 per cent during 1985-88. The pattern of percentage increase over the period was almost similar in the two selected districts. In Hissar, from 2.7 per cent during 1977-80 to 3.9 per cent during the Sixth Plan and to 7.1 per cent during 1985-88. In Rohtak district, which was only partly covered under DDP, the proportionate expenditure on project administration was more as compared to both State level and Hissar district. For 1985-88 period, it was the highest at 12.3 per cent.

3.45 The position of expenditure incurred on project administration in Rajasthan State as a whole and in the selected districts is given in the following table :

(Table 3.3 on next page)

Table 3.3: Expenditure Incurred on Project Administration under DDP

(Rs. in lakhs)				
State/ Districts	Before sixth plan (1977-80)	Sixth Plan (1980-85)	Seventh Plan (1985-88)	Total Expd. upto (1987-88)
1	2	3	4	5
Rajasthan	34.89 (2.01)	286.08 (5.17)	277.37 (3.62)	598.34 (4.01)
Barmer	0.74 (0.72)	17.46 (3.53)	17.82 (1.84)	36.02 (2.30)
Jaisalmer	0.86 (1.64)	11.76 (2.88)	21.40 (1.99)	34.02 (2.21)
Jhunjhunu	7.03 (4.61)	24.01 (7.20)	14.37 (5.27)	45.41 (5.98)
Jodhpur	0.76 (0.48)	21.64 (3.08)	24.72 (2.65)	47.12 (2.63)

Note : Figures in brackets are percentages to total expenditure under all sectors.

3.46 According to the information received from the State Government, the expenditure on this item is incurred on the establishment cost of the officers of;

- (1) Project Formulation Cell of SSO at the State level,
- (2) Desert Development Commissioner's office, and
- (3) District Rural Development Agencies/Districts covered under the programme. In addition to this, the line departments are allotted 10 per cent of the cost of works on pro-rata basis. It was also reported that Forest and Agriculture Departments were given

establishment charges through budgetary grants. As for other departments, their establishment cost was in-built in the cost of works (@ 10 per cent on pro-rata basis). The expenditure figures given in the table 3.3 did not include the establishment expenditure of the line departments which were not available separately.

3.47 The reported expenditure on project administration in Rajasthan State as a whole upto 1987-88 was Rs.598.34 lakh which was 4 per cent of the total DDP expenditure. It was 5 per cent during the Sixth Plan and about 4 per cent during 1985-88. As for the selected districts, except Jhunjhunu, the percentage expenditure on project administration remained almost within 3 per cent during different periods. In Jhunjhunu it varied between 5 to 7 per cent.

3.48 For having an idea about sharing of expenditure between the three different levels i.e. State, DDC office and DRDA, data for 1987-88 for Rajasthan was collected. Of the total expenditure of Rs.111 lakh on project administration during that year (it was 4 per cent of the total expenditure), 70 per cent was at the DRDA level (for 11 districts covered), 20 per cent was at the State level for the Project Formulation Cell and 10 per cent was shared by the office of the Desert Development Commissioner at Jodhpur.

Cold Desert States

3.49 The position of expenditure on project administration in the cold desert states is given in the following table 3.4 as on next page.

Table 3.4 : Expenditure Incurred on Project Administration

(Rs. in lakhs)				
State/ district	Before Sixth Plan (1977-80)	Sixth Plan (1980-85)	Seventh Plan (1985-88)	Total Expd. upto (1987-88)
1	2	3	4	5
Himachal Pradesh	6.94 (8.87)	39.20 (9.50)	40.64 (10.14)	86.78 (9.73)
Spiti Sub-Division (Lahaul & Spiti)	6.94 (8.87)	28.59 (9.01)	16.93 (8.51)	52.46 (8.82)
Jammu & Kashmir	1.44 (3.50)	25.93 (4.92)	48.26 (7.89)	75.63 (6.41)
Leh	0.72 (3.73)	13.43 (4.53)	33.57 (10.79)	47.72 (7.61)

Note : Figures in brackets are percentages to total expenditure under all sectors.

3.50 As the above table indicates, in Himachal Pradesh the total expenditure on project administration was Rs.86.78 lakh which was about 10 per cent of the total expenditure under DDP. The percentage expenditure remained high from the very beginning. It was 9 per cent for the period before the Sixth Plan and about 10 per cent during the Sixth and Seventh Plan. In the selected Spiti Sub-Division also, the percentage expenditure was around 9 per cent all through.

3.51 In Jammu and Kashmir, the reported total expenditure under this item upto 1987-88 was Rs.75.63 lakh which was over 6 per cent of the total expenditure under the programme. There was a gradual increase over

the period. From 3.5 per cent during 1977-80, it increased to nearly 5 per cent during the Sixth Plan and to 8 per cent during 1985-88. In the selected districts, Leh, while the expenditure on project administration was only about 4 per cent of the total expenditure during the earlier period and upto the Sixth Plan, it rose to about 11 per cent during 1985-88.

3.52 What has been said on the project administration expenditure for different states, the same does not provide the true picture for the selected districts, since a good proportion of it was mixed up with the cost of departmental works. As such, it was not possible to find out the exact proportion under this important head. The only indication is that almost in all areas there was a complaint of not having adequate funds for establishment needs. Even in the cold desert regions where the Agencies had so much of staff, under the pretext that they would directly execute the works, through their own staff, were pressing for more staff. Even these agencies were utilising the services of the State line departments for implementing some of the schemes.

II Monitoring and Evaluation Arrangements

3.53 For implementing any development programme especially where huge funds are involved, proper monitoring and evaluation is very necessary. Monitoring becomes necessary to know as to how far the physical and financial targets of different sectoral schemes in the requisite time frame were achieved. If shortfalls in some segments were noticed during periodical reviews and field visits, corrective measures could be thought of

and the concerned administrative or executive agency tightened up. It is equally necessary to find out whether the programme was running as per the objectives and guidelines. Monitoring will not be of much help in this direction and, therefore, evaluation would be necessary. Through evaluation and qualitative assessment, the administrators and organisers would know whether the programme was achieving the desired objectives.

Gujarat

3.54 In Gujarat, monitoring of DDP at the State level was being done by the Deputy Commissioner(Monitoring) in the Commissionerate of Rural Development through reviewing the monthly, quarterly, and other periodical progress and inspection reports. The State Project Advisory Board, which earlier functioned as State Level Coordination Committee, also reviewed the progress during their meetings held to sanction the annual plans for the DDP. At the district level, monitoring was done through the Governing Body of the DRDA. In Banaskantha, the progress of different sectoral schemes was discussed in its monthly meetings and directions wherever necessary were given. However, it was observed that since DDP was only one of the several development programmes covered for discussions, not much time was devoted to it. It was felt that if separate monitoring and review arrangements for DDP at the district level were made, these could be more effective in achieving the desired results.

3.55 Supervision and guidance provided by senior officers is a part of monitoring arrangement but visits

by the State level officials to the DRDA for the purpose were only incidental. The district authorities of Banaskantha were very much satisfied with the visit of one of the Joint Secretaries, Ministry of Rural Development (5th to 9th February, 1987) who evinced keen interest and also guided the officers implementing the programme. More frequent visits from the Central and the State level officers would be beneficial.

3.56 No evaluation of the programme in the State was reported to have been done by any Agency.

Haryana

3.57 At the State level, monitoring of the programme was done through reviewing the periodical progress reports received from the DRDAs. These progress reports were reviewed by the Special Project Cell and put up to the Secretary, incharge of the programme. Necessary instructions were issued to the concerned districts, wherever required. As reported officers visited the project areas sometimes for supervision and provided necessary guidance. It was, however, noted that such visits were few and far between. As such the visits of senior officers did not have the desired impact. It was also noted that while reviewing the progress in the meetings, more emphasis was given on the financial achievements. Even while considering the physical achievements, the qualitative aspects were not given any weightage. The aspects, like maintenance of plants, the mortality rate, etc., were hardly discussed.

3.58 In the selected districts of Hissar and Rohtak, the monitoring cells at the DRDA level were

existence. The monthly progress reports received from different line departments were consolidated and copies sent to the State and Central Governments. The reports were discussed in the periodical meetings of the DRDA which were also attended by officers of different line departments. The shortcomings, if any, were pointed out to the concerned officers for correction. The arrangements for monitoring of DDP at different levels can be called satisfactory as a routine exercise, but a lot more is required to be done to cover qualitative aspects to make it really effective.

3.59 No evaluation work of any type by any Agency, on the working of DDP in the State, was available.

Rajasthan

3.60 Monitoring of programme in the State was done at three levels, viz., State, Regional and the District level. At the State level, Secretary (Special Schemes & IRD) and now the Chief Secretary, reviewed the progress with the head of various line departments and DRDA officials. These reports are submitted to the State by the DRDA having received the same from line departments. The Secretary (Special Schemes and IRD) also holds monthly meetings with District Planning Officers to take corrective measures, wherever necessary. At the Regional level, the Desert Development Commissioner also received reports from the DRDAs and held monthly meetings with the DRDA officers, technical officers and heads of the concerned line departments.

3.61 It was reported that senior officers of the State Government made field visits twice or thrice a

year for supervision and necessary guidance to concerned officers. The tour reports were passed on the DRDAs for necessary action, wherever desired. It stated that such visits were certainly helpful improving the quality of work.

3.62 At the district level, DRDA was the sole agency responsible for implementation of the program through various line departments. The Heads of line departments were made responsible for submitting progress reports alongwith the utilisation as well as completion certificates in respect of individual works. The DRDA in turn submitted monthly progress reports (both physical and financial) to SSO and DDC. In the meetings of the Governing Body of the DRDA held under the chairmanship of the District Collector, besides discussing the progress of different sectoral schemes the feed back regarding the impact of the programme and the reactions of the people were also reviewed. It was reported that the monitoring set up at all the levels had been suitably strengthened to make it more effective.

3.63 Because of the load of work and some problems in Jaisalmer, one post of Additional Project Director had been sanctioned since 1987-88. With this additional post and one Dy. Director, Statistics and his other technical staff, it was expected that there would be qualitative improvement not only in the planning of DR schemes but also in better coordination and monitoring of the programme. It was reported that officers from the Department of Rural Development, Government of India, had visited the district twice in the year 1981

It was observed that Jaisalmer being a tourist resort, there were more frequent visits of officers from Central as also State Governments.

3.64 It was noted that an Evaluation Cell functioned under the Special Schemes Organisation of the State Government for carrying out concurrent evaluation studies of certain development programmes. A number of studies have been carried out by this Evaluation Cell. A study of Sheep Development Scheme under the Desert Development Programme in Nagaur district was also carried out. It was a small study, but a few of its findings were found useful. It has been recommended that the exotic cross breeding was not so successful in these areas and more stress was required on the improved local breeds which have better resistance against adverse desert conditions. It has, however, been reported that follow up action on the recommendations was not being taken up.

Cold Desert States

3.65 In the cold desert states, monitoring arrangements were rather weak. The project areas were far off from the State headquarters and the approach to those areas was difficult. Due to extreme cold, the working season did not extend beyond six months and for the rest of the period they remained cut off.

Himachal Pradesh

3.66 There was no monitoring cell as such at the state level. The Additional Deputy Commissioner, in-charge of the project was responsible for the preparation of periodical progress reports which were

sent to the Desert Development Agency at the State level. The absence of monitoring cell at the State level was considered as serious lapse which affected proper implementation of the programme.

3.67 It was observed that the Additional District Commissioner, because of his magisterial and other responsibilities, was not able to supervise the works effectively and depended more on his junior. Greater supervision and spot verification of completed works were necessary.

3.68 In both the Projects in the State, the visits of the officers either from the Central or State Government were few and far between. Long distance road with difficult terrain was the main reason for not visiting the project areas by state officials.

3.69 So far as evaluation is concerned, a Benchmark Survey was conducted in the Pooh Project area by the Directorate of Economics and Statistics, Government of Himachal Pradesh in August/September, 1983. Similarly, in Spiti Project area, an evaluation study was conducted by the Department of Economics, Himachal Pradesh University, Shimla in 1983-84. However, it was not known, if any action on these study reports was taken for improving the programme.

Jammu and Kashmir

3.70 Monitoring of DDP was done on the basis of progress reports prepared by the Desert Development Agency at the district level. In the first instance, the concerned line departments involved in the execution of works submitted their progress reports to the DRDA which consolidated them. The reports in the form of Monthly

and Quarterly progress were sent to the State Secretariat. From there, these were sent to the Central Government. The progress reports were checked up at each level. However, it was observed that monitoring of the programme was weak and did not lead to corrective action either with regard to the physical and financial achievements vis-a-vis the targets or the qualitative aspects of its implementation.

3.71 It was reported that the Additional Chief Secretary-cum-Secretary Planning, who is the incharge of Ladakh affairs, had also been monitoring and reviewing the programme of both the districts through periodical meetings but in the absence of proper supervision and on the spot verification, the gaps remained unfulfilled.

3.72 The visits of the senior officials to the project areas have been a very few. Only one meeting in a year to approve the district plans was held.

3.73 A team of officers from the Department of Rural Development, Government of India, reportedly visited the desert area of Leh and Kargil during 1987 and expressed displeasure on the non-completion and the manner of implementation of certain irrigation and other works. Again during 1989, Minister of State for Planning alongwith the officers from the Department of Rural Development and Planning Commission visited the desert areas of Leh and Kargil to apprise himself of the problems of cold desert areas.

3.74 No evaluation studies as such on DDP were conducted in the State. However, the workshops on development of cold arid areas held every year in

Himachal Pradesh and Jammu and Kashmir by rotation highlighted the problems of these cold areas and also suggested measures to tackle them. These were attended by State officials of the two state Governments, Research Organisations and representatives of Agriculture and Horticulture Universities of the two States. It was observed that it generally remained an academic exercise and no serious view was taken of the recommendations of these workshops.

CHAPTER IV

FORMULATION AND IMPLEMENTATION OF SCHEME

In any development programme, proper selection and formulation of schemes that meet the objectives of the programme with proper coordination between the agencies involved is of a great importance. Moreover, involvement of the people or their representatives, who have ultimately to benefit from such programmes, is very necessary. The schemes finally selected in order of priority should reflect the felt needs of the area and its people. Since DDP is an area development programme and lately the emphasis has been on micro-watershed approach for a compact and integrated area development, it was necessary to find out the progress made and difficulties experienced in this direction in the States covered under the programme.

4.2 Based on information collected from the concerned agencies responsible for administering and implementing the programme and observations of the evaluation teams, the position as it existed in different States has been analysed.

Gujarat

4.3 In Gujarat, schemes were formulated at the district level by the different line departments

alongwith their own regular programmes. It was reported that the schemes formulated by these line departments depended on the allocation of funds by the DRDA for each sectoral programme and the felt needs of the area and people in general. In the selected district Banaskantha, it was reported that the following line departments and agencies were involved in the formulation and implementation of schemes under DDP:

- (1) Agriculture Department;
- (2) Forest Department;
- (3) Minor Irrigation;
- (4) Soil Conservation;
- (5) Animal Husbandry;
- (6) Cooperative Department;
- (7) Fisheries Department;
- (8) District Industries Centre;
- (9) Gujarat Rural Development Corporation;
- (10) Gujarat Land Development Corporation;
- (11) Gujarat Wool Development Corporation; and
- (12) Panchayat Department.

4.4 Depending on the availability of funds, the schemes prepared by individual agencies with financial and physical details were submitted to DRDA for

inclusion in the Annual Action Plan. As per the new guidelines, the schemes involving outlays upto Rs. one crore were cleared by the State Sanctioning Committee itself and for schemes beyond this limit the approval of the Government of India was required.

4.5 As regards survey of the area for deciding on the priorities of schemes, their selection and formulation, it was reported that one such survey was conducted in two blocks of Mehsana district. In Banaskantha district, however, no such survey was conducted. It was also noted that no Master Plan for DDP was prepared in Gujarat.

4.6 It was observed that no voluntary agency was involved in identification of the areas or the formulation of schemes as far as DDP in the State is concerned.

Implementation of Schemes

4.7 The schemes/works under DDP in Gujarat State were executed by the different line departments. The district heads of the concerned line departments were members of the DRDA Governing Body and received DDP funds for schemes/works as per the approved Annual Action Plan. These works were in addition to their own departmental works and were executed through their own

staff. It was reported that the works executed by these departments were as per the Annual Action Plan and in accordance with the guidelines provided by the DRDA. The progress of work was reviewed in the monthly and other meetings at the DRDA and State level. The progress reports giving physical and financial achievements were submitted to the DRDA, which after compilation for different sectoral programmes, were submitted to the state and central Government.

Problems Faced

4.8 Some of the problems faced by the officers in implementing the DDP in the State were :

(1) Due to flat terrain and shifting of sand particles from little Rann of Kutch to the DDP covered areas, the scope for identification of micro-watershed area was quite limited and as such planning on that basis became difficult;

(2) Allocation of funds for different sectoral schemes was as per the guidelines issued by the Government of India which did not always reflect the needs of the area. As a consequence the sectoral imbalances in the development strategy remained unattended;

(3) Shortage of drinking water, for human beings as well as for animals, created problems for proper execution of several schemes; and

(4) Soil erosion due to wind and water also created obstacles in the way of execution of some schemes.

Suggestions for Improvement

4.9 The officers dealing with the programme in the State had suggested that weightage should be decided in consultation with the State Government and should be based on the sectoral needs of the area. Irrigation for instance, needed more funds than the provision of 20 per cent under water resources development.

Views of knowledgeable Persons

4.10 So far as Banaskantha district of Gujarat was concerned, most of the Knowledgeable Persons (KPs) interviewed reported that the schemes implemented under the DDP were, by and large, based on the felt needs of the area and its people. It was also mentioned by a few of them, who were either MLAs, Taluka Residents or Progressive cultivators, that since some of the representatives of the people were members of the

District Governing Council, they knew about the schemes that were being selected for implementation . Regarding the execution of schemes, there was a mixed reaction. Majority of them, however, felt that though the selection of the schemes was alright, the execution was slow and not very satisfactory.

Haryana

4.11 In Haryana also, the schemes were formulated at the district level by different line departments. The heads of different line departments, who are members of the Governing Body of the DRDA, are informed in advance about the available funds. The following line departments were involved in the formulation of DDP schemes at the district level:

- (1) Animal Husbandry;
- (2) Agriculture;
- (3) Soil Conservation;
- (4) Forest;
- (5) Fisheries;
- (6) Dairy Development; and
- (7) Minor Irrigation and Tubewell Corporation.

4.12 It was reported that no survey was conducted in either of the two selected districts for deciding

priorities for sectoral schemes under DDP. No Master Plan was prepared either. However, some soil and topographic and hydrological surveys were conducted in the State by the Agriculture, Irrigation and Hydrological Departments for use in formulating departmental schemes. The information collected through these surveys was utilised while formulating various schemes under DDP.

4.13 It was noted that at the district level the execution of schemes/works was carried out by the line departments under the overall guidance of their respective heads. The main schemes undertaken for execution under DDP related to; (a) Afforestation and Pasture Development, (b) Irrigation, (c) Animal Husbandry (d) Soil Conservation, etc. The Block Development Agency had almost no role except helping the line departments in the identification of areas/schemes.

4.14 In the formulation of schemes, the local people were not involved, but some of them who were members of the Governing Body, knew of the schemes as these were discussed in the meeting before inclusion in the Action Plan. There is, perhaps, a need for more involvement of

the Block Development Officers in formulation and execution of schemes under this programme, since they have better knowledge of the rural areas and problems of the people.

4.15 Thus, in Haryana, the DRDAs with the help of other development departments prepared the Annual Action Plan. After getting the Action Plan approved by the Governing Body, the same was sent to the State Level Sanctioning Committee for their approval. The execution of schemes was carried out by the concerned line departments.

Programme Execution

4.16 Due to the existence of the DRDA Coordination Committee at the District level on which all the concerned district level departmental heads are represented, no problem of inter-departmental coordination in the execution of schemes was reported. However, as far as the integration of different sectoral schemes is concerned, it was not being done in a desired manner.

4.17 It was mentioned by the State officials that the programme was running smoothly till the new guidelines were issued in 1987. They expressed dissatisfaction with the new norms set up by the Department of

Rural Development for sectoral allocation. For example, 40 per cent of the total fund required to be spent on forestry was not justified in view of the difficulties in getting the land for plantation. On the other hand, 10 per cent of funds for Project Administration cost were inadequate. Earlier it used to be 18 per cent. The State officials also opined that the categorisation of schemes as eligible and not eligible also created problems in the proper functioning of the programme.

Views of Knowledgeable Persons

4.18 Of the 15 Knowledgeable Persons from different categories contacted in Hissar district, 6 (40%) of them belonging to agricultural labourer and herdsman categories could not express any opinion about the working of DDP. According to the remaining 9 (60%), the schemes taken up under the programme were based on felt needs of the area and the people. Most of them felt that the execution of works was, by and large, satisfactory, while some of them felt that the maintenance of assets created under the programme was poor. These KPs also felt that because of afforestation schemes there was some improvement in ecology of the

area. According to them, due to afforestation and soil conservation works, the income of Village Panchayats had also increased.

4.19 In the other selected district Rohtak, of the 15 selected KPs, 8 could not express any views about the functioning of the programme. This shows lack of awareness amongst the people. However, officials thought that since DDP was not a beneficiary oriented programme, most of the rural people did not know about it as a separate programme. As in the case of Hissar, in Rohtak also, most of the Knowledgeable Persons, who could express their views, felt that the schemes undertaken were according to the felt needs of the people. They also mentioned that people's representatives were also consulted before formulating schemes. On the execution of schemes, their impact on ecology, etc., the views expressed were almost similar to those expressed in Hissar district.

4.20 In both the districts, Knowledgeable Persons expressed the view that DDP should also have some beneficiary oriented schemes, so that people are directly benefited by the programme. Such schemes may

relate to irrigation facilities, like, Community tube-wells for irrigation and drinking water, subsidy for water sprinklers, etc.

4.21 No voluntary agencies in any of the districts were reported to be associated with the planning and execution of schemes.

4.22 Some of the suggestions relating to the coverage of schemes received from State officials, Panchayat and Village people in general, are given below:

- (1) The State Government should have more say in deciding the weightage to be given to different sectoral schemes and these should not be imposed from above. This will lead to better development of the area;
- (2) For Community Plantation, which is generally done on Panchayat lands, the procedure for obtaining a resolution for acquiring such lands should be simplified;
- (3) Under irrigation the distribution of sprinklers, construction of pucca channels, digging of more tubewells, etc., should be encouraged; and
- (4) It was suggested that village people should be allowed to take fuel wood from the plantation

done under DDP on common land. For this purpose, a sale depot near the village be opened instead of auctioning the forest produce to the highest bidder as is the practice at present. The highest bidder is generally the businessman from outside the area and local people are not benefitted.

Rajasthan

4.23 In Rajasthan also, different line departments formulated their own schemes/plans for desert development programme based on the guidelines received from the DRDAs. It was reported that the schemes were prepared keeping in view the felt needs of the area and the people. After formulation, the schemes were submitted to the DRDAs for approval. These schemes were examined by the Project Economist with the help of different subject matter specialists. After finalising the schemes, the DRDA prepared an Annual Action Plan which was submitted to the District Governing Body for approval. The same was sent to State Government as well as Government of India for final approval.

4.24 The following departments/agencies were involved in the formulation of DDP schemes:

- (1) Agriculture;

- (2) Soil Conservation;
- (3) Animal Husbandry;
- (4) Forests;
- (5) Irrigation;
- (6) Public Health Engineering; and
- (7) Ground Water Development

4.25 Besides the above departments which were directly involved in the formulation of schemes, some other offices and agencies associated with the scrutiny, approval, selection of areas, etc., were the State Department of Special Schemes, Desert Development Commissioner, State Remote Sensing Application Centre, DRDA and Panchayat Samitis.

4.26 No Master Plan was prepared in the State for DDP. However, a perspective plan for the first time was prepared in 1987-88 for the three years, i.e., 1987-88 to 1989-90. Some soil and topographic surveys, hydrological surveys and aerial photo interpretation of the satellite imageries were conducted in the DDP areas. The State Remote Sensing Application Centre, Jodhpur had done significant work in identifying macro and micro watersheds. The information obtained through these surveys was utilised in planning and formulation of schemes.

4.27 A few MPs, MLAs, Zila Pramukhs and Pradhans were no doubt members of the Governing Council at the DRDA level which approved the schemes/projects for DDP in the area. It was stated that views of such people's representatives were taken into consideration at the time of formulation and approval of schemes/projects of their areas, but in actual practice their involvement was very limited. Moreover, the voluntary organisations had no role in the formulation and implementation of DDP in the State.

4.28 Implementation of the schemes/works under DDP was the responsibility of the line departments. However, at the district level, the Chief Executive of DRDA or other officers of the Rural Development Department including Special Schemes Organisation supervised the works executed by the line departments. It was reported that there was no problem of inter-sectoral coordination.

Problems Faced

4.29 No problem was faced by the State Government in selection and execution of DDP schemes till the revised guidelines were issued by the Department of Rural Development in 1987 which greatly restricted the choice

of schemes. The revised norms of allocations for different sectoral schemes were not according to the needs of each sector. It was suggested that so much rigidity should not be there and the State Government should have some discretion to incur expenditure on various schemes as per requirements and felt needs of the people and the area. As such the sectoral financial weightage should have some flexibility depending on the needs of a particular area.

Views of Knowledgeable Persons

4.30 Fifteen Knowledgeable Persons (KPs) in each of the four selected districts in Rajasthan were contacted to find out their views about their knowledge and involvement in the formulation of schemes under DDP. It was to be found whether these were according to the felt needs of the people and the area, the impact of the programme and their suggestions for better implementation.

4.31 Most of the Knowledgeable persons reported that the schemes taken up under DDP were according to the felt needs of the area. As far the involvement of the people in the selection and formulation of schemes was concerned, a good number of KPs had no knowledge.

However, KPs who were either people's representatives, like; MPs, MLAs, Panchayat Pradhans, etc., or were otherwise socially better off had reported that though they were not consulted in the selection or formulation of schemes as such, they had knowledge of the schemes to be taken up as decided in the Governing Body meetings and had the opportunity to discuss the pros and cons of such schemes. It was through the officials of the line departments that these people got the information. The MPs and MLAs who were members of the Governing Body could influence the line department officials in selecting schemes and areas of their choice.

4.32 As for the implementation of schemes, a good number of KPs opined that, by and large, the line departments executed the schemes properly, though shortcomings, like; lack of coordination between different line departments, inadequate and untrained staff and cases of corruption were pointed out by some of them.

Impact

4.33 Most of the Knowledgeable Persons thought that because of large scale plantation under afforestation programme, pasture development and other measures undertaken under DDP in the last decade, there has been

improvement in the ecology of the desert area. Some of them, however, felt that the results were not in commensurate with the investment made under the programme and with proper implementation, the impact would have been more significant.

4.34 Some knowledgeable persons were more specific and mentioned that besides improvement in ecology because of plantations, increased irrigation potential due to construction of water harvesting structures (Khadins, ponds, tanks, anicuts, etc.,) helped increase in agricultural production. Plantation of wild 'Ber' stabilised sand dunes and checked soil erosion. Schemes taken up under Animal Husbandry sector and construction of more drinking water ponds for animals helped the cattle breeders of the area. All these activities provided additional employment opportunities, raised their income and brought about some change in their life style.

Suggestions

4.35 Some important suggestions given by the KPs for

different sectoral programmes are as under:

(1) Afforestation

- (a) The plantation of all types should be taken up on a greater scale and more intensively with proper supervision and follow up;
- (b) The period of maintenance of plantations for the desert areas be increased by at least two years; and
- (c) More village people be involved in farm forestry. The plantation on farm boundaries to protect crops from animals may be encouraged.

(2) Irrigation

- (a) More tube-wells be provided with power connection and more ground water studies be undertaken as additional irrigation facilities will bring prosperity to the area;
- (b) Construction of more khadins and other water harvesting structures may be taken up for increasing agricultural production; and
- (c) Indira Gandhi Canal may be extended to Barmer district also so that more water was available for irrigation.

(3) Animal Husbandry

More attention may be given to all aspects of livestock development particularly sheep, goats

and camel breeding. Veterinary centres with adequate medicines, good markets for wool and mutton may be provided.

(4) General

(a) People's participation should be increased by creating greater awareness of different sectoral programmes. Village Panchayats and Voluntary agencies should also be involved in the execution of works, wherever possible.

(b) The technologies developed by CAZRI (Jodhpur) in the field of horticulture, dry farming, silvi-pastures, grassland development, etc., should be transferred to cultivators for their benefit.

Himachal Pradesh

4.36 It was reported that as per the instructions of the Government of India, the schemes under DDP were formulated according to the Annual Action Plan prepared by the State Government. All the schemes were formulated by the two respective Desert Development Agencies with the help of the following State line departments:

(1) Irrigation and Public Health;

(2) Forest;

- (3) Agriculture;
- (4) Animal Husbandry; and
- (5) Village Panchayats.

4.37 The Desert Development Agency at the State level had prepared a Five Year Plan(1977-81) for DDP in the State. This was, however, not made much use of and even a copy of the same was not available. The Annual Action Plans were being prepared every year which were approved by the State level Governing Body and the Central Level Sanctioning Committee before the schemes were taken up for implementation.

4.38 It was observed that no soil and topographic surveys or hydrological surveys were conducted by any department or agency. No aerial photo interpretation of the satellite imageries was prepared either.

4.39 With regard to people's involvement and voluntary help in the formulation and implementation of schemes, it was reported that the Pradhan and Panch were consulted and the work was taken up only after their consent.

4.40 In the selected Spiti area of Lahaul & Spiti district, except irrigation schemes, all other works were executed by the Desert Development Agency directly.

Irrigation works were implemented by the Irrigation Department for which besides the project cost, service charges were also charged. In Pooh Desert Development Agency, the irrigation works and forestry were implemented by the Irrigation and Forest Departments respectively. However, no problem of inter-departmental coordination in execution was reported.

Problems Faced

4.41 The officials of the Desert Development Agency did not face any problem in the implementation of the programme, except the execution of irrigation schemes which were being implemented by the Irrigation Department. It was mentioned that not only the completion of such works was delayed but also more expensive as these were not treated on a par with other Government works. Over and above the cost estimates, a surcharge of 17 per cent as their service charges was also levied. This was not justified.

4.42 The real problem arose after the revised guidelines of 1987 when weightages to different sectors were specified, which they felt were not realistic. The delay in releasing of funds by the State Government also hampered the progress of work at time.

Views of Knowledgeable Persons

4.43 Fifteen Knowledgeable Persons were contacted in the Spiti Project Area of Lahaul & Spiti district to seek

their views on the working of the DDP. It was felt that the schemes taken up under the programme were according to the felt needs of the people and the area.

4.44 As for the involvement of the people in the selection of schemes, most of the KPs expressed the opinion that representatives of the people like Panchayat Pradhans, etc., were consulted by the Project officials while taking up new schemes. Since such schemes were to benefit the people and the area, there was no question of opposing such measures. However, they complained about the lack of funds, lack of supervision/coordination, inadequate working force for completion of works during the short period of five to six months and lack of interest on the part of officials for proper execution. Most of them were also not satisfied with the irrigation schemes which generally took long time for completion and even then their performance was not satisfactory.

Impact

4.45 The impression of most of the KPs was that for improving the ecology of the vast area, afforestation and green cover on a massive scale was required. As compared to the need, very little had been done so far

and as such its impact was visible only in some small patches. However, the officials' view in this connection was that its impact was there and in support of their contention they quoted the latest rainfall figures which were more than the normal.

4.46 Income of the people has increased, though marginally, because of additional employment generated under afforestation and other schemes. Under animal husbandry sector, improved breeds of animals were provided free of cost to some individuals which increased their income. However, since the number of such individuals was not large, its impact was limited.

4.47 Subsidy on land development schemes to individual cultivators was also provided, but since assistance for other related items, like; irrigation, improved seeds, etc., could not be adequately provided, its impact on crop production was insignificant. However, such measures were helpful in checking soil erosion. As far as Agriculture sector is concerned, lot of research work is required, which in the absence of area based research institutions, is very much lacking.

Suggestions

4.10 Some of the important suggestions given by the KPs are :

- (1) Efforts should be made to increase the area under afforestation, community plantation and individual plantation. People of the area should be motivated through extension and provision of subsidy to cover more areas and protect them till maturity. The available barren lands may be covered by plantation and Panchayats may be involved in this work with some provision for incentives. Pasture development should also be encouraged;**
- (2) Private nurseries with proper incentives should be encouraged;**
- (3) Since afforestation and agriculture development depended on irrigation, construction of new Kuhls and completion of incomplete Kuhls should be taken up on priority basis;**
- (4) Arrangements for research on food grains, fodder and cash crops be made for better production as the average yield at present is very low; and**

- (5) Since people of the area cannot solely depend on agriculture, improved milch cattle, sheep and goats of improved breeds be provided to them with some financial assistance.

Jammu and Kashmir

4.49. In Jammu and Kashmir the following agencies were involved in the formulation of schemes for DDP at the project level:

- (1) Desert Development Agency;
- (2) Forest Department;
- (3) Irrigation Department;
- (4) Animal Husbandry Department;
- (5) Agriculture Department; and
- (6) Panchayat Department.

4.50 After collecting necessary information and material through their own offices regarding schemes to be prepared, DDP schemes were formulated and were proposed to DDA for sanction. The statistical wing of the Agency headed by the Project Economist scrutinised these schemes and, if found in order, were discussed in the Governing Body meeting of the Agency. If approved, these were referred to the State Level Sanctioning Committee for their clearance and final approval.

4.51 It was observed that no master plan was prepared either for the State or for the selected Leh district. However, annual programme works with sectoral schemes were being prepared every year with the help of other development departments in the district. The responsibility of preparation of Annual Plan was of the Desert Development Agency.

4.52 It was noted that no soil, topographic or hydrological surveys, which could be helpful in deciding the areas of thrust and in formulation of the area based schemes, were undertaken by any agency.

4.53. Regarding people's involvement and voluntary help in the formulation of DDP schemes/projects, it was observed that they were hardly consulted in the meetings.

4.54. The concerned officials informed that schemes relating to Irrigation and Plantation were executed by the Irrigation and Forest Departments of the State respectively, while schemes relating to Animal Husbandry, Agriculture, Soil conservation, etc. were mostly executed by the Desert Development Agency itself. They did not face any problem of inter-departmental coordination as the District Development Commissioner was the coordinating head and all district level officers were under his administrative control.

Problems Faced

4.55 The performance of most of the DDP schemes undertaken under different sectors, especially irrigation schemes was not satisfactory. The concerned officials of the Agency reported that the following problems came in the way of proper execution of schemes:

- (1) Due to shortage of staff, short working season and lack of transport facilities, the Forest department was finding it difficult to fulfil the financial and physical targets as per the norms of the Government of India;
- (2) Shortage of material, particularly cement, was considered as the major hindrance in the way of smooth and quick implementation of irrigation works;
- (3) In the case of animal husbandry which was considered a major economic activity of the region, most of the schemes were declared as ineligible under the new guidelines, thereby creating problems as to how to continue such schemes and complete the ongoing ones; and
- (4) In the absence of any provision for maintenance of assets already created as well as the State

Government's inability in this regard, maintenance of such assets became a problem.

Views of Knowledgeable Persons

4.56 In the selected district of the State, because of certain problems only 5 KPs could be contacted. Of these, one was a former Minister, one was retired Additional Secretary, Government of Jammu and Kashmir and one was retired Naib Tahsildar and presently a progressive farmer.

4.57. All the KPs felt that the schemes taken up in the district were according to the felt needs of the people and the area. Two of them, however, felt that establishment of Green Houses under DDP at a high cost did not serve any useful purpose and was a wastage of money.

4.58 As regards people's involvement in the selection and formulation of schemes, there was a mixed reaction of the KPs. While one of them could not express his opinion, two KPs. (ex-Minister and retired Additional Secretary) felt that people's involvement was only in name. The remaining two, however, felt that there was some involvement of the people's representatives. According to them, the representatives who were members

of the Governing Body of the DDA expressed their views about the suitability of schemes before these were finalised.

4.59. Regarding execution of schemes, the KPs had almost unanimity and felt that these were not properly executed. There was no voluntary agency in the area which could be associated in selection, formulation and execution of schemes.

Impact of the Programme

4.60. The KPs opined that there was no perceptible impact of DDP in the area even after a decade of its existence. The Irrigation canal, which was started several years earlier, was still under construction. Major activities under plantation and agriculture were dependent on the completion of this canal. Some progress has been made in the field of plantation, but in the absence of adequate irrigation facilities, it has been far below expectations.

4.61 It was mentioned that some progress had been made in the field of animal husbandry by supplying improved breeds of sheep and cattle, but such schemes have now been withdrawn from the programme and may have to be

taken up under the State sector. Efforts were also being made to increase fodder production. Individual farmers were being helped by supplying them with improved fodder seeds. It was reported that fodder banks were also being constituted to help animal breeders during lean periods.

Suggestions

4.62 Some of the important suggestions offered by the KPs for improving the functioning of DDP in the area are:

- (1) There is a dire need for the agriculture research as the average yield of crops is quite low at present;
- (2) Schemes should be taken up after careful thought and planning and due weightage should be given to views of the local people;
- (3) Small irrigation schemes with short gestation period should be taken up so that quick results were possible in improving agriculture and increasing area under plantations; and
- (4) Only suitable officers should be posted to run this programme and proper accountability be fixed at each level.

INTEGRATED MICRO-WATERSHED APPROACH

4.63 The development of micro-watershed as a unit of planning is considered to be the most scientific approach for optimum utilisation of land , water, human and livestock resources leading to a balanced development of the area through increased production and productivity. In a watershed area the available resources have to be properly assessed and development plan prepared in an integrated manner. Such a development approach is comprehensive. It includes the related activities, like; agriculture, horticulture, soil conservation, forestry, etc. The report of the Swaminathan Task Force on DPAP and DDP(1982), had also emphasised the need for watershed approach. It had stressed that,"instead of trying to benefit as large as an area as possible, projects should concentrate on specific watersheds and the programme should aim at full and comprehensive development of that watershed". Secondly, linkages with various rural development programmes like; self and wages employment programmes, etc., have to be established for better development of the area and its people. However, it was revealed that

this had not been done in an effective manner in any of the area covered under the Desert Development Programme.

4.64 The watershed as a unit of planning has, however, been questioned for the desert areas, which have no catchment and where there is absence of any defined drainage system. It has been argued that generally aquifers in desert areas are neither homogeneous nor continuous, but are as isolated basins having their own hydrological parameters, controlled by the geomorphic settings of the respective ground water potential body. On the basis of research in water balance studies in desert areas, the Central Arid Zone Research Institute(CAZRI) has come out with the concept of 'Index Catchment'. Such an index catchment can form the basis of an environment oriented area development planning and can serve as a substitute for micro-watershed approach. According to the Department of Rural Development, Government of India, this new index catchment approach had now been recommended for such desert areas.

Progress of Micro-Watersheds

Hot Desert States

4.65 There has been emphasis from the very beginning, on adopting micro-watershed approach for the development of desert areas, covered under the DDP. However, because of various reasons, like, non-availability of data, paucity of skilled and trained staff, high costs involved, etc., the progress in this direction in most of the concerned States had been very little. Even where this was tried in a limited way, it was not integrated with other State sectoral schemes and special programmes of rural development.

Gujarat

4.66 In Gujarat, identification of macro and micro-watersheds and preparation of their development plans are done by Gujarat State Land Development Corporation, which also undertakes soil conservation works. However, the scope for identification of watersheds is very limited since the terrain is flat with vast stretches of land experiencing ingress salinity due to shifting of saline sand particles from the Rann of Kutch and the river banks of Banas. It was reported that in the seven blocks of Banaskantha district covered under DDP, 47

such watersheds were identified, but their development could not be planned in a desired manner.

4.67 The severe drought conditions prevailing in the State have also hampered the micro-watersheds planning and their integration with other programmes. However, it was felt that the concerned staff were not adequately trained and did not have the desired knowledge of micro-watershed development approach. The only important activity in the area was the soil conservation works. Due to these constraints, the implementation of schemes strictly on watershed basis was not insisted upon.

Haryana

4.68 Like Gujarat, most of the areas in the four districts covered under the programme could not be developed on micro-watershed basis. The topography of Rohtak, Hissar and Sirsa districts is not suitable for this type of development approach. In the fourth district, Bhiwani, where some areas can be taken up under micro-watersheds, it was reported that two watersheds were to be developed at an estimated cost of about Rs. 45 lakh.

Rajasthan

4.69 In Rajasthan, where 11 districts are covered under DDP, it was envisaged that wherever watersheds are feasible, planning was to be done on watershed basis only. In the initial stages field staff were engaged to earmark the area, identify the number of watersheds and to initiate topographical as well as detailed soil survey. However, the system proved to be very time consuming and the staff had to face considerable difficulty in delineating the ridge lines of the watersheds on the basis of their reconnaissance surveys. Because of these problems, the work was entrusted to State Remote Sensing Application Centre, Jodhpur(SRSAC).

4.70 The watershed development programme is based on the area development approach in which a patch of 5 to 20 thousand hectares of watershed area is identified/selected. It is called macro-watershed. This project area is divided into smaller areas called micro-watershed, development of which in an integrated manner could be managed by a single agency. The area of a micro-watershed is generally below 500 hectares. Under the aerial photo technique the interpreter can easily view the whole terrain under the stereoscope and mark the watershed boundaries more speedily and accurately.

Watershed planning in Desert Blocks

4.71 According to the information supplied by the State Remote Sensing Application Centre, Jodhpur, out of 77 desert blocks in 11 districts of Rajasthan, watershed planning was possible only in 28 blocks of seven districts. These seven districts were Barmer, Jalore, Nagaur, Pali, Sikar, Jhunjhunu and Jodhpur. In these 28 blocks for which watershed maps were prepared, 909 macro-watersheds were identified and demarcated on the maps. These reports were submitted to the concerned District Rural Development Agencies for further action. From these 909 identified macro-watersheds, the DRDAs selected only 50 and referred these back to SRSAC for further detailing and delineating micro-watershed boundaries. This work was completed by SRSAC by identifying 300 micro-watersheds in seven districts ranging from 20 in Barmer to 66 in Pali and Sikar districts.

4.72 As per the information supplied by the Special Schemes Organisation, Government of Rajasthan, of the 300 micro-watersheds identified by SRSAC, 27 were being implemented in the desired integrated manner in the seven desert districts which included three of the four

districts selected for the study, viz.; Barmer, Jhunjhunu and Jodhpur. Of these, only two were reported to have been implemented in 1987-88, four during 1988-89 and 21 were planned for 1989-90. The integrated activities covered were; construction of water harvesting structures, soil conservation works, afforestation and pasture development and extension activities of Agriculture Department.

4.73 Regarding the watershed approach being followed in the districts selected for the study in Rajasthan, the field reports indicated that in Jodhpur some watershed areas were taken up for development in the past but proper micro-watershed approach for a compact and integrated area development had not been adopted. However, during 1988-89 three micro-watersheds were to be developed in an integrated manner as per their Action Plan, but according to the available reports integration with different departments was hardly there. Prior to these, one Jhanwar Micro-Watershed was taken up in the district as a model, the work was started in January, 1987 and an amount of Rs. 40 lakh was sanctioned for the project. This model watershed was formulated with the assistance of CAZRI. This project site was visited by the Evaluation Team and it was found that till July, 1988 an amount of Rs. 4.05 lakh only had been spent. The watershed covered an area of 873 hectares and till July 1988, 3 masonry dams, 60

brushwood check dams and 40 dry stone check dams had been constructed as part of the planned programme. Besides these, a dry stone wall covering 23 hectares was constructed and 2700 plants, mainly acacia tortilis had been planted on the sides of the wall. Six farm ponds at a cost of around Rs.18,000 each were being constructed to store run off water for irrigation. It was also reported that silvi-pastures for grazing had been developed on 20 hectares of land where besides grasses, 2850 trees were also planted. The area was enclosed and was to be handed over to the village Panchayat when developed. This 'model' watershed was, however, not functioning well. The utilisation of funds was low and the physical progress tardy. Lack of coordination between CAZRI, the planners of the projects, and the implementing agency, the Soil Conservation Wing of the Agriculture Department, was also reported.

4.74 In Jhunjhunu district, three micro-watersheds were taken up during 1988-89 for development. A few such watersheds were also being taken up in Barmer district. No watershed could be identified in Jaisalmer district.

4.75 'Activity clusters' in desert districts as a substitute approach for watershed was also reported. It was envisaged that wherever watershed approach is not feasible, planning may be done on the basis of grouping of adjacent villages in activity clusters for development. The villages having identical terrain characteristics, resource base and other similar features were grouped into six activity clusters by the SRSAC. It was reported by the SRSAC that 21 reports of different blocks alongwith their land use characteristics, ground water potential map and activity cluster maps were submitted to the concerned DRDA for the preparation of detailed development plans. These included 5 blocks in Barmer 2 blocks in Jodhpur and 8 blocks in Jhunjhunu district.

4.76 For following integrated development approach, officers of the Soil Conservation Wing of the State Agriculture Department, who are mainly responsible for the development of watersheds in Rajasthan, felt that all concerned departments should have a common base map and the basic information about the area. They felt these were the pre-requisites for any meaningful integrated development of a watershed area.

Cold Desert States

4.77 Area development under DDP in cold arid regions is also supposed to be done on micro-watershed basis but it appears that not much has been done in this regard in the two states, especially in Himachal Pradesh.

Himachal Pradesh

4.78 The topography and the climatic conditions of the areas in the two districts of Lahaul and Spiti and Kinnaur, covered under the programme were very peculiar and as such, there was very little scope for adopting watershed approach. The annual precipitation received during summer and winter in terms of both rainfall and snow was negligible. During summer very little or no rains were received and in winter whatever little snowfall was there, it was blown off from the surface by the wind. The second important reason given for not following the watershed approach was related to topography. It was mentioned that when some water harvesting structures were constructed, because of difficult terrain, the water storage tanks/ponds were filled with silt because of the loose and sandy soil texture. Due to these factors the watershed approach in the State was not considered viable.

Jammu and Kashmir

4.79 In Leh, which was the selected district for the study, very slow progress regarding development planning on watershed basis was reported. As late as 1987-88 five watershed areas, one each in five different blocks, were identified but no activities were undertaken. However, as per the Annual Action Plan of the Desert Development Agency, Leh for the year 1989-90, the Agency had identified 18 watersheds throughout the district for which project reports were prepared and execution work had been started. It was pointed out that because of varying topographies, altitudes, agro-climatic conditions, occupations, etc., different watershed projects were being planned differently. The Changthang belt of Leh district, which had an altitude of over 14000 ft., has more potential for cattle rearing and development of pastures and fodder and low potential for agro-based activities. Likewise, Khamtsi belt suited for cereal and horticulture development and Nobri Valley was more suitable for fodder seeds development.

4.80 In Kargil, the other district covered under DDP, execution of some schemes on watershed basis had been started. The first integrated micro-watershed scheme was taken up in 1986-87 in Kargil block at an estimated

cost of Rs. 12.17 lakh but till 1987-88, the project had not been completed. Seven more micro-watersheds were identified during 1987-88 and project reports prepared, but work could be started only on three, during the year. The total expenditure incurred on watershed projects taken up in the district till 1987-88 was Rs. 11.0 lakh but none was complete. Over 60 per cent of this expenditure was on the first watershed project taken up in Minji Village of Kargil block started in 1986-87. The important activities undertaken and likely to be undertaken on these integrated watershed projects were soil conservation works, like; land reclamation, tarracing and bunding, plantations, development of land for fodder and cereal cultivation, etc.

4.81 It was reported that since the area was quite vast, population sparse and distances between watershed villages being too long, one watershed usually covered one village only. Non-availability of data and paucity of skilled and trained staff all hampered the progress in identifying and preparing watershed projects. Problems of inter-sectoral coordination while preparing detailed plans were also reported.

4.82 It was felt by the implementing agency that for proper identification of micro-watershed and preparation

of a detailed land-use pattern plan for the cold desert areas, there was a great need for using the remote sensing technology for which the Department of Space could be approached.

4.83 The progress of integrated micro-watershed approach in different states shows that except in Rajasthan, where remote sensing technique was available, this approach on development planning in other desert areas was adopted in a very limited way. Even in Rajasthan, with all the help of SRSAC, only a very limited number of micro-watersheds could finally be identified for preparing their project reports and their implementation.

CHAPTER V

FINANCIAL PERFORMANCE OF THE PROGRAMME

The Desert Development Programme was started in 1977-78 in five States as a Centrally Sponsored Scheme and the entire burden of funding was borne by the Central Government. From 1979-80, however, and till the end of the Sixth Plan in 1984-85, the expenditure under this programme was being shared equally between the Central Government and the respective State Governments. In the Seventh Plan, DDP was again made a Centrally Sponsored Scheme with cent per cent assistance from the Central Government.

Pattern of Funding

5.2 The allocation of funds for the programme in the initial two years was broadly on an ad-hoc basis depending upon the formulation of suitable schemes by the concerned State Governments and their capacity to utilise the funds. From 1979-80 the allocations were made on the basis of blocks covered under the programme. The allocation per block was fixed at Rs.15 lakh per annum which is to be shared equally by the Centre and the State Governments. For the project in Spiti sub-division of Lahaul and Spiti district in Himachal Pradesh, where only one block was covered under the programme, a minimum annual allocation of Rs.50 lakh (including the share of the State Government) was made. This pattern continued till 1981-82. The actual release of the funds to the different States was, however, regulated according to the availability of funds in the Centre.

budget, the size of the approved programme and the progress of expenditure.

5.3 The Swaminathan Task Force (1982), suggested modification in the prevailing norms of allocation of funds to different states and recommended the intensity of aridity and the extent of areas subject to desert conditions as the more national basis. The Task Force, therefore, evolved a broad indicator to distinguish the less arid areas from the more. The suggested indicator comprised of two elements - rainfall and irrigation. The less arid areas were to be identified as those with either (a) an annual rainfall of more than 400mm, whether or not it had irrigation for 30 per cent of the net sown area or (b) an annual rainfall of less than 400 mm, but with irrigation for more than 30 per cent of the net sown area. The cut off point was kept at 400 mm, because the more arid areas had all along been defined as those with annual rainfall upto 375 mm. Similarly, the percentage of the net sown area under irrigation was kept at 30, because according to Irrigation Commission, areas having irrigation for at least 30 per cent of the net sown area could be considered as immune to drought.

5.4 Based on the recommendations of the Task Force, from 1982-83 the allocation of funds was changed to the following scale :

Hot Desert

Less acute areas : Rs. 60 lakh per annum for the districts of

Ganganagar in Rajasthan, Rohtak, Bhiwani and Hissar in Haryana and Rs. 50 lakh per annum for Sirsa in Haryana.

More acute areas : Rs. 10 lakh per 1000 Sq.Km. of geographical area, subject to a maximum of Rs.200 lakh per district per annum for the areas in Gujarat and Rajasthan (except Ganganagar district).

Cold Desert : Rs. 50 lakh each to Pooh and Spiti sub-divisions in Himachal Pradesh and Rs.100 lakh to Leh district including Zaskar block of Kargil district of Jammu and Kashmir.

Funding during Seventh Plan

5.5 Realising the need to give a greater thrust to the Desert Development Programme, it was made a 100 per cent Centrally sponsored scheme in the Seventh Plan with a total outlay of Rs. 245 crore.

5.6 The general yardstick for hot arid zone in the first year (1985-86) was Rs.15 lakh per 1000 Sq.Km. with a ceiling of Rs.4 crore per district which would subsequently rise to Rs.25 lakh per 1000 sq.Km. in the last year of the Plan (1989-90) subject to a ceiling of Rs. 6 crore per district. However, during 1988-89 and 1989-90, allocations were made at the rate of Rs.24 lakh per 1000 sq.km. the ceiling per district being Rs. 5 crore. In respect of cold desert, the funding norm as stated in the Seventh Plan document, was Rs.75 lakh per district in 1985-86 which would rise to Rs.175 lakh per district in 1989-90. However, during 1988-89 and 1989-90 the lumpsum allocation is

Himachal Pradesh had been at the rate of Rs.100 lakh per district, whereas it was Rs.150 lakh per district per annum in the case of Jammu and Kashmir. Instead of making allocations at a uniform rate, progressively increased allocations were proposed in order to have some impact of the programme. It was expected that increased allocation would enable State Governments to take advance action and build up necessary absorptive capacity for meaningful and efficient utilisation of funds on a gradually ascending scale.

Outlay sanctioned and Expenditure

5.7 The information on outlay sanctioned and expenditure incurred during different periods of the programme were collected from the concerned States and are given at Appendix IV-A.5.1. It also gives the percentage expenditure to outlays sanctioned during each period indicating utilisation of funds. The following table gives in brief the expenditure incurred under the programme as reported by the State Governments during the period before the Sixth Plan, during the Sixth Plan and total for the first three years of the Seventh Plan in hot desert States.

(Table 5.1 on next page)

**Table 5.1 : Expenditure and its Percentage
to Outlay Sanctioned**

(Rs.in lakh)

State	Before Sixth Plan (1977-80)	Sixth Plan (1980-85)	First three years of Seventh Plan (1985-88)	Grand Total (since 1977- 78 to 1987- 1988)
1	2	3	4	5
Gujarat	273.77 (NA)	605.35 (73.67)	508.27 (86.79)	1387.39 (NA)
Haryana	342.41 (41.10)	1375.00 (77.28)	874.00 (78.71)	2591.41 (69.61)
Rajasthan	1731.52 (82.39)	5533.80 (94.31)	7656.51 (107.75)	14921.83 (98.98)

Note : Figures in brackets indicate percentage outlay sanctioned.

5.8 In the case of Gujarat, the outlay sanctioned for the period before the Sixth Plan was not available, though the expenditure reported was Rs.273.77 lakh. The State Government was not sure even about the expenditure figure and thought that some DPAP and other sectoral expenditure were included in it, which could not be separated out. According to the records maintained in the Rural Development Division of the Planning Commission, the expenditure was only Rs.88.93 lakh for this period. During the Sixth Plan period, when half of the funds were to be shared by the State Government as against an outlay of Rs.821.39 lakh for the State, the total expenditure was Rs.605.35

lakh indicating about 74 per cent utilisation. This percentage utilisation, however, gradually increased during the Seventh plan, because the programme was fully funded by the Central Government. From 74 per cent in 1985-86, the percentage utilisation of funds increased to about 85 in 1986-87 and to 97 in 1987-88. Taking the total for the three years, as against an outlay of Rs.585.61 lakh, the expenditure was Rs.508.27 lakh showing about 87 per cent utilisation.

5.9 In the case of Haryana as the table given at Appendix IV-A. 5.1 and the above table indicate that as against an outlay of Rs.833 lakh during 1977-80, the expenditure was Rs.342.41 lakh, indicating only 41 per cent utilisation. This was due to the fact that it was the beginning of the programme and it took time to formulate and execute the schemes. During the Sixth Plan period, the expenditure in the State was Rs.1375 lakh which was 77 per cent of the sanctioned outlay. During the first three years of the Seventh Five Year Plan also, the percentage utilisation varied between 77 per cent and 79 per cent and taking into account the total figures for three years, as against the total outlay of Rs.1110.37 lakh, the expenditure was Rs.874 lakh accounting for 79 per cent utilisation. As such, the progress in this regard in the case of Haryana can not be termed as very satisfactory.

5.10 Rajasthan has been the largest beneficiary of this Programme. Of the total expenditure incurred during different

periods in the five States where DDP is in operation, Rajasthan had 70 per cent share during the period before the Sixth Plan, 70 per cent during Sixth Plan and 76 per cent during the first three years of the Seventh Plan. One of the reasons given for low expenditure during the Sixth Plan was that the State Government found it difficult to pool 50 per cent of the funds from its own resources.

5.11 During 1977-80, the State Government had spent Rs.1731.1 lakh on the programme which was 82 per cent of the sanctioned outlay. According to the reported figures for the Sixth Plan period as against an outlay of Rs.5867.97 lakh, the expenditure was Rs.5533.80 lakh, indicating 94 per cent utilisation. However, these figures seem to be suffering from certain limitations. According to the allocation and expenditure figures maintained in the RD Division of the Planning Commission the expenditure during the Sixth Plan was Rs.4532 lakh which was about 68 per cent of the allocated amount. The reason given for under utilisation of funds was the inability of the State Government to provide matching funds for the programme. During the Seventh Plan, however, when all the funds were provided by the Centre, utilisation figures in the State improved considerably. In all the first three years, the expenditure exceeded the outlay. For 1985-88, as against the total outlay of Rs.7105.50 lakh, the reported expenditure was Rs.7656.51 lakh which was 108 per cent of the sanctioned outlay.

Cold Desert States

5.12 While detailed outlay and expenditure figures are given at Appendix IV-A. 5.1, the table 5.2 gives the figures for expenditure during different periods with percentages to outlay sanctioned :

Table 5.2 : Expenditure and its Percentage to Outlay Sanctioned.

(Rs. in lakhs)

State	Before Sixth Plan (1977-80) Expenditure	Sixth Plan (1980-85) Expenditure	First Three years of Seventh Plan (1985-88) Expenditure	Total Expenditure (1977-78 to 1987-88)
1	2	3	4	5
Himachal Pradesh	78.25 (36.93)	412.91 (80.49)	400.68 (65.55)	891.84 (66.75)
Jammu & Kashmir	41.09 (NA)	526.61 (NA)	611.68 (84.55)	1179.38 (NA)

Note : Figures in brackets indicate percentage to outlay sanctioned.

5.13 In Himachal Pradesh, for the first three years of the programme, the reported expenditure under DDP was only Rs.78.25 lakh. It accounted for only about 37 per cent of the sanctioned outlay. For the Sixth Plan period the expenditure in the State increased to Rs.412.91 lakh which was over 80 per cent of the outlay. During the three years of the Seventh Plan, the utilisation varied between 62 per cent and 72 per cent. The

total expenditure for the three years was Rs.400.68 lakh which was 66 per cent of the total outlay for this period. All this shows that in Himachal Pradesh, as against the approved outlays, the expenditure incurred was much less which is indicative of poor performance.

5.14 For Jammu and Kashmir, the figures for approved outlays for the period before the Sixth Plan as also for the Sixth Plan were not available. The reported expenditure of Rs.41.09 lakh for the period 1977-80 was the lowest amongst the covered States. The main reason was that the programme in the State had started only in 1979-80. The activities were stepped up during the Sixth Plan period and the total expenditure was reported at Rs.526.61 lakh. There was progressive increase in the utilisation of funds during the Seventh Plan which increased from 59 per cent in 1985-86 to 86 per cent in 1986-87 and again 98 per cent in 1987-88. Taking into account the total for the three years, as against the approved outlay of Rs.723.49 lakh, the reported expenditure was Rs.611.68 lakh being over 85 per cent of the sanctioned outlay for the period.

5.15 It may be worthwhile to get a glimpse at the share of each State in the total expenditure under the Programme and also the proportionate expenditure of each State during different periods. The following table gives the relevant information :

(Table 5.3 on next page)

Table 5.3 : Share in Expenditure on Desert Development

Programme in different States since inception upto 1987-88

State		Before Sixth Plan (1977-80)	Sixth Plan (1980-85)	3 Years of Seventh Plan (1985-88)	Total Expenditure (1977-88)
1		2	3	4	5
Gujarat	(a)	11.1	7.1	5.0	6.6
	(b)	19.7	43.6	36.7	100.0
Haryana	(a)	13.9	16.3	8.7	12.4
	(b)	13.2	53.1	33.7	100.0
Rajasthan	(a)	70.1	65.5	76.2	71.2
	(b)	11.6	37.1	51.3	100.0
Himachal Pradesh	(a)	3.2	4.9	4.0	4.2
	(b)	8.8	46.3	44.9	100.0
Jammu & Kashmir	(a)	1.7	6.2	6.1	5.6
	(b)	3.5	44.6	51.9	100.0
Total		2467.04	8453.67	10051.14	20971.85
Expenditure					
(Rs. in lakhs)	(a)	(100.0)	(100.0)	(100.0)	(100.0)
	(b)	(11.7)	(40.3)	(48.0)	(100.0)

Note : (a) Percentage share of each State in the total expenditure.

(b) State-wise percentage distribution of expenditure during different periods.

5.16 It is clear from the above table that in the total expenditure of Rs.20971.85 lakh during the eleven year period of DDP i.e., from 1977-78 to 1987-88, the share of Rajasthan, which had the largest coverage with 11 districts, was 71 per cent, followed by Haryana with 12 per cent, Gujarat 7 per cent, Jammu and Kashmir 6 per cent and Himachal Pradesh 4 per cent. During

the three years of the Seventh Plan, Rajasthan had 76 per cent share in expenditure, Haryana 9 per cent, Jammu and Kashmir per cent, Gujarat 5 per cent and Himachal Pradesh 4 per cent. The pattern of share in expenditure was almost similar during the Sixth Plan except that the share of Rajasthan was only 65 per cent. In the initial three year period, the share of Jammu and Kashmir was the lowest at 2 per cent and the reason was that the programme in that State had actually started in the later part of 1979-80 only.

5.17 The percentage distribution during different periods gives the pattern of expenditure for each State. During the Sixth Plan, the proportionate expenditure for Rajasthan was the lowest at 37 per cent and the highest 53 per cent for Haryana. The percentage share for other three States varied between 44 and 46. It has been observed that over 50 per cent of the total expenditure was incurred in Rajasthan and Jammu and Kashmir during the three years of the Seventh Plan. During the same period, Himachal Pradesh spent 45 per cent, Gujarat 37 per cent and Haryana 34 per cent of the total expenditure.

5.18 The information on allocation of funds and expenditure during different periods in respect of the concerned States was also collected from the Rural Development Division of the Planning Commission. The basic source, however, was the Department of Rural Development, Ministry of Agriculture. While there could be variations in the figures for outlay sanctioned

and allocation of funds, it was expected that figures for expenditure would tally. However, as the following table shows, there was a marked difference in some figures, especially in Rajasthan for the Sixth Plan period.

Table 5.4 : Allocation of Funds and Expenditure
(Rs. in lakhs)

State	Before Sixth Plan (1977-80)		Sixth Plan (1980-85)		Seventh Plan (3 years)		Total Expenditure upto 1987-88
	A	E	A	E	A	E	
1	2	3	4	5	6	7	8
Gujarat	NA	88.93	522.52	567.60 (108.63)	428.00	411.63 (96.17)	1068.16
Haryana	NA	380.92	1305.24	1355.27 (103.83)	826.00	875.56 (106.00)	2611.75
Rajasthan	NA	1767.53	6700.80	4531.99 (67.63)	7096.00	7568.01 (106.65)	13867.53
Himachal Pradesh	NA	93.88	400.00	373.53 (93.38)	400.00	400.88 (100.22)	868.29
Jammu & Kashmir	NA	41.25	556.64	527.07 (94.69)	550.00	532.41 (96.80)	1100.93
In reserve for studies, etc.	-	-	-	-	50.00	-	-
Total	2372.69	2372.71 (100.00)	9485.20	7355.46 (77.55)	9350.00	9788.49 (104.69)	19516.66 (92.03)

A - Allocation Source : RD Division, Planning Commission
E - Expenditure Note : Figures in brackets are percentages of expenditure to funds allocated.

.19 These variations, especially in the case of expenditure figures, give an impression that there were some lacunae in the

maintenance of records with the State Governments and that expenditure figures were not properly reconciled with concerned Department of the Central Government.

Sectoral Expenditure

5.20 The utilisation of funds on sectoral schemes during different periods would give an idea about the weightage given to each sector in different states. In the beginning, the objectives of the programme were so broad based that any scheme that was considered helpful in the economic development of the area, whether it served the core objectives of the programme or not, could be covered under DDP. In the absence of proper monitoring and supervision, certain schemes which were of capital intensive nature, like; agriculture and animal farms, veterinary dispensaries, poultry farms, irrigation canals with long gestation period, etc., were taken up under DDP. On the insistence of the Central Ministry, such projects were transferred to the State line departments and under the new guidelines of 1987, besides indicating weightages for different sectors, a list of eligible and ineligible schemes was also provided for the guidance of the State Governments. The sectoral expenditure separately for each State for different periods with percentage weightage for each sector has been given at Appendices IV-A 5.2 to 5.7. The importance given to different sectors in each period may be seen in the light of the revised guidelines with the prescribed weightage, which is same for all the areas.

5.21 The sectoral expenditure was collected and compiled at two stages, one for the State level and the other for the selected districts. The State level data with sector-wise expenditure is analysed here.

5.22 In Gujarat, of the total expenditure of Rs.1387.39 lakh till 1987-88, the maximum expenditure of Rs.480.60 lakh (35%) was incurred on Irrigation. In the total expenditure for the period of 1977-80 also, the share of expenditure on Irrigation was the highest being over 44 per cent. During the Sixth Plan period, however, of the total expenditure of Rs.605.35 lakh, the expenditure on Irrigation was Rs.90 lakh being only 15 per cent of the total. During the Seventh Plan, the expenditure on this sector increased from year to year and in the third year of the Plan, it rose to Rs.158.78 lakh which was 70 per cent of the total DDP expenditure in the State for that year. For the three year period of the Plan, the share of this sector was 53 per cent.

5.23 The next important sector was forestry on which Rs.371.73 lakh were spent accounting for about 27 per cent of the total expenditure. The percentage share of this sector for the period before the Sixth Plan and during the Sixth Plan was almost the same being nearly one-third of the total expenditure. During the three years of the Seventh Plan, however, the weightage to this sector was reduced from 24 per cent in 1985-86 to 16 per

cent in 1986-87 and to 14 per cent in 1987-88. During period, more expenditure was incurred on Animal Husbandry Irrigation.

5.24 Another important sector in the desert economy is Animal Husbandry and Dairy Development programme on which all the States had spent substantial amount. In Gujarat, during the first three years of the programme, Rs.21.65 lakh were spent on Animal Husbandry which was 8 per cent of the total expenditure during that period. In the Sixth Plan, the expenditure on this sector increased to Rs.194.84 lakh (32%) and for the three years of the Seventh Plan, the expenditure was Rs.115.34 lakh (23%) of the total expenditure of Rs.508.27 lakh for that period. In the total expenditure for the entire period in the State, the share of Animal Husbandry came to about 24 per cent.

5.25 Agriculture sector, which mainly included soil and moisture conservation and land development schemes, though important in itself for the desert development, perhaps did not receive the attention it deserved. In Gujarat, while no expenditure was incurred on it during 1977-80, Rs.50 lakh or 8 per cent of the total expenditure (Rs.605.35) lakh were spent during the Sixth Plan. As it is evident from the available figures, this sector was completely neglected during the three year period of the Seventh Plan. Of the total expenditure of Rs.508.27 lakh, only Rs.10.07 lakh (2%) were spent on this sector.

5.26 Thus, of the total expenditure on DDP upto 1987-88 in Gujarat, nearly 90 per cent was spent on the above four important sectors. On Rural Electrification, which was included as one of the items of activity under DDP in the beginning, Rs.87.64 lakh were spent upto the Sixth Plan. However, since the manner of its implementation was not satisfactory and it was not serving the desired purpose, the scheme was withdrawn.

5.27 In Haryana, where four districts were covered under DDP, a total expenditure of Rs.2591.41 lakh was reported till 1987-88. Of this, the highest amount was spent on Forestry ~~Rs.1094.29~~ lakh (42%), followed by Rs.803.03 lakh on Animal Husbandry and Dairying (31%), Rs.274.25 Lakh (11%) on Irrigation and Rs.152.80 lakh (6%) on schemes related to Agriculture. Thus, all these four sectors together accounted for nearly 90 per cent of the total expenditure. Since the beginning of the Programme and till the first year of the Seventh Plan, Forestry received the highest share in expenditure. During 1977-80, of the total expenditure of Rs.342.41 lakh in the State, Rs.128.75lakh (38%) were spent on Forestry. The share of expenditure on this sector further increased during the Sixth Plan, when of the total expenditure of Rs.1375.00lakh, Rs.764.76 lakh (56%) were spent on Forestry. In 1985-86 also, this sector had the highest share of expenditure with about 42 per cent, but then it started declining. In the total expenditure of Rs.344.22 lakh and Rs.315.77 lakh during 1986-87 and 1987-88, the share of expenditure on Forestry

was only 21 per cent and 12 per cent respectively. This indicates that the State Government started giving more attention to schemes related to Irrigation and Agriculture.

5.28 In order of priority, Animal Husbandry and Dairying was the second sector. During the three year period before the Sixth Plan, of the total expenditure of Rs.342.42 lakh under DDP in Haryana, Rs.149.08 lakh (44%) was spent on this sector. However, Dairying accounted for three-fourths share. Haryana is known for its milch cattle and its promising prospects for marketing dairy products in and around Delhi. During the Sixth Plan also Rs.450.01 lakh were spent on this sector which was one-third of the total expenditure of Rs.1375.00 lakh. In the Seventh Plan, however, the State Government was asked not to spend funds on Dairy Development schemes and the assets created under it were transferred to the State line department. As such, during 1985-88, Rs.203.94 lakh were spent on this sector which was only 23.33 per cent of the total expenditure. Of this amount, the expenditure on Dairy Development was only Rs.6.87 lakh. By this time the State Government had become conscious that more weightage had to be given to Irrigation and Agriculture schemes.

5.29 As Haryana had, by and large, less desertic conditions and rainfall was comparatively better, Irrigation was not provided a higher priority under DDP. According to the available figures, an amount of Rs 24.25 lakh (11%) was spent on this sector since the inception of the programme till 1987-88. During the eight year period upto the Sixth Plan, an amount of

Rs.106.63 lakh was spent on Irrigation in the State which was 6 per cent of the total expenditure of Rs.1717.41 lakh during this period. The expenditure on this sector was stepped up during the Seventh Plan and in the first three years an amount of Rs.167.62 lakh was spent, which was 19 per cent of the total expenditure of Rs.874.00 lakh. In the revised guidelines 20 per cent weightage has been provided for Irrigation. The State Government is supposed to give more attention to this sector and it was noticed that more schemes on digging of ponds, water storage tanks, tube-wells, etc., were now being formulated for execution in different areas in this State.

5.30 In Haryana also, Soil conservation and land development schemes under Agriculture were not given much attention upto the Sixth Plan. During these eight years (1977-85) only Rs.23.48 lakh were spent under this sector in the four districts which was only about 1.4 per cent of the total DDP expenditure. During the first three years of the Seventh Plan, however, this expenditure increased to Rs.129.32 lakh which was about 15 per cent of the total expenditure during this period. Considering the total expenditure under DDP since the beginning of the programme in the State and till 1987-88, the share of this sector was Rs.152.80 lakh which was about 6 per cent of the total. Under the revised guidelines issued in 1987 by the Central Ministry, 15 per cent weightage to this sector had to be given.

5.31 It was observed that during the year 1987-88, miscellaneous expenditure from Animal Husbandry sector was all incurred on maintenance of assets created under DDP, such as purchase of tractor trolley, water tanker, milk can, and some other expenditure in the State of Haryana.

5.32 In Rajasthan, 11 of the 27 districts were covered under DDP. Considering the total expenditure since inception upto 1987-88 the expenditure was the highest under Forestry and Pastures followed by Animal Husbandry and Dairy Development, Irrigation and Ground Water Development and Agriculture. Some expenditure was incurred on miscellaneous schemes grouped under 'others' which included Power (Rural Electrification), SFDA type facilities, cooperation, Rural Water Supply, etc. While more details have been given at Appendix IV-A.5.4, the following table gives the expenditure on key sectors since the inception of DDP upto 1987-88.

Table 5.5 : DDP Expenditure on Key Sectors in Rajasthan
(Rs. in lakhs)

Sector	Before Sixth Plan (1977-80)	Sixth Plan (1980-85)	3 years of Seventh Plan (1985-88)	Total (1977-88)
1	2	3	4	5
1. Agriculture (Soil Conservation etc.)	127.57 (7.37)	445.82 (8.06)	555.08 (7.25)	1128.47 (7.56)
2. (i) Irrigation	72.17 (4.17)	438.92 (7.93)	582.10 (7.60)	1093.19 (7.33)
(ii) Ground Water Development	41.67 (2.41)	439.09 (7.93)	1108.48 (14.48)	1589.24 (10.65)
3. Animal Husbandry	474.39 (27.40)	1417.34 (25.61)	2260.72 (29.53)	4152.45 (27.83)
4. Forestry & Pasture Development	418.07 (24.14)	2130.12 (38.49)	2726.99 (35.62)	5275.18 (35.35)

Note : Figures in brackets are percentages to the total expenditure for all sectors.

5.33 The above table indicates that 89 per cent of the total expenditure under the programme was incurred on the four key sectors. During the period before the Sixth Plan, the proportionate expenditure on these sectors was about 65 per cent. This was because Rs.485.69 lakh (28%) were spent on Power during that period. During the Sixth Plan, the four key sectors together accounted for 88 per cent of the total expenditure. Their share during 1985-88 was still higher being 94 per cent.

5.34 The maximum expenditure of Rs.5275.18 lakh was incurred on "Forestry and Pastures" which was over 35 per cent of the total expenditure of Rs.14921.83 lakh for the entire period. The share of this sector was 24 per cent for 1977-80 period, 38 per cent for the Sixth Plan and about 36 per cent for the first three years of the Seventh Plan. Besides plantations, sand dune stabilisation and pasture development, the expenditure of Rs.124.69 lakh was also incurred on the development of Desert National Park for preservation of wild life in an area of 3000 sq.km. in Jaiselmer and Barmer districts.

5.35 Animal Husbandry and Dairy Development was another important sector on which Rs.4152.45 lakhs (28%) were spent upto 1987-88 from DDP funds. The activities included were, opening of new veterinary dispensaries/centres, setting up of new sheep breeding/rearing cooperative societies and artificial insemination centres, construction of milk routes, setting up of milk collection centres/cooperatives, cattle drinking water schemes, fodder development, etc. On cattle drinking water

schemes alone, the expenditure in the State till 1987-88 was Re.1855.97 lakh (12%). Of this, the maximum amount was spent during the three year period of the Seventh Plan which was Rs.1692.51 lakh or over 91 per cent. The share of this sector in the total expenditure for the period before the Sixth Plan was 27 per cent, it was 26 per cent during the Sixth Plan and 30 per cent for 1985-88 period. The above figures show the importance attached and weightage accorded to this sector in the State under DDP, though this was not appreciated by the Department of Rural Development. Their contention was that most of the schemes under this sector should have been covered under the State Plan. Under the revised guidelines of 1987, most of the schemes mentioned above were declared inadmissible and this sector has been put under the category of 'other miscellaneous schemes' with a total weightage of only 15 per cent.

5.36 For the development of desert areas, provision of irrigation facilities is of utmost importance. Besides Irrigation schemes, this sector also included ground water development. For planning minor irrigation schemes, it was considered necessary to first study the ground water with its strata, the quantity and its quality, the re-charge capacity, etc. All this was necessary as a pre-requisite for water management Plans. Though, all this should have been normally covered under State sector schemes but in Rajasthan, substantial amount was spent on Ground Water Development from DDP funds. Of the total expenditure of Rs.2682.43 lakh (18%) on Irrigation and

Ground Water Development, Rs. 1589.24 lakh (59%) were spent on Ground Water Development. As indicated at Appendix IV-A.5.4, Rs.113.84 lakh (7%) were spent on this sector during 1977-80, Rs.878.01 lakh (16%) during the Sixth Plan and Rs.1690.58 lakh (22%) during three year period of the Seventh Plan. During this period more expenditure was incurred on Ground Water Development and its share ~~and its share~~ was two-third and that of Irrigation being one-third. Under the revised guidelines, 20 per cent weightage has been accorded to this sector, which shows that the progress in the field of Irrigation as such in the State had not been upto the mark. In the progress upto 1987-88, 18 per cent share for Irrigation in the total expenditure included more than half of the expenditure on ground water development programme. In such a situation, not much can be expected in the form of actual additional area irrigated. The irrigation potential created through DDP schemes upto 1987-88 was 23701 hectares which was about 60 per cent of the targetted figure. The share in the irrigation potential achievement was 27 per cent during 1977-80, 33 per cent during the Sixth Plan and 40 per cent during 1985-88.

5.37 Under Agriculture sector, the main activities undertaken in the State were; soil surveys, topographical surveys, soil and moisture conservation measures and execution of watersheds. This sector though important was not given enough weightage. In the total expenditure of Rs.14921.83 lakh in the State under DDP

till 1987-88, only Rs.1128.47 lakh (8%) were spent on this sector. Of this expenditure, nearly half the amount was spent during the three year period of the Seventh Plan and the other half upto the Sixth Plan period. As table 5.5 indicates, the weightage given to this sector during different periods, for which expenditure figures were compiled, varied between 7 and 8 per cent of the total expenditure for the respective periods. Under the revised guidelines, this sector has been given 15 per cent weightage.

5.38 Besides, the above four key sectors covered under DDP, which accounted for nearly 89 per cent of the total expenditure, substantial amount was spent on "power". On Power Rs.924.05 lakh were spent which was over 6 per cent of the total expenditure. Of this amount, 53 per cent was incurred during 1977-80, 34 per cent during the Sixth Plan and the balance of 13 per cent during 1985-88. The main items covered were construction of high tension lines, supply of power in the non-remunerative area of the desert by providing financial assistance to the State Electricity Board which could help in the electrification of villages, energisation of wells and exploitation of ground water. The total number of villages reported electrified during the period were 686, of which 200 were electrified during 1977-80, 419 during the Sixth Plan period and 67 villages during 1985-88. Likewise, as per the State report, 2609 Tubewells/pumpsets were energised under the programme, of which two-third were energised

during the Sixth Plan and one third before the Sixth Plan period. Under the revised guidelines, such schemes have been discontinued.

5.39 DDP has been an area development programme but in Rajasthan SFDA type facilities like individual beneficiary programme was also taken up in the State from 1978-79 to 1980-81. The scheme was, however, discontinued from 2nd October, 1980. Some expenditure was incurred under Cooperative Societies also. This was done upto the Sixth Plan only and an amount of Rs.8.54 lakh was spent under this head for providing managerial subsidy to the Cooperative Societies in desert areas. For Rural Water Supply also some expenditure under DDP was booked during the Sixth Plan period. However, it was reported that no scheme as such was approved under the programme. The scheme was actually approved under DPAP and only the spill over liabilities worth Rs.15000/- were taken care of under DDP.

5.40 The pattern of expenditure in the cold desert States of Himachal Pradesh and Jammu and Kashmir was somewhat different from the hot desert States. In both these States, the highest weightage was given to Irrigation as it was felt that without irrigation facilities, the Afforestation programme would not be successful.

5.41 For Himachal Pradesh, the sector-wise expenditure with percentage share of each sector during different periods of the Programme upto 1987-88 has been given at Appendix IV-A.5.5.

(Table 5.6 on next page)

Table 5.6 : Expenditure on all Sectors in Himachal Pradesh

(Rs. in lakhs)

Sector	1977-80	1980-85	1985-88	Total 1977-88
1	2	3	4	5
Agriculture including Soil Conservation, etc.	8.74 (11.17)	23.26 (5.63)	15.97 (3.99)	47.97 (5.38)
Irrigation	44.00 (56.23)	182.37 (44.17)	126.88 (31.67)	353.25 (39.61)
Animal Husbandry	5.33 (6.81)	35.40 (8.57)	33.10 (8.26)	73.83 (8.28)
Forestry	13.24 (16.92)	132.68 (32.13)	177.91 (44.40)	323.83 (36.31)
Project Administration	6.94 (8.87)	39.20 (9.50)	40.64 (10.14)	86.78 (9.73)
Others (Fisheries and Horticulture)	0.00	0.00	6.18 (1.54)	6.18 (0.69)
Total	78.25 (100.00)	412.91 (100.00)	400.68 (100.00)	891.84 (100.00)

5.42 The expenditure figures given in the table indicate that the highest expenditure under the programme was incurred on Irrigation. Of the total expenditure of Rs.891.84 lakh upto 1987-88, the expenditure on irrigation was Rs.353.25 lakh (40%). In fact, since the inception of the programme in the State, Irrigation got the highest weightage. The weightage was 56 per cent for the period before the Sixth Plan and 44 per cent for the Sixth Plan. With gradually increased weightage to Forestry during the Seventh Plan period, the weightage to Irrigation came down to 32 per cent for the period 1985-88. The State was

feeling the difficulty because under the new guidelines only 20 per cent funds could be spent on Irrigation. The main activity under Irrigation was construction of Kuhls, for which, a potential of over 2000 hectares was created.

5.43 The second highest expenditure was on Forestry where Rs.323.83 (36%) lakh were spent. Thus, Irrigation and Forestry taken together accounted for over three-fourths of the total expenditure. From Rs.13.24 lakh (17%) during 1977-80, the expenditure on Forestry rose to Rs.132.68 lakh (32%) for the Sixth Plan period. The expenditure and weightage further increased during the three year period of the Seventh Plan. During this period Rs.177.91 lakh (44%) were spent on Forestry. Of these three years, the largest amount of Rs.76.79 lakh (49%) was spent during 1986-87. The main activity was plantation of willow and poplar trees in an area of about 1200 hectares.

5.44 Animal Husbandry, which plays an important role in the economy of desert areas, was somehow not given much weightage in Himachal Pradesh and this was the only State covered under DDP where the share of this sector was so low. Of the total expenditure of Rs.891.84 lakh upto 1987-88 in the State, the share of Animal Husbandry sector was only Rs.73.83 lakh (8%). The position almost remained the same throughout the period as its share was 7 per cent for the period before the Sixth Plan, about 9 per cent for the Sixth Plan period and 8 per cent for the three year period of the Seventh Plan. Opening of new

veterinary dispensaries and construction of some buildings and production of fodder seeds were the main activities under this sector.

5.45 Soil Conservation and Land Development activities under Agriculture, which are considered important for improving the desert economy were not taken up in the right earnest in the State. This was perhaps because the micro watershed approach for area development planning of these areas could not be taken up as desired. In Himachal Pradesh during the entire period under reference (1977-88), only Rs.47.97 lakh (5%) were spent on this sector. During the Sixth Plan period Rs.23.26 lakh (6%) were spent on such activities. During the first three years of the Seventh Plan, the share of expenditure in the first two years was still less at 3 per cent and 2 per cent respectively. However, the expenditure on this sector during 1987-88 increased to Rs.8.68 lakh (6%). It would be seen from the table that the highest share for this sector came during the period before the Sixth Plan, when it was Rs.8.74 lakh (11%).

5.46 The four key sectors together accounted for almost 90 per cent of the total expenditure. A few minor schemes on Fisheries and Horticulture were also taken up on which an amount Rs.6.18 lakh was spent accounting for less than 1 per cent of the total expenditure. The share in expenditure on Project Administration was about 10 per cent. In hot desert States, where this programme is being implemented through the line departments, the

expenditure on Project Administration is not fully reflected in the figures supplied and as such, the reported figure is much less than the allowed 10 per cent. The expenditure on staff is booked under different works taken up. In the case of Himachal Pradesh and Jammu and Kashmir, however, where DDP Project Agencies are registered bodies, technical staff from different departments are taken on deputation and most of the works executed directly. Under the new guidelines, a provision of 10 per cent expenditure on project administration has been allowed, which was 18 per cent earlier.

5.47 In Jammu and Kashmir, the programme started only in 1979-80 and there were changes in coverage over the period. On the recommendations of the Task Force (1982), most of the areas of Kargil district were excluded from the programme, but these were again included on the recommendations of the Inter-Departmental Group.

5.48 In this State also, maximum weightage was given to Irrigation. This was followed by Animal Husbandry, Agriculture and Forestry. Sector-wise details of expenditure since the inception of the programme upto 1987-88 with percentage share of each sector have been given at Appendix IV-A.5.6. However, the following table gives the information in brief on expenditure for the key sectors which command the maximum coverage.

(Table 5.7 on next page)

Table 5.7: Expenditure on Key Sector in Jammu and Kashmir

(Rs. in lakhs)				
Sector	Before Sixth Plan(1979-80)	Sixth Plan (1980-85)	Seventy Plan (1985-88)	Total (1979-88)
1	2	3	4	5
Agriculture	6.29 (15.31)	56.44 (10.72)	84.09 (13.75)	146.82 (12.45)
Irrigation	5.62 (13.68)	223.38 (42.42)	207.93 (33.99)	436.93 (37.05)
Animal Husbandry	19.18 (46.68)	152.05 (28.87)	141.67 (23.16)	312.90 (26.53)
Forestry	1.91 (4.65)	35.82 (6.80)	96.82 (15.83)	134.55 (11.41)
Project Admn.	1.44 (3.50)	25.93 (4.92)	48.26 (7.89)	75.63 (6.41)
Others(Fish-eries, Sericulture and Horticulture)	6.65 (16.18)	32.99 (6.27)	32.91 (5.38)	72.55 (6.15)
Total	41.09 (100.00)	526.61 (100.00)	611.68 (100.00)	1179.38 (100.00)

5.49 In Jammu and Kashmir also the maximum expenditure was on Irrigation sector. Of the total expenditure of Rs.1179.38 lakh, the share of Irrigation was Rs.436.93 Lakh (37%). During 1979-80 when the total expenditure was Rs.41.09 lakh, only Rs.5.62 lakh (14%) were spent on this sector and more funds were spent on Animal Husbandry and Agriculture. Later on, this sector had the highest share in DDP expenditure. During the Sixth Plan, of the total expenditure of Rs.526.61 lakh in the State, as much as

Rs.223.38 lakh (42%) were reported to have been spent on this sector alone. The higher weightage was maintained all through the three year period of the Seventh Plan, when of the total expenditure of Rs.611.68 lakh, Rs.207.93 lakh (34%) were spent on Irrigation. Construction of minor and medium irrigation canals and construction of water harvesting structures were the main activities. The reported irrigation potential created upto 1987-88 was 845 hectares. It was reported that no canal was completed and there was hardly any additional area irrigated. Taking up of such canal projects with long gestation period invited sharp criticism from the Central Ministry. Even after a lapse of about a decade with huge expenditure on Irrigation Schemes, the area has not benefited much (Refer Chapter VII). The State Government has now been advised that Irrigation Schemes, which were not likely to be completed in two-three year time, may not be taken up under DDP.

5.50 In terms of expenditure, Animal Husbandry was the second highest covered sector in the State. Of the total expenditure of Rs.1179.38 lakh, Rs.312.90 lakh (27%) were spent on Animal Husbandry. During 1979-80, the expenditure on this sector was Rs.19.18 lakh which was 47 per cent of the total expenditure for that year. During the Sixth Plan period, of the total expenditure of Rs.526.61 lakh, Rs.152.05 lakh (29%) were spent on this sector. The share of Animal Husbandry in the total

expenditure was 28 per cent in 1985-86 and 30 per cent in 1986-

87. The expenditure on Project Administration has also increased substantially during this period.

5.51 Under this sector, wool development programme, both for pashmina and non-pashmina, was taken up. For improving the quality of wool and meat of local sheep, cross breeding with exotic Marino and Karakul rams was introduced. Under the Dairy Development Programme, local milch cows were being improved through cross breeding with improved bulls. Some pedigree bulls were imported for producing cross bred local bulls. Along with the development of animal farms, some fodder production farms were also developed under DDP. In some areas, sheep breeders were being provided with the facility of mechanical shearing of wool which reportedly gave 15 per cent more wool than manual shearing.

5.52 Most of the schemes under Animal Husbandry have now been withdrawn. There is a strong feeling that some of the earlier schemes should be started again as the State Government may not be able to take up all the schemes because of the paucity of funds.

5.53 Agriculture ranks third in terms of expenditure in the State. Since 1979-80 upto 1987-88, an amount of Rs.146.81 lakh was spent which was over 12 per cent of the total expenditure. In the initial year, Rs.6.29 lakh were spent on this sector which was 15 per cent of the total expenditure during

that year. During the Sixth Plan, the expenditure on this sector was Rs.56.44 lakh which was about 11 per cent of the total expenditure of Rs.526.61 lakh. For the three year period of the Seventh Plan, the reported expenditure was Rs.84.09 lakh(14%).

5.54 The major activity, taken up under Agriculture, as far as DDP is concerned, was the establishment of two seed multiplication farms for wheat, barley and peas. These farms have now been transferred to the State Government. There is a good scope for growing vegetables in these areas, especially in the Leh region, which could even be exported to other areas. As for soil conservation works, about 581 hectares of land was reported to have been covered in Leh district for land levelling, gully plugging, erosion control measures, etc.

5.55 The Field Research Laboratory (FRL) at Leh under the Ministry of Defence is doing some useful work in the field of Agriculture and there is need for fully associating them in the research work carried out by the State Agriculture Department and the Jammu and Kashmir Agriculture University.

5.56 Forestry and Development of Pastures is the most important sector under DDP, but it was given the fourth place in the State. Upto 1987-88 and only Rs.134.55 lakh were spent on this sector, which was only 11 per cent of the total expenditure of Rs.1179.38 lakh. As table 5.7 indicates only about 5 per cent of the expenditure during 1979-80 and 7 per cent during the Sixth Plan period were made on Forestry. The share of expenditure increased to 16 per cent during the three year period of the Seventh Plan.

5.57 The main reason reported for less coverage under Forestry was lack of irrigation facilities. This is why maximum expenditure was being incurred on Irrigation schemes, but the State Government did not seem to be serious about completing Irrigation schemes even after more than a decade of their start. As a consequence of these schemes, the increase in the area under irrigation had so far been insignificant (refer Chapter VII). There is a scarcity of fuel wood in cold desert region and it was reported that about 40 per cent of the fuel needs of the area are met by resorting to imports from Kashmir Valley. Only traditional species of 'Poplar' and 'Willow' plants are grown and no quick growing of special fuel wood plants were identified except Hypophia and Mercaria which are grown in small areas.

5.58 The four key sectors together accounted for over 87 per cent of the total expenditure under DDP in the State upto 1987-88

CHAPTER VI

ADDITIONALITY OF DESERT DEVELOPMENT PROGRAMME

The Desert Development Programme was introduced in the country as a measure to combat the inter-regional disparities and ecological imbalance and to provide help to the dis-advantaged people of desert areas so that they could lead a better life. In fact, DDP was planned to provide additionality to the already existing plan schemes of the State Governments and special area programmes for rural development through additional funds to boost state efforts in desert area development. However, after about a decade of its working, the Rural Development Department realised that there was no tangible impact of this programme in arresting desert to which a number of factors were attributed. It was noted that since no strict sectoral priorities were laid down, the DDP funds were diverted to unapproved schemes and a good part of expenditure was incurred on buildings, chilling and dairy plants, livestock and poultry farms, etc. Besides these, the Department of Rural Development, Government of India, had an impression that a high percentage of expenditure incurred on schemes under core sectors in the districts covered under DDP, was being met through DDP funds and not much was being contributed from State Plan

resources. Since a sizeable amount of investment has been made in the programme, it was thought worthwhile to find out the additionality of DDP in financial terms vis-a-vis the State Sectoral Schemes under the core sectors.

6.2 In view of the above, while collecting expenditure data on DDP for different sectors in the selected districts for the study, the concerned authorities were requested to furnish the sectoral expenditure under the State Plan as well. These were collected for the key sectors, i.e.; Forestry, Irrigation including Ground Water Development, Soil and Water Conservation and Land Development, Animal Husbandry and Dairying. These were the same core sectors for which expenditure under DDP was compiled and analysed. For Rajasthan, which has the largest area coverage and expenditure under DDP, the State Government furnished the total State Plan expenditure on these sectors for all the 11 districts covered under DDP, besides giving the information separately for the selected districts.

6.3 The expenditure figures under the State Plan and DDP for the key sectors for selected districts and the State of Rajasthan (DDP areas) are given at Appendices IV-A. 6.1 to 6.5.

6.4 The additionality of DDP in the selected districts, which is given as percentage to the total expenditure (DDP + State Plan) has been analysed as under:

Gujarat

6.5 The following table depicts the position of additionality in Banaskantha district of Gujarat.

Table 6.1: Additionality of DDP in the Total Expenditure.

(Rs. in lakhs)

Sector	Sixth Plan (1980-85) Expenditure under DDP	Seventh Plan first three years (1985-88) Expenditure under DDP
1	2	3
Forestry & Pasture	113.22 (18.25)	80.15 (23.19)
Irrigation including Ground Water Development.	62.03 (4.33)	191.75 (27.34)
Soil & Water Conser- vation and Land Development.	50.04 (24.15)	8.51 (6.04)
Animal Husbandry and Dairy Development	93.60 (87.18)	92.56 (73.23)

Note : 1. Expenditure Before Sixth Plan not available

2. Figures in brackets are percentages of expenditure under DDP to total expenditure (DDP + State Plan)

6.6 The figures given above do not depict the correct picture because while the State sector expenditure has been given for the entire district covering 11 development blocks, the expenditure under DDP is only for 7 blocks covered under the programme. The comparable figures for State sector expenditure for the area covered under DDP were not available. However, the DDP expenditure on Animal Husbandry and Dairy Development was over 87 per cent and 73 percent of the total expenditure during the Sixth Plan and first three years of the Seventh Plan respectively, is quite significant. If the comparable State sector figures for the seven DDP blocks were available, the percentage expenditure would have gone still higher. The percentage of expenditure showing additionality in the case of other sectors, as can be seen from the above table was, however, not so significant.

Haryana

6.7 The table 6.2 gives the expenditure under DDP on the key sectors during different periods and its proportion to the total expenditure including state sector expenditure for the selected districts:

Table 6.2: Additionality of DDP in the
Total Expenditure., (Rs. in lakhs)

Sector	Before sixth Plan(1977-80) Expenditure under DDP		Sixth Plan (1980-85) Expenditure under DDP		Seventh plan (first 3 yrs. 1985-88) Expenditure under DDP	
	Hissar Rohtak		Hissar Rohtak		Hissar Rohtak	
	1	2	3	4	5	6
Forestry & Pasture	52.35 (70.98)	11.11 (25.60)	231.17 (88.45)	187.52 (58.61)	42.68 (40.78)	44.50 (28.74)
Irrigation including Groundwater Development	-	0.08 (0.02)	-	0.17 (0.01)	53.00 (9.53)	9.93 (0.79)
Soil and Water Conservation & Land Development	1.05 (NA)	1.19 (77.78)	4.36 (NA)	12.12 (86.70)	14.18 (60.76)	5.54 (59.89)
Animal Hus- bandry	15.11 (29.93)	3.37 (NA)	126.28 (49.84)	71.09 (NA)	83.92 (40.84)	52.86 (17.61)
Dairy Deve- lopment	42.75 (100.00)	7.68 (85.43)	25.44 (69.62)	13.80 (21.73)	3.81 (17.41)	-

Note : Figures in brackets are percentages
of expenditure under DDP to total
expenditure (DDP + State Plan)

6.8 Like Banaskantha district of Gujarat, Rohtak district of Haryana was also partly covered under DDP and comparable figures for State sector expenditure for the DDP area were not available. As such the true

picture of additionality would not emerge. However, even in the case of Rohtak as the figures in the above table indicate, for certain sectors during some periods, the DDP expenditure as a proportion to the total expenditure is quite significant. For soil and water conservation, it was 78 per cent during 1977-80, 87 per cent during the Sixth Plan and 60 per cent during the first three years of the Seventh Plan. The proportionate expenditures on Dairy Development (85%) during 1977-80 and forestry and pasture (59%) during the Sixth Plan period were also substantial. These percentages would have gone still higher if the comparable data for State expenditure on the DDP covered areas was available.

6.9 In the case of Hissar district, as the figures in the above table show, the proportionate expenditure under DDP for Forestry was 71 per cent during the period before the Sixth Plan, it was over 88 per cent during the Sixth Plan, but came down to 41 per cent during 1985-88 period of the Seventh Plan. The figures for State sector expenditure on soil and water conservation for the first two periods was not available and for the period 1985-88, the proportionate DDP expenditure was about 61 per cent. The proportionate expenditure under DDP on Animal Husbandry was 30 per cent, 50 per cent and

41 per cent respectively during the three plan periods as indicated in the above table. For Dairy Development, which is a part of the Animal Husbandry Programme, separate figures were available. In Hissar district, Rs. 42.75 lakh were spent on dairy development from DDP funds during 1977-80 whereas no expenditure was incurred under this head from the State Sector during this period. During the sixth Plan also the proportionate expenditure under DDP on dairy development was about 70 per cent. During 1985-88, however, the expenditure came down to Rs.3.81 lakh which was 17 per cent of the total expenditure. This sharp decline in expenditure was due to the fact that the main dairy development projects were transferred to the State sector. As for the expenditure on irrigation, no amount was reported to have been spent under DDP, though expenditure under the State sector was significant (Appendix IV A. 6.2). However, during 1985-88, Rs. 53.00 lakh were spent on irrigation under DDP, which was about 10 percent of the total expenditure.

Rajasthan

6.10 In the case of Rajasthan, the information regarding State Plan expenditure on key sectors was made available for all the 11 districts covered under DDP. Since Rajasthan has the largest area covered under DDP and is the biggest beneficiary under the programme, it

was thought proper to utilise this data and to see how the total picture is compared with that in the four selected districts. The table gives the picture of the total area (11 districts) covered in the State.

Table 6.3: Additionality of DDP in the Total Key Sectors in the Entire DDP Areas in Rajasthan.

(Rs. in lakhs)			
Sector	Before Sixth Plan(1977-80) Expenditure under DDP	Sixth Plan (1980-85) Expenditure under DDP.	Seventh Plan (First two years 1985-87) Expenditure under DDP
1	2	3	4
Forestry & Pasture	418.07 (51.16)	2130.12 (87.61)	1733.34 (96.23)
Irrigation including Ground Water Development & Flood Control	113.84 (1.06)	878.01 (3.20)	397.41 (2.99)
Soil & Water Conservation & Land Development	127.57 (98.53)	445.82 (89.65)	300.75 (90.04)
Animal Husbandry & Dairying	481.17 (80.07)	1419.10 (76.06)	1230.04 (78.17)

Note : Figures in brackets are percentages to the total expenditure (DDP + State Plan).

6.11 Except expenditure on Irrigation which includes ground water development, etc., under all the other three sectors, the expenditure from DDP funds has

been very substantial. The apprehension of the Rural Development Department, Government of India, appears to be justified atleast in the case of Rajasthan where not much State Plan funds have been spent on DDP areas. As the table 6.3 shows that in the case of Forestry, while the proportion of expenditure from DDP funds was 51 per cent during 1977-80, it increased to 88 per cent during the Sixth Plan and to over 96 per cent during the first two years of the Seventh Plan. In other words, this increasing trend of DDP expenditure is indicative of the fact that the share of State in total expenditure has decreased during these periods. Under soil and water conservation and land development programme , the expenditure from DDP funds was over 98 per cent during the period before the sixth Plan and 90 per cent during the Sixth Plan and the first two year period of the Seventh Plan. The proportionate expenditure from DDP funds on Animal Husbandry and Dairying was also substantial being 80 per cent, 76 per cent and 78 per cent of the total expenditure during the respective three periods. As regards Irrigation and Ground Water Development, the expenditure under DDP was proportionately not much. In the absence of perennial sources of water in the desert areas, rain water is tapped for irrigation purposes. Construction of water harvesting structures and Khadins was taken up under DDP for augmenting irrigation resources. The main source of

irrigation in Rajasthan is canals which account for nearly 60 per cent of the irrigated area. While small canal projects may neither be feasible nor viable in such areas, big irrigation projects, like, Indira Gandhi Canal, etc., cannot be expected to be covered under DDP. However, an amount of Rs. 1.14 crore spent during the period before the sixth Plan, Rs. 8.78 crore during the Sixth Plan and Rs.3.97 crore during the first two years of the Seventh Plan on irrigation under DDP is a significant expenditure as compared to the state share. The percentage expenditure under DDP on irrigation may not be impressive vis-a-vis State share because of state plan expenditure on large canal irrigation projects and ground water research for which separate figures were not available, but it was reported that the expenditure on water harvesting structures, construction of Khadins and wells, etc. was mostly met from DDP funds. The district-wise information also supports this fact where the proportionate expenditure from DDP funds was substantial.

The Additionality Position in Selected Districts

6.12 While the additionality of DDP in the State as a whole has been discussed earlier, the position as it existed in the selected districts is given in the table on the next page.

Table 6.4: Additionality of DDP in the Total Expenditure

(Rs. in lakhs)					
Sector	Period	District/Expenditure under DDP			
		Barmer	Jaisalmer	Jhunjhunu	Jodhpur
1	2	3	4	5	6
Forestry and Pasture	(a) Before Sixth Plan(1977-80)	35.48 (100.00)	19.90 (100.00)	28.81 (99.86)	50.74 (95.63)
	(b) Sixth Plan (1980-85)	195.13 (90.17)	114.69 (99.64)	147.68 (96.09)	224.70 (88.15)
	(c) Seventh Plan (First 3 yrs. 1985-88)	319.82 (61.03)	387.49 (93.13)	109.82 (90.57)	275.41 (89.70)
Irrigation including Ground Water Development	(a) 1977-80	0.62 (100.00)	12.74 (0.30)	2.00 (62.11)	8.03 (7.33)
	(b) 1980-85	48.15 (53.81)	62.53 (0.59)	36.17 (100.00)	121.75 (53.31)
	(c) 1985-88	138.82 (62.38)	161.69 (3.14)	85.38 (100.00)	415.53 (88.93)
Soil & Water Conservation and Land Development	(a) 1977-80	1.00 (100.00)	Nil	5.99 (100.00)	37.82 (95.22)
	(b) 1980-85	26.42 (100.00)	2.33 (100.00)	27.86 (100.00)	130.15 (72.96)
	(c) 1985-88	76.32 (48.65)	63.78 (100.00)	23.64 (71.44)	62.70 (91.24)
Animal Husbandry and Dairy Development	(a) 1977-80	4.54 (42.04)	7.57 (62.46)	72.44 (94.51)	50.63 (82.67)
	(b) 1980-85	128.38 (91.12)	70.05 (89.87)	84.18 (82.08)	192.97 (86.49)
	(c) 1985-88	398.33 (92.99)	385.72 (98.02)	39.52 (47.21)	138.53 (66.31)

Note : Figures in brackets are percentages of expenditure under DDP to total expenditure(DDP+ State Plan)

6.13 The table 6.4 is self explanatory and indicates that most of the expenditure on key sectors was met through DDP funds. The proportionate expenditure under DDP is even higher in the selected districts as compared to the total state picture. According to the field reports in Jaisalmer on the key sectors, the State Government was not allocating any funds from the State sector. The DDP had almost replaced the sectoral programmes. They became the exclusive programmes of DDP atleast till 1987-88.

6.14 For 'Forestry and Pasture', in Barmer district during 1977-80, the entire expenditure was met through DDP funds. The position was not very different during the Sixth Plan as well, when only 10 per cent of the total expenditure was met from the State Plan funds. During the first three years of the Seventh Plan, however, there was a substantial increase in the total expenditure which increased from Rs. 216 lakh in the Sixth Plan to Rs. 524 lakh in which reportedly the State share was Rs. 204 lakh (39%). In Jaisalmer, upto the sixth Plan, almost the entire expenditure on this sector was met through DDP funds only. During the three-year period of the Seventh Plan also when there was steep rise in expenditure from Rs. 115 lakh in the Sixth Plan to Rs. 416 lakh, the share of the State Government came to only 7 percent. The position in Jhunjhunu and

Jodhpur districts also was not very different where a very high proportion of expenditure was met through DDP funds and the State Government had only a marginal share in it which varied from negligible to 12 'per cent in the two districts during the three periods for which the expenditure figures were compiled.

6.15 For 'Irrigation and Ground Water Development', the position in the selected districts in the matter of proportionate expenditure was different from the State level picture analysed earlier. In Barmer district whatever little expenditure (0.62 lakh) was incurred on irrigation during 1977-80, it was all met from DDP funds. During the Sixth Plan, of the total expenditure of about Rs. 90 lakh, 54 per cent was met from DDP and during 1985-88, when an amount of Rs. 223 lakh was spent on this sector, the share of DDP was over 62 per cent. The position in Jaisalmer was different perhaps mainly because of Indira Gandhi Canal project where large amounts were required to be spent under the State sector. Although the expenditure under DDP on irrigation increased from Rs. 13 lakh during 1977-80 to Rs.63 lakh in the Sixth Plan and Rs. 162 lakh during the three year period of the Seventh Plan, the proportionate expenditure was much less, ranging between less than 1 per cent to a little over 3 per cent.

6.16 In Jhunjhunu district while DDP shared 62 per cent of the total expenditure on irrigation during 1977-80, it was 100 per cent during the remaining two periods. This shows that the district depended entirely on DDP for this sector and the State Government had no share in it. Of the four selected districts, the DDP funds spent on irrigation were the highest in Jodhpur district. From Rs. 8 lakh during 1977-80, it increased to Rs.122 lakh during the Sixth Plan and to Rs.416 lakh during the three year period of the Seventh Plan. The proportionate DDP expenditure also increased from 7 per cent in the first period to 53 per cent in the second and to as high as 89 per cent during the third period.

6.17 It appears that 'Soil and water conservation and land Development' programme, had started with the Desert Development Programme and the State Government did not take up this important programme under the State sector. In the selected districts, except Jodhpur, no funds were spent from the State sector upto the Sixth Plan. Even during the relevant years of the Seventh Plan, no State

funds were spent in Jaisalmer district on this sector. In Barmer district even under DDP only an amount of Rs. 1 lakh was spent during the period before the Sixth Plan. It increased to over Rs. 26 lakh during the Sixth Plan with no share of State Government and further to Rs. 157 lakh during 1985-88 with about 51 per cent share of the State Government. In Jaisalmer, which is the most arid region of Rajasthan, this programme was not at all taken up during 1977-80 and during the Sixth Plan period also only Rs.2.33 lakh from DDP funds were spent on this sector with no share from the State Plan. However, the programme was stepped up during the Seventh Plan and about Rs.64 lakh were spent under DDP during the first three years. In Jhunjhunu, Rs. 28 lakh were spent during the Sixth Plan and about Rs. 6 lakh before that period. During 1985-88, of the total amount of Rs.33 lakh spent on this sector, the share of DDP was over 71 per cent. As the expenditure figures for Jodhpur show, the proportionate DDP expenditure was 95 per cent during 1977-80, 73 per cent during the Sixth Plan and over 91 per cent during 1985-88.

6.18 'Animal Husbandry' has been an important sector for development in Rajasthan and Dairy Development schemes, like forming cooperative milk societies, development of milk routes, etc., were given added importance under the Desert Development Programme. In Barmer, of the total expenditure of Rs. 10.80 lakh on

this sector during the period before the Sixth Plan, 42 per cent was the share of DDP. During the Sixth Plan the total expenditure increased to Rs. 141 lakh of which 91 per cent was met from DDP funds. The involvement of DDP funds increased further during the three year period of the Seventh Plan when of the total expenditure of Rs.428.35 lakh on this sector, the share of DDP was Rs.398.33 lakh(93%). The position in Jaiselmer district was also, by and large, the same during the three periods. During the period 1977-80, of the total expenditure of Rs.12.12 lakh on Animal Husbandry and Dairy Development in the district, Rs.7.57 lakh (62%) was met through DDP. During the Sixth Plan while the total expenditure increased to Rs.78 lakh, the share of DDP was Rs.70 lakh (90%). During 1985-88 there was a substantial rise in expenditure which increased to Rs.393.53 lakh wherein the share of the State Government was only nominal at Rs.7.81 lakh. In this manner the proportionate DDP share came to 98 per cent. In Jhunjhunu, which is less arid than Barmer and jaiselmer districts, the proportionate expenditure under DDP showed a declining trend. During 1977-80, of the total expenditure of Rs.76.65 lakh, the share of DDP was over 94 per cent. During the Sixth Plan period while the total expenditure rose to Rs.102.56 lakh, the DDP share came down to 82 per cent. During the three year period of the Seventh Plan, the total expenditure in the

district came down to Rs.83.71 lakh and the proportionate share of DDP also slumped to 47 per cent. As for Jodhpur district, Appendices IV-A.6.1 and 6.4 indicate the proportionate expenditure under DDP was 83 per cent, 86 per cent and 66 per cent during the three respective periods. Thus, in the case of Rajasthan it has very clearly been shown that the contribution of the State Government on the key sector schemes in the DDP areas was minimal and for the development of these areas they depended exclusively on DDP funds.

Himachal Pradesh

6.19 The officers responsible for implementing the programme did not have much idea about the additiveness of this Programme and they did not seem to have taken account of it. They could only say that DDP had given a big boost to the development activities in the areas covered under the programme and but for it, with state efforts alone, not much development of area would have been possible. Appendices IV-A 6.1 to 6.4 give the position for the entire period. During 1985-88 for which information was available the DDP expenditure under 'Forestry and Pasture' in the Spiti Sub-Division was Rs.109.74 lakh being 64 per cent of the total expenditure. During the same period, on 'Soil and Water Conservation schemes' an amount of Rs.23.54 lakh was spent in the DDP area of the district of which Rs.12.38 lakh(53%) were spent from DDP funds. Likewise, under

'Animal Husbandry and Dairy Development', Rs.20.68 lakh were spent during the period of three years(1985-88) of which the DDP share was Rs.15.03 lakh or about 73 per cent. As far as the additionality of expenditure under Irrigation is concerned, this could not be calculated because the State sector expenditure on this sector was not available. After Forestry, Irrigation was the second important sector on which Rs.42.25 lakh were spent under DDP during the three year period of the Seventh Plan. In fact, it was felt by the Project authorities that they need more funds for irrigation in the first instance because afforestation which has to be given top priority and higher weightage, will not be possible in these areas unless adequate irrigation facilities were provided.

Jammu and Kashmir

6.20 According to the State officials, DDP in the State was an additive programme upto an extent of about 20 per cent of the District Plan. This however, varied from scheme to scheme and on some of the schemes it was even upto 100 per cent. It was mentioned that schemes on which 50 per cent to 100 per cent DDP funds were utilised were; establishment of fodder farms, seed multiplication farms, animal development and extension farms, certain medium and minor irrigation works, etc.. The information for the selected Leh district on expenditure under DDP and State sector is given at

Appendices IV-A. 6.1 to 6.4. The table 6.5 below gives the position in brief for Leh district.

Table 6.5: Additionality of DDP in the total Expenditure.

(Rs. in lakhs)			
Sector	Before Sixth Plan(1977-80) Expenditure under DDP	Sixth Plan (1980-85) Expenditure under DDP	Seventh Plan (First 3 yrs. 1985-88) Expenditure under DDP
1	2	3	4
Forestry & Pasture	0.96 (19.39)	24.42 (43.44)	45.00 (51.99)
Irrigation including Ground Water Development	2.55 (5.85)	124.55 (23.25)	93.31 (17.41)
Soil Conser- vation & Land Development	2.02 (100.00)	32.87 (100.00)	51.70 (99.42)
Animal Hus- bandry & Dairying	9.18 (48.39)	85.90 (45.35)	85.14 (45.01)

Note: Figures in brackets are percentages of expenditure under DDP to total expenditure (DDP + State Plan)

6.21 'Forestry' is the most important sector and maximum weightage was accorded to it under the DDP. During 1977-80, the total expenditure on this sector in Leh was only Rs.4.95 lakh, of which Rs.0.96 lakh (19.39%) were spent from DDP. In the Sixth Plan the total expenditure on forestry increased to Rs.56.22 lakh, in which DDP had a share of over 43 per cent.

Later on, during 1985-88 the total expenditure further increased to Rs.86.56 lakh, with DDP share being 52 per cent.

6.22 While forestry development is very important for arid regions, irrigation is no less, especially in the cold arid zone where afforestation programme cannot get a boost till irrigation facilities are provided. During 1977-80, a total amount of Rs.43.62 lakh was spent on irrigation in Leh district and only Rs.2.55 lakh (5.85%) could be spent on schemes formulated under DDP. During the Sixth Plan this sector got a big boost as the total expenditure increased to Rs.535.69 lakh. The expenditure on irrigation schemes under DDP which included small canals also increased to Rs.124.55 lakh, accounting for over 23 per cent of the total expenditure. Of the total expenditure of Rs.535.83 lakh during 1985-88, the DDP share was only Rs.93.31 lakh or 17 per cent.

6.23 Entire expenditure on soil conservation and land development schemes in the district was met from DDP funds. During 1977-80, the amount spent on such schemes was only Rs.2.02 lakh which increased to Rs.32.87 lakh during the Sixth Plan period. During 1985-88, of the total expenditure of Rs.52.00 lakh, Rs.51.70 lakh (99.42%) were spent from DDP funds.

6.24 The proportionate expenditure on 'Animal Husbandry and Dairy Development schemes' from DDP funds ranged

between 45 per cent and 48 per cent during the three periods. For the period before the Sixth Plan the total expenditure was Rs.18.97 lakh, of which Rs.9.18 lakh (48.39%) was met through DDP funds. During the Sixth Plan period the total expenditure under this sector increased to Rs.189.42 lakh, of which DDP share was Rs.85.90 lakh(45.35%). In the first three years of the Seventh Plan, i.e., 1985-88, the total expenditure on this sector was Rs.189.14 lakh, the DDP share came to Rs.85.14 lakh or about 45 per cent of the total expenditure.

6.25 From the above analysis of the data collected, an attempt has been made to find out as to how far DDP in financial terms has served as an additive programme. The Desert Development Programme which is basically an area development programme, was only additive in nature to provide extra financial assistance to the State Governments in boosting their efforts for desert development. However, in the absence of proper guidelines on integrated planning at the district level, the implementing agencies tended to treat DDP as a normal scheme without realising its supplemental role in the overall development of the desert areas.

6.26 Since DDP is an area development programme, its progress and achievements are to be judged not in isolation but in the total development of the area. In

fact as DDP is supposed to be integrated with other development programmes, the impact of DDP as such would be difficult to measure. It is, therefore, suggested that while making provisions for sectoral schemes in the District Plans, the share of DDP and the State Plan funds may be specified and the plan finalised accordingly. In other words, the DDP funds may be made as a part of the District Plan, though its quantum and proportion be specified and maintained. As at present, at least in hot desert States, the schemes under this programme are being executed by the State line departments only. These departments unnecessarily have to make a distinction between State schemes and DDP schemes and at times prefer to pay more attention to DDP works than their own or vice versa. In the cold desert areas where DDP projects are registered bodies, most of the technical and other staff are taken from the regular State line departments on deputation for implementing DDP schemes. Even after this, line departments are engaged for implementing some works and their involvement is there in one way or the other.

6.27 It is felt that through the integrated area development approach the additionality of DDP funds would be maintained as it would form a part of the total area development plan of the district where the State Government would also be spending from the State Plan funds on such schemes.

Chapter VII

PHYSICAL PERFORMANCE OF THE PROGRAMME

This Chapter gives an insight into the activities undertaken under the programme during different periods in states and districts selected for the study. Besides the physical achievements in relation to targets under the key sectors, the field observations of officers who conducted the study, comments of the State officials and suggestions, wherever given, have also been analysed. This will give an idea of the types of schemes that were taken up in different areas during different periods and the extent to which these have been in consonance with the revised guidelines of the Department of Rural Development under which a definite weightage has been accorded for different sectors.

7.2. The physical achievements for different activities under the core sector of the programme have been analysed for each State. The achievements have also been given^{at} Appendices IV-A. 7.1 to 7.5.

GUJARAT

7.3. The two areas, the Little Rann of Kutch and Greater Rann of Kutch have been adversely affecting the adjoining districts in Gujarat. Sand particles carried through strong winds during summer months from the desert have been converting the cultivable and cultivated lands of these areas into ingress salinity. The ground water has also become saline and brackish. With the objective of arresting desertification and improving the ecology of the area, the DDP was

introduced during the Fifth Plan in Kutch, Mehsana and Banaskantha districts. In 1982, however, Kutch was excluded and at present only 7 talukas of Banaskantha district and two talukas of Mehsana constituted the DDP areas of the State.

7.4. The mini-watershed approach for in-situ moisture conservation and integrated development recommended under the programme was not found possible for this area because the terrain was flat and sloping towards South-West. The three rivers running through the area carried water only during the monsoon. The annual rainfall in this area is scanty and ranges from 200 to 500 mm only. The water available, in general, is brackish and is not fit for drinking and cultivation. It was reported that Rabadi Desais, a semi-nomadic tribe of Gujarat, depending mainly on dairy farming and sheep rearing, seasonally migrated to other areas in search of fodder for their cowherds, sheep and goats, when the same was not available in their own areas because of drought conditions.

7.5. The schemes/works taken up under DDP relate to afforestation and pasture development, minor irrigation, soil and moisture conservation, animal husbandry and fodder development. The activities covered under different sectoral heads are given in the following paragraphs.

Afforestation and Pasture Development

7.6. The main problem in Gujarat is the advancement of desert due to depletion of vegetation cover over the years. For arresting desertification

and ingress salinity of the soil, afforestation which includes plantation, shelter belts and grassland or pasture development is of utmost importance. The physical progress under main activities of afforestation for the period before the Sixth Plan, Sixth Plan and for the first three year period of the Seventh Plan alongwith their respective targets and percentage achievements has been given at Appendix IV-A. 7.1.

(i) Plantation

7.7. An area of 21,075 hectares was covered under plantation since the inception of the programme ~~and~~ till 1987-88. This was a little more than the targetted area. About 60 per cent of the total achievement was during the Sixth Plan (1980-85). There was some shortfall in the achievement during 1985-88. The State Forest Department has identified the salt resistant 'Shivari plants', 'Subabul', 'Israeli Babul', 'Gulmohar', etc., as suitable species for plantation in the area.

(ii) Shelter Belts

7.8. The total area covered under shelter belts upto 1987-88 was only 460 Row Kilometers (RKms) as against the targetted area of 1719 Rkms which was only 27 per cent achievement. It appears that this scheme was taken up seriously only during 1977-80 because according to the available figures as against the target of 330 RKms, 310 RKms of shelter belts (94%) were carried out. About 68 per cent of the total progress was achieved during this period. For the Sixth Plan period, the achievement was only 150 Rkms(11%) against the

target of 1389 RKas. This scheme was, however, not taken up during the first three years of the Seventh Plan. All this shows that provision of shelter belts was not given due importance in the programme. The Central Arid Zone Research Institute had also suggested shelter belt plantation along the borders of Little Rann and the Greater Rann of Kutch to serve as barriers against the strong winds during the summer that carried saline dust particles. The area is quite vast (approximately 200 kms in length). However, very little progress has been made in covering this area by shelter belts.

(iii) Grass Land Development

7.9. The figures show that like shelter belt plantation, the grassland development scheme had also remained popular under the programme only in its initial period. The target of 1300 Hects. for 1977-80 was achieved in full. For 1980-85 there was an impressive target of 4350 Hects, but the achievement was very poor with only 603 Hects. (14%). This scheme was also not taken up during 1985-88. Thus, of the total achievement of 1903 hectares for grass land development, 68 per cent was achieved during 1977-80 and the balance of 32 per cent during 1980-85.

District Level

7.10. Of the two districts covered under the programme in Gujarat, Banaskantha was selected for the study and the physical achievements of the main activities covered under Forestry sector for the period during 1977-88 are given in the following table:

(Table 7.1 on next page)

Table 7.1 : Progress of Activities under Forestry in Banaskantha

Activity	Unit	For the period 1977-88	
		Target	Achievement
1	2	3	4
Plantation	Hects.	NA	11,010
Shelter Belts	RKms.	400	400 (100.0)
Grass Land Development	Hects.	1210	1205 (99.6)

Note : Figures in brackets are percentages

7.11. Of the total plantation of 11,010 hectares in Banaskantha district during 1977-88, half of it was planted during the Sixth Plan period and over one-third during 1977-80. While no target seemed to have been fixed during 1977-80 period, the achievement for 1980-85 far exceeded the target(175%). For 1985-88, the achievement was 94 per cent of the target. Considering the total State progress which was reported as 21,075 hectares under DDP for two districts, the share of Banaskantha was more than half.

7.12. Regarding shelter belts, the achievement for the total period was 400 Rkms and was the same as the target. Of this, about 15 per cent was achieved during 1977-80 and the remaining during 1980-85. This 400 RKms. is against the total of 460 RKms. for the State as a whole.

7.13. The area covered under grass land and pasture development was 1205 hect. for the district. Of this,

83 per cent was achieved during 1977-80 and the balance of 17 per cent during 1980-85. This activity was undertaken during the Seventh Plan.

Observations

(1) As a result of increase in human and animal population over the decade, the increasing dependence on vegetation has caused its depletion. Severe drought conditions for three consecutive years (1985-88) have further accentuated the degradation of the limited vegetative cover.

(2) The fuel need of the rural people has been increasing, but the success in the fuel wood plantation has not been significant except in some pockets. It was noted that the number of villages covered under fuel wood plantation in Gochar lands has been much less compared to the potential.

(3) The three forest nurseries in Banaskantha do not have adequate supply of seedlings. These are hardly sufficient for Government plantations and as such fail to mobilise and involve local people in plantation work.

(4) It was noted that Gujarat State Rural Development Corporation had propagated some varieties that have multi-purpose uses as fodder, fuel wood and wind breakers, but their use has not been significant.

(5) No systematic arrangements were noticed for monitoring the process of desertification/deforestation except the usual regulatory measures adopted by the Forest Department in the reserve forest areas.

Water Resources Development

7.14. The role of water resource development and water management is no less important in arresting desertification in such areas because the success of core sectors, like, forestry and plantation, agriculture and animal husbandry (including dairy development, pasture, and fodder development) more or less depends on the availability of water. The scanty rainfall, frequent drought conditions, and the river remaining dry, except in rainy season, made the position very difficult in the DDP areas. In view of these conditions it is considered important to make earnest efforts in harnessing the existing water potential of DDP areas by creating new potential year after year and maintaining the existing percolation tanks, adbundhs, check dams, etc.

7.15. It was reported that exploitation of ground water by digging deeper tube wells has a large scope in these areas, but because of exorbitant cost, it was limited to the government works only. At times the depth of tubewells exceed 1000 metres because of salinity 'C' and sodium - 'S' in the ground water upto a certain depth. It was also mentioned that once the tubewell is beyond the usual levels, it becomes necessary to install submersible pumpsets to draw water to the ground and thus the whole operation becomes very expensive and beyond the reach of individual farmers. The cost reaches several lakhs of rupees.

7.16. Gujarat Water Resources Development Corporation (GWRDC) which is responsible for taking up

surveys for the assessment of ground water potential completed micro-level ground water investigation in areas of Banaskantha and Mehsana districts and the findings are below:

	Banaskantha	Mehsana
1. Utilisation recharge (MCM/Year)	665.44	85.42
2. Net draft (MCM/year)	196.04	6.34
3. Balance available (MCM/year)	469.40	79.08
4. Level of Development (i.e. % of 2 to 1)	29.46	7.42

(MCM = Million cubic metres)

7.17. The above table indicates that while the utilisation of the available ground water in Banaskantha area was about 30 per cent it was less than 8 per cent in Mehsana. In fact, there is a good scope for exploiting the ground water resources in DDP areas in both the districts.

Physical Achievements

7.18. The irrigation sources provided in DDP areas of the two districts in Gujarat during different periods of the programme and the potential created are given in the following table:

(table on next page)

Table 7.2 : Irrigation Sources Provided under DDP and Potential Created

District	Source	1977-80 (Nos.)	1980-85 (Nos.)	1985-88 (Nos.)	Total upto 1987-88 (Nos.)	Poten- tial creat- ed (hects.)
1	2	3	4	5	6	7
Banaskantha	M.I. Tank	1	1	-	2	152
	Percolation Tank	9	-	-	9	NA
	Lift Irrigation	-	4	-	4	453
Mehsana	Percolation tank	-	-	7	7	150
	Tubewells	-	-	7	7	350
Total		10	5	14	29	1105

7.19. The above table shows that in Banaskantha district 2 minor irrigation tanks, 9 percolation tanks, and 4 lift irrigation works were completed under the programme till the end of 1987-88. The 2 minor irrigation tanks and 4 lift irrigation works have created irrigation potential of 152 and 453 hectares respectively. The irrigation potential created in respect of Percolation tanks was not available. It was pointed out that the percolation tanks, check dams and adbundhs are expected to raise the water level in the wells within a radius of 800 metres of each of these

works. Adbundhs are also expected to reclaim land affected with salinity. However, it was reported that the above work did not show significant increase in area irrigated during 1985-88, being drought years. As regards Mehsana district, 7 percolation tanks and tubewells were constructed during the three year period of the Seventh Plan and created irrigation potential of 150 and 350 hectares respectively. However, due to continuous drought, the area actually irrigated by these two sources was as low as 20 and 70 hectares respectively.

7.20. The total irrigation potential thus created as a result of various irrigation schemes under the programme in the DDP areas of Gujarat during 1977-88 was 1105 hectares. This, however, did not include the potential for percolation tanks in Banaskantha area which was not available. The achievement was against the target of 1790 hectares.

7.21. Besides the activities undertaken under water resources development and water conservation given in the table above, water harvesting structure is another important activity under this sector. According to the available information, against the target of 73, 100 such structures were constructed during the period 1980-81 to 1987-88 in the DDP area. The achievement was 137 per cent of the target fixed.

Observations

(1) Based on discussion with the State officials, local leaders and some knowledgeable persons it was felt that efforts made in creating new irrigation potential and harnessing of surface water in the DDP areas were only marginal. In fact, much more could have been done considering the available resources.

(2) It was also revealed that no studies on seepage losses, evaporation losses, etc., were carried out either by any Government Agency or by the Gujarat Agricultural University. For proper utilisation of water and for moisture conservation no management study had been carried out either.

Agriculture including Soil Conservation

7.22. Because of salinity in the soil and ground water, scanty rainfall and frequent drought conditions the general condition of agriculture in the DDP areas of Gujarat has been marginal to sub-marginal. The yield rates of the conventional crops, like, Bajra, Jowar, Wheat, etc., have been very low. However, even with this adverse situation the principal occupation of the people in general has remained agriculture. They do cultivate their marginal and submarginal lands with a hope to produce some grains for their self-consumption and fodder for animals.

7.23. The activities taken up under this sector related mainly to soil conservation. Soil surveys and area treated under soil conservation were the two activities taken up under the programme. As can be seen

from Appendix IV-A.7.1, in the DDP areas, a total of 286 thousand hectares was covered under soil surveys till 1987-88. This was 87 per cent of the target. No progress was reported for the period before the Sixth Plan. During the Sixth Plan period the soil surveys covered 100 thousand hectares (35%), whereas during 1985-88, 186 thousand hectares (65% of the total) were covered. The achievements in relation to targets fixed during 1980-85 and 1985-88 were 75 per cent and 95 per cent respectively.

7.24. As regards area treated under soil conservation it was 1701 hectares till 1987-88 which constituted 72 per cent of the targetted area. The achievement in relation to the target during the Sixth Plan period was as high as 79 per cent, whereas for the Seventh Plan it was only 66 per cent. Most of the above achievements related to Banaskantha district alone. The progress in the other district was negligible. In Banaskantha district contour bunding on 932 hectares and terracing on 694 hectares of land were also reported.

7.25. The efforts of Agriculture Department, have been in the form of distribution of mini-kits of high yielding varieties. Their contribution in agriculture extension and training was only marginal. It was observed that the research activities conducted by the Gujarat Agriculture University in Banaskantha were quite impressive.

7.26. It was reported that Banaskantha is a deficient district as far as food production is concerned. Moreover, the drought conditions that prevailed consecutively for three years - 1985-86 to 1987-88 made the position still worse. In 1987-88 all rainfed crops failed. It was mentioned that during 1986-87 and 1987-88, substantial quantity of foodgrains (72% and 83% respectively of the total requirement) was brought from outside by the Food Corporation of India and distributed through fair price shops.

7.27. It was observed that poor farmers of the area were not able to undertake soil conservation measures on their own in the absence of loan and subsidy facility. In this connection, however, it was suggested that Gujarat Land Development Corporation may take up soil conservation measures on private lands from the State Government funds and DDP funds would be used for such works on Government lands.

7.28. It was noted that some varieties of Ber (Plum) and other fruit bearing plants were developed by the Gujarat Agriculture University which could sustain the agro-climatic conditions of the DDP areas of this region, but surprisingly the State Horticulture Department did not have any programme for this area. There is a good scope for horticulture development in Banaskantha district, which may provide some income and employment to the hard affected local people.

Animal Husbandry and Dairy Farming

7.29. The principal occupation of most of the people in DDP areas has been, no doubt, agriculture but in fact they largely depend on animal husbandry for their livelihood. For small and marginal farmers and agricultural labourers in particular, animal husbandry assumed greater importance and proved to be more dependable occupation. For many of those, who mainly depend on cattle, goats, sheep and camel, their income is generally assured. Camel is a reliable desert animal which has been serving the multifarious needs of the people in the area with minimum consumption of water and consuming odd varieties of vegetable matter available. Kankaraj cows, Vadhiari bullocks and Mehsana breed buffaloes are the popular breeds in the region. Milk Cooperatives have been organised in the area and their milk and milk products are sold not only in Gujarat but throughout the country. Marvadi and Patanvadi breeds of sheep quite popular in the area (including DDP areas) produce a significant quantity of wool. There is a Sheep and Wool Development Corporation run by the Government of Gujarat as well.

7.30. The main problems of this sector are lack of adequate drinking water for animals, fodder by way of fodder cultivation and grazing land and inadequate health care for animals.

7.31. The main activities taken up under the programme were setting up of sheep breeding/rearing Cooperative Societies and fodder development farms. Other activities related to items, like, camel and goat

breeding and animal care in general. The achievements in relation to targets fixed are given at Appendix IV-A.7.1 which shows that under the programme 43 new sheep breeding/rearing cooperative societies were set up during 1985-88 achieving cent per cent targets. As regards setting up of fodder development farms, against the target of 59 for the total period upto 1987-88, the achievement was 57. Of these, however, 41 (72%) were set up during the Sixth Plan period.

7.32. In the selected Banaskantha district, animal husbandry occupied second place after afforestation. The activities undertaken under Animal Husbandry sector and their achievements as available for the Sixth Plan period are given in the following table :

Table 7.3 : Activities Undertaken and their Achievements in Banaskantha District during Sixth Plan Period.

Item of work/schemes	Unit	Total Achievement (1980-85)
1	2	3
Sheep breeding(Extension Centre started)	Nos.	42
Artificial insemination done	Nos.	12,271
Drenching	Nos.	3,50,692
Animal vaccinated	Nos.	4,54,671
Wool procured/purchased	Kgs.	26,087

7.33. Other activities taken up in the district included establishment of 5 fodder farms through Gujarat State Rural Development Corporation(GSRDC) in 235

hectares, one Kankraj Pramium Bull Centre and Frozen Semen Centre.

7.34. As regards development of fodder in the areas, fodder farms maintained by Gujarat State Rural Development Corporation is the main source of fodder since it is very difficult for individual farmers to grow fodder for cattle due to salinity and desert conditions. The Gujarat Agriculture University has developed 'Gajraj' fodder which is, however, confined only to research farms so far and needs to be propagated for adoption by the farmers of the area.

HARYANA

7.35. The Desert Development Programme in Haryana was started at the end of 1977-78. It covered 26 blocks of four districts, viz., Bhiwani (7), Hissar (10), part of Rohtak (5) and Sirsa (4). There has been no change in the area coverage under DDP since its inception. The main thrust of the programme was on arresting desertification through activities which could restore ecological balance. The following activities were given priority:

- (1) Afforestation (with special emphasis on shelter belts), grass land development and sand dune stabilisation;
- (2) Development of agriculture with emphasis on soil conservation measures;
- (3) Animal husbandry and dairying;
- (4) Irrigation works; and
- (5) Rural electrification (energisation of tube wells/pumpsets).

7.36. The state level physical achievements in relation to targets for important activities under key sectors for different periods have been given at Appendix IV-A.7.2.

Afforestation

7.37. The State Forest Department had prepared various schemes under DDP keeping in view the availability of areas, requirement of fuelwood fodder and small timber of the local people. Under afforestation, schemes regarding plantation, shelter belts, sand dune stabilisation, and pasture development had been taken up. It was mentioned that success of all schemes under forestry sector depended upon rainfall and number of rainy days in a year. In a good rainy season, the survival rate of plants may be more than 75 per cent while during a bad one it may not reach even 50 per cent. The quick growing trees identified for plantation and shelter belts under DDP in the State were *Acacia Tortilis*, *Acacia Nilotica* (Desi Keekar) and *Prosopis Juliflora*. While *Acacia Tortilis* was normally planted in sandy areas, *Acacia Nilotica* was planted where water was available. *Eucalyptus*, *Sheesham* and *Neem* were also planted in some areas. For sand-dune stabilisation, *Sacrumunja* (Sarkanda) alongwith *Acacia Tortilis* were generally planted. The physical achievements in relation to targets, since inception upto March 1988, are given in the following table that follows:

(Table on next page)

Table 7.4 : Targets and Achievements for different Activities under Forestry Sector during 1977-88

Item/Activity	Unit	Target	Achievement	%age achievement
1	2	3	4	5
Plantation	Hects.	15,553	13,816	88.8
Shelter belts	R.Kms.	32,899	34,620	105.2
Sand dune Stabilisation	Hects.	5,030	4,790	95.2
Nursery	Plants (in lakhs)	347	311	89.6
Pasture Development	Hects.	1,353	685	50.6

7.38 As the above table indicates, except pasture development where the achievement was only 51 per cent, the results were quite satisfactory for all other activities. For shelter belts and sand dune schemes, however, the maximum coverage was reported during the Sixth Plan period which accounted for 77 per cent and 78 per cent of the total achievement respectively. In both the selected districts, viz., Hissar and Rohtak the plantation started from the very inception of the programme. It was reported that all degraded lands were to be treated under this scheme, but the land must be of the Government/institution or it should be community land.

7.39. The important activities covered under this sector in the two selected districts were plantation, shelter belts and sand dune stabilisation. The targets and physical achievements relating to these activities

in the two districts for the period 1977-88 are given in the following table:

Table 7.5: Performance Under Forestry Sector in the Selected Districts during 1977-88.

Item/ Activity	Unit	HISSAR			ROHTAK		
		Target	Achievement	%age achievement	Target	Achievement	%age achievement
1	2	3	4	5	6	7	8
Plantation	Hects.	4,575	4,382	95.8	3,281	2,793	85.1
Shelter belts	R.Kms.	13,700	14,225	103.8	6,110	6,467	105.8
Sand dune stabilisation	Hects.	945	793	83.9	115	85	73.9

Plantation

7.40. As the above table indicates, substantial area was covered under plantation in the two districts and the main plant used was 'Acacia Tortilis'. The achievements as against the targets were also satisfactory being 96 per cent and 85 per cent. In the case of Hissar, 40 per cent of the total achievement was during the Sixth Plan and 36 per cent was before it. The remaining 24 per cent was covered during 1985-88. In Rohtak district, however, most of the work was done during Sixth and Seventh Plan periods.

Shelter Belts

7.41. In both the districts the achievements under shelter belts exceeded the targets. In Hissar district, three - fourths of the total work was covered during the Sixth Plan, the rest was achieved during 1977-80. The work during 1985-88 was negligible. In Rohtak, over 90

per cent of the total work was carried out during 1980-85. No progress was reported after this period.

Sand-dunea atabilisation

7.42. The problem of sand-dunes is not so serious in Haryana as it is in Rajasthan. In Hissar district, an area of 793 hectares was stabilized which was 84 per cent of the targetted area. Of the total area stabilized, 57 per cent was covered during 1977-80 and the balance during 1980-85. In Rohtak district this problem may be in a mild form and 85 hectares of area under sand dunes was stabilized, which was 74 per cent of the targetted area. This was done during 1977-85. For sand dune stabilisation, generally sacrumunja(Sarkanda) alongwith acacia tortilis is planted.

Some problems of implementation

7.43. The officers of the Forest Department implementing the afforestation schemes under DDP mentioned some problems which came in the way of smooth implementation and progress of work.

- (1) As almost the entire plantation under DDP in the State is community plantation, it was becoming increasingly difficult to carry out this work because sufficient community land was not available.
- (2) The resolutions passed by the Panchayats allowing community lands for plantation have a condition that grazing would be allowed in such areas. Because of unrestricted grazing, the young plants suffer heavy

casualty. Forest Act is not applicable to Panchayat areas.

- (3) In the absence of sufficient manpower with the Department for plantation work, it was difficult to achieve the targets. It was strongly felt by the officials that contract labour may be allowed for the programme for achieving higher progress.
- (4) Individual areas are not allowed to be taken up for plantation under DDP. This may be allowed to give a boost to plantation work.
- (5) Sufficient funds are not available under the programme for barbed wire fencing of sensitive areas and water resource development at the plantation site.

Observations

- (1) It was observed that plantation done along roads, canals and railway tracks acted as shelter belts and wind breakers. The relative humidity of the area had gone up and moisture conservation in the soil has improved. This helped in stabilising the sand dunes.
- (2) Acacia Tortilis is a good tree for the desert area and is also good for fuelwood, but its thorns are very hard and sharp which created problems for the people and their animals. People of the area wanted plantation of this tree to be stopped and replaced by some other variety which could also be used as timber.

- (3) On maturity, the community plantation is auctioned to the highest bidder who is generally an outsider. Under this arrangement, the local village people are not benefited. For providing benefit to the local people and to encourage their involvement in the programme, it would be better if about 50 per cent of the fuelwood is sold to the people of the Panchayat area at concessional rates and the balance is auctioned.
- (4) A lot of machinery, like, tractor, water tankers, ploughs, etc., purchased under DDP were lying idle and waiting to be written off.

Irrigation

7.44 A number of activities were undertaken in the districts covered under the programme during different periods in Haryana which have been given at Appendix IV-A. 7.2. However, the achievements for some of them for the total period are given in the following table:

Table 7.6 : Targets and Achievements for Different Activities upto 1987-88

Item/Activity	Unit	Target	Achievement	%age achievement
1	2	3	4	5
Energisation of Tubewells/Pumpsets	Nos.	788	552	70.1
Digging of Ponds/Tanks	Nos.	118	212	179.7
Burma Pumping Sets	Nos.	100	26	26.0
Sprinkler Sets	Nos.	76	15	19.7

7.45. Installation/energisation of tubewells and pumpsets was an important activity and the achievement during this period was 552 against the target of 788. Of this, nearly two-thirds was achieved during the Sixth Plan and the remaining during the Seventh Plan period. The other activity was digging and deepening of ponds and tanks which was taken up only during the Seventh Plan. These were mainly to provide water to people and animals during drought periods, though used for irrigation also. The number covered was 212 showing 180 per cent achievement. During the same period, 26 Burma pumping sets were also installed. In addition to these, 15 sprinkler sets were also put up, which though popular and useful, were not allowed under the programme later.

7.46. The information in respect of irrigation has not been compiled. The officials were pinning all their hopes on the completion of Satluj Yamuna Lower Canal(SYLC) and thought that the entire picture of the area would change once the canal became operational.

7.47. No water management study as such was taken up in the State, but some research was being carried out by the Haryana Agriculture University in collaboration with the State Government. However, no details were available. There was some arrangement for ground water surveys and the data was being updated regularly. One Hydrologist was posted in each district. All this work was being done under the State sector scheme.

7.48. In both the selected districts, namely, Hissar and Rohtak, it was observed that not much work

was done under irrigation. In Hissar, although areas were being served with canal irrigation, but in absence of proper water carrier system the desired benefits were not reaching the farmers. There were still many areas where shift arrangements and katcha surface channels were made by the farmers on their own. This has resulted in loss of scarce and precious water. In Hissar they were planning to have some schemes for constructing pucca surface channels for areas where seepage losses were observed. In Rohtak district, it was reported that underground water, because of its sodic nature, was not fit for irrigation in most of the areas as it spoiled the structure and fertility of the soil. The deep tubewells were successful at many places, but due to the high installation cost, the individual farmers could not afford to install them. However, 20 deep tubewells were installed under DDP on Panchayat lands during 1987-88 in Rohtak district. Laying out of 16 underground water pipelines in Rohtak district was also reported.

Observations

- (1) There was a good demand for the installation of sprinklers in the area and there was a great resentment that these had become ineligible under DDP. It was pointed out that there was no wastage of water under the system and it was very successful in Mohendergarh district of the State which was covered under DPAP.
- (2) It was reported that construction of old 'Kutchha' surface channels was allowed under the programme but these did not serve

purpose due to seepage losses. It was strongly felt by the officials that lining of surface channels should be made an eligible scheme under DDP so that the irrigation potential could be properly utilised.

Agriculture

7.49. In the initial stages of the programme, the schemes covered under Agriculture sector included the supply of agriculture implements, subsidy on fertilisers, laying out of demonstration plots, etc. These were the schemes of the Agriculture department which were passed on to DDP in the absence of proper guidelines. The scheme of dryland farming was, however, included from the beginning. The following table gives various activities covered under this sector with targets and achievements for the period 1977 to 1988.

Table 7.7: Activities under Agriculture Sector in DDP Areas During 1977-88

Item/Activity	Unit	Target	Achievement	%age Achievement
1	2	3	4	5
Supply of Agrl. Implements	Nos.	1020	333	32.6
Subsidy on Fertilisers	Nos.	10500	1815	17.3
Demonstration Plots	Nos.	2759	2019	73.2
Dry Land Farming	No. of Plots	3731	3028	81.2
Land Levelling & Development	Hects.	1760	1180	67.1
Soil Survey	Hects.	42000	14479	34.5
Soil Testing Laboratory	Nos.	3	3	100.0

7.50. The first two schemes in the above table were covered under DDP only upto the Sixth Plan. Since emphasis was on soil conservation and land development measures, the scheme of land levelling was started during the Sixth Plan and upto 1987-88, 1180 hectares of land or 67 per cent of the target was covered. For dryland farming also, the achievement was good as the number of plots covered was 3028 with 81 per cent achievement. The scheme of Demonstration Plots for the benefits of farmers was there from the beginning of DDP. The overall achievement in relation to target was 73 per cent. The other activities were soil surveys on 14.5 thousand hectares and the establishment of three soil testing laboratories covered under DDP during the Sixth Plan. In addition to these, for the development of fodder crops, 200 plots during Sixth Plan and 228 during the Seventh Plan were laid out in DDP districts.

Table 7.8: Physical Targets and Achievements of Agriculture activities during 1977-88 in Selected Districts

Item/ Activity	Unit	Hissar District			Rohtak District		
		T	A	%	T	A	%
1	2	3	4	5	6	7	8
Supply of Agrl. implements	Nos.	100	40	40.0	1250	256	20.5
Subsidy on fertilisers	Nos.	3000	2000	66.7	3000	3150	105.0
Demonstration Plots	Hects.	-	-	-	712	616	86.5
Dry land farming	Hects.	-	-	-	150	110	73.3
Land levelling & development	Hects.	-	-	-	40	30	75.0
Soil Survey	Hects.	260	260	100.0	-	-	-
T - Targets		A-Achievements					

7.51. Soil survey activity was not reported from Rohtak district, while dryland farming, laying out of demonstration plots and land levelling activities were not reported from Hissar district.

7.52. In Hissar district one Mother Orchard-cum-Nursery was established under DDP on Panchayat land of Village Mayar. The nursery is also having other programmes like bee-keeping, mushroom cultivation, etc., in addition to raising of fruit plants. It was reported that the Mother plant required 4-5 year period to attain the age, when it became ready for providing bud-wood or grafting material.

7.53. For laying out demonstration plots, inputs were provided to the farmers and the maximum subsidy limit was Rs.200/- per acre. This limit, however, was too low for some crops. One Fruit and Vegetable Nursery was also established at Bahadurgarh in Rohtak district during the Sixth Plan. It was revealed during discussion with officials that soil conservation and land development measures had helped in increasing agriculture production. The Panchayats whose lands were developed under DDP were getting good income.

Animal Husbandry and Dairy Development

7.54. With the increase in population, the size of land holdings has come down significantly. Now majority of the farmers belong to small and marginal category. In the absence of any industries and adequate income from agriculture, rural people have to depend on animal husbandry and dairying for supplementing their income. Considering the needs of the people, a

number of schemes/activities were taken up in Har under DDP. The following table gives some important activities covered under the programme in the state, targets and achievements for the period 1977 to 1988.

Table 7.9: Targets and Achievements of Different Activities for the period 1977-88

Item/Activity	Unit	Target	Achievement	Percentage Achievement
1	2	3	4	5
Bull Farm- cum- Semen Bank	Nos.	2	1	50.0
Liquid Nitrogen Plant	Nos.	2	2	100.0
Wool Extn. Centres	Nos.	3	2	66.7
Broiler & Hatcheries	Nos.	2	2	100.0
Milk Collection Centres/Coop.	Nos.	641	464	72.4
Supply of milch Animals	Nos.	1850	1060	57.3
Milk Chilling Plants	Nos.	3	1	33.3
Piggery Extn. Centres	Nos.	NA	10	-

7.55. Most of the activities given in the above table were covered during the Sixth Plan and before. Only the Liquid Nitrogen Plants, Broiler Hatcheries (Poultry) and Piggery Extension Centres were set up during the Seventh Plan. 1060 milch animals were supplied to village people in different districts covered under the programme. For dairy development, milk collection centres/cooperative societies were

up and of these, two thirds were set up during 1977-80 and the balance during the Sixth Plan. Most of these institutions, which were set up with DDP funds have now been transferred to the State sector.

7.56. In both the selected districts, Hissar and Rohtak, enough was done to improve the breed of local cattle through different infrastructural development activities. In Hissar, one Bull farm-cum-semen Bank, Mobile Veterinary Units, Sheep Breeding Extension Centre and a Broiler-cum-Hatchery Project were set up under DDP. For dairy development a number of milk collection Centres were started. It was reported that under cross breeding programme, 618 rams of very high quality were purchased under DDP. Under Broiler Project, besides supplying one-day old chicks at subsidised rates to poultry farmers, training on different aspects of poultry farming was also imparted.

7.57. In Rohtak district also, similar activities were taken up. For improving the breed of local cattle a Bull Farm was established, where Jersey bulls are kept for better quality semen. There was arrangement for liquid Nitrogen as well. Two Piggery Extension Centres were set up during the Sixth Plan, of which one was closed after sometime and the other was transferred to the State Animal Husbandry Department. The Poultry Hatchery Project which was set up with DDP funds during the Seventh Plan has also been transferred to the Department. Some sheep breeding extension centres for improving the breed of sheep and consequent improvement in the quality of wool and a number of sheep breeders

cooperative societies were set up. Between 1977-85, 473 milch cattle were supplied and 115 milk collection centres were set up.

RAJASTHAN

7.58. In order to arrest the process of desertification leading to improvement in the ecological balance and to raise the standard of living of the people through increase in their income, different schemes/activities were undertaken under the programme. The details of important schemes taken up under different sectors with targets and achievements are given in the following paragraphs.

Afforestation and Pasture Development

7.59. The various schemes taken up in Rajasthan under Afforestation and Pasture Development were: Shelter belt plantation; Rehabilitation of degraded forests; Village fuelwood and fodder plantation; Farm Forestry; Sand dune stabilisation; Pasture Development; and Establishment of Nurseries. The progress of some important schemes under this sector, like, shelter belt plantation, sand dune stabilisation, Plantation and Pasture development has been discussed here. Their physical targets and achievements over the period are given at Appendix IV- A. 7.3

Shelter Belt Plantation

7.60. Under Shelter belt plantation, road-side trees are planted in rows on both sides of the roads. These trees provide not only roadside avenues but also check soil erosion by winds and help in improving the ecology. The number of rows to be planted depends on

the availability of plantation sites. Generally, 3 to 5 rows are planted on either side of the road. It was noted that maximum work was done under this scheme during the Sixth Plan period. As against the target of 4,943 kms. for the State, as many as 8,858 kms. (179%) of shelter belts have been covered under plantation. Before the Sixth Plan period 1,00 kms. (92%) of shelter belt against the target of 1,200 kms. were achieved. During the first three years of Seventh Plan, shelter belt plantation of 5,596 kms (102%) was achieved as against the target of 5,838 kms.

Sand Dune Stabilisation

7.61 For stabilising sand dunes, plants and grasses are grown. The growth of trees and grasses check their shifting and spreading to other areas. The plants of quick growing species like 'phog' are sown with advantage. According to the figures given at Appendix IV-A. 7.3, since the inception of the programme till 1987-88, 16,219 hectares of area under sand dunes was stabilized in the DDP areas in the State. Out of this as much as 7,487 hectares area (46%) was stabilized during the first 3 years of the Seventh Plan. It was reported that if the planted trees and the grown grasses on the sand dunes were maintained permanently, these could definitely help in arresting desertification of the area.

Plantation

7.62. The Forest Department established departmental nurseries for distribution of plants free of cost to the individual farmers for planting them on their fields. The Forest Department also provides

technical know-how. Plants are also planted to provide fuel wood to the rural people and fodder for animals. The scheme is implemented on Panchayat Samiti's lands for a period of five years and thereafter it is handed over to the Panchayat Samiti's for their maintenance. It was mentioned that such plants still needed care and Panchayats were not able to maintain them. It was, therefore, suggested that such plantations may be transferred to Panchayat Samiti's only after about seven years when much after care was not needed.

7.63 During the period 1977-88 plantation was done on 62,138 hectares as against the target of 64,269 hectares (96.7%). Of the total plantation carried out under DDP, the achievement was the maximum at 29,821 hectares during the Sixth Plan (48%). This was followed by 27,317 hectares (44%) during the first three years of the Seventh Plan and 5,000 hectares (8%) for the initial period of 1977-80.

Pasture Development

7.64. Under the scheme, grass seeds/plants of suitable varieties were sown/planted on pasture lands to provide grazing facilities and fodder to the livestock. Fencing was also done to protect the area from open grazing. It was reported that Sheep pasture plots of the total size of about 100 hectares were handed over by the Sheep and Wool Department of the Forest Department for development. For the development of pastures, grass seeds were sown and leaf fodder species of trees like Eer and Khejri were planted. Various schemes, like, silvi plantation, re-afforestation of degraded forests,

village fuelwood and fodder plantation, etc. were also implemented under DDP in the State in order to develop pastures and grass lands in the arid regions.

7.65 During the course of study it was noted that in all the selected districts more or less the same schemes were implemented under afforestation and pasture development sector. The physical achievements in relation to targets for important schemes in the selected districts for the period 1977 to 1988 are given below:

Table 7.10: Performance Under Afforestation in Selected Districts during 1977-1988

Name of the Scheme	Unit	Selected Districts			
		Barmer	Jaisalmer	Jhunjhunu	Jodhpur
1	2	3	4	5	6
Plantation	Hects.T	NA	6545	4361	6376
	A	3719 (NR)	4607 (70.4)	3063 (70.2)	4817 (75.6)
Shelter Belts	Kms. T	NA	897	919	974
	A	786 (NR)	748 (83.4)	593 (64.5)	450 (46.2)
Sand Dune Stabilisation	Hects.T	NA	NA	Not taken up in the district	710
	A	2155 (NR)	4021 (NR)		378 (53.2)
Farm Forestry Plants in '000'	T	NA	NA	-	1413
	A	745 (NR)	2100 (NR)	- (-)	449 (31.8)
T - Target		A - Achievement			
Figures in brackets are percentages.					

7.66. Besides the above schemes some other schemes, such as: silvi-pastoral plantation, rural fuel wood plantation, pasture development, graded Bar (Plum)

scheme, green fodder production, etc., were also implemented in the selected districts.

Observations

7.67 Some of the observations of the evaluation team on the execution of plantation schemes in the selected districts are:

- (1) The impact of afforestation and pasture development schemes was not significant. This was primarily due to inadequate plantation, low rate of survival and poor growth. This poor impact was generally attributed by the executing agency to very low precipitation and inadequate irrigation facilities. It was, however, observed that even in some of the areas where irrigation facilities were available, afforestation work was not so successful. Thus, lack of planning and supervision were the main causes for poor results in plantation works.
- (2) There was no proper coordination between the Forest Department and the District Administration regarding selection of sites for afforestation programme.
- (3) For the community plantation works, village people were not consulted about the choice of species to be planted in any area. The purpose of forestry programme, especially relating to community plantation in these areas, is not only to improve environment but also to provide fuel wood and fodder in the

area. It will be difficult to achieve this social purpose without involving local people.

- (4) It was strongly felt by officers dealing with plantation works that considering the acute arid conditions in Rajasthan, provision of funds for a period of 5 years for any plantation was inadequate. It was suggested that provision of funds for maintenance of plants should be increased from three to at least five years. However, there were some officers who felt that it was not the increase in the maintenance period but better supervision and after care that were more necessary to improve the situation.

- (5) It was revealing to note that, of the total geographical area of these 11 districts covered under DDP, one-third of the area with different agencies was such that could be covered under afforestation/plantation schemes. Of this area, while only 7 per cent was with the Forest Department, 15 per cent with the Revenue Department, 13 per cent with Panchayats and as much as 65 per cent, in the form of cultivable waste, with individuals. This programme, they felt, can make a big dent if such lands with individuals could be developed with proper incentives to them, keeping their rights intact. According to the information supplied, the percentage of such lands with

individuals was as high as 86 per cent in Jaisselmer and 43 per cent in Barmer which were two of the four selected districts for the study.

- (6) Engagemant of contractors for plantation work was not allowed under DDP, but it was noted that on many occasions their services were utilised for this work. This fact was not agreed to by the executing departments, although they had opined that it was very labour difficult for them to organise for plantation work, which necessitated the execution of work through contractors.

Irrigation

7.68 Under this sector various schemes were implemented under DDP to harness the existing surface water potential. These included execution of watersheds, construction of water harvesting structures and khadins. The details of activities taken up under DDP in Rajasthan during different periods for tapping the

surface water potential are given below:

Table 7.11 : Activities taken up during 1977-80 - 1985-88.

Item	Unit	1977-80	1980-85	1985-88
1	2	3	4	5
Construction of watersheds	Hects.	26,596	15,274	15,542
Water harvesting structures	Nos.	7	77	153
Construction of Khadins	Nos.	-	40	80

7.69 So far as canals are concerned, Rajasthan Canal, Indira Gandhi National Project (IGNP) is the biggest

project which has a command area of 10,000 hecets. Considering DDP districts, it has provided irrigation source to Bikanar and to a small patch called Machna Mohan Ganj in Jaisalmer. The other canals serving the area are Bhakra lower and Gang Canal (Ganganagar).

7.70 According to available figures, during 1977-80, 6,357 hectares of irrigation potential were created in DDP districts. During the Sixth plan period and first three years of the Seventh plan (1985-88) irrigation potential to the tune of 7,724 and 9,620 hectares was created respectively. However, the area actually irrigated was not available.

7.71 It was reported that detailed hydrogeological investigations in western districts of the State as part of the ground water development programme were initiated from the year 1976-77, initially under DPAP and subsequently merged with DDP, with a view to precisely delineate fresh/potable ground water potential zone, their qualitative and quantitative assessment including estimation of static and dynamic reserves. These were completed in seven districts, viz., Churu, Barmer, Pali, Jalore, Jaisalmer, Sikar and Jhunjhunu and were in progress in the remaining four, i.e., Jodhpur, Nagaur, Bikaner and SriGanganagar at the time of field investigation.

7.72 It was mentioned that on the basis of these investigations a number of regional water supply schemes, minor irrigation schemes and rural electrification schemes were formulated and many of these were already under execution.

7.73 It was observed that drip irrigation and the use of sprinklers had not been taken up under the programme, except in sporadic cases, because these improved methods of irrigation had a limited scope in the hot desert areas, besides being expensive.

7.74 In the selected districts also, construction of water harvesting structures and khadins were the main activities taken up under this sector. Except in Jodhpur and Barmer districts, energisation of tubewells and pumpsets for irrigation either did not have much scope or was not taken up under DDP. The following table gives the targets and achievements for the period 1977 to 1988.

Table 7.12 : Performance of Activities under DDP in Selected Districts(1977-1988).

Selected Districts	Irrigation Potential created		Const. of water Har-vesting Struct-ures(Nos.)		Const.of Khadins (Nos.)	
	T	A	T	A	T	A
1	2	3	4	5	6	7
Barmer	1,950	1,497 (76.8)	36	14 (38.9)	45	26 (57.8)
Jaisalmer	1,307	138 (10.6)	-	-	41	24 (58.5)
Jhunjhunu	1,118	870 (77.8)	9	8 (88.9)	-	-
Jodhpur	2,435	3,300 (135.5)	16	9 (56.3)	79	42 (53.2)

T- Target A - Achievement

Note: Figures in brackets are percentages of achievements to targets.

7.75 In Barmer district, efforts were made under DDP to conserve and exploit the surface water resources through construction of khadins, bunds, anicuts, etc., and development of watersheds. It was reported that ground water surveys were also undertaken in the district, but these revealed that water was saline and too deep to exploit it for the purpose of irrigation. According to available information, as against the target of 45, only 26 khadins were constructed (58%). The progress of water harvesting structures was also not very satisfactory as only 14 (39%), against a target of 36, were constructed. The target for the irrigation potential to be created was 1950 hectares, while the achievement was 1497 hectares (77%). During the first three years of the Seventh Plan, 13 Tube wells/pumpsets were also energised against the target of 26.

7.76 In Jaisalmer district, there is no flowing surface water. Whatever little rain is there, that is the only source of surface water which is used for irrigation through the construction of khadins. Under the system, the rain water of a particular catchment area is stored which provides moisture to the crops. Construction of khadins is the only irrigation activity under DDP. It was reported that only 24 khadins were constructed during this entire period against the target of 41. Most of these, however, were constructed during 1985-88. As against the irrigation potential target of 1307 hectares, the achievement was only 138 hectares (11%).

7.77 Desert conditions are less acute in Jhunjhunu district as compared to Jaisalmer and Barmer districts.

Under DDP only 8 water harvesting structures were constructed in the district which created an irrigation potential of 870 hectares. Energisation of tubewells/pumpsets was carried out only through State Plan budget. It was reported that under DDP 10 sprinklers were distributed in 1984-85 for irrigation purposes.

7.78 In Jodhpur district, which has about 6 per cent irrigated area, efforts were made to harness the existing surface water potential under the programme by constructing khadins. There are no perennial canals in the district and most of the irrigation is done through wells and tubewells (ground water). It was reported that till 1987-88 irrigation potential of 3,300 hectares was created and 42 khadins and 9 water harvesting structures had been constructed under the programme. Since ground water is the main source of irrigation, 340 tubewells/pumps were energised for this purpose. All this, however, was carried out during the Sixth Plan period.

7.79 The main problem reported by the officers of the irrigation Department was about the sanctioning of works. All works costing more than Rs. 5 lakh were sanctioned by the Chief Engineer (Jaipur) and they felt that the sanctioning powers of Additional Chief Engineer located at Jodhpur should be enhanced to Rs. 7 lakh which will help in early execution of the schemes.

Agriculture

7.80 The average rainfall in Rajasthan is very low being as low as 164 mm. in Jaisalmer district. In the absence of any perennial rivers, the level of ground

water is also very low and is generally not available as per the requirement. Keeping in view the climatic conditions, several agricultural programmes propagated for better yield in the DDP areas were :

- (1) Adoption of high yielding varieties and improved practices;
- (2) Dryland farming practices; and
- (3) Contour bunding and other soil and moisture conservation measures.

7.81 So far as agencies involved in the research work are concerned, there is a 2 tier system - one at the Government level and the other at the University level. As for extension work, the Department of Agriculture has its own Extension Wing with village level extension worker as its lowest field officer whose main job is to guide the farmers in adopting latest technology in agriculture and irrigational practices. It was, however, observed that the fruits of research were not reaching the farmers to the desired extent.

7.82 The physical achievements under important items of Agriculture sector for all the 11 districts covered under DDP in the State since the inception of the programme upto 1987-88 are given in table 7.13.

(Table on next page)

Table 7.13 : Table Showing Achievements under Important Items of Agriculture during (1977-88).

Item	Unit	Targets	Achievements	%age Achievement
1	2	3	4	5
Soil Survey	Hacts.	1,43,000	1,42,650	99.8
Area treated under soil conservation	Hects.	8,182	3,136	38.3
Execution of watersheds	Hects.	78,865	57,412	72.8
Analysis of water soil sample	Nos.	44,109	64,018	145.1

7.83 The above table reveals that achievements in respect of 'Analysis of water soil sample' exceeded the targets (145.1%). The achievements in respect of soil survey and construction of watersheds were also very satisfactory being 99.8 per cent and 72.8 per cent respectively. However, the 'area treated under soil conservation' had shown a very slow progress and the coverage was only 38.3 per cent of the targets.

7.84 The Plan-wise details are given at Appendix IV A.7.3. It would be seen that in respect of soil survey maximum work of 82,000 Hectares (58%) was carried out during the Sixth Plan period. The achievement with regard to area treated under soil conservation was maximum during the Seventh Plan period, whereas no work was done under the activity before the Sixth Plan. Regarding execution of watersheds, an area of 26.6 thousand hectares was covered during 1977-80. During Sixth and Seventh Plan (first 3 years) period the

achievements were 15,274 hectares(26.6%) and 15,542 hectares(27%) respectively. However, most of the watershed development was not on scientific lines.

7.85 It was observed that the soil conservation and land development measures taken up in the desert areas had helped in conserving moisture and checking of soil erosion. Due to these activities it became possible to grow one kharif crop in certain areas, where no crop could be grown earlier. In certain areas, though small, where only kharif crop was grown earlier, Rabi crop also became possible. The development of pastures in the watershed areas has also helped in restricting the wind erosion of soil.

7.86 It was pointed out by the officials that overall agriculture production had increased by about 30 per cent in the areas covered by these land development measures. This increase was, however, possible only under normal rainfall conditions. During the discussions with the cultivators, it was gathered that because of different measures taken up for improved agricultural practices, the yield had increased by about 20 to 50 per cent.

7.87 Free mini-kits of fodder crops like lucern were distributed to small and marginal farmers. Sewan is another important green as well as dry fodder crop that is being developed particularly in Jaisalmer district. This variety of fodder has been recommended by CAZRI also. It was observed during the course of the study

that though extension wing of Agriculture Department, Forest Department and Animal Husbandry Department are making all out efforts to popularise growing of fodder crops, like, lucern and sewan, the local people have yet to be convinced of the benefits of growing the varieties of fodder crops.

7.88 Activities taken up to develop agriculture and efforts made to increase the yield of different crops in the selected districts were the same as mentioned above. In Jhunjhunu district, it has been reported that there were good prospects for development of horticulture particularly ber, papaya, lemon and citrus cultivation which can be taken up on a large scale.

7.89 Several difficulties in adopting improved agricultural practices were mentioned. These included lack of irrigation facilities, high rate of illiterates amongst farmers, soil problems, sand dunes (undulating land), etc. In Jodhpur, it was observed that extension machinery of the Agriculture Department was not active and most of the farmers were still not adopting improved practices.

7.90 The physical achievements of important activities taken up under Agriculture in all the four selected districts of the State from 1977-88 are given in table 7.14.

(Table on next page)

Table 7.15: Physical Performance of Some Activities in DDP districts of Rajasthan during the period 1977-87 to 1987-88.

Item	Unit	Targets	Achievements	%age achievements
1	2	3	4	5
New veterinary disp./centres set up	Nos.	208	208	100.0
New milk collection centres/coop. societies set up.	Nos.	1091	902	82.7
New sheep breeding/rearing coop. societies set up.	Nos.	204	137	67.2
Artificial insemination centres set up.	Nos.	25	24	96.0
Sheep breeders training centres set up.	Nos.	3	3	100.0
SFDA type facilities (distribution of sheep, goat, milch cattle, etc.)	Nos.	1977	8788	440.1
Construction of milk routes	kms.	776	400	51.5
Construction of ponds, tubewells etc. for cattle drinking water.	Nos.	1635	2148	131.4

7.94 Of the 208 veterinary dispensaries/centres set up under DDP, as many as 134(64%) were set up during the Sixth Plan period. Likewise, out of 902 milk collection centres, 641 (71%) were set up during the Sixth Plan. In the case of sheep breeding/rearing cooperative societies, all the 24 artificial insemination and the 3 sheep breeding training centres were set up before the Sixth Plan. The distribution of sheep, goats, milch

cattle, etc., was freely made upto Sixth Plan but later on withdrawn as it was not allowed under the programme. Similarly, 400 kms. of milk routes were constructed under DDP upto the Sixth Plan period. Some important activities for providing drinking water to animals, like, construction of tubewells, ponds, tanks, etc., were also taken up.

7.95 The district-wise physical achievements in the four selected districts in regard to important schemes covered under this sector are given in the following paragraphs:

7.96 It is evident from the livestock census data (refer Chapter II), among the selected districts Barmer district had the highest livestock population of 32.48 lakhs with the highest increase of over 28 per cent during the five year period. It was reported that there are improved breeds of cows, bulls, sheep and horses in this area. The popular cow breeds are Tharparkar and Kankrej. Similarly, Marwari sheeps and Malani horses of this area are popular all over the country. Animal husbandry is the main source of occupation of the people. It was reported that on an average 3,86,000 litres of milk per day and 8471 quintals of wool per annum are produced in the district. Keeping in view the importance of livestock for this area, a number of schemes/works for the development of animal husbandry and dairying were taken up under DDP in the district. Under animal health scheme, veterinary dispensaries, animal health centres, etc., and for dairy development, milk collection centres and cooperative

societies were set up. The following table gives the targets and achievements of such schemes under DDP upto 1987-88.

Table 7.16 : Performance under Animals Health and Dairy Development Schemes for the period of 1977 - 78 to 1987 - 88 in Barmer.

Item	Unit	Target	Achievement
1	2	3	4
Veterinary Dispensary/ Health Centres	Nos.	NA	21
Milk Collection Centres/ Coop. Societies set up.	Nos.	65	42(64.6)
Sheep Breeding/Rearing Coop. Societies set up.	Nos.	5	3(60.0)
Surra Control Units	Nos.	1	1(100.0)

Note: Figures in brackets are percentage achievements to targets.

7.97 As given in the above table, 21 veterinary dispensaries/health centres which included 10 dispensaries, 2 mobile units, 8 mobile sub-centres and one mobile diagnostic laboratory were set up under the programme. In addition, one Surra Control Unit was set up in 1978 under DDP to look after and control the Surra disease among camels. Besides these, 42 against the target of 65 milk collection centres/cooperative societies were set up. Three sheep breeding/Rearing Co-operative Societies were also set up under DDP during this period against the target of 5 and 220 rams against the target of 300 were also distributed.

7.98 As per 1982 Livestock Census, the total livestock population of Jaiaelmer district was 16.3 lakh which increased to 25 per cent over the population of 1977. The number of sheep and goats was 12.93 lakhs which was

over 79 per cent of the total livestock. The share of cattle and buffaloes was 16 per cent, but the increase in their number during the five year period was as high as 111 per cent. Livestock rearing and breeding are the main occupations of the rural people in the district.

7.99 Animal husbandry being the mainstay of desert people, several animal health and dairy development schemes were prepared under the programme. The following table gives the details of such schemes and their physical achievements in the district for the period 1977 to 1988.

Table 7.17 : Performance under Animal Health and Dairy Development Schemes for the Period 1977 to 1988 in Jaizelmer District.

Item	Unit	Target	Achievement
1	2	3	4
Vet.Diap./Health Centre	Nos.	23	23 (100.0)
Milk Collection Centres/ Coop. Societies set up	Nos.	87	124 (142.5)
Health Centre Buildings	Nos.	NA	11
Mobile Health Centres	Nos.	5	5 (100.0)
Surra Control Unit	Nos.	1	1 (100.0)

Note : Figures in brackets are percentage achievements.

7.100 As given in the above table, under Animal health scheme 23 veterinary dispensaries/animal health centres five mobile health centres and one surra control unit were started under DDP. It was reported that till 1987 88 total animals treated were 1.47 lakh. It was observed that in view of the large number of animal

kept with the population ratio of almost 1 man : 8 animals, these health cover facilities were not adequate. Non-availability of medicines in the health centres was also a common complaint. For dairy development, 124 milk collection centres and cooperative societies were set up during this period against the target of 87, showing an achievement of 143 per cent.

7.101 At the district level, there is a Sheep and Wool Development Officer who helps the sheep breeders with the supply of sheep and rams of improved breeds, in marketing of wool, pasture development and training. It was reported that during the Sixth Plan, training was imparted to 1546 sheep breeders while during the Seventh Plan (first three years), 661 breeders were imparted with training. In addition, 376 rams were purchased and distributed free of cost during 1985-88. The absence of regulated wool markets in the district was the main problem and as such breeders were being exploited by the private traders. The establishment of a mutton processing unit was another important requirement of the district.

7.102 Lathi series project and SFDA type facilities were other activities taken up under this sector. Under lathi series project, green fodder was produced to maintain the popular Tharparker breeds of cows in this area. Under SFDA type facilities, subsidy was given to the breeders by providing them with milch cattle, bullocks, camels, etc. There was also a proposal to have a fodder bank in Jaisalmer district under which fodder would be collected at three centres, viz.,

Austar, Palli-Digga and Nachane for meeting the fodder demand during famine conditions.

7.103 Jhunjhunu is less arid than Jaipur and Barmer districts. This had the minimum livestock population. According to the 1982 census, it had a total livestock population of 16.3 lakh showing an increase of 21 per cent over 1977 figures. The share of sheep and goat was about 65 per cent and of cattle and buffaloes 32 per cent. However, the increase during the five year census period was the highest in the case of sheep and goat being over 31 per cent.

7.104 The schemes taken up under this sector in the district were, by and large, the same as in Barmer and Jaipur districts. Sixteen new veterinary dispensaries/artificial insemination centres as against the target of 17 were set up in the district during period 1977-88. Out of these, 8 centres were being run by the Animal Husbandry Department and five by the Local Trust to improve the quality of local stock. It was reported that during 1977-88, 6715 animals (93.32%), as against the target of 6900, were artificially inseminated.

7.105 According to available reports, 25 sheep breeding and rearing cooperative societies were set up in the district during 1977-88 as against the target of 40. It was reported that this region had the best breeds of sheep and CAZRI has found out through various studies that this tract was not suitable for cross breeding and the native breeds may be preserved through selective breeding.

7.106 Pasture development is another important activity of the animal husbandry programme and for its development free seed was distributed to breeders with irrigation facilities. This scheme became very popular with them and they tried to grow green fodder in both the seasons. Some drinking water facilities for cattle were also created under DDP in the district from 1987-88 onward.

7.107 Like other desert districts, in Jodhpur also animal husbandry occupies an important place in the rural economy. According to the census of 1982, the total livestock population of the district was nearly 27 lakh as against the human population of 17 lakh (1981). As compared to other selected districts, however, the increase in number over 1977 population was not much being only 9 per cent. The number of sheep and goats was the highest with 74 per cent of the total. The share of cattle and buffaloes was 24 per cent.

7.108 The schemes taken up under this sector in Jodhpur district were the same as covered in other selected districts. Under animal health programme, 5 veterinary dispensaries and animal health centres were set up. Out of these, 3 were set up before the Sixth Plan period and 2 during the Sixth Plan Period. For dairy development, 114 milk collection centres and cooperative societies were started during the Sixth Plan as against the target of 98. In addition, 100 sheep breeding/rearing cooperative societies were set up and training programmes for over 2500 animal breeders were arranged. Besides, 20 Marino rams were also purchased for

distribution and about 605 water ponds were constructed for providing drinking water to animals.

7.109 As a resuma on the development of animal husbandry sector under DDP it can be said that under the revised guidelines, this sector has been given the lowest weightage. Most of the schemes covered upto 1987-88 are made as ineligible. Only schemes relating to fodder production, grassland and pasture development, etc., are allowed to be taken up. The important schemes on animal health and breeding, dairy development, etc., will have to be taken up by the State Governments with their own resources. The States are not very happy with the reprioritisation made by the Central Ministry. They felt that withdrawal of such important schemes was likely to give a set back to the programme.

HIMACHAL PRADESH

7.110 In Himachal Pradesh, the Desert Development Programme was started in Spiti Sub-Division of Lahaul and Spiti District in 1977-78, though the actual work was started in 1978-79. On the recommendations of the Task Force, the adjoining Pooch Sub-Division of Kinnaur district was also included under the programme from 1982-83. The DDP area in the State is characterized by cold desert climatic conditions and the annual precipitation received both in terms of snow and rainfall is very low. The soil texture is very loose and sandy which is prone to excessive erosion. The cultivation is carried out only in summer as the area remains covered with snow in winter. The working

season is limited to only six or seven months from April/May to October.

7.111 Despite various hurdles such as: rugged topography and extreme cold conditions, the Desert Development Programme had made some progress in core sectors, like; irrigation, forestry plantation, agriculture including soil conservation and animal husbandry. The progress made in terms of physical achievements in different key sectors since inception of DDP and till 1987-88 has been discussed as under:

Afforestation and Pasture Development

7.112 Under forestry plantation, it was reported that both Government and private lands were taken up, though the major activity was confined to Government lands. In majority of the cases the areas selected were near the river beds so as to provide water to the plantation with the help of surface channels (kuhls) from the Spiti river. According to the available figures, about 1209 hectares of land were covered under plantation during 1978-88. Of this, about 8 per cent was covered during 1978-80, nearly 43 per cent during the Sixth Plan and 49 per cent during the first three years of the Seventh Plan. The achievement in relation to the targets was 115 per cent for the Sixth Plan period and 83 per cent for 1985-88 period. The survival rate of plants was reported to be as high as 70 per cent in areas where water was assured, whereas in the sloppy areas the survival rate was as low as 25 per cent. During winter such 'kuhls' get washed away by the glacier and availability of water was not possible till the complete

renovation of these 'kuhls' in the following year.

7.113 The main species grown are Willow and Poplar. These are used for fodder, fuel and timber, Robania plants which were recently introduced are also good for fodder and fuel. Hypofia, which is considered as good for hedge was also grown in some places. These species though suitable to the area, reportedly took 15-20 years to mature and till that time required water. It was observed that forestry plantations developed under DDP were not yet mature enough to meet the fuel needs of the local people.

7.114 It was reported that 7 nurseries were developed covering an area of 4.5 hectares for providing saplings of different species, but these were not enough to meet the total requirement. In addition to these, substantial supplies were obtained from private and Forest Department nurseries to meet the growing demand. The average cost of a sapling grown on the DDP nurseries worked out to Rs. 1.70 and these were distributed to community and individual planters on 50 per cent subsidy.

7.115 In the area, a "tree patta" scheme for small and marginal farmers having land measuring 4 acres and less has also been included in the DDP. However, the progress was negligible as the area covered under this scheme was reported to be only 1 hectare till 1987-88.

7.116 Under DDP, pastures were developed within the afforested area as well as on barren lands. The area covered within the afforested area was 142 hectares and pastures on barren lands accounted for 458 hectares. It was observed that pastures in the afforested areas were

better than those on the barren lands. The DDP activity in this regard remained confined to fencing and spreading of lucern and red clover seeds. In the absence of irrigation facilities, such pastures were not being properly developed. In the selected Spiti sub-Division, an area of 735 hectares was covered under plantation till 1987-88. Of this, 421 hectares were covered during the Sixth Plan and 262 hectares during 1985-88. The species planted were Poplar, Willow and Robania.

Irrigation

7.117 The success of the core sectors depended on the availability of water for irrigation. According to the State Government officials this sector in the cold desert areas should have been accorded the highest weightage (40%). Since there is scanty or no rainfall and ground water exploitation is not possible due to high altitude, the only source of irrigation is through surface channels called 'kuhls'. The activity of this sector under DDP till 1983-84 was mainly confined to remodelling of the existing traditional 'kuhls' and as such the increase in irrigation potential was not significant. It was decided in 1983-84 that only new 'kuhls' would be constructed under the programme, but then it was not found feasible because of the high cost benefit ratio. It was later on decided to take up both, new as well as remodelling of 'kuhls', if these could result in additional crop command area. The activities undertaken under this sector with targets and achievements during different plan periods in the State

are given at Appendix IV-A.7.4. The following table, however, gives the position for the entire period upto 1987-88 and also separately for the Spiti Sub-Division.

Table 7.18: Performance of some Activities under Irrigation During 1978-88.

Item	Unit	Targets and Achievements (State level)			Targets & Achievements (Spiti Sub-Division)		
		T	A	%	T	A	%
1	2	3	4	5	6	7	8
Construction of Kuhls	Nos.	NA	49	-	NA	24	-
Construction of Water harvesting structures	Nos.	NA	1	-	NA	1	-
Irrigation Potential created	Hects.	2648	2157	81.5	1924	1433	74.5

7.118 In the two Sub-Divisions covered under DDP, works on 49 'Kuhls' were undertaken. About half of these were covered during the Sixth Plan and one-third during the first three years of the Seventh Plan. Of the total number of 'kuhlus', 24 were taken up in Spiti Sub-Division. It was observed that while the programme of tree plantation under DDP was carried out with the help of the project staff itself, the irrigation and other construction works were executed through Irrigation and Public Health Department of the State Government on work deposit basis for which they charged 17 per cent as service charges, in addition to the cost of works.

7.119 The irrigation potential created through different schemes under DDP upto 1987-88 in the State was reported to be 2157 hectares which was about 81 per cent of the targetted area. Of this total potential,

about 55 per cent was achieved during the Sixth Plan and 40 per cent during 1985-88. In the selected Spiti Sub-Division, the potential created was 1433 hectares which was about 75 per cent of the targetted area.

7.120 It was reported that no ground water survey had been carried out as there was little scope for having wells/tube-wells. No studies on seepage losses were conducted either, but it was roughly estimated that such losses were around 25 per cent. As per available reports, no water management studies for proper utilisation and conservation of water were carried out.

Agriculture including Soil Conservation and Land Development.

7.121 Soil conservation and land development were the main activities covered under this sector in the State. The land development activity was taken up from 1979-80 to the end of the Sixth Plan. After this period, the works were taken over by the State Agriculture Department. Under land development which included reshaping and terracing of land, an area of 277 hectares was covered. Of this, more than 78 per cent was covered during 1985-88. The soil conservation measures included construction of spur check dam, etc., along and near the splash flood prone areas so that the agricultural fields of the farmers could be protected from floods and erosion. The progress of all these items of work may be seen at Appendix IV-A. 7.4.

7.122 The main crops grown in DDP covered area are wheat, barley, peas, potato and vegetables. The Research Farm at Lari in Spiti area developed with DDP funds was handed over to the State Agriculture

University, Palampur in 1987 for carrying out intensive research work in selected foodgrains, vegetables, seed potato and in the field of horticulture. Areas with over 10,000 ft. altitude are not suitable for horticulture and as such in most of the Spiti area horticulture cannot be developed. Pooh area of Kinnaur district provided excellent climatic conditions for developing horticulture. The main horticulture crops grown in that area are apple, apricot and almond. However, marketing was reported as a big problem and private contractors did not pay proper price to the producers.

Animal Husbandry and Dairy Development

7.123 The natural factors have made agriculture very uncertain which forced the people to depend more on animal husbandry. In the initial stages of DDP, therefore, more emphasis was given on this sector. The revised guidelines of 1987 according least weightage to this sector, came as a shock to the organisers of the programme in the State. The main activities undertaken related to construction of veterinary dispensary buildings, opening of new veterinary dispensaries, distribution of sheep, goats, yak and milch cattle, and treatment of animals. Other activities related to fodder development including fencing of areas. According to their progress reports between 1977-88, over 14 thousand sheep and goats, 36 milch cattle and 40 yaks were distributed. In addition, 37 cross bred lambs, which included Angora bucks and Marino and Karakul rams, were also distributed to the farmers.

For fodder development, an area of 49 hectares was covered in the 'Spiti area'.

7.124 Pasture development is very necessary in such areas as besides providing grazing ground for animals, these also help in checking soil erosion. Under pasture development, afforested and barren lands were taken up. The seeds of lucern and red clover were spread over the pastures. Grazing was not allowed in the afforested pasture areas till these were developed.

JAMMU AND KASHMIR

7.125 The Ladakh region of Jammu and Kashmir, which is one of the cold desert areas covered under DDP, is characterized by extreme aridity coupled with prolonged and severe winter. The elevations in this region range from 17000 to 25000 feet. This is one of the most thinly populated areas in the country and is one of the inhabited at the highest cold regions of the world. The soils are devoid of organic matter and are deficient in nitrogen and phosphorus.

Afforestation and Pasture Development

7.126 Afforestation and Pasture development under DDP was intended to be a major thrust area which could help in arresting desertification and restoring the ecological balance of the area. This sector has been accorded the highest weightage (40%), but the implementing authorities find it difficult to achieve it in the absence of required irrigation facilities. Scanty rainfall and lack of moisture were considered as the main impediments in afforestation works. Due to this, most of the plantation works were taken up along the river/nallah banks, where there was enough moisture.

It was reported that so far no quick growing species were identified and mostly the traditional varieties, viz., Willow and Poplar were grown in the area. Some other varieties, like Robania, Miricaria and Hypofia (for hedging), which are also locally available, are now being tried and if found successful, large scale plantation of these varieties would be taken up. The leaves of poplar and willow trees are used as fodder for the livestock and the wood is used as timber and fuel. About 40 per cent of the fuel requirement of the area is being met by resorting to imports from the Kashmir valley.

7.127 Under DDP, no forest nursery was planned in Leh though one was established in Kargil. The Forest Department in Leh had three nurseries and two of them were subsequently transferred to the Desert Development Agency, Leh. The sapling requirements for plantation were mostly met from these nurseries and the average cost of each sapling was estimated to be around Rs. 3. Under Social Forestry Programme, willow and poplar plants are supplied to individuals free of cost. Under community plantation, available waste land of the villages is fenced and half the plants are provided free of cost to the community. Community plantation was almost absent in Leh, but in Kargil district some community plantation was done through Panchayats. Incentive was provided to individuals at the rate of Re. 1 (now raised to Rs. 2) per surviving plant. This incentive scheme was reported to be quite successful in social forestry.

7.128 As for the achievements under DDP plantation in the State are concerned, according to the available figures, 607 hectares were covered upto 1986-87. Of this, 51 per cent was covered during the Sixth Plan period and the balance during 1985-87. While the target set for 1980-85 was not available, the target for 1985-87 was almost the same as achievement. (Appendix IV-A. 7.5).

7.129 In the selected Leh district an area of 678 hectares was reported to have been covered under plantation upto 1987-88. This, however, included the area under social forestry as well. Of the total, about 59 per cent was achieved during 1985-88 and the rest was covered during the Sixth Plan. The progress as related to targets, however, was not impressive during 1985-88 as it was only 31 per cent. This was almost cent per cent during the Sixth Plan.

7.130 As regards fodder and pasture development, efforts are being made to multiply suitable varieties of pasture grasses for reseedling. Besides this, some demonstration plots were laid out on the farmers' fields and seeds of Alfa were distributed to them. Three fodder nurseries have also been set-up. One of these is intended for the supply of seeds, while the other two are for supplying fodder to the fodder bank.

Irrigation

7.131 Though this arid zone has water resources, like, rivers and nallas, but due to extremely rugged terrain an insignificant fraction is used for irrigation at present. While some kuhls and tanks were constructed, a

number of irrigation projects including medium sized canals were still under construction. Some canals started in early eighties were still incomplete. As per the available information, while Rs. 349 lakh or 38 per cent of the total expenditure were incurred on irrigation projects in the State, since inception of the programme till 1986-87, the irrigation potential created had been only 845 hectares. Of this, 665 hectares (78.7%) were created during the Sixth Plan and the remaining 180 hectares (21.3%) were added during the first two years of the Seventh Plan. The actual area irrigated will be much less than the potential created. The position with regard to the selected district, Le was also not very satisfactory. According to information supplied by the State Government during 1977-88, an amount of Rs. 202 lakh was spent under this sector which constituted 34 per cent of the total expenditure. The irrigation potential created in this district during the Sixth Plan was 253 hectares, while information for other period was not available.

7.132 It was also reported that 392 water harvesting structures were constructed in the state during 1979-87. Of these, about 80 per cent were constructed during the Sixth Plan. In view of the poor performance of the irrigation projects, it has been decided that instead of long gestation irrigation projects, only mini- projects will be taken up in future which will include upgradation of the Zamindari kuhls or small irrigation channels maintained by the farmers.

7.133 The use of ground water for irrigation is hardly in existence at present. No ground water survey was

undertaken in the region. The Field Research Laboratory of the Ministry of Defence is having a tube-well at Leh. Even if digging of tube-wells is expensive in these areas, it may be worth trying to have additional irrigation facilities. The development of water resources is of utmost importance for this region.

7.134 Though no study on seepage and evaporation losses of irrigation water was conducted, it was reported by the officials that seepage from kuhls, canals, water storage tanks, etc., was as high as 40 per cent in some cases, because of loose soil and poor construction works. Efforts should be made to check this seepage by providing proper lining to the channels or by using other engineering and water management techniques.

Agriculture

7.135 It was observed that not much attention had been paid to the development of agriculture and increasing productivity of different crops. According to information supplied by the State Government, the average yield of wheat and barley in this region was static, during the last 10 years or so, at 6.7 to 7.2 quintals per hectare. The recommended seed rate for both the crops was 3 quintals per hectare and in actual practice, the farmers were using even more. The research and extension work in this field was very weak. The improved agricultural practices did not seem to have been propagated and adopted in this area. Only Field

Research Laboratory(FRL) at Leh under the Ministry of Defence has been doing some useful research work in this field, but since it is mainly for the defence needs, the work regarding the transfer of technology to the farmers of the region was not taking place. This area especially Leh region, is very suitable for growing vegetables during summer season because of increased photosynthesis when there is scarcity of vegetables in the plains. Vegetables, like, cabbage, cauliflower, khol khol, carrot, radish, etc., easily grow in this area and with some extension efforts of the Agriculture Department this area can not only become self sufficient in vegetables but also supply the surplus quantities to other areas as well.

Solar Green Houses

7.136 There is abundant sunshine almost throughout the year in Leh area, but because of extreme cold during winter (during a sunny day in December/January the temperature is -10 to -15 celcius) and strong winds blowing, no cultivation in the open field is possible. Moreover, wheat and barley crops which are the main food crops of the area, are sown in April-May, but because of the short crop season, they start withering away due to cold even before they are matured. The green houses could be used for germinating the seeds early so that crops are matured before the onset of winter. The latest thinking as to overcome these problems is to have more and more Solar Green Houses. In these green houses, the crops can be grown under conditions of

controlled temperature. It was reported by the officers of the Desert Development Agency, Leh that the Agency would have a number of such houses with the assistance from the Department of Non-Conventional Sources of Energy, Government of India.

7.137 Area development through soil conservation measures is an important activity under this sector. According to available information given at Appendix IV-A.7.5, till the end of 1986-87 an area of 581 hectares as against the target of 1023 hectares (57%) was covered under soil conservation. Of this, 46 per cent was covered during the Sixth Plan and the remaining 54 per cent during the first two years of the Seventh Plan. Under horticulture, apricot is the only fruit of commercial value in this area. Other fruits grown in the area are apple, grapes, almond and cherry, but their production is very small.

Animal Husbandry and Sheep Rearing

7.138 Animal husbandry was given a second priority after irrigation under DDP. It was reported that the local breeds of cattle and sheep are generally unproductive in the area and there was a need to improve them through exotic breeds. For this purpose, one Bull-Mother-Farm for producing quality bulls for servicing the local cows had been established in each district so that the entire breedable cattle population could be covered. While, about 25 per cent of the local cows were reported to have been covered in Kargil district till 1987-88, there was not much progress in Leh district. However, it was reported that in the cross breeding programme, the milk yield of cows in some cases

had come down and the mortality rate of infants had increased.

7.139 In the cold desert areas of the State, sheep and goats rearing is more popular among other groups of livestock. Pashmina goats of Leh and Karakul sheep of Kargil are very popular. In Leh, there has been a pashmina development programme, where lambing sheds, fodder banks and health covers were provided for the preservation and proliferation of pashmina goats. Non-pashmina goats in the district are taken care of by cross breeding mostly with imported Angoras. In Kargil district Marino and Karakul rams had been introduced for cross breeding programme. Cross bred lambs were also distributed in the State. In Leh district, 542 such lambs were distributed till 1987-88.

7.140 For helping the sheep breeders, Wool Extension Centres were set up in the two districts. In all, 15 such centres were set up upto 1986-87. During the period before the Sixth Plan, five such centres were started in Leh district and during the Sixth Plan, 5 centres each were set up in Leh and Kargil districts. It was reported that in Kargil district, sheep breeders were being provided with mechanical wool shearing facility which brought out 15 per cent more wool content than the traditional shearing and also saved labour.

7.141 It was felt that under Animal Husbandry programme in the State, the first priority should go to the development of pashmina goats in the Changthang region of Ladakh. The altitude of this area varied from 12,000 to 16,000 feet. The Pashu wool of this area is said to

be of very fine quality and average yield of pashmina wool per adult goat is 200 to 300 grams. Pashmina goats are best suited to this area because of favourable climatic conditions for their development.

7.142 As per the new guidelines, excepting pasture and fodder development, all other schemes have been made ineligible under Animal Husbandry. It has been placed under miscellaneous category with a total weightage of only 15 per cent. The State officials felt that in view of the importance of this sector, the weightage may be increased and more schemes may be included in the approved list.

Chapter VIII

IMPACT OF THE PROGRAMME

In an area development programme like the DD which serves only as an additionality to normal effort of State Governments in identified sectors of development, it was difficult to assess its impact as such. However, besides getting overall picture of working of DDP in different states with expenditure incurred and physical achievements made under different sectors, efforts were made to collect additional information on some items in the selected district which could serve as indicators of development relevant to the programme. This included data on rainfall irrigated area, cultivated area, area covered under plantation, pasture development, sand dune stabilisation and use of non-conventional sources of energy. In addition, some information on 'Aerial Seeding' and 'Tissue Culture' technique, which could be relevant to this programme, was also collected and included in this Chapter. Since no beneficiaries were canvassed for information on additional production, employment and income generated at the beneficiary level could not be collected. Besides, the information regarding total employment generated under different schemes of DDP was not available. Because of drought during 1986 to 1988 in most of the areas covered under the programme, the

data on cultivated area, net sown area, gross cropped area and irrigated area got so much vitiated that these could not be used for any meaningful analysis. The data collected on other relevant items has been analysed as follows:

Annual Raifall

8.2 It has been established that forests and green cover in an area have a bearing on the amount of rainfall it receives. In view of this it was expected that with the weightage given to forestry under DDP, there may be some improvement in rainfall in the areas covered during the period of over ten years. For this reason, rainfall data for the districts selected for the study was collected for 1961, 1971 and for each year from 1977 to 1987. This has been given at Appendix IV-A.8.1.

8.3 In Banaskantha district of Gujarat, which has a normal rainfall of 381 mm, in most of the years except from 1985 to 1987, the recorded rainfall was more than the normal. During 1977 it was exceptionally higher at 1148 mm. In 1982, it was only 284 mm. From 1985 to 1987, drought conditions prevailed and during 1987 only 43 mm rainfall was recorded.

8.4 In Haryana, where one of the selected districts, Hissar, had a normal rainfall of 395 mm. A glance at the rainfall data given at Appendix IV-A. 8.1 will show that out of the thirteen years for which data was collected, the rainfall during 9 years was less than

normal. Of course, 1987 was the drought year when only 180 mm rainfall was received. In Rohtak district, however, the position was somewhat different, as during most of the years the rainfall received was more than normal of 536 mm. When drought conditions during 1986 and 1987 prevailed in this district, only 316 mm and 258 mm rainfall was received during the two years respectively.

8.5 In all the four selected districts of Rajasthan, drought conditions prevailed during 1985-87. As such, less than the normal rainfall was received. The position was acute in 1987 when rainfall was minimal. In Barmer district the ten year data between 1961 and 1984 show that the rainfall was less than normal (278 mm) during six years which included continuous three years between 1980-82. In Jaisalmer district, where the average rainfall is only 164 mm, during seven of the thirteen years even this much rainfall was not recorded. Likewise, in Jhunjhunu district which has the highest normal rainfall of 445 mm, nine of the thirteen years received less than the average. In fact for four consecutive years from 1979 to 1982, the rainfall was less than the normal. It was only in Jodhpur district that for several years the annual rainfall was more than the average of 319 mm. All this shows that afforestation programme in the hot desert areas had no discernible impact at least on the

quantum of rainfall received.

8.6 In a schematic study of "Twenty Five Monsoons in Rajasthan, 1961-85" carried out by the Irrigation Department of Rajasthan, it has been mentioned that the duration of rainy season in Rajasthan had shrunk from 101 days in 1973 to only 64 days in 1985 and this had adversely affected the agriculture production and availability of water in the surface reservoirs and ground water aquifers. A comparison of the rainfall data for 1901-50 and 1961-85 periods revealed that normal rainfall during monsoon period (June to September) had declined in 5 of the 11 districts covered under the Desert Development Programme. These Five districts were Churu, Ganganagar, Barmer, Jaisalmer and Jodhpur. The percentage decline varied from 1 in Jodhpur to 22 in Barmer. In Jaisalmer, the decline was 2 per cent while in Jhunjhunu there was an increase of the 14 per cent according to this study.

8.7 For Spiti sub-division of Lahaul and Spiti district in Himachal Pradesh, the normal annual rainfall figure was not available. However, it was supposed to be less than 100 mm. As the rainfall data given at Appendix IV-A.8.1 indicated, there was no rainfall in Spiti area during six of the thirteen years, for which the data was collected. This included continuous five years from 1980 to 1984. During 1985, however, 123 mm

rainfall was received in the area which can be taken as substantially above normal. Even during 1986 and 1987 the rainfall received was 79 mm and 59 mm respectively which was said to be more than what received in other areas. The officials of the Spiti Desert Development Agency attributed this improvement in rainfall to the afforestation programme taken up under DDP.

8.8 For Leh district of Jammu and Kashmir, normal rainfall was only 93 mm, the rainfall data for most of the years was not available. The rainfall recorded during 1985 and 1986 was 89 mm and 47 mm respectively.

Plantation/Shelter Belts

8.9 For improving the ecology of the desert areas, plantation and shelter belts were the main activities taken up under forestry sector. The information on these items alongwith the expenditure incurred was specifically collected for the selected districts to have some idea of their impact. However, reliable expenditure figures separately for these items were not available in most of the cases, as these formed part of the overall forestry sector and as such could not be used alongwith the physical achievements. Table 8.1 gives some idea of physical achievements made in the selected districts for the period 1977-78.

(Table on next page)

Table 8.1 : Area Covered under Plantation and Shelter Belts in the Selected District During 1977-88

State/District	Plantation (Hects.)	Shelter Belts (RKMs)	Mortality Rate (%)
1	2	3	4
<u>Gujarat</u>			
Banaskantha	*11010	400	50-70
<u>HARYANA</u>			
Hissar	4382	14225	30-40
Rohtak	2793	6517	30-40
<u>RAJASTHAN</u>			
Barmer	3710	786	30-40
Jaisalmer	1008	748	40-80
Jhunjhunu	3063	593	30-40
Jodhpur	4817	450	30-40
<u>HIMACHAL PRADESH</u>			
(Lahaul & Spiti)	916	-	30-70
<u>JAMMU and KASHMIR</u>			
Leh	678	-	20-50

*This includes the achievements under DPAP also during the initial period.

8.10 For Banaskantha district the progress under plantation appeared to be impressive, but it included the area covered under DPAP also, which could not be separated. In the districts of Haryana as also Rajasthan, the progress appeared to be significant, but considering the need of the desert areas, it appears that more is needed. It was observed that even the areas replanted because of high mortality were shown as additional areas covered and again formed part of the cumulative total. In fact, there is a need to have a survey of each area to determine the actual area covered under plantation, because it is not the question of only justifying the expenditure incurred and the achievement of targets, but to have a proper assessment of the area actually covered which is so essential for future planning. The Report of the Comptroller and Auditor General (CAG) of India of December, 1988 on DDP had mentioned about several highly exaggerated reports on area covered under forestry in several states.

8.11 The reported achievement of shelter belts was the highest in Haryana. This was natural as the two districts are less arid and comparatively better developed with good network of roads.

8.12 In the selected areas of Himachal Pradesh and Jammu and Kashmir, the progress under plantation was not satisfactory. In fact more area should have been covered to have any visible impact. Even CAG in their

Report had mentioned about the poor performance in the two cold desert States.

8.13 In any plantation programme, mortality or survival rate is very important. It will be more meaningful if besides the area covered, the progress was also recorded in terms of number of plants planted/survived. In the desert areas, the mortality rate is generally higher because of inadequate irrigation facilities, biotic pressure and lack of after care. In the absence of any systematic arrangement for record keeping, only a rough idea is generally given about the mortality rate. In Banaskantha, the mortality rate was too high at 50 to 70 per cent. In Haryana and Rajasthan it was between 30 and 40 per cent though in Jaiselmer it went up to 80 per cent. In Spiti area of Himachal Pradesh the mortality rate was between 30 to 70 per cent and Leh of Jammu and Kashmir it was 20 to 50 per cent. The variation was more in cold desert areas, because as for plantations near the water channels the mortality was much less.

Pasture Development

8.14 The high rate of increase in livestock population in desert areas has created fodder problem for the animals and ecological problems for the region. Agriculture not being so prosperous, fodder production is very limited and since stall feeding is not possible, animals have to depend on outside grazing. The

development of pastures in such areas is of utmost importance as their present carrying capacity is very poor. The information collected from the selected areas is revealing. While in some DDP areas the carrying capacity had not been estimated in Rajasthan districts it was reported to be 2.5 to 4.5 hectares per adult cattle in Jhunjhunu, 2 hect. per cattle each in Jodhpur and Barmer, and about 1 hect. per cattle Jaisalmer. It was, however, reported from Jhunjhunu that with DDP efforts the carrying capacity of pastures had improved from 4.5 hectares to about 2.5 hect. per cattle.

8.15 The area covered and expenditure incurred on pasture development in the selected districts since inception of the programme till 1987-88 is given in the following table:

Table 8.2 : Pasture Development under DDP in Selected Hot-Desert Districts During 1977-88.

Activity	Gujarat	Haryana		Rajasthan			
	Banas- kantha	Hissar	Rohtak	Barmer	Jaisel- mer	jhun- jhunu	Jodh- pur
1	2	3	4	5	6	7	8
Area covered (Hects.)	1205	70	2	1840	4316	450	3590
Expd. incurred (Rs. in lakhs)	8.98	1.37	0.02	4.64	49.67	8.32	52.94

8.16 It will be seen from the above table that in

Jaiselmer and Jodhpur districts of Rajasthan, substantial expenditure had been incurred on this important programme. In other districts, it was quite low, specially in the selected districts of Haryana. According to the reported figures, major achievement in Banaskantha(Gujarat) was during the period before the Sixth Plan when 100 per cent of the targetted area was covered and constituted 83 per cent of the total achievement up to the Sixth Plan. There was no coverage during the first three years of the Seventh Plan. While in Hissar district of Haryana, this activity was undertaken only during the Seventh Plan, in Rohtak there was no such activity both during the Sixth and Seventh Plan periods. In fact, it was reported that there were no pasture lands as such which could be developed in these areas. In Rajasthan, where there is increased pressure of livestock population and as the pastures also help in soil conservation and sand dune stabilisation, substantial progress was reported from Jodhpur and Jaiselmer districts incurring an expenditure of about Rs.53 lakh and Rs.50 lakh with area coverage of 3590 hec. and 4316 hec. respectively. While in Jodhpur about 900 hec. of pastures lands were reported to have been developed even before the Sixth Plan period of DDP, this work in Jaiselmer was taken up only from the Sixth Plan. In Barmer district 1840 hec.

of pasture lands were taken up for development with an expenditure of Rs. 4.64 lakh. For Jhunjhunu an expenditure of Rs. 8.32 lakh for developing 450 hec. upto Sixth Plan was reported. However, it appears that the progress of area covered for pasture development during the period as reported has to be taken with caution. Moreover, proper assessment regarding the quality of pasture land developed and success achieved in its implementation could not be made. However, the officers responsible for implementing the scheme had mentioned some problems. For any pasture development, fencing, etc., have to be done for protected and rotational grazing. As people were used to unprotected grazing since long, they objected to fencing and protected grazing and it became difficult to properly introduce the improved system.

8.17 In Rajasthan besides grassland development, with the help of CAZRI, a two-tier system known as "Silvi Pastoral" in which trees and grasses are grown in combination has been developed. Since both the components extract moisture and nutrients from different depths of soil, there is no competition between the two. A number of improved varieties of trees and grasses for different rainfall regions in hot desert areas have been recommended. The popular amongst trees being *Acacia*, *Tortilis*, *Prosopis Juliflora* and *Zizyphus nummularia* and amongst improved grasses are *Lasiurus indicus*, *Cenchrus*

ciliaris(Dhaman) and Cenchrus setigerus (Sewen). Besides these varieties of trees and grasses, a number of other species are being grown. It has been recommended under the system that there should be no grazing for initial 2-3 years and grass should be harvested manually. The trees can be lopped for leaf fodder after five years and are ready for fuel wood only after about 8-10 years. However, the restrictions recommended are not strictly adhered to and as such the desired results are seldom achieved. The studies conducted at the Central Arid Zone Research Institute(CAZRI) have revealed that adoption of Silvi-Pastoral system gave higher returns as compared to monoculture practices of growing either trees or grasses.

8.18 It was observed that Jodhpur being the headquarters of CAZRI with a regional station at Jaisalmer, progress of work was more pronounced in these two of the four selected districts. The selection of agriculture households for research and with demonstration of new techniques on the farmers' fields through the "Lab to the Land Programme" of CAZRI has certainly helped these districts more than others in adopting improved practices.

9.19 The development of pastures (including Silvi-Pastoral) is important as it serves different sectors of the programme. On the one hand it is a part of the

forestry programme as it helps afforestation, on the other, it is a good soil and moisture conservation measure. It is mainly used for fodder grass and grazing of animals which is a major economic activity in the desert areas. The trees supply leaves for fodder and also fuel wood and timber for the households. Pastures are the backbone of the desert economy and as such their identification through proper surveys to find out the extent of area village-wise is very necessary. For getting this work done, help of Revenue, Agriculture, Animal Husbandry and other like departments may be taken. These then are needed to be categorised on the basis of their carrying capacity. As at present, the implementation of the pasture development programme under DDP in none of the States seemed to be satisfactory. The known pasture management practices of enclosing portions of pasture lands to allow their rejuvenation and introduction of rotational grazing have to be strictly followed. The users of these pastures and local people are to be involved in this programme as their cooperation is very necessary.

8.20 As far as the pasture development in cold desert areas is concerned, according to the available figures, in Spiti Sub-division of Himachal Pradesh 24 hectares of land was covered for pasture development during the Sixth Plan, but the expenditure figures were not available. During the first three years of the Seventh Plan, an amount of Rs. 1.59 lakh was spent on

ciliaris(Dhaman) and Cenchrus setigerus (Sewan). Besides these varieties of trees and grasses, a number of other species are being grown. It has been recommended under the system that there should be no grazing for initial 2-3 years and grass should be harvested manually. The trees can be lopped for leaf fodder after five years and are ready for fuel wood only after about 8-10 years. However, the restrictions recommended are not strictly adhered to and as such the desired results are seldom achieved. The studies conducted at the Central Arid Zone Research Institute(CAZRI) have revealed that adoption of Silvi-Pastoral system gave higher returns as compared to monoculture practices of growing either trees or grasses.

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the development of 107 hectares of pasture land. This programme was not undertaken in Leh district of Jammu and Kashmir.

Sand Dune Stabilisation

8.21 The existence of sand dunes in more arid regions is one of the major problems of the desert areas. These are barren stretches of land devoid of vegetation and because of their inaccessibility, these had remained unexploited. These are susceptible to high speed wind and shift from one place to another. For making the region safer and more productive, adequate measures are required for their stabilisation. The problem is more pronounced in Western Rajasthan where more than half of the area is said to be under sand dunes and sandy plains.

8.22 For sand dune stabilisation, the main task is to reduce the wind speed by erecting micro-wind breaks. According to CAZRI scientists who have done considerable work in this field, these micro-wind breaks can be built up by locally available brush wood or by grasses. However, it was observed that in areas where wind velocity is not intensive, erecting of micro-wind breaks may not be necessary and only recommended trees and grasses may be grown. A number of improved species of trees and grasses suitable for sand dune stabilisation have been identified and recommended for different regions but most popular and widely used

plants were *Acacia tortilis*, *Prosopis juliflora* and Khejri. The plantation of "Ber"(Plum), the only fruit of the desert, was also taken up in some areas of Rajasthan. In between the rows of trees, grass seeds are sown, the popular ones being *Cenchrus ciliaris*(Dhaman), *Cenchrus setigerus*(Sewan) and "phog". Grass strips are planted on the down slope side of the dune to arrest sand and water movement. The moisture is said to be available in the sand dunes at the depth of 1 to 1.5 meters which is consumed by the plants. It has been recommended that there should be no grazing on the stabilized sand dunes during the first two years and grass has to be harvested manually for stall feeding to animals. However, this generally did not happen and animals were left to graze which adversely affected the stabilisation process.

8.23 Sand dune stabilisation being an important scheme in afforestation sector under the Desert Development Programme in relevant areas, information on total area under sand dunes, area planned for coverage and area actually stabilized and expenditure incurred for the period 1977-88 was planned to be collected for the selected districts. However, since the total area and area planned for stabilisation was not available for most of the districts, these could not be tabulated and analysed. The following table gives in brief, the area stabilized and expenditure incurred in the selected

hot desert districts for the total period of the study:

Table 8.3: Sand Dune Stabilisation in the Selected Hot-Desert during 1977-88

Activity	Gujarat	Haryana		Rajasthan			
	Banas- kantha	Hissar	Rohtak	Bar- mer	Jaise- mer	Jhun- jhunu	Jodh pur
1	2	3	4	5	6	7	8
Area Sta- bilised (Hects.)	-	791	85	2155	4021	-	378
Expenditure - (Rs. in lakhs)		6.92	2.98	68.68	85.04	-	16.2

8.24 In Banaskantha district of Gujarat and Jhunjhunu district of Rajasthan, no progress was reported in this regard. In Banaskantha there are no sand dunes as such for stabilisation, though the problem of shifting of sand and its deposit on the farmers' fields between April and July was reported which caused damage to the cultivable lands. As expected, Jaiselmer and Barmer districts of Rajasthan had reported the highest coverage. In Jaiselmer, over 4 thousand hectares of area under sand dune, which is more than 10 per cent of the total geographical area of the district, was reported to have been stabilized till 1987-88 with a total expenditure of Rs.85.04 lakh. This indicated full physical achievement as the area planned for stabilisation during different periods was the same as

achieved. In Barmer district, while 60 per cent of the planned area was stabilized during 1977-80, the progress was reported to be only 15 per cent of the target during the Sixth Plan. In Jodhpur district where sand dune problem did not seem to be so acute, for the period of the study against the targetted figure of 710 hectares, 378 hectares (53%) was reported to have been actually stabilized with a total expenditure of Rs.16.02 lakh. In all the selected districts of Rajasthan, *Acacia tortilis* and *Prosopis Juliflora* amongst the trees and 'phog' and 'sewan' amongst the grasses were mostly grown for sand dune stabilisation. In Jodhpur, besides the above, Khejri and 'Ber' plantations were also taken up.

8.25 In the selected districts of Haryana, especially Rohtak, the problem was perhaps confined to limited areas only. In both the districts, the programme was undertaken only upto the Sixth Plan. In Hissar, the entire targetted sand dune area of 791 hectares was stabilized, of which 43 per cent was covered during 1980-85. The total expenditure incurred was Rs. 6.92 lakh. In Rohtak district, the area stabilized was only 85 hectares at a cost of Rs. 2.98 lakh.

8.26 The sand dune problem did not exist in the cold arid regions of Himachal Pradesh and Jammu & Kashmir.

Aerial Seeding for Afforestation

8.27 Aerial seedings for sowing vegetation from

the air has been advocated as one of the economic and speedy method for inaccessible and difficult areas where manual operation are not possible. Such areas could be denuded higher hills in the cold arid zones, difficult sand dunes of Rajasthan and Gujarat or deep ravines in some States. According to the available information, the aerial seeding in India was tried for the first time in 1950 as an experimental venture on the sand dunes of Banaskantha district in Gujarat. Aerial seeding work was also taken by the Central Arid Zone Research Institute(CAZRI) in Bikaner area of Rajasthan falling under the Indira Gandhi Canal Zone. This project was taken up to find out if aerial seeding could produce vegetative cover on the sand dunes to prevent siltation of the canal. However, all these efforts were reported to be not so successful for several reasons including lack of protection from cattle grazing.

8.28 There are two schools of thought on effective suitability of aerial seeding technique in the afforestation programme. While one section is very much in favour of it and feels that with proper preparatory work and safeguard this should be an effective method for afforestation of inaccessible areas, the other group led by some forestry experts considers it as neither cost-effective nor successful as compared to the conventional technique of afforestation and do not favour the use of this technique. Recently, however,

the National Wasteland Development Board under Ministry of Environment and Forests, have decided launch the programme of aerial seeding for afforestation of wastelands in the country. In the new program the shortcomings of the earlier aerial seeding program like non-availability of the good seeds, soil and water conservation and protection of plants from grazing etc., were expected to be taken care of. This aerial seeding programme was, no doubt, specifically meant for national wastelands and perhaps might not have much to do with the areas covered under the Desert Development Programme. But in case it proved successful with improved methodology, there is no harm in extending it to the inaccessible areas of hot and cold deserts also, where afforestation through manual operation not possible. As far as DDP areas were concerned, the problem will arise only in some western districts Rajasthan where high and difficult moving sand dunes were needed to be stabilized.

Tissue Culture

8.29 Tissue culture is a rapidly developing field of bio-technology which promises to shorten the time and reduce the cost presently incurred on conventional plants variety development and multiplication programs. It was receiving added attention owing to its ability to provide a progeny which was identical to the parent with rapid rate of multiplication. As against the usual method of plant propagation through seeds, tissue

culture made use of tiny part of the parent plant for developing an entirely new plant through fusing together parent cells and growing the fused cell in sterile environment in a special nutrient medium. The plant replication in this technique was said to be very fast and did not depend on the season. However, it appears that not much use has so far been made of this technique in the country in the propagation of species needed for afforestation.

8.30 Under the DDP, heavy weightage has been accorded to afforestation including social forestry and this cannot be achieved without adequate involvement of the local people. However, in view of the limited number of saplings available in the Government nurseries, which is the major source of supply, people's participation, at present, appears to be very limited. With the adoption of tissue culture technique the production of required saplings in a particular area could be augmented significantly, thereby giving big boost to the afforestation programme in the desert areas. In none of the areas, however, where DDP is in operation, this new technique was found to be in existence. There is need for exploring the possibility of its introduction, especially in areas where demand for some particular species is heavy. If necessary, one laboratory with DDP funds may be set up in some suitable area on experimental basis.

Non-conventional Energy Sources

8.31 Indian desert areas have vast untapped potential for generating energy from sun, wind and other non-conventional sources like biomass, etc. One of the causes of degradation of the limited forests and green cover in these areas is the fuel need of the inhabitants for cooking, etc. In the cold desert areas, especially where their need cannot be fulfilled locally, arrangements for fuel-wood in substantial quantity have to be made from outside the area by the State Governments. This fuel need can be met if the non-conventional sources of energy are adequately tapped. Even the improved chullha (smokeless) consumes less fuelwood and because of less smoke, there are less respiratory problems. A number of agencies are working in different States for propagating the use of non-conventional energy sources and some progress has also been made in this direction, but this is far short requirement.

8.32 In Gujarat, it was reported that no steps were taken to harness the non-conventional energy sources, although the scope for exploitation of wind and solar energy was enormous. In the selected districts of Haryana, though nothing was done in this field under DDP, smokeless chullhas, solar gadgets and bio-gas plants were supplied through other agencies. However, it was reported that there was need and scope for doing much more than what was being done.

8.33 The use of solar energy for street lighting, water heating and cooking was reported from desert districts of Rajasthan. The use of smokeless chulhas and bio-gas plants was also popular in these districts. There is also sufficient scope for harnessing wind energy in desert areas, especially during summer months and some progress in this field was reported from Jodhpur and Jaisalmer districts. The Rajasthan Energy Development Agency (REDA), which was established in 1985, has been working on the development of solar and wind energy. The development of bio-gas plants in the State is being carried out under National Project on Bio-gas Development (NPBD) since 1981. The achievements of the two agencies in the selected desert districts are given in the following table:

Table 8.4: Achievements in Non-Conventional Energy Sources through REDA and NPBD.

District	Rajasthan Energy Dev. Agency (1985-88)				NPBD (1981-88)
	Street Light (No.)	Solar Water Heaters (Nos.)	Solar Cookers (Nos.)	Aero Generator (Nos.)	Bio-gas plant installed (Nos.)
1	2	3	4	5	6
Barmer	125	-	500	-	229
Jaisalmer	355 (1000 lit. cap.)	2	1000	3 (1 kw-2 25kw-1)	220
Jhunjhunu	-	-	-	-	1052
Jodhpur	10 (250 lit. cap.)	6	1000	1 (1 kw)	1211

8.34 In Jaisalmer district which has the largest desert area, the activities covered under non-

conventional energy sources through REDA appear to the maximum. The number of street lights(355) provided with the help of solar energy was significant. However in such an area where the availability of fuelwood was such a problem, though the number of 1000 solar cookers was the highest for any desert district, efforts should be made to supply at least one solar cooker to every household. Wind mills were installed only in three of the 11 desert districts in Rajasthan by REDA. There were three in Sikar, two in Ganganagar and one in Bikaner district. The absence of indigenous technology and equipment to commercially exploit wind energy was the main hurdle in its larger application.

8.35 Under National Project on Bio-Gas Development (NPBD), all the 11 districts covered under DDP had some achievement in installing Bio-gas plants. Ganganagar district with 2716 plants had the highest number. Of the selected four districts, Jodhpur had the maximum with 1211. In Jhunjhunu the number was 1052 of which 5 were not functioning.

8.36 In Himachal Pradesh, the Integrated Rural Energy Programme(IREP) was in operation since 1983-84 in the selected Spiti area which was involved in harnessing the solar energy and nothing had been done for tapping other non-traditional sources. Under IREP, in the Spiti Project area upto 1986-87 only 100 solar cookers were distributed. During the same period, 3 solar water

heaters of 500 litre capacity and 6 of 100 litre capacity were provided. In addition, 6 voltaic lighting systems were also installed which were working satisfactorily. In Leh district of Jammu and Kashmir, except the construction of a few solar green houses, no work has been done in this field.

8.37 It is heartening that the results of research conducted by the Central Arid Zone Research Institute (CAZRI), Jodhpur, and the analysis of satellite imageries do not support the general view that the Thar desert of Rajasthan is advancing. On the other hand, it was revealed that there was no evidence of desert spreading towards east and north-east of Rajasthan but on the contrary, it was shrinking towards west. These findings are indicative of the fact that there has been some positive impact of afforestation and other allied area development programmes taken up in Rajasthan, though the achievements may not be as significant as expected. In other States, where DDP coverage was much less, some positive achievements were there, but these were not adequate enough to make any visible impact in improving the conditions of the desert areas.

MAINTENANCE OF ASSETS

8.38 In any development programme, especially the centrally sponsored ones, where there is provision for creating some assets, there has always been problem of their maintenance. In the absence of provision of funds for maintenance in the scheme itself, such assets get

neglected and get into disuse much earlier than expected. Even state governments are generally reluctant in taking over such assets for fear of running or maintaining them from their own funds. The position regarding maintenance of assets created under DDP was enquired from the concerned officials in different states and their views are as under:

Gujarat

8.39 It was reported by the state government officials that no separate funds for maintenance of assets under DDP were allotted and it was suggested that Government of India should consider this aspect seriously. For proper maintenance of assets already created, therefore, it was suggested that there should be a clear cut policy regarding provision of funds either by the Centre or the State Governments.

Haryana

8.40 According to available information after the creation of any asset, the asset is transferred to the concerned line department and there is no provision for their maintenance under DDP. However, some provision of funds under the forestry sector for the first three years is there and funds are given for the purpose to the Forest Department. It was mentioned that some of the line departments faced serious difficulties when such assets were transferred to them because of paucity of funds. Sometimes such departments felt that if they

had adequate funds for running and maintaining such assets they could have as well created them. It was also pointed out that at times there was delay in taking over the created assets simply because they had no funds to run/maintain them.

8.41 It was reported both from Rohtak and Hisar districts that after the transfer of a particular assets to the concerned line department, its maintenance was neglected to a great extent. It was mentioned by DRDA officials that the implementing line departments in some cases also try to delay the take over of the assets created under DDP. It was observed in Rohtak district that a lot of machinery, like, tractors, water tankers, matador, ploughs, etc. were purchased under DDP for plantation and soil conservation works. However, in the absence of any provision of funds for maintenance of such machinery and tools, a number of them were lying idle.

Rajasthan

8.42 The assets created under DDP are maintained through DDP funds till the completion of such works or projects. After their completion these are handed over to the concerned line departments. However, it was reported that assets, like, areas forested, pasture developed, anicuts made and khadins constructed were not being looked after properly by the concerned departments. The assets transferred to Panchayats were also not being maintained well. The maintenance of

tubewells by the Public Health and Engineering Department was, however, considered as an exception. It was informed that though the State Government was seized of the problem of maintenance of assets created under DDP, but paucity of funds had always come in the way. Whether it was line department or Panchayat, funds were reported to be the main hurdle.

8.43 For plantations a period of five years is provided for maintenance under the programme. However, it was strongly felt by some officials that the five year period was not enough and that it should be increased to at least 7 years though a ten year period would be more ideal. It was suggested that for plantations to be maintained by the Panchayats after five years, an amount of Rs. 200/- per hectare per annum for a period of 3 to 5 years should be provided to ensure proper maintenance and positive impact of the programme in the field of forestry. This additional cost was considered to be reasonable.

8.44 In Jhunjhunu district, almost all the Heads of Departments opined that the funds for maintenance provided by the State Government were negligible and the assets created remained neglected. Even in the forestry sector though the plants became tolerant to climatic conditions after three years, the plantations suffered later on due to biotic factors and because of irresponsible behaviour of the residents of the area. It

this connection it was suggested by the DRDA officials that 20 per cent of DDP outlay in the district should be earmarked for proper maintenance of assets. The position regarding maintenance of such assets was more or less similar in all districts selected for the study.

Himachal Pradesh

8.45 In Himachal Pradesh, the maintenance of forestry plantations is carried out by the DDP Agency itself for a period of 5 years and there after it is done by the Forest Department. No problem as such was reported about their maintenance. The maintenance of irrigation 'kuhls' constructed under DDP was the responsibility of the Irrigation Department. However, here also, because of inadequate funds such 'kuhls' were not properly maintained and there was lot of water seepage.

Jammu and Kashmir

8.46 The assets created under DDP constituted some minor irrigation works, fodder/animal farms and infrastructural type facilities, like, residential and office buildings, and sheds. The assets so created are to be maintained by the concerned departments. It was admitted that the State Government was finding it difficult to maintain them from its own funds and it was suggested that separate funds should be earmarked for the maintenance of such assets alongwith the annual financial allocation.

Chapter IX

SUMMARY OF FINDINGS AND SUGGESTIONS

At the instance of the Planning Commission, the Programme Evaluation Organisation (PEO) undertook the study of the Desert Development Programme in August, 1988. The main objectives of the study were:

- (1) To study different schemes taken up to check desertification, restoration of ecological balance, etc., under the Desert Development Programme and assess their overall impact on the development of the area with reference to the objectives of the programme;
- (2) To study the effectiveness of the strategy adopted in terms of area development approach and their linkages with other related Programmes;
- (3) To study the administrative and monitoring arrangements at different levels in implementing the programme;
- (4) To study the difficulties encountered and extent of people's participation in implementing the programme and suggest measures for improvement;
- (5) To study how the schemes under DDP are formulated and whether they contain measures for short-term integrated development of desert areas on the basis of watershed development and management. Also, as to how far the information obtained through soil and topographic surveys, hydrological surveys

- aerial photo - interpretation of the satellite imageries, etc., have been utilised for preparing development schemes; and
- (6) To study the status of maintenance of assets created under the programme.

9.2 The DDP is an additive to normal efforts being made under State Sectoral Plans and Special Programmes. Since a sizeable amount of investment has been made in the Programme, it was thought worthwhile to find out the additionality of DDP vis-a-vis state sectoral schemes under core sectors.

9.3 The study was conducted in all the five states where the programme is in operation. In the hot desert areas, 4 out of 11 districts in Rajasthan, 2 out of 4 districts in Haryana and one of the two districts in Gujarat were selected for the study. In Jammu and Kashmir and Himachal Pradesh, which are having two districts under DDP in the cold arid region, one district in each State was selected. In addition, a set of knowledgeable persons, viz., MP/MLA/Panchayat Pradhan/Other well known persons in the area, was selected from each to know about the people's involvement and the impact of the programme.

9.4 Since Desert Development is an area development programme, it was decided not to canvass the households. The field work was conducted during August, 1988 to February, 1989.

Findings

9.5 Besides uncontrolled and over-grazing of livestock, growing demand for fuel and fodder arising

out of the increased human and liveatock population were observed to be the main causal factors for depletion of vegetal covar and degradation of environment of the desert areas.

(Para 2.23)

9.6 Uncontrolled grazing has to be curbed with tha active cooperation of the people and pastures developed on scientific lines with increased carrying capacity. The introduction of silvi-pastoral system of grazing, supply of seeds of improved variety of grasses, lagumes, fodder crops, etc., should be encouraged under the programme.

(Para 2.25)

9.7 In Gujarat, it was observed that for implementing the works under DDP, no separate staff has been provided. In Haryana, it was noted that the role of Block Development Agency in implementation of DDP was limited to obtaining resolutions from village panchayats for plantation works on panchayat lands.

(Paras 3.5 and 3.9)

9.8 In all the states, the proramme is administered at the state level by the Department of Rural Development and at the district level by the DRDA though the schemes were actually executed through line departments.

(Paras 3.14, 3.15 and 3.18)

9.9 Owing to the severe and adverse condition and lack of housing and educational facilities, the staf were reluctant to be posted in the selected district particularly Jaiselmer and Barmer.

(Para 3.38)

9.10 In Himachal Pradesh, the irrigation and other construction works were entrusted to the irrigation and Public Works Departments of the State for execution on work deposit basis for which they charged 17 per cent service charges in addition to the cost of works. It was felt that if some engineers were posted on deputation with the project like other staff, the works could be completed well in time and with less cost.

(Para 3.35)

9.11 The Chairman of the Governing Body of the Desert Development Agency, Leh, felt that there was no need for having an independent agency with so much of staff, when most of the work under DDP was being executed through the line departments.

(Para 3.37)

9.12 In Gujarat, it was reported that if separate monitoring and review arrangements for DDP at the district level were made, these could be more effective in achieving the desired results.

(Para 3.54)

9.13 It was observed that visits of senior officers were few and far between, which did not have the desired impact. More frequent visits of the officials from the Central and the State Governments were thought to be beneficial.

(Paras 3.55 and 3.57)

9.14 The monitoring of the programme was weak and did not lead to corrective action either with quantitative or qualitative aspects of its

implementation. The arrangements for monitoring need be streamlined.

(Paras 3.58 to 3.70)

9.15 It was observed that people's involvement and voluntary help were missing in the identification of the areas or the formulation and implementation of schemes of the DDP.

(Paras 4.6, 4.14, 4.27 and 4.53)

9.16 Some knowledgeable persons had stated that the period of maintenance of plantations for the desert areas be increased at least for two years and more village people be involved in farm forestry. More tubewells be provided with power connections and more ground water studies be undertaken as additional irrigation facilities will bring prosperity to the area

(Para 4.35)

9.17 In Jammu and Kashmir no soil, topographic hydrological surveys which could be helpful in deciding the areas of thrust and in formulation of the area based schemes were undertaken by any agency.

(Para 4.52)

9.18 The Knowledgeable Persons in Jammu and Kashmir opined that there was no perceptible impact of the DDP even after a decade of its existence.

(Para 4.6)

9.19 The progress of integrated micro-watershed approach to area development planning in the desert areas was limited.

(Para 4.8)

9.20 In Gujarat, Agriculture sector, which is important in itself for desert development, did not

receive the attention it deserved. During 1977-80 no expenditure was incurred on it, while the amount spent during the Sixth Plan and for first three years of the Seventh Plan constituted only 8 per cent and 2 per cent of the total expenditure respectively. In Rajasthan as well, this sector has not been given enough weightage. As of the total expenditure under the DDP till 1987-88, only 8 per cent was spent on this sector.

(Paras 5.25 and 5.37)

9.21 The pattern of expenditure in cold desert states was somewhat different. In both the States, the highest weightage was given to irrigation, as it was felt that without irrigation facilities, the afforestation programme would not be successful.

(Para 5.40)

9.22 Soil conservation and land development activities, which were considered important for improving the desert economy, were not taken up in the right earnest in Himachal Pradesh.

(Para 5.45)

9.23 In Jammu and Kashmir, it was reported that even after a lapse of about a decade with huge expenditure on construction of minor and medium irrigation canals, the area has not benefited much. The State Government has now been advised that irrigation schemes which were not likely to be completed in two-three year time may not be taken up under the DDP.

(Para 5.49)

9.24 In Rajasthan, in the selected districts, it has been found that most of the expenditure on key sectors was met through DDP funds. The proportionate

expenditure under the DDP is even higher in the selected districts as compared to the total state picture.

(Para 6.13)

9.25 It appears that Soil and Water Conservation and Land Development programme, had started with the Desert Development Programme and the Government of Rajasthan did not take up this important programme under the State sector. In selected districts, except Jodhpur, no funds were spent from the State sector upto the Sixth Plan.

(Para 6.17)

9.26 In the case of Rajasthan, the expenditure figures for selected districts have clearly shown that the contribution of the State Government on the key sector schemes in the DDP areas was minimal and that they depended exclusively on DDP funds, which was against the spirit of the Desert Development Programme.

(Para 6.18)

9.27 In Himachal Pradesh, the officers responsible for implementing the programme did not have much idea about the additiveness of this programme. They could only say that but for DDP, with the State efforts alone, not much development of the area would have been possible.

(Para 6.19)

9.28 In the absence of proper guidelines of integrated planning at the district level, the implementing agencies tended to treat the DDP as

normal scheme without realising its supplemental role in the overall development of the desert areas.

(Para 6.25)

9.29 In Gujarat, it was noted that the fuelwood plantation had not been significant. Moreover, no systematic arrangements were noticed for monitoring the process of desertification/deforestation, except the usual regulatory measures adopted by the Forest Department in the reserve forest areas.

(Para 7.13)

9.30 It was revealed that no studies on seepage losses, evaporation losses, etc., were carried out either by any Government agency or by the Gujarat Agriculture University. For proper utilisation of water and moisture conservation, no water management study had been carried out either.

(Para 7.21)

9.31 In Haryana, the officers of the Forest Department had reported that some problems, like, non availability of sufficient land for community plantation, non-applicability of Forest Act to Panchayat areas, lack of sufficient manpower, non-availability of sufficient funds, etc., came in the way of smooth implementation of work.

(Para 7.43)

9.32 It was suggested that for providing benefit to the local people and to encourage their involvement in the programme, about 50 per cent of the fuelwood should be sold to the people of the panchayat area at concessional rates and the balance may be auctioned.

(Para 7.43)

9.33 It was observed that inspite of good demand for the installation of sprinklers in Haryana, the scheme had been declared ineligible under the DDP. It had caused resentment among the people. It was strongly felt by the officials that lining of surface channels ^{the} should be made an eligible scheme under DDP so that the irrigation potential could be properly utilised.

(Para 7.48)

9.34 In Rajasthan, it was observed that due to lack of proper planning and supervision even in areas where irrigation facilities were available afforestation and pasture development schemes were not so successful. There was no proper coordination between the Forest Department and the District Administration regarding selection of sites, etc.

(Para 7.67)

9.35 It was observed that the soil conservation and land development measures taken up in the desert areas of Rajasthan had helped in conserving moisture and checking of soil erosion. Due to these activities it became possible to grow one kharif crop in certain areas where no crop could be grown earlier. In certain areas though small, where only kharif crop was grown earlier Rabi crop also became possible. The development of pastures in the watershed areas has also helped in restricting the wind erosion of soil.

(Para 7.8)

9.36 In Jaisalmer district of Rajasthan, in view of the large number of animals kept with the population ratio of almost 1 man : 8 animals, the health control facilities were not adequate. Non-availability

medicines in the health centres was also a common complaint.

(Para 7.100)

9.37 As per the revised guidelines animal husbandry and dairy development sector has been given the least weightage. The states are not very happy with this change brought out by the Central Ministry. They felt that withdrawal of such important schemes was likely to give a set-back to the programme.

(Para 7.109)

9.38 In Himachal Pradesh, no ground water survey had been carried out, as there was little scope for having wells/tubewells. No studies on seepage losses were conducted either, but it was roughly estimated that such losses were around 25 per cent.

(Para 7.120)

9.39 In Jammu and Kashmir also, no study on seepage and evaporation losses of irrigation water was conducted. However, it was reported by the officials that because of loose soil and poor construction works, the seepage losses were as high as 40 per cent in some cases. It was suggested that efforts should be made to check this by providing plastic lining to the canal or by using other engineering and water management techniques.

(Para 7.134)

9.40 It was observed that afforestation programme in hot desert areas had no discernible impact at least on the quantum of rainfall received. On the other hand, the officials of the Spiti Desert Development Agency

attributed improvement in rainfall to the afforestation programme taken up under DDP.

(Paras 8.5 to 8.7)

9.41 It was reported that with DDP efforts in Jhunjhunu district of Rajasthan, the carrying capacity of pastures had improved from 4.5 hectares to about 2.5 hectares per cattle.

(Para 8.14)

9.42 The studies conducted by CAZRI have revealed that adoption of silvi-culture system gave higher returns as compared to mono-culture practices of growing either trees or grasses.

(Para 8.17)

9.43 Pastures are the backbone of the desert economy and as such their identification through proper surveys to find out the extent of village-wise area is very necessary. For getting this work done, help of Revenue, Agriculture, Animal Husbandry and other like departments may be taken.

(Para 8.19)

9.44 It has been recommended that there should be no grazing on the stabilized sand-dunes during the first two years and grasses had to be harvested manually to be stall fed to animals. However, this generally, did not happen and animals were left to graze which adversely affected the stabilisation process.

(Para 8.2)

9.45 There is a need for exploring the possibility of introducing "Tissue Culture" technique especially in areas where demand for some particular species is high.

If necessary, one laboratory with DDP funds may be set up in some suitable area on experimental basis.

(Para 8.30)

9.46 On the basis of research conducted by CAZRI and analysis of satellite imageries, it has been found that there was no evidence of desert spreading towards east and north east of Rajasthan, but on the contrary, it was shrinking towards west. These findings are indicative of the fact that there has been some positive impact of afforestation and other allied area development programmes taken up in Rajasthan, though the achievement may not be as significant as expected.

(Para 8.37)

9.47 No separate funds for maintenance of assets under the DDP were allotted. In Gujarat, it was suggested that for proper maintenance of assets already created, there should be a clear cut policy regarding provision of funds either by the centre or the State Governments. In Haryana, it was pointed out that at times some of the line departments faced serious difficulties, when assets were transferred to them because of paucity of funds. In Rajasthan also, the assets created were not being maintained properly as there were no funds separately earmarked for this purpose.

(Paras 8.39, 8.40 and 8.42)

9.48 In both the cold desert states, viz., Himachal Pradesh and Jammu & Kashmir, the State Governments were finding it difficult to maintain the assets from their own funds and had suggested that

separate funds should be earmarked for the purpose alongwith the annual allocations.

(Paras 8.45 and 8.46)

Suggestions

9.49 There is a need for providing the non conventional sources of energy like installation of bio-gas plants and use of solar energy which may greatly help in reducing the consumption of firewood.

(Para 2.24)

9.50 It is suggested that Block Agency which has team of extension workers and generally have a rapport with the village people should be effectively involve especially in the schemes under agriculture, forestry and pasture development.

(Para 3.9)

9.51 It is suggested that a thorough study into the working of the two agencies in Jammu and Kashmir be undertaken to see as to how far the staffing pattern adopted was justified.

(Para 3.4)

9.52 For overcoming the difficulties faced with regard to postings of staff in difficult desert areas some attractive financial incentives, adequate accommodation, educational and medical facilities should be provided. Besides, some weightage to the staff serving in such areas at the time of promotion may be given.

(Para 3)

9.53 It is suggested that village people should be allowed to take fuel wood from the plantation done under

the DDP on common land and for this purpose a sale depot near the village be opened instead of auctioning the produce to the highest bidder as is the practice at present.

(Para 4.22)

9.54 With regard to allocation for different core sector schemes, it is suggested that so much rigidity should not be there and State Governments may be given some discretion to incur expenditure on schemes as per the felt needs of the people and the area.

(Para 4.29)

9.55 People's participation should be mobilised by creating greater awareness of different sectoral schemes. Moreover, wherever possible, the village panchayats and voluntary agencies should be involved in the execution of works. This has also been recommended by the National Committee on DPAP/DDP.

(para 4.35)

9.56 There is a need for fully associating the Field Research Laboratory at Leh in the research work carried out by the State Agriculture Department and Jammu and Kashmir Agriculture University.

(Para 5.55)

9.57 It is suggested that DDP funds may be made a part of the district plan, though its quantum and proportion be specified and maintained. In the cold desert areas there is a need to see whether these independent projects have justified their existence or this work could be assigned to the line departments with some extra staff, whenever necessary.

(Para 6.26)

9.58 The programme of afforestation can make a big dent if uncultivable land owned by individuals could be covered with proper incentives to them and keeping their rights intact.

(paras 7.43 and 7.67)

9.59 It is suggested that for proper maintenance of the assets created under the DDP, there should be a clear cut policy regarding the provision of funds.

(Paras 8.39, 8.41, 8.44 & 8.46)

A P P E N D I C E S

Appendix I

List of Blocks covered under the
Desert Development Programme (DDP)

State	District	Name of Blocks covered
1.	2.	3.
(A) Hot Arid Areas		
1. Gujarat	1. Banaskantha	1. Deodar 2. Kankrej 3. Radhanpur 4. Santalpur 5. Tharad 6. Vav * 7. Dhanera
	2. Mehsana	1. Harij 2. Sami
Total	2	9
2. Haryana	1. Hissar	1. Bahuna 2. Barwala 3. Dairanwas 4. Fatehabad 5. Hissar 6. Hansi 7. Mundhal 8. Naruaud 9. Ratia 10. Tohana
	2. Bhiwani	1. Badhra 2. Bawani Khara 3. Bhiwani 4. Bond 5. Dadri 6. Loharu 7. Tosham
	3. Rohtak	1. Bahadurgarh 2. Beri 3. Jhajjar 4. Nahar 5. Sahlawas
	4. Sirsa	1. Beraduda 2. Dabwali 3. Rania 4. Sirsa
	Total	26

Appendix I (Contd.)

List of Blocks covered under the
Desert Development Programme (DDP)

State	District	Name of Blocks covered
1.	2.	3.
3. Rajasthan	1. Ganganagar	1. Bhadra 2. Hanumangarh 3. Karanpur 4. Mirzewala 5. Nohar 6. Padampur 7. Raisinghanagar 8. Sadulshahar 9. Suratgarh
	2. Bikaner	1. Bikaner 2. Kolayat 3. Loonkaransar 4. Nokha
	3. Churu	1. Dumargarh 2. Rajgarh 3. Ratangarh 4. Ratannagar 5. Sardarshahr 6. Sujangarh 7. Taranagar
	4. Jhunjhunu	1. Alsisar 2. Buhana 3. Chirawa 4. Jhunjhunu 5. Khetri 6. Nawalgarh 7. Surajgarh 8. Udaipurwati
	5. Sikar	1. Dantaramgarh 2. Dohad 3. Fatehpur 4. Khandela 5. Lachhanganagar 6. Neem Ka Thana 7. Piprali 8. Srimadhapur

Appendix I (Contd.)

List of Blocks covered under the
Desert Development Programme (DDP)

State	District	Name of Blocks covered
1.	2.	3.
	6. Nagaur	1. Deedwana 2. Degana 3. Jayal 4. Kuchaman 5. Ladnu 6. Makrana 7. Mundwa 8. Merta 9. Nagaur 10. Parbatsar 11. Riyan
	7. Jodhpur	1. Batesar 2. Bap 3. Bhopalgarh 4. Bilara 5. Jodhpur 6. Luni 7. Osian 8. Phalodi 9. Shergarh
	8. Jaisalmer	1. Jaisalmer 2. Sam 3. Shankra
	9. Barmer	1. Baitu 2. Barmer 3. Chohtan 4. Guralamani 5. Pachpadra 6. Sheo 7. Sindhari 8. Siwana
	10. Jalore	1. Ahere 2. Bhimmal 3. Jalore 4. Jaswantpur 5. Sanchoe 6. Raniura 7. Sayale

Appendix I (Contd.)

List of Blocks covered under the
Desert Development Programme (DDP)

State	District	Name of Blocks covered
1.	2.	3.
	11. Pali	1. Bali 2. Desuri 3. Jaitaran 4. Kharahi 5. Pali 6. Raipur 7. Ranistation 8. Roha 9. Sojat 10. Sumerpur
Total	11	84
-----	--	--
(B) Cold Arid Areas		
4. Himachal Pradesh	1. Lahaul & Spiti 2. Kinnaur	1. Spiti 1. Pooh Sub-Division
Total	2	2
-----	--	--
5. Jammu & Kashmir	1. Leh	1. Leh 2. Darbuk 3. Nayoma 4. Khalsi 5. Kobra
	2. Kargil	1. Zanskar : 2. Kargil *: 3. Drass : 4. Samko : 5. Sankarchikatan
Total	2	10
-----	--	--
Grand Total	21 (districts)	131 (Blocks)

Note : * indicates Blocks added during the Seventh Plan

Desert Development Programme coverage during the Seventh Plan

Area(Provisional)
Population - 1981 Census

State	Total No. of Dis- tricts in the State	Total No. of Blocks in the State	Total Area (000 sq. Kms.)	Total popu- lation (Mil- lion)	Programme Coverage					
					No. of Dis- tricts	No. of Blocks	Area (000 sq. Kms.)	% age of total area in the State	Population in Million	% of total population in the State
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
I. Hot Desert										
1. Gujarat	19	218	195.98	34.09	2	9	9.37	4.8	1.02	3.0
2. Karyana	12	93	44.22	12.92	4	26	17.62	39.8	3.27	25.3
3. Rajasthan	27	236	342.22	34.26	11	84	208.75	61.0	10.53	30.7
Sub-total	58	547	582.42	81.27	17	119	235.74 (65.1)	40.5	14.82 (99.0)	18.2
II. Cold Desert										
4. Himachal Pradesh	12	69	55.67	4.28	2	2	29.70	53.4	0.02	0.4
5. Jammu & Kashmir	14	113	222.24	5.99	2	10	96.70	45.5	0.13	0.2
Sub-Total	26	182	277.91	10.27	4	12	126.40 (34.7)	45.5	0.15 (1.0)	1.5
Total :	84	729	860.33	91.54	21	131	362.14 (100.0)	42.1	14.97 (100.0)	16.4

Source: Rural Development Division, Planning Commission.

Appendix III

Indicative list of schemes eligible and ineligible for inclusion under DPAP/DDP

Sector	Eligible	Ineligible
1.	2.	3.
Agriculture	Land shaping and bunding, water harvesting structures (Check dams, Percolation tanks), horticulture, transfer of technology land treated with soil and moisture conservation.	Distribution of agricultural implements plan protection equipments, general training of farms within and outside the state, establishment and strengthening of seed farmer buildings and staff quarters seed processing unit and lab, equipments.
Horticulture	Vegetable and fruit nurseries, fencing of areas identified for horticulture dev. in watersheds, supply of planting material at admissible rates of subsidy.	Estt. of orchards, meeting cost of digging pits, manure etc. in private land should be borne by cultivators, coconut dev: parasite breed centre Palampur cultivation/palm complex, palampur indust and mini kit distribution of inputs.
Water Resource Development.	Construction of water harvesting structures, excavation of kachha channels, percolation tanks, community irrigation wells for IRDP beneficiaries	Sprinkler/drip irrigation, purchase of rigs ground water survey, lift irrigation schemes involving huge cost on energisation and running lining of channels etc. ground water exploration and exploitation schemes which need to be covered under respective sectoral programmes.
Animal Husbandry	Fodder production and grassland development	Supply of foot and mouth vaccine, esst. of liquid nitrogen plants, veterinary cover, cross cover, cross breeding programme, organisation of cow and calf rallies shows distribution of breed bulls and construction/strengthening of buildings/staff quarters.

Contd.

Appendix III(Contd.)

1.	2.	3.
Diary Dev.	Fodder production	Construction of Chilling plant ⁴ milk processing plants, in are ⁴ where operation flood programme is operating/ scheduled to operate during the Seventh Plan period. Feed mixing and pellatisation plants, construction of milk routes transport subsidy, milk procurement team. Management subsidy, buildings, provision of facilities of milk coop societies.
Sheep dev.	Development of pastures and their product- ivity through re-seeding, fencing, moisture conservation and water harvesting, plant- ation of fodder trees etc.	Deworming of sheep, estt. of sheep multiplication farms cross breeding programme, construction/modernisation of slaughter houses and construction of feed godowns, Sheep research and development programmes.
Forestry	Establishment of nurseries (grass fodder trees and timber), plantation on degraded forests, social forestry, farm forestry and waste land development of water resources for establishing and main- taining plantations.	Development of parks, wild li ⁴ conservation plantation in reserve forest areas(unless farming integral part of micro-watershed(s) to be developed) and eucalyptus plantation.
Poultry		Poultry hamlet community poultry marketing cmntre. hatchery and feed production.
Fisheries	Deepening of fish ponds/tanks production of fingerlings, etc.	Establishment of cold storage plants, construction of approach roads to fishermen's villages/fish waters.

Contd.

Appendix III(Contd.)

1.	2.	3.
Drinking Water -----		
a) Cattle & Sheep	Water harvesting and storage structures for cattle and sheep, small tanks/tanks meeting the requirement of animals in the water sheds selected for integrated development/ areas selected for sheep and livestock development.	Construction of channels, pipelines for supply for water for cattle.
b) Human beings	-	To be excluded from the programme and taken up under the sectoral progra
Rural Electrification	-	-do-
Sericulture	Development of rainfed mulberry plantation for supply of loaves.	Establishment of high cap grainages, silk reeling & twisting units, silk exch market yards, disinfectio squad and silk hamlet. Establishment of chawkie rearing units.

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Table A 5.1: Outlay Sanctioned and Expenditure Incurred Under Desert Development Programme since Inception till 1987-88.

S. State No.	Before Sixth Plan 1977-78 to 1979 - 80		Sixth Plan 1980 - 81 to 1984 - 85		Seventh Plan 1985-86 to 1986-87		Total (First 3 yrs. of Seventh Plan)		Grand Total (since 1977-78 to 1987 - 88)						
	Outlay sanctioned	Expenditure incurred	Outlay sanctioned	Expenditure incurred	Outlay sanctioned	Expenditure incurred	Outlay sanctioned	Expenditure incurred	Outlay sanctioned	Expenditure incurred					
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
Hot Desert Areas															
1. Gujarat	MA	273.77	821.69	605.35	150.31	111.73	200.93	169.73	234.37	226.81	585.61	508.27	MA	1387.39	
				(73.67)		(74.33)		(84.47)		(96.77)		(86.79)			
2. Maryana	833.13	342.41	1779.13	1375.00	277.84	214.01	435.10	344.22	397.43	315.77	1110.37	874.00	3722.63	2591.41	(69.61)
		(41.10)		(77.28)		(77.03)		(79.11)		(79.45)		(78.71)			
3. Raj-asthan	2101.65	1731.52	5867.97	5533.80	1096.00	1106.70	3000.00	3436.75	3009.60	3113.06	7105.60	7656.51	15075.22	14921.83	(98.98)
		(82.39)		(94.31)		(100.98)		(114.56)		(103.44)		(107.75)			
Sub-Total (Hot Desert Areas)	MA	2347.70	8468.79	7514.15	1524.15	1432.44	3636.00	3950.70	3641.40	3655.64	8801.58	9038.78	MA	18900.63	
				(88.73)		(93.98)		(108.66)		(100.39)		(102.69)			
Cold Desert Areas															
4. Nimschal Pradesh	211.90	78.25	513.02	412.91	171.31	106.36	217.98	156.55	221.96	137.77	611.25	400.68	1336.17	891.84	(66.75)
		(36.93)		(80.49)		(62.09)		(71.82)		(62.07)		(63.55)			
5. Jammu & Kashmir	MA	41.09	NA	526.61	158.92	94.21	292.10	251.06	272.47	266.41	723.49	611.68	MA	1179.38	
					(59.28)		(85.95)		(97.78)		(84.55)				
Sub-Total (Cold Desert Areas)	MA	119.34	NA	939.52	330.23	200.57	510.08	407.61	494.43	404.18	1334.74	1012.36	MA	2071.22	
					(60.74)		(79.91)		(81.75)		(75.85)				
Total (All Areas)	MA	2467.04	NA	8453.67	1854.38	1633.01	4146.11	4358.31	4135.83	4059.82	10136.32	10051.14	MA	20971.85	
					(86.86)		(105.12)		(98.16)		(99.16)				

Note: Figures in brackets relate to percentages of expenditure to outlay sanctioned.

Table A.5.2 : Sector-wise Expenditure under DDP and its share in total expenditure since inception till 1987-88(State Level)

Gujarat State								
(Rs. in lakhs)								
Sl. No.	Sector	Before Sixth Plan (1977-78 to 1979-80)	Sixth Plan (1980-81 to 1984-85)	Seventh Plan			Grand Total	
				1985-86	1986-87	1987-88	Total (First 3 yrs. of VIIIth Plan)	(1977-78 to 1987-88)
1.	2.	3.	4.	5.	6.	7.	8.	9.
1.	Agriculture(including Soil Conservation)	0.00	50.04 (8.27)	2.40 (2.14)	0.29 (0.17)	7.38 (3.25)	10.07 (1.98)	60.11 (4.33)
2.	Irrigation	121.85 (44.51)	90.85 (15.01)	25.41 (22.74)	83.71 (49.32)	158.78 (70.01)	267.90 (52.71)	480.60 (34.64)
3.	Animal Husbandary	21.65 (7.91)	194.84 (32.19)	48.39 (43.30)	48.06 (28.32)	18.89 (8.33)	115.34 (22.69)	331.83 (23.92)
4.	Forestry & Pasture	89.09 (32.54)	195.66 (32.32)	26.38 (23.50)	27.81 (16.38)	32.79 (14.46)	86.98 (17.11)	371.73 (26.79)
5.	Fisheries	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.	Sericulture	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.	Horticulture	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8.	Project Administration	0.00	27.50 (4.54)	9.15 (8.22)	9.36 (5.81)	8.97 (3.95)	27.98 (5.51)	55.48 (4.00)
9.	Others(specify (Rural Electrification)	41.18 (15.04)	46.46 (7.67)	0.00	0.00	0.00	0.00	87.64 (6.32)
TOTAL		273.77 (100.00)	605.35 (100.00)	111.73 (100.00)	169.73 (100.00)	226.81 (100.00)	508.27 (100.00)	1387.39 (100.00)

Note: Figures in brackets are percentages to total expenditure

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Table A.5.3 : Expenditure of each sector under DDP and its share in total expenditure since inception till 1987-88.

State: Haryana

(Rs. in lakhs)

Sl. No.	Sector	Before Sixth Plan (1977-80)	Sixth Plan (1980-85)	Seventh Plan			Grand Total	
				1985-86	1986-87	1987-88	Total (First 3 yrs.)	(1977-88)
1.	2.	3.	4.	5.	6.	7.	8.	9.
1.	Agriculture(including Soil Conservation land development etc.	3.91 (1.14)	19.57 (1.42)	17.12 (8.00)	56.36 (16.37)	55.84 (17.68)	129.32 (14.80)	152.80 (5.90)
2.	Irrigation	50.92 (14.87)	55.71 (4.05)	26.28 (12.28)	22.78 (6.62)	118.56 (37.55)	167.62 (19.18)	274.25 (10.58)
3.	(i) Animal Husbandary	35.73 (10.43)	270.38 (19.66)	39.86 (18.62)	96.01 (27.89)	61.20 (19.38)	197.07 (22.55)	503.18 (19.42)
	(ii) Dairy Development	113.35 (33.11)	179.63 (13.06)	0.00	6.87 (2.00)	0.00	6.87 (0.78)	299.85 (11.57)
4.	Forestry & Pasture	128.75 (37.60)	764.76 (55.63)	89.00 (41.59)	73.74 (21.42)	38.04 (12.05)	200.76 (22.97)	1094.29 (42.23)
5.	Fisheries	0.00	1.26 (0.09)	0.00	3.58 (1.04)	1.67 (0.53)	5.25 (0.60)	6.51 (0.25)
6.	Sericulture	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.	Horticulture	0.55	0.00	0.00	0.00	0.00	0.00	0.55
8.	Project Administration	9.20 (2.69)	64.72 (4.71)	22.75 (10.63)	32.04 (9.31)	32.93 (10.43)	87.72 (10.04)	161.64 (6.24)
9.	Others(specify) (Rural Electrification)	0.00	18.97 (1.38)	19.00 (8.88)	52.84 (15.35)	7.53 (2.38)	79.37 (9.08)	96.34 (3.79)
TOTAL EXPENDITURE		342.41 (100.00)	1375.00 (100.00)	214.01 (100.00)	344.22 (100.00)	315.77 (100.00)	874.00 (100.00)	2591.41 (100.00)

Note: Figures in brackets are percentages of each sector to total expenditure.

* Others: Include digging of ponds, water storage tanks, deep tubewells, handpumps etc.

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Table A.5.4 : Sector-wise Expenditure under DDP and its share in total expenditure since inception upto 1987-88.

State: Rajasthan

(Rs. in lakhs)

Sl. No.	Sector	Before Sixth Plan (1977-80)	Sixth Plan (1980-85)	Seventh Plan(Three years)			Grand Total (1977-88)	
				1985-86	1986-87	1987-88	Total (First 3 yrs.)	
1.	2.	3.	4.	5.	6.	7.	8.	9.
1.	Agriculture(including Soil Conservation	127.57 (7.37)	445.82 (8.06)	65.04 (5.88)	235.71 (6.86)	254.33 (8.17)	555.08 (7.25)	1128.47 (7.56)
2.	Irrigation & Ground Water Development.	113.84 (6.57)	878.01 (15.87)	122.09 (11.03)	863.48 (25.12)	705.01 (22.65)	1690.58 (22.08)	2682.43 (17.97)
3.	Animal Husbandry & Dair Development.	474.39 (27.40)	1417.34 (25.61)	276.67 (25.00)	953.37 (27.74)	1030.68 (33.11)	2260.72 (29.53)	4152.45 (27.83)
4.	Forestry and Pasture	418.07 (24.14)	2130.12 (38.49)	562.11 (50.79)	1171.23 (34.08)	993.65 (31.92)	2726.99 (35.62)	5275.18 (35.35)
5.	Fisheries	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.	Sericulture	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.	Horticulture	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8.	Project Administration	34.89 (2.01)	286.08 (5.17)	68.16 (6.16)	98.24 (2.84)	110.97 (3.56)	277.77 (3.62)	598.34 (4.01)
9.	Others(specify)-\$	562.76 (32.50)	376.43 (6.80)	12.63 (1.14)	114.72 (3.34)	18.42 (0.59)	145.77 (1.91)	1084.96 (7.27)
Total Expenditure		1731.52 (100.00)	5533.80 (100.00)	1106.70 (100.00)	3436.75 (100.00)	3113.06 (100.00)	7656.51 (100.00)	14921.83 (100.00)

Note: Figures in brackets are percentages to total expenditure.
 Others: Cooperation, SFDA type facilities, Rural Water, Power,
 ----- Grants-in-aid to Udaipur University and sanction to SRSAC, Jodhpur.

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Table A.5.4(a): Expenditure under IDP since inception till 1987-88
(for sector/item covered under 'OTHERS')

State: Rajasthan

(Rs. in lakhs)

Sl. No.	Sector (Items under OTHERS)	Before Sixth Plan	Sixth Plan	Seventh Plan			Grand Total	
		Plan (1977-78 to 1979-80)	(1984-85)	1985-86	1986-87	1987-88	Total (First 3 yrs.)	(1977-78 to 1987-88)
1.	2.	3.	4.	5.	6.	7.	8.	9.
1.	Cooperation	6.78 (0.39)	1.76 (0.03)	-	-	-	-	8.54 (0.06)
2.	SFDA Type Facilities	70.29 (4.08)	6.89 (0.12)	-	-	-	-	77.18 (0.52)
3.	Rural Water Supply	-	0.15 (0.00)	-	-	-	-	0.15 (0.00)
4.	Power	485.69 (28.17)	311.92 (5.64)	12.63 (1.14)	104.17 (3.03)	9.64 (0.31)	126.44 (1.65)	924.05 (6.19)
5.	Grant-in-Aid to Udaipur University	-	55.71 (1.01)	-	-	-	-	55.71 (0.37)
6.	Sanction to SRSAC (APIL) Jodhpur	-	-	-	10.55 (0.30)	8.78 (0.28)	19.33 (0.25)	19.33 (0.13)
7.	All Items Total (under Others)	562.76 (32.50)	376.43 (6.80)	12.63 (1.14)	114.72 (3.34)	18.42 (0.59)	145.77 (1.90)	1084.96 (7.27)
8.	Total (ALL SECTORS)	1731.52 (100.00)	5533.80 (100.00)	1106.70 (100.00)	3436.75 (100.00)	3113.06 (100.00)	7656.51 (100.00)	14921.83 (100.00)

Note: Figures in brackets are percentages to total expenditure.

Table A.5.5: Sector-wise Expenditure under DDP and its share in total expenditure since inception till 1987-88.

State: Himachal Pradesh

(Rs. in lakhs)

Sl. No.	Sector	Before Sixth Plan (1977-80)	Sixth Plan (1980-85)	Seventh Plan			Grand Total	
				1985-86	1986-87	1987-88	Total (First 3 yrs.)	(1977-88)
1.	2.	3.	4.	5.	6.	7.	8.	9.
1.	Agriculture (including Soil Conservation)	8.74 (11.17)	23.26 (5.63)	3.39 (3.18)	3.90 (2.49)	8.68 (6.30)	15.97 (3.99)	47.97 (5.38)
2.	Irrigation	44 (56.23)	182.37 (44.17)	43.53 (40.93)	49.38 (31.54)	33.97 (24.66)	126.88 (31.67)	353.25 (39.61)
3.	Animal Husbandry	5.33 (6.81)	35.40 (8.57)	6.41 (6.03)	12.15 (7.76)	14.54 (10.55)	33.10 (8.26)	73.83 (8.28)
4.	Forestry and Pasture	13.24 (16.92)	132.68 (32.13)	39.57 (37.20)	76.79 (49.05)	61.55 (44.68)	177.91 (44.40)	323.83 (36.31)
5.	Fisheries	0.00	0.00	0.04 (0.04)	0.29 (0.09)	0.84 (0.61)	1.17 (0.29)	1.17 (0.13)
6.	Horticulture	0.00	0.00	0.90 (0.85)	1.52 (0.97)	2.59 (1.88)	5.01 (1.25)	5.01 (0.56)
7.	Sericulture	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8.	Project Administration	6.94 (8.87)	39.20 (9.50)	12.52 (11.77)	12.52 (8.00)	15.60 (11.32)	40.64 (10.14)	86.78 (9.73)
9.	Others (specify)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Expenditure		78.25 (100.00)	412.91 (100.00)	106.36 (100.00)	156.55 (100.00)	137.77 (100.00)	400.68 (100.00)	891.84 (100.00)

Note: Figures in brackets are percentages of each to total expenditure.

Appendix IV

Table A.5.6: Sector-wise Expenditure under DOP and its share in total expenditure since inception till 1987-88(State Level)

State : Jammu & Kashmir

(Rs. in lakhs)

Sl. No.	Sector	Before Sixth Plan (1977-78 to 1979-80)	Sixth Plan (1980-81 to 1984-85)	1985-86	1986-87	1987-88	Total (First 3 yrs.)	Grand Total (1977-78 to 1987-88)
1.	2.	3.	4.	5.	6.	7.	8.	9.
1.	Agriculture(including Soil Conservation)	6.29 (15.31)	56.44 (10.72)	13.40 (14.22)	35.43 (14.11)	35.26 (13.23)	84.09 (13.75)	146.82 (12.45)
2.	Irrigation	5.62 (13.68)	223.38 (42.42)	29.05 (30.84)	90.73 (36.14)	88.15 (33.09)	207.93 (33.99)	436.93 (37.05)
3.	Animal Husbandary	19.18 (46.68)	152.05 (28.87)	26.69 (28.33)	75.11 (29.92)	39.87 (14.97)	141.67 (23.16)	312.90 (26.53)
4.	Forestry & Pasture	1.91 (4.65)	35.82 (6.80)	14.45 (15.34)	28.79 (11.47)	53.58 (20.11)	96.82 (15.83)	134.55 (11.41)
5.	Fisheries	0.00 (0.38)	1.99 (0.38)	0.00	0.30 (0.12)	0.30 (0.11)	0.60 (0.10)	2.59 (0.22)
6.	Sericulture	0.00	0.00	0.00	0.00	4.00 (1.50)	4.00 (0.65)	4.00 (0.34)
7.	Horticulture	2.13 (5.18)	12.90 (2.45)	2.88 (3.06)	4.58 (1.82)	3.75 (1.41)	11.21 (1.83)	26.24 (2.22)
8.	Project Administration.	1.44 (3.50)	25.93 (4.92)	7.60 (8.06)	11.92 (4.75)	28.74 (10.78)	48.26 (7.89)	75.63 (6.41)
9.	Others(specify)-8	4.52 (11.00)	18.10 (3.44)	0.14 (0.15)	4.20 (1.67)	12.76 (4.80)	17.10 (2.80)	39.72 (3.37)
	TOTAL	41.09 (100.00)	526.61 (100.00)	94.21 (100.00)	251.06 (100.00)	266.41 (100.00)	511.68 (100.00)	1179.38 (100.00)

Note: Figures in brackets are percentages to total expenditure.
 8 Others: Cooperation, Non-conventional energy sources, Training-cum-seminar, micro-watershed, C.D. Research, Energy etc. and Infrastructure Development.(Appendix IV-A.5.7)

Appendix IV

Table A.5.7: Expenditure under DDP since inception till 1987-88
(for Sector/item covered under 'OTHERS').

State: Jammu & Kashmir

(Rs. in lakhs)

S. Sector-Others No.	Before Sixth Plan (1977-78 to to 1979-80)*	Sixth Plan (1980-81 1984-85)	Seventh Plan				Grand Total	
			1985-86	1986-87	1987-88	Total (First 3 yrs.)	(1979-80 to 1987-88)	
1.	2.	3.	4.	5.	6.	7.	8.	9.
1.Cooperation	4.52 (11.00)	18.10 (3.44)	0.14 (0.15)	0.50 (0.20)	0.50 (0.19)	1.14 (0.19)	23.76 (2.02)	
2.Micro-watershed	-	-	-	1.70 (0.67)	10.76 (4.04)	12.46 (2.04)	12.46 (1.06)	
3.Infrastructure Development	-	-	-	1.50 (0.60)	-	1.50 (0.25)	1.50 (0.13)	
4.Non-conventional Energy Sources	-	-	Nil	Nil	Nil	Nil	Nil	
5.Training-cum- Seminar	-	-	Nil	0.50 (0.20)	0.50 (0.19)	1.00 (0.16)	1.00 (0.08)	
6.C.D. Research, Energy etc.	-	-	-	Nil	1.00 (0.38)	1.00 (0.16)	1.00 (0.08)	
Total ('Others')	4.52 (11.00)	18.10 (3.44)	0.14 (0.15)	4.20 (1.67)	12.76 (4.80)	17.10 (2.80)	39.72 (3.37)	
All Sectors - Total	41.09 (100.00)	526.61 (100.00)	94.21 (100.00)	251.06 (100.00)	266.41 (100.00)	611.68 (100.00)	1179.38 (100.00)	

NB : Figures in brackets are percentages to total expenditure.

* Only for 1979-80.

Appendix IV

Table A.6.1: Expenditure on Key Sector under State Plan and Desert Development Programme in Selected Districts.

Sector : Forestry & Pasture						
(Rs. in lakhs)						
State/District	Before Sixth Plan (1977-80)		Sixth Plan (1980-85)		Seventh Plan (first 3 years) (1985-88)	
	Under State Plan	Under DDP	Under State Plan	Under DDP	Under State Plan	Under DDP
1.	2.	3.	4.	5.	6.	7.
Gujarat						
1. Banaskantha	NA	NA	507.16 (81.75)	113.22 (18.25)	265.43	80.15 (23.19)
Haryana						
2. Hisar	21.40	52.35 (70.98)	38.19	231.17 (88.45)	61.97	42.68 (40.78)
3. Rohtak	32.29	11.11 (25.60)	132.42	187.52 (58.61)	110.34	44.50 (28.74)
Rajasthan						
4. Barmer	-	35.48 (100.00)	21.28	195.13 (90.17)	204.23	319.82 (61.03)
5. Jaisalmer	-	19.90 (100.00)	0.42	114.69 (99.64)	28.57	387.49 (93.13)
6. Jhunjhunu	0.04	28.81 (99.86)	6.01	147.68 (96.09)	11.43	109.82 (90.57)
7. Jodhpur	2.32	50.74 (95.63)	30.22	224.70 (88.15)	31.63	275.41 (89.70)
Himachal Pradesh						
8. Lahaul & Spiti (Spiti Sub Division)	NA	13.24	NA	118.77	63.23	109.74 (63.44)
Jammu & Kashmir						
9. Leh	3.99	0.96 (19.39)	31.80	24.42 (43.44)	41.56	45.00 (51.99)

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Table A.6.2: Expenditure on Key Sector under State Plan and Desert Development Programme in Selected Districts.

State/District	Sector		Irrigation			
	(Rs. in lakhs)		(Ground Water Development)			
	Before Sixth Plan (1977-80)		Sixth Plan (1980-85)		Seventh Plan (first 3 years) (1985-88)	
	Under State Plan	Under DDP	Under State Plan	Under DDP	Under State Plan	Under DDP
1.	2.	3.	4.	5.	6.	7.
Gujarat						
1. Banaskantha	NA	NA	1369.18	62.03 (4.33)	509.57	191.75 (27.34)
Maryana						
2. Nissar	397.05	-	1001.97	-	503.13	53.00 (9.53)
3. Rohtak	534.98	0.08 (0.02)	1846.39	0.17 (0.01)	1240.34	9.93 (0.79)
Rajasthan						
4. Barmer		0.62	41.33	48.15 (53.81)	83.73	138.82 (62.38)
5. Jaisalmer	4267.06	12.74 (0.30)	10493.69	62.53 (0.59)	4994.66	161.69 (3.14)
6. Jhunjhunu	1.22	2.00 (62.11)	-	36.17 (100.00)	-	85.38 (100.00)
7. Jodhpur	101.47	8.03 (7.33)	106.62	121.75 (53.31)	51.73	415.53 (88.93)
Himachal Pradesh						
8. Lehail & Spiti (Spiti Sub Division)	NA	44.00	NA	115.38	NA	42.25
Jammu & Kashmir						
9. Leh	41.07	2.55 (5.85)	411.14	124.55 (23.25)	442.55	93.31 (17.41)

Table A.6.3: Expenditure on Key Sector under State Plan and Desert Development Programme in Selected Districts.

Sector : Agriculture						
(Rs. in lakhs)			(Soil and Water Conservation)			
State/District	Before Sixth Plan (1977-80)		Sixth Plan (1980-85)		Seventh Plan (first 3 years) (1985-88)	
	Under State Plan	Under DDP	Under State Plan	Under DDP	Under State Plan	Under DDP
1.	2.	3.	4.	5.	6.	7.
Gujarat						
1. Banaskantha	NA	NA	157.15	50.04 (24.15)	132.49	8.51 (6.04)
Haryana						
2. Hissar	NA	1.05	NA	4.36	28.53	44.18 (60.76)
3. Rohtak	0.34	1.19 (77.78)	1.86	12.12 (86.70)	3.71	5.54 (59.89)
Rajasthan						
4. Barmer	Nil	1.00 (100.00)	Nil	26.42 (100.00)	80.55	76.32 (48.65)
5. Jaisalmer	Nil	Nil	Nil	2.33 (100.00)	Nil	63.78 (100.00)
6. Jhunjhunu	Nil	5.99 (100.00)	Nil	27.86 (100.00)	9.45	23.64 (71.44)
7. Jodhpur	1.90	37.82 (95.22)	48.23	130.15 (72.96)	6.02	62.70 (91.24)
Himachal Pradesh						
8. Lahaul & Spiti (Spiti Sub Division)	NA	8.74	NA	21.84	11.16	12.38 (52.59)
Jammu & Kashmir						
9. Leh	Nil	2.02 (100.00)	Nil	32.87 (100.00)	0.30	51.70 (99.42)

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Table A.6.4: Expenditure on Key Sector under State Plan and Desert Development Programme in Selected Districts.

Sector:- Animal Husbandry and Dairy Development						
(Rs. in lakhs)						
State/District	Before Sixth Plan (1977-80)		Sixth Plan (1980-85)		Seventh Plan (first 3 years (1985-88))	
	Under State Plan	Under DDP	Under State Plan	Under DDP	Under State Plan	Under DDP
1.	2.	3.	4.	5.	6.	7.
Gujarat						
1. Banaskantha (a & b)	NA	NA	13.76	93.60 (87.18)	33.83	92.56 (73.23)
Maryana						
2. Nissar (a)	35.37	15.11 (29.93)	127.08	126.28 (49.84)	121.55	83.92 (40.84)
(b)		42.75 (100.0)	11.10	25.44 (69.62)	18.04	3.81 (17.41)
3. Rohtak (a)	NA	3.37	NA	71.09	247.23	52.86 (17.61)
(b)	1.31	7.68 (85.43)	49.70	13.80 (21.73)	20.15	- (0.00)
Rajasthan						
4. Barmer (a & b)	6.26	4.54 (42.04)	12.51	128.38 (91.12)	30.02	398.33 (92.99)
3. Jaisalmer (a & b)	4.55	7.57 (62.46)	7.90	70.05 (89.87)	7.81	385.33 (98.02)
6. Jhunjhunu (a & b)	4.21	72.44 (94.51)	18.38	84.18 (82.08)	44.19	39.52 (47.21)
7. Jodhpur (a & b)	10.61	50.63 (82.67)	30.15	192.97 (86.49)	70.39	138.53 (66.31)
Himachal Pradesh						
8. Lahaul & Spiti (a & b) (Spiti Sub Division)	NA	5.33	NA	42.86	5.65	15.03 (72.68)
Jammu & Kashmir						
9. Leh (a & b)	9.79	9.18 (48.39)	103.52	85.90 (45.35)	104.00	85.14 (45.01)

Note : (a) Animal Husbandry (b) Dairy Development.

Percentages in brackets are the proportion of expenditure under DDP to the pooled expenditure - State and DDP.

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Table A.6.5 : Expenditure on key sectors under State Plan and DDP in all the 11 DDP districts of Rajasthan

(Rs. in lakhs)							
S. No.	Sector	Before Sixth Plan (1977-80)		Sixth Plan (1980-85)		Seventh Plan - First two years (1985-87)	
		Under State Sector	Under DDP	Under State Sector	Under DDP	Under State Sector	Under DDP
1.	2.	3.	4.	5.	6.	7.	8.
1.	Forestry and Wild life	399.04 (48.84)	418.07 (51.16)	301.37 (12.39)	2130.12 (87.61)	67.83 (3.77)	1733.34 (96.23)
2.	Irrigation, including ground water Dev. & Flood Control	10641.27 (98.94)	113.84 (1.06)	26584.80 (96.80)	878.01 (3.20)	12902.73 (97.01)	397.41 (2.99)
3.	Soil and water conservation and Land Development	1.90 (1.47)	127.57 (98.53)	51.48 (10.35)	445.82 (89.65)	33.25 (9.96)	300.75 (90.04)
3.	Animal Husbandry & Dairying	119.80 (19.93)	481.17 (80.07)	446.78 (23.94)	1419.10 (76.06)	343.47 (21.83)	1230.04 (78.17)

Note : Figures in brackets are percentages to the total expenditure (DDP+State Plan).

Table A.7.1: Key Indicators of Physical Targets and Achievements under different Sectors at State Level

Appendix IV

State: Gujarat

S.No. Sector/ Item	Unit	Before Sixth Plan (1980-85)					Sixth Plan (1980-85)					Seventh Plan(First 3 years)(1985-00)					Total since Inception & till (1987-88)				
		T	A	X	T	A	X	T	A	X	T	A	X	T	A	X					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15							
1. Afforestation																					
1. Plantation	Hectg.	4800	4800	100.00	10843	12598	116.2	4695	3677	78.3	20338	21075	103.6								
			(22.78)			(59.78)			(17.44)			(100.00)									
2. Shelter Belts	Kms.	330	310	93.90	1389	150	10.8	-	-	-	1719	460	26.8								
			(67.39)			(32.61)						(100.00)									
3. Grass Land Development	Hects.	1300	1300	100.00	4350	603	13.9	-	-	-	5650	1903	33.7								
			(68.31)			(31.69)						(100.00)									
2. Irrigation																					
1. Potential created	Hects.	-	-	-	-	-	-	1790	1105	61.7	1790	1105	61.7								
									(100.00)			(100.00)									
2. Construction of water harvesting structures	Nos.	-	-	-	-	20	17	85.0	53	83	156.6	73	100	137.0							
						(17.00)				(83.00)			(100.00)								
3. Agriculture																					
1. Soil Surveys	Hects.	-	-	-	-	134000	100000	74.6	196000	186000	94.9	330000	286000	86.7							
							(34.96)			(65.04)			(100.00)								
2. Area treated under soil conservation	Hects.	-	-	-	-	1167	923	79.1	1182	778	65.8	2349	1701	72.4							
						(34.26)				(45.74)			(100.00)								

Table A.7.1(Contd.): Key Indicators of Physical Targets and Ache under different Sectors at State Level

Appendix IV

State: Gujarat

S.No. Sector/ Item	Unit Before Sixth Plan (1980-85)			Sixth Plan (1980-85)			Seventh Plan(First 3 years)(1985-88)			Total since Inception & till (1987-88)		
	T	A	%	T	A	%	T	A	%	T	A	%
1	2	3	4	5	6	7	8	9	10	11	12	13
4. Animal Husbandry												15
1. New Sheep Breeding/ Rearing Coop. Societies set up	Nos.	-	-	-	-	-	-	-	43	43	100.0	43
										(100.00)		(100.00)
2. Fodder Development Farm	Nos.	4	4	(7.02)	100.0	43	41	95.3	12	12	100.0	59
							(71.93)			(21.05)		(100.00)
5. Rural Electrification												
1. Tubewells/Pumps Energised	Nos.	225	225	(42.45)	100.0	667	300	45.0	12	5	41.7	904
							(56.61)			(0.94)		(100.00)
2. Villages electrified	Nos.	-	-	-	-	22	22	100.0	-	-	-	22
							100.00					(100.00)

Note: Figures in brackets are percentages to the total.

A - Achievements

T - Targets

Table A.7.2 : Key Indicators of Physical Targets and Achievements under different sectors at State Level - Maryland.

State: Maryland														
S.No. Sector/Item	Unit	Before Sixth Plan (1977-80)			Sixth Plan (1980-85)			Seventh Plan (First three years) (1985-88)			Total (since inception till (1987-88)			
		T	A	%	T	A	%	T	A	%	T	A	%	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Afforestation														
1. Plantation	Hects.	2430	1262 (9.13)	51.93	7915	7723 (55.00)	97.47	5208	4831 (34.97)	92.76	15553	13816 (100.00)	88.83	
2. Shelter Belts	Kms.	7870	7740 (22.36)	98.35	24879	26730 (77.21)	107.44	150	150 (0.43)	100.00	32899	34620 (100.00)	105.23	
3. Sand Dune Stabilisation	Hects.	1235	789 (16.47)	63.89	3545	3751 (78.31)	105.81	250	250 (5.22)	100.00	5030	4790 (100.00)	95.23	
2. Irrigation														
1. Underground Pipelines	Nos.	175	4 (5.26)	2.28	180	72 (94.74)	40.00	-	-	-	355	76 (100.00)	21.41	
2. Sprinkler Set	Nos.	60	-	NR	-	-	-	16	15 (100.00)	93.75	76	15 (100.00)	19.74	
3. Pumping sets	Nos.	-	-	-	-	-	-	100	26 (100.00)	26.00	100	26 (100.00)	26	
4. Digging of Ponds/Tanks	Nos	-	-	-	-	-	-	118	212 (100.00)	179.66	118	212 (100.00)	179.66	
5. Treatment of land under watershed management	Hects.	-	-	-	557	37 (1.80)	6.64	2057	2018 (98.20)	98.10	2616	2055 (100.00)	78.62	

Contd.

Table A.7.2(Contd.) : Key Indicophysical Targets and Achievements under different sectors at State Level - Maryland.

State: Maryland														
S.No. Sector/Item	Unit	Before Sixth Plan (1977-80)			Sixth Plan (1980-85)			Seventh Plan (1985-90)			Total since inception till (1987-88)			
		T	A	%	T	A	%	T	A	%	T	A	%	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
3. Agriculture														
1. Soil Survey	Hects.	-	-	-	-	42000	14479 (100.00)	34.47	-	-	-	42000	14479 (100.00)	34.47
2. Land Levelling	Hects.	-	-	-	-	500	218 (18.47)	43.60	1260	962 (81.53)	76.35	1760	1180 (100.00)	67.05
4. Animal Husbandry														
1. New Veterinary dis./centres	Nos.	1	1	100.00	-	-	-	-	-	-	-	1	1	100.00
2. New wool Extension Centres set up	Nos.	1	-	-	2	2	100.00	100.00	-	-	-	3	2	66.67
3. New Milk collection Centres/Coop.Society setup	Nos.	480	313 (67.46)	65	21	161	151 (32.54)	93.79	-	-	-	641	464 (100.00)	72.39

Contd.

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Table A.7.2(Contd.) : Key IndicPhysical Targets and Achievements under different sectors at State Level - Maryana.

State: Maryana																
S.No.	Sector/Item	Unit	Before Sixth Plan (1977-80)				Sixth Plan (1980-85)				Seventh Plan (First three years) (1985-88)				Total(since inception till(1987-88)	
			T	A	Z	X	T	A	Z	X	T	A	Z	X		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
4.	New Sheep breeding/ rearing Coop.society set up.	Mos.	-	-	-	-	1	1	100.00	-	-	-	1	1	100.00	(100.00)
5.	Supply of Milch Animals(SFDA type)	Mos.	1850	1060	57.30	-	-	-	-	-	-	1850	1060	57.30	(100.00)	
6.	Broiler Project and hatchery	Mos.	-	-	-	-	-	-	2	2	100.00	2	2	100.00	(100.00)	
7.	Liquid Nitrogen Plant	Mos.	-	-	-	-	-	-	2	2	100.00	2	2	100.00	(100.00)	
5.	Rural Electrification															
1.	Tube wells/Pumps energised	Mos.	95	27	28.42	526	350	66.54	167	175	104.79	788	552	70.05	(100.00)	

Note: Figures in brackets are percentages to the total.

A - Achievements

T - Targets

Table A.7.3: Key Indicators of Physical Targets and Achievements under different sectors at State Level. Appendix IV

State: Rajasthan														
S.No.	Sector/Item	Unit	Before Sixth Plan (1977-80)			Sixth Plan (1980-85)			Seventh Plan (1985-88)			Total since inception till (1987-88)		
			T	A	%	T	A	%	T	A	%	T	A	%
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Afforestation														
1.	Plantation	Hects.	9410	5000 (8.05)	53.1	25020	29821 (47.99)	119.2	29839	27317 (43.96)	91.5	64269	62138 (100.00)	96.7
2.	Shelter Belts	Kms.	1200	1100 (6.91)	91.7	4943	8058 (55.66)	179.2	5838	5956 (37.43)	102	11981	15914 (100.00)	132.8
3.	Sand Dune Stabilisation	Hects.	4535	2216 (13.66)	48.9	6998	6516 (40.18)	93.1	8338	7487 (46.16)	89.8	19871	16219 (100.00)	81.6
2. Irrigation														
1.	Potential created	Hects.	6537	6357 (26.82)	97.2	6761	7724 (32.59)	114.2	22108	9620 (40.59)	43.5	35406	23701 (100.00)	66.9
2.	Construction of Water harvesting structures	Nos.	67	61 (20.96)	91.0	77	77 (26.46)	100.0	305	153 (52.58)	50.2	449	291 (100.00)	64.8
3.	Construction of Khadins	Nos.	-	-	-	17	40 (33.33)	235.3	263	80 (66.67)	30.4	280	120 (100.00)	42.9
3. Agriculture														
1.	Soil Survey	Hects	72000	59450 (41.68)	82.6	69000	82000 (57.48)	118.8	2000	1200 (0.84)	60.8	143000	142650 (100.00)	99.8
2.	Area Treated under soil conservation	Hects.	-	-	-	390	852 (27.17)	218.5	7792	2284 (72.83)	29.3	8182	3136 (100.00)	38.3

Contd.

Table A.7.3(Contd.): Key Indicators of Physical Targets and Achievements under different sectors at State Level. Appendix IV

State: Rajasthan																	
S.No. Sector/Item	Unit	Before Sixth Plan (1977-80)					Sixth Plan (1980-85)					Seventh Plan (First 3 years (1985-88)					Total since inception till (1987-88)
		T	A	%	T	A	%	T	A	%	T	A	%				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15			
3. Execution of Watersheds	Hects.	31169	26596 (46.32)	85.3	11617	15274 (26.61)	134	134 (64.42)	100.0	14	14 (6.73)	100.0	208	208 (100.00)	100.0		
4. Animal Husbandry																	
1. New Veterinary Dispensaries/Centres	Nos.	60	60 (28.85)	100.0	134	134 (64.42)	100.0	14	14 (6.73)	100.0	208	208 (100.00)	100.0				
2. New Milk Collection Centres/Coop.Societies set up	Nos.	70	12 (1.35)	17.1	812	641 (71.06)	78.9	209	249 (27.61)	119.1	1091	902 (100.00)	82.7				
3. New Sheep breeding/ Rearing Coop. Societies set up	Nos.	-	-	-	204	137 (100.00)	67.2	-	-	-	204	137 (100.00)	67.2				
4. Artificial Insemination Extn.Centres set up	Nos.	25	24 (100.00)	96.0	-	-	-	-	-	-	25	24 (100.00)	96.0				
5. Construction of Milk Routes	Kms.	-	-	-	776	400 (100.00)	51.5	-	-	-	776	400 (100.00)	51.5				
5. Rural Electrification																	
1. Tubewells/Pumps Energised	Nos.	-	867 (33.23)	-	2422	1725 (66.12)	71.2	785	17 (0.65)	2.2	3207	2609 (100.00)	81.4				
2. Villages Electrified	Nos.	-	200 (29.15)	-	350	419 (61.08)	119.7	92	67 (9.77)	72.8	442	606 (100.00)	155.2				

Notes: Figures in brackets are percentages to the total

A - Achievements
T - Targets

Note: Figures in brackets are percentages to the total

A - Achievements
T - Targets

Table A.7.4:

Key Indicators of Physical Targets and Achievements
under different Sectors at State Level

Appendix IV

State: Himachal Pradesh

Sl. No.	Sector/Item	Unit	Before 6th Plan 1978-79 1979-80	Sixth Plan 1980-81 to 1984-85	Seventh Plan 1985-86 to 1987-88	Grand Total since inception 1978-79 to 87-88								
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
			Target	Achieve- ment	%	Target	Achieve- ment	%	Target	Achieve- ment	%	Target	Achieve- ment	%
1. Afforestation														
	Plantation	Hectg.	NA	103.06	MR	448.68 (8.52)	516.97 (42.76)	115.22	707.79	589.02 (48.72)	83.22	NA	1209.05 (100.00)	MR
2. Irrigation														
	i) Potential created	Hectg.	172.00	122.00 (5.66)	70.93	1230.00	1176.00 (54.52)	95.61	1246.00	859.00 (39.82)	68.94	2648.00	2157.00 (100.00)	81.46
	ii) Construction of Water harvesting structures	No.	-	-	-	-	1 (100.00)	MR	-	-	-	-	1 (100.00)	MR
	iii) Construction of kuhl Nos.	No.	NA	7	MR	NA	25	MR	NA	17	MR	NA	49 (100.00)	MR
3. Agriculture														
	i) Area treated under soil conservation	Hectg.	NA	113.00 (15.11)	MR	-	538.75 (72.05)	-	NA	96.00 (12.84)	MR	NA	747.25 (100.00)	MR
	ii) Land Development	Hectg.	60.00	60.00 (21.64)	100.00	150.00	217.27 (78.36)	144.85	-	-	-	210.00	227.27 (100.00)	132.03
	iii) Bench Terracing	Hectg.	-	-	-	80.00	-	-	270.00	110.19 (100.00)	40.81	350.00	110.19 (100.00)	31.48
4. Animal Husbandry														
	i) New Veterinary Disp./centres	No.	-	4 (21.00)	-	-	15 (78.95)	-	-	-	-	-	19 (100.00)	-
	ii) Const. of vet Hosp./Disp. Building	No.	3	3 (25.00)	100.00	-	-	-	-	9 (75.00)	-	3	12 (100.00)	25.00
	iii) Fodder seed sown	Hectg.	-	-	-	76.00	38.07 (27.18)	50.00	250.00	102.00 (72.82)	40.80	326.00	140.07 (100.00)	42.97
	iv) Area under fencing	Hectg.	-	-	-	-	-	-	220.00	100.00 (100.00)	45.45	220.00	100.00 (100.00)	45.45

Table A.7.5 : Key Indicators of Physical Targets and Achievements Under different Sectors at State Level

State : Jammu & Kashmir

S. Sector/Item No.	Unit	Before Sixth Plan (1977-80)				Sixth Plan 1980-85				Seventh Plan 1985-87 (First 2 years)				Total Since Inception & upto 1986-87			
		T	A	%	T	A	%	T	A	%	T	A	%	T	A	%	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.			
1. Afforestation																	
1.	Plantation	Hects.	-	-	-	NA	311 (51.24)	NR	299	296 (48.76)	99	NA (100.0)	607	NR			
2. Irrigation																	
1.	Potential created	Hects.	-	-	-	NA	665 (78.70)	NR	NA	180 (21.30)	NR	NA	845 (100.0)	NR			
2.	Const. of Water harvesting structures	Mos.	NA	4 (1.02)	-	466	374 (95.41)	80.3	30	14 (3.57)	46.7	NA	392 (100.0)	NR			
3. Agriculture																	
1.	Area treated under soil conservation	Hecta.	-	-	-	378	266 (45.78)	70.4	645	315 (54.22)	48.8	1023	581	56.8			
4. Animal Husbandry																	
1.	New Wool Ext. Centres Set up.	Mos.	-	5 (33.33)	-	NA	10 (66.67)	NR	-	-	-	NA	15 (100.00)	NR			
T - Targets		A - Achievements				% - Percentage											

Table A.8.1 : Annual Rainfall in Selected Districts for DDP Study during the period from

1961 to 1987.
(In MM)

State	Selected District	Normal Rain Fall	1961	1971	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Gujarat	Banaskantha	381	672	438	1148	546	353	429	479	284	540	637	263	233	43
Maryana	1. Misar	395	152	291	547	508	250	236	409	389	457	368	330	384	180
	2. Rohtak	536	747	605	973	517	250	387	545	564	803	549	538	316	258
Rajasthan	1. Barmer	278	536	257	243	283	295	171	184	258	315	240	181	122	52
	2. Jaisalmer	164	532	114	131	215	244	142	251	177	267	132	79	59	39
	3. Jhunjhunu	445	417	535	534	668	226	324	249	368	490	336	325	256	191
	4. Jodhpur	319	355	269	389	386	537	250	279	451	554	221	112	192	87
Himachal Pradesh	1. Spiti Sub-Division (Lahaul Spiti)	NA	NIL	115	38	83	48	NIL	NIL	NIL	NIL	NIL	123	79	59
Jammu and Kashmir	1. Leh	93	NA	NA	109	NA	NA	NA	NA	NA	NA	152	89	47	NA

Appendix VI (Contd.)

Region	Name	Designation
3. Central Region	1. S/Shri J.K. Chahal	Deputy Adviser, REO, Jaipur
	2. Om Prakash	Research Officer
	3. C.H. Gohil	Senior Economic Investigator
	4. B.L. Sharma	Senior Economic Investigator
	5. C.M. Kulethwale	Economic Investigator
	6. J.V. Bulchandani	Economic Investigator
	7. Rajender Kumar	Project Evaluation Officer, Indore
	8. M.G. Bakshi	Eco. Investigator
	9. S.K. Sutradhar	Eco. Investigator
	10. Manoranjan Kumar	Project Evaluation Officer, Bhopal
	11. Virendra Singh	Eco. Investigator
	12. R.L. Tiwari	Eco. Investigator
	13. K.M. Temburney	Eco. Investigator
	14. Ganga Ram	Eco. Investigator

Sarva Shri Ram Babu and M.I. Farooqui, Research Officers, Nagender Jatav, E.I. Grade I and Suraj Prakash, Computer assisted at the time of finalisation of the draft.

In addition, Shri Dharmender Singh Sajwan, Tabulation Clerk, Smt. Rachna Bawa, Stenographer, Sarva Shri Raj Singh and Iqbal Singh of CSD, National Informatics Centre also assisted in different stages of finalisation of the draft.

