

Anantapuram district is one of the four districts of Rayalaseema region and the largest among the 23 districts of Andhra Pradesh with a geographical area of 19,197 sq.km. The district is economically backward and chronically drought affected. Eleven districts in Andhra Pradesh are classified as drought-prone and Anantapuram district as desert-prone, by the Government of India.¹ On average once in every five years, the district experiences drought conditions.² In 2006, Anantapuram was one of the thirty-one districts identified by the Government of India as being prone to agriculture-related suicides.³ The suicides are reported from the entire district except few mandals viz., Hindupur, Lepakshi and Chilamattur, irrespective of whether the mandal is falling in command area or non command areas, low or high ground water development.⁴

The soils of Anantapuram have great limitation in terms of its physical and chemical properties which seriously affect crop productivity in the district. The soils of the district have very poor water-retention capacity and high erodability, hence suffers from excessive water runoff and also undulating topography of the district promotes easy soil and water runoff which acts as impediment for cultivation in the district. Two-thirds of cultivable area can be cultivated only if conservation measures are adopted rigorously.

The entire district of Anantapuram is declared as hot arid due to severity of soil erosion, high temperatures, low and erratic, uneven and unreliable distribution of rainfall resulting in soil and moisture stress, low ground water level, high evaporation losses resulting in severe drought conditions. Trends of desertification are also seen in parts of the District. Degeneration of existing marginal and degraded forests had happened in the last 4 decades and acute scarcity of drinking water, fodder and fuel is taking place in every alternate year which is a serious drought year. Ground water levels are depleting at an alarming rate. Out of the total rainfall received only 10 to 15 percent is utilizable for agriculture and the rest is going waste through streams into sea and evaporation. All these factors are creating tremendous concern and awareness regarding the danger that is looming large among the masses of the districts.⁶

The following Physical Symptoms are Indicative for Beginning of Desertification Trends in Anantapuram District⁷

- Hardly 10 per cent of land mass available in the district is covered with forest.
- Most of the hillocks and hill ranges are barren without any sort of vegetation. The top soils are washed away due to very strong erosion factor.
- About 30 per cent of the hills are declared to be dead hills where nothing can grow because of the fact that there is no top soil on the hills except granites boulders and weathered rocks.
- Levels of ground water are going down year after year owing to low rainfall and over exploitation and not proper use and wastage of water.

The magnitude of soil and water erosion that happens in Anantapuram district calls for massive efforts for conservation of soil and water resources. The district needs a combination of short, medium, and long-term measures of soil and water conservation and drought proofing.⁸ Watershed development is found to be an

appropriate drought proofing solution to address the issue of drought and desertification.

Short-term measures are usually temporary in nature and need to be remade or taken up afresh periodically. Short-term treatments such as contour farming, compartmental bunds, broad bed and furrows, ridge and furrows, conservation furrows, and the practice of mulching are taken up at the individual farmer's field.⁹

Medium-term measures include inter-bund treatments and building conventional bunds along the field boundaries. These help in minimizing the velocity of surface flow of water on land, and helps retain soil and water.¹⁰

Long-term measures are taken up with the purpose of intercepting runoff, increasing infiltration time of rain water, checking soil erosion, regulating overland flow, and reducing peak flows. While short-term measures are taken up to some extent by individual farmers, the medium and long-term measures require higher investment and cannot be taken up by individual farmers.¹¹

Watershed Programmes in Anantapuram District

Anantapuram District has been declared as a chronic drought prone area in 1975 and since then the efforts are on to control eco-degradation and to restore ecological balance. To combat the recurring drought and to bring comprehensive development, the DPAP programme was introduced in 1975 covering all the blocks in the district. The programme was implemented on area approach basis with watershed development concept. Accordingly several developmental strategies were implemented with a view to conserve soil, harvest and conserve rain water bringing out change in cropping pattern, organizing people in the Self-Help Groups, development of dry land horticulture, sericulture and promotion of social forestry and Integrated Rural Development.

The efforts to promote watershed development were taken up in 1983 by voluntary organizations and subsequently the DPAP introduced micro-watershed development activities. Since 1990-91 the

district has taken up Integrated Watershed development programme at many areas. During 1993-94 and 1994-95, large number of water harvesting structures was taken up in the district resulting in ground water recharge.¹²

In the district of Anantapuram, soil and water conservation activities are carried out by District Water Management Agency under Department of Rural development, Soil and Water conservation wing of the Department of Agriculture (under National Watershed Development Projects for Rainfed Areas, (NWDPRRA), as well as by some Non-Governmental Organizations. Major watershed activities that are carried out by DWMA are construction of check dams, farm ponds, percolations tanks, rock fill dams and afforestation on endowment lands.¹³

Organizational Structure of Soil and Water Conservation Wing of DoA in Anantapuram District

The watershed activities of Soil and Water Conservation wing are carried out under NWDPRRA. The wing has four divisions comprising of Anantapuram, Kadiri, Hindupur, and Kalyandurg. From 1950's till 1985 the department had 1 Deputy Director of Agriculture at the district level. Under him there were 4 Assistant Directors of Agriculture one each for each division.¹⁴ Each Assistant Director of Agriculture had 5 to 6 Agricultural Officers under him in each division. Under each Agricultural officer there were 7 to 8 Agricultural Extension Officers who were solely responsible for soil and water conservation works at the village level.¹⁵

Post 1985, changes were made in the staff structure dealing with Soil and Water conservation activities. Agricultural Officers, and Agricultural Extension Officers dealing exclusively with Soil and Water conservation were removed. The wing had one Deputy Director and four Assistant Directors one each for the divisions, namely, Anantapuram, Kalyandurg, Kadiri, and Hindupur. The Department set up village level Watershed Committees, and it was these committees that came up with the kind of work that need to be carried

out in their watersheds. The field level activities were to be carried out by the villagers themselves.¹⁶

Earlier, the department used to take up a lot of activities in the individual farmers' fields. They also used to strictly follow the ridge to valley approach of treatment of watersheds. Social forestry and grassland development activities were taken up in the upper reaches. Continuous contour trenching, and graded bunds, check dams, Gabbion structures, etc, were taken up in the middle reaches, and farm ponds, field bunds and rock fill dams, were taken up in the lower reaches. According to the officials of the Soil and Water conservation Wing of the Department of Agriculture, post 1985, the type of activity taken up and level of activity has come down. The ridge to valley approach of treating a watershed is no longer adhered to, and the majority of the works taken up is construction of low cost structures like field bunds, rock fill dams and check dams.

Total area treated under NWDPRP programme in Anantapuram district during the period 1992-2007 is 29,097 hectares. This means that only a mere 1.5 per cent of the total geographical area of the district has been treated under NWDPRP programme over a period of 15 years, starting from 1992. In other words, just about 2000 ha per annum has received soil and water treatment under this programme.¹⁷

Evolution and Organizational Structure of DWMA in Anantapuram District

During 1993, a separate Project Directorate was sanctioned for implementing Watershed and Wage Employment Programmes for Anantapuram District. Subsequently, Project Directorates were created in the 11 DPAP Districts taking into account the workload involved in Watershed Wage Employment Programme.¹⁸ While implementing these activities a need was felt to have separate wing for water management in the 10 non-DPAP Districts also. Towards this, the Government has created separate establishment for water management and wage employment at district level.¹⁹ All the projects

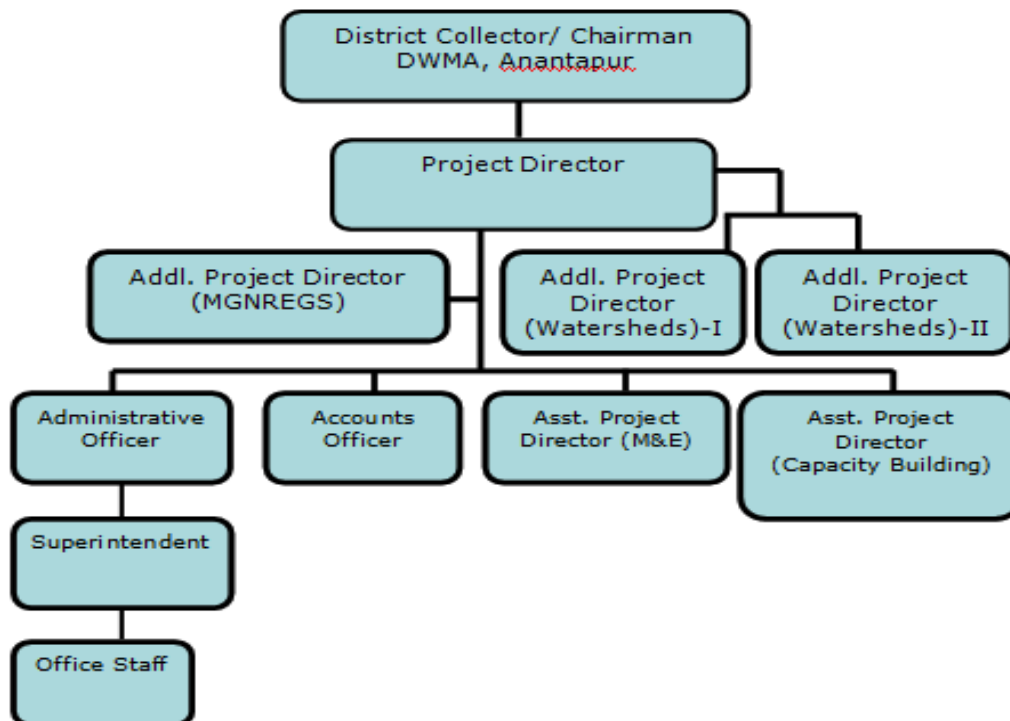
handling watersheds and wage employment programmes have been re-designated as District Water Management Agency.²⁰ Thus, DWMA has been created as a separate establishment by bifurcating from DRDA exclusively to look after development of human resources and natural resources on watershed basis. Consequently the nomenclature of Project Director DPAP is changed as Project Director District Water Management Agency uniformly for all districts in the state.²¹ The DWMA's are now the district units under the administrative control of the Commissioner, Rural Development. The Chairman of the Project is District Collector and the Project is looked after by Project Director who is assisted by Multi Disciplinary Team (MDT) having one Deputy Executive Engineer, Assistant Conservator of Forest, Assistant Director of Agriculture, Assistant Engineer and Agriculture Officer as members. The Agency apart from Integrated Watershed Management programme is also monitoring Comprehensive Land Development Programme (CLDP), Mahatma Gandhi National Rural Employment Guarantee Scheme (MNREGS), Food for Work Programme, Indira Jala Prabha in the District under which watershed works were also under taken.²²

Functions of Anantapuram District Water Management Agency (DWMA)

- Planning and implementing watershed programmes at district level.
- Guiding, supporting, monitoring, co-coordinating and facilitating cluster APDs, MPDOs and APOs in effective execution of watersheds and implementing water vision.
- Facilitating co-ordination of conservation efforts of various Government Departments/Water resource monitoring.

The organization set up of DWMA is given in Figure 5.1.

Figure 5.1
ORGANIZATION SETUP OF DWMA, ANANTAPURAM



As on 2013, 468 watersheds have been completed by DWMA in the district and nearly one-third of geographical area of the district, namely, 605,665 hectare, is treated under watersheds according to data furnished by DWMA. As DWMA is the implementing agency for MNREGS, under the Indiramma Cheruvulu scheme until 2008, 749 tanks repair work was undertaken. Some tanks were also converted into percolation tanks.²³

In addition to other measures the DWMA has taken special emphasis on development of common lands so as to improve the greenery, provide employment to the landless labour and increase the revenue to the community for over all development. The common lands in the district are Government waste lands, hillocks and endowment lands.²⁴

In watershed programmes, more emphasis was given to raise the block plantation in the form of Barren Hill Afforestation (BHA), Avenue plantation and village wood lots (VWL). In the district it is also felt that the tamarind plant is drought resistant, hard species and will give more income to the community and intern financially supports the development of poor in future. Hence, more thrust was given to raise tamarind plantation in the district along with other species.²⁵

The watershed programme in the district is being implemented under six schemes by DWMA, i.e., Employment Assurance Scheme (EAS), Andhra Pradesh Rural Livelihood programme (APRLP), Andhra Pradesh Hazard Mitigation Programme (APHM), Desert Development Programme (DDP), Hariyali Scheme and Integrated Watershed Management programme which are explained in detail.²⁶

Employment Assurance Scheme (EAS)

In Anantapuram district Employment Assurance Scheme was introduced during 1993-1994. During this period nearly 3765 works have been approved with the aim of providing 30 lakh man days of employment. The total allocation of Rs 15.64 lakh included 3206 works of soil, water and moisture conservation, works on 164 link roads at Rs 3.20 crores and 395 works concerning repairs to primary school buildings and construction of new buildings at a cost of Rs 2.14 crores. But the projections were not completely achieved as the programme was started in second half of the year.

Table 5.1 gives the list of Watersheds completed in Anantapuram district under Employment Assurance Scheme.

Table 5.1**WATERSHEDS COMPLETED IN ANANTAPURAM DISTRICT UNDER EAS**

Sl.No.	Mandal	No. of watershed completed
1.	Agali	3
2.	Anantapuram	3
3.	Atmakur	2
4.	Beluguppa	2
5.	Brahmasamudram	2
6.	Bukkapatnam	4
7.	Chennekottapalli	1
8.	Chilamatturu	6
9.	Gandlapenta	1
10.	Gooty	3
11.	Guntakal	4
12.	Hindupur	5
13.	Kadiri	1
14.	Kalyanadurg	3
15.	Kambadur	6
16.	Kanaganapalle	3
17.	Kanekal	5
18.	Kottacheruvu	3
19.	Kundurpi	2
20.	Lepakshi	2
21.	Mudigubba	4
22.	Nallacheruvu	4
23.	Nallamada	1
24.	Nambulipulikunta	2
25.	Narpala	3
26.	Parigi	4

Sl.No.	Mandal	No. of watershed completed
27.	Peddapapur	3
28.	Penukonda	5
29.	Puttur	3
30.	Ramagiri	4
31.	Rapthadu	7
32.	Roddam	2
33.	Rolla	3
34.	Settur	3
35.	Singanamala	2
36.	Somandepalli	3
37.	Tadimarri	2
38.	Tadipatri	3
39.	Talupala	3
40.	Tanakal	2
41.	Uravakonda	5
42.	Vajrakaruru	4
43.	Videpanakal	2
	Total	141

Source: DWMA, Anantapuram.

141 watershed projects were completed under Employment Assurance scheme in the district. The total number of mandals covered under the programme is 43.

Andhra Pradesh Hazard Mitigation Programme (APHMP)

An integrated action plan for the project of 3 years from 1997-98 to 1999-2000 was prepared for 20 watersheds selected in the district under APHM. During the first year, preliminaries like formation of watershed committees, preparation of action plans, formation of SHGs and UGs were completed and development works were started.

Table 5.2 depicts watersheds completed in Anantapuram district under Andhra Pradesh Hazard Mitigation.

Table 5.2

**WATERSHEDS COMPLETED IN ANANTAPURAM DISTRICT UNDER
ANDHRA PRADESH HAZARD MITIGATION**

Sl.No.	Mandal	No. of watershed completed
1.	B.K. Samudram	1
2.	Dharmavaram	1
3.	Guntakal	4
4.	Hindupur	1
5.	Kadiri	1
6.	Kalyandurg	2
7.	Kottacheruvu	2
8.	Madakasira	4
9.	O.D. Cheruvu	1
10.	Pamidi	1
11.	Rayadurg	1
12.	Tadipatri	1
	Total	20

Source: DWMA, Anantapuram.

Under Andhra Pradesh Hazard Mitigation Programme 20 watershed projects were completed in the district. 12 mandals in the district were covered under the programme.

Andhra Pradesh Rural Livelihood Programme (APRLP)

District of Anantapuram is also one of the 5 APRLP districts of Andhra Pradesh others being Kurnool, Mahaboobnagar, Nalgonda and Prakasam districts. The capacity building and livelihood issues are pursued under the APRLP.

Watersheds completed in Anantapuram district under Andhra Pradesh Rural Livelihood Programme is given in Table 5.3.

Table 5.3**WATERSHEDS COMPLETED IN ANANTAPURAM DISTRICT UNDER
ANDHRA PRADESH RURAL LIVELIHOOD**

Sl.No.	Mandal	No. of watershed completed
1.	Agali	5
2.	Amadagur	2
3.	Beluguppa	1
4.	Bukkapatnam	2
5.	Bukkarayasamudram	3
6.	Chennekottapalli	6
7.	Chilamattur	3
8.	Gooty	7
9.	Gorantla	11
10.	Guntakal	1
11.	Kalyandurg	3
12.	Kambadur	5
13.	Kanaganapalli	5
14.	Kudair	4
15.	Mudigubba	2
16.	Nallacheruvu	3
17.	Narpala	3
18.	Pamidi	2
19.	Peddavadugu	2
20.	Penukonda	3
21.	Puttaparthi	3
22.	Ramagiri	4
23.	Rapthadu	3
24.	Roddam	8
25.	Rolla	6
26.	Somandepalli	2
27.	Vajrakaruru	1
	Total	100

Source: DWMA, Anantapuram.

Table 5.3 points out that under APRLP, 100 watershed projects were completed in Anantapuram district. 27 mandals were covered under this programme.

Desert Development Programme (DDP)

The district of Anantapuram is one of the DDP districts having totally 813 watersheds under various schemes. The Desert Development Programme is being implemented since 1995 in the district. DDP-V was introduced from 01.04.1999. Initially 16 blocks

were covered under DDP. Traditionally, the watershed approach was aimed at treating degraded lands with the help of low costs and locally accessed technologies such as in-situ soil and moisture conservation, afforestation etc by involving village communities in the implementation of watershed programme. DDP is aimed at promoting overall development of poorer sections of people inhabiting in the programme area. The approach basically followed was project based Ridge to Valley concept with the minimum unit of area being 500 hectares.

The DDP watersheds are spread over 56 mandals (out of total 63 mandals) over 6 MDT divisions. Once in every month the Project Director reviews the work with all the PIAs, MDTs and watershed secretaries at District level. The MDTs collect data from the PIAs and consolidate at their offices before transmitting to the Project Director, DDP. There are 6 MDT teams with headquarters at Anantapuram, Dharmavaram, Uravakonda, Hindupur, Kadiri, Kalyandurg. These teams have offices (mostly rented) and all the details of watersheds in their jurisdiction are computerized here and transmitted to the PD, DDP. The MDT teams have senior functionaries from Forestry, Agriculture and Engineering Sectors. Social mobilizers are also attached to them.

DDP-V Scheme

DDP-V scheme is implemented in the district during 1999-2000. For the sake of effective implementation of the watershed programme, the whole district of Anantapuram is divided into 12 clusters under Descent Development Programme- B.K. Samudram, Dharmavaram, Guntakal, Hindupur, Kadiri, Kalyandurg, Kottacheruvu, Madakasira, O.D. Cheruvu, Pamidi, Rayadurg and Tadipatri. Each cluster covers 1-7 mandals. Under each mandal 1-14 villages are taken up for the programme.

Under this scheme, in B.K. Samudram cluster 11 villages in six mandals; Dharmavaram cluster, nine villages in five mandals; Guntakal cluster nine villages in four mandals; Hindupur cluster nine

villages in five mandals; Kadiri cluster six villages in four mandals; Kalyandurg cluster eight villages in six mandals; Kottachruvu eight villages in five mandals; Madakasira cluster seven villages in five mandals; O.D. Cheruvu cluster eight villages in four mandals; Pamidi cluster seven villages in four mandals; Rayadurg cluster seven villages in four mandals and lastly Tadipatri cluster seven villages in three mandals were covered.

In all 12 clusters, 55 mandals, 96 watershed villages were covered under DDO-V scheme with B.K. Samudram cluster covering maximum number of mandals (6) and watershed villages (11)

DDP-VI Scheme

The DDP-VI scheme was started in 2000-2001 in the district. This scheme also covers the same 12 clusters. Apart from the mandals covered under DDP-V scheme, new mandals are also covered under this present DDP-VI scheme, covering the uncovered watershed villages.

Under this scheme, in B.K. Samudram cluster four villages in three mandals; Dharmavaram cluster five villages in four mandals; Guntakal cluster two villages in two mandals; Hindupur cluster seven villages in three mandals; Kadiri cluster seven villages in five mandals; Kalyandurg cluster seven villages in four mandals; Kottacheruvu cluster three villages in two mandals; Madakasira cluster six villages in five mandals; O.D. Cheruvu cluster one village in one mandal; Pamidi cluster three villages in two mandals; Rayadurg cluster six villages in four mandals; and Tadipatri cluster nine villages in four mandals were covered.

Over all, the DDP-VI scheme is covered under 12 clusters, 39 mandals and 60 watershed villages with Madakasira cluster covering maximum mandals (7) and Tadipatri cluster maximum watershed villages (9)

DDP-VII Scheme

The DDP-VII scheme was sanctioned to Anantapuram district in the year 2001-2002. The uncovered villages in DDP- V and VI schemes are covered under this scheme.

Under this scheme, in B.K. Samudram cluster four villages in four mandals; Dharmavaram cluster two villages in one mandal; Guntakal cluster three villages in two mandals; Hindupur cluster 11 villages in four mandals; Kadiri cluster 12 villages in five mandals; Kalyandurg cluster 10 villages in five mandals; Kottacheruvu cluster five villages in two mandals; Madakasira cluster six villages in four mandals; O.D. Cheruvu cluster six villages in four mandals; Pamidi cluster seven villages in four mandals; Rayadurg cluster four villages in three mandals; and Tadipatri cluster 10 villages in five mandals were covered.

In all, 12 clusters, 43 mandals and 80 watershed villages are covered under this present scheme with Kadiri cluster covering maximum number of mandals (5) and watershed villages (12)

DDP-VIII Scheme

The scheme was implemented in the district during the year 2002-2003. The scheme covers already covered mandals and uncovered mandals and watershed villages.

Under this scheme, in B.K. Samudram cluster eight villages in five mandals; Dharmavaram cluster 14 villages in six mandals; Guntakal cluster six villages in three mandals; Hindupur cluster 10 villages in five mandals; Kadiri cluster 12 villages in five mandals; Kalyandurg cluster nine villages in six mandals; Kottacheruvu cluster 12 villages in six mandals; Madakasira cluster 12 villages in five mandals; O.D. Cheruvu cluster 12 village in five mandals; Pamidi cluster seven villages in four mandals; Rayadurg cluster four villages in three mandals; and Tadipatri cluster four villages in three mandals were covered.

Overall, 12 clusters, 56 mandals, 110 watershed villages are covered under this present scheme with Dharmavaram cluster covering maximum number of mandals (6) and villages (14)

Thus under DDP-V, DDP-VI, DDP-VII and DDP-VIII schemes, in B.K. Samudram cluster 27 villages in 18 mandals; Dharmavaram cluster 30 villages in 16 mandals; Guntakal cluster 20 villages in 11 mandals; Hindupur cluster 37 villages in 17 mandals; Kadiri cluster 37 villages in 19 mandals; Kalyandurg cluster 34 villages in 21 mandals; Kottacheruvu cluster 28 villages in 15 mandals; Madakasira cluster 31 villages in 19 mandals; O.D. Cheruvu cluster 27 village in 14 mandals; Pamidi cluster 24 villages in 14 mandals; Rayadurg cluster 21 villages in 14 mandals; and Tadipatri cluster 30 villages in 15 mandals were covered totally.

Overall, under DDP schemes, 12 clusters, 193 mandals, 346 villages were covered, with Kalyandurg cluster covering maximum number of mandals (21) and Hindupur and Kadiri clusters covering maximum number of villages (37). The DDP programme was closed in March 2012 in the district.

Watershed Programmes implemented under DDP in Anantapuram is given in Table 5.4

Watershed Programmes under Hariyali Schemes

Watershed works were being implemented under Hariyali programme in Anantapuram district since 2003. For the implementation of watershed programmes under Hariyali, the district was divided into 12 clusters. The same 12 clusters under DDP were continued for Hariyali watershed programme. Hariyali programme was implemented in the district in five phases Hariyali-I, Hariyali-II, Hariyali-III and Hariyali-IV which are discussed in detailed below:

Hariyali-I

Hariyali-I programme was implemented in the district in 2003-2004, covering 12 clusters. Under this scheme in B.K. Samudram cluster 10 villages in five mandals; Dharmavaram cluster seven villages in five mandals; Guntakal cluster seven villages in four

mandals; Hindupur cluster eight villages in four mandals; Kadiri cluster 13 villages in five mandals; Kalyandurg cluster seven villages in six mandals; Kottacheruvu cluster seven villages in five mandals; Madakasira cluster 14 villages in five mandals; O.D. Cheruvu cluster 11 village in five mandals; Pamidi cluster 11 villages in four mandals; Rayadurg cluster seven villages in three mandals; and Tadipatri cluster eight villages in four mandals were covered.

In all the clusters, 55 mandals and 110 villages were covered under Hariyali-I scheme with Kalyandurg cluster covering maximum number of mandals (6) and Madakasira cluster covering maximum number of watershed villages (14)

Hariyali-II

Hariyali scheme was started in 2004-2005 in the district covering previously covered mandals under Hariyali-I scheme and also covering uncovered mandals and villages under the scheme.

Under this scheme, in B.K. Samudram cluster 10 villages in four mandals; Dharmavaram cluster 13 villages in six mandals; Guntakal cluster eight villages in four mandals; Hindupur cluster seven villages in five mandals; Kadiri cluster eight villages in five mandals; Kalyandurg cluster 14 villages in six mandals; Kottacheruvu cluster seven villages in six mandals; Madakasira cluster seven villages in five mandals; O.D. Cheruvu cluster seven village in five mandals; Pamidi cluster 10 villages in five mandals; Rayadurg cluster 11 villages in five mandals; and Tadipatri cluster eight villages in five mandals were covered.

Overall, the Hariyali-II scheme is covers 12 clusters, 61 mandals and 110 watershed villages with Kalyandurg cluster covering maximum number of mandals (6) and villages (14).

Table 5.4**WATERSHED PROGRAMMES IMPLEMENTED UNDER DDP IN ANANTAPURAM**

Sl. No.	Cluster	DDP-V		DDP-VI		DDP-VII		DDP-VIII		Total	
		Mandal	Village	Mandal	Village	Mandal	Village	Mandal	Village	Mandal	Village
1.	B.K. Samudram	6	11	3	4	4	4	5	8	18	27
2.	Dharmavaram	5	9	4	5	1	2	6	14	16	30
3.	Guntakal	4	9	2	2	2	3	3	6	11	20
4.	Hindupur	5	9	3	7	4	11	5	10	17	37
5.	Kadiri	4	6	5	7	5	12	5	12	19	37
6.	Kalyandurg	6	8	4	7	5	10	6	9	21	34
7.	Kottacheruvu	5	8	2	3	2	5	6	12	15	28
8.	Madakasira	5	7	5	6	4	6	5	12	19	31
9.	O.D. Cheruvu	4	8	1	1	4	6	5	12	14	27
10.	Pamidi	4	7	2	3	4	7	4	7	14	24
11.	Rayadurg	4	7	4	6	3	4	3	4	14	21
12.	Tadipatri	3	7	4	9	5	10	3	4	15	30
	Total	55	96	39	60	43	80	56	110	193	216

Source: DWMA, Anantapuram.

Hariyali-III

Hariyali-III scheme is started in the district in 2005-2006. The villages not covered under Hariyali-I and Hariyali-II are covered under this scheme.

Under Hariyali-III, in B.K. Samudram cluster 13 villages in six mandals; Dharmavaram cluster 15 villages in six mandals; Guntakal cluster 11 villages in three mandals; Hindupur cluster eight villages in four mandals; Kadiri cluster 10 villages in five mandals; Kalyandurg cluster 16 villages in six mandals; Kottacheruvu cluster nine villages in five mandals; Madakasira cluster eight villages in two mandals; O.D. Cheruvu cluster nine village in five mandals; Pamidi cluster 11 villages in five mandals; Rayadurg cluster 14 villages in five mandals; and Tadipatri cluster 10 villages in five mandals were covered.

In all, the Hariyali-III programme is covered under 12 clusters, 57 mandals, 134 villages with B.K. Samudram and Dharmavaram clusters covering maximum number of mandals (6) and Kalyandurg cluster covering maximum number of villages (16).

Hariyali-IV

Hariyali-IV scheme was implemented in the district during 2006-2007. The uncovered mandals and villages by previous Hariyali-I, II, III schemes are covered under this scheme.

Under Hariyali-IV programme in B.K. Samudram cluster 14 villages in six mandals; Dharmavaram cluster 16 villages in six mandals; Guntakal cluster 12 villages in four mandals; Hindupur cluster nine villages in five mandals; Kadiri cluster 12 villages in five mandals; Kalyandurg cluster 18 villages in six mandals; Kottacheruvu cluster 10 villages in five mandals; Madakasira cluster nine villages in five mandals; O.D. Cheruvu cluster nine village in five mandals; Pamidi cluster 13 villages in five mandals; Rayadurg cluster 15 villages in five mandals; and Tadipatri cluster 11 villages in five mandals were covered.

In all, 12 clusters, 62 mandals, 148 villages are covered under Hariyali-IV with Kalyandurg cluster covering maximum number of mandals 6 and villages 18.

Overall under Hariyali programme, 12 clusters, 235 mandals, 502 watershed villages were covered with Kalyandurg cluster covering maximum number of mandals 24 and villages 55. Hariyali programme was closed on March 2013 in the district.

During 2011-2012 alone, a total of 196 villages have been identified as over exploited in 29 mandals of Anantapuram district. All together 418 villages in the district are identified as over exploited.

The three watershed villages under Hariyali-IV programme selected for the present study. Kandukuru, Yarrgunta and Duddebanda are also categorized as over exploited, and have watershed programme implementation to treat them.

Table 5.5 shows the list of watershed programme under Hariyali scheme (2003-2007).

Watershed Programmes under Integrated Watershed Management (IWM) Programme

Integrated Watershed Management Programme was started in the district in 2009-2010. After Hariyali-II (2006-2007), no new projects were sanctioned to the district till 2009.

IWMP-I

In 2009-2010, 1st Batch of 82 watershed projects under IWMP were sanctioned covering 68 Gram Panchayats, 243 habitations overall 15 mandals were covered under this programme.

IWMP-II

IWMP Batch-II programme was introduced in the district in 2010-2011. Under this programme 116 watershed projects were sanctioned covering 113 Gram Panchayats and 423 habitations. Total mandals covered under this programme is 25.

Table 5.5**WATERSHED PROGRAMMES IMPLEMENTED UNDER HARIYALI SCHEME IN ANANTAPURAM**

Sl. No.	Cluster	Hariyali-I		Hariyali-II		Hariyali-III		Hariyali-IV		Total	
		Mandal	Village	Mandal	Village	Mandal	Village	Mandal	Village	Mandal	Village
1.	B.K. Samudram	5	10	4	10	6	13	6	14	21	47
2.	Dharmavaram	5	7	6	13	6	15	6	16	23	51
3.	Guntakal	4	7	4	8	3	11	4	12	15	38
4.	Hindupur	4	8	5	7	4	8	5	9	18	32
5.	Kadiri	5	13	5	8	5	10	5	12	20	43
6.	Kalyandurg	6	7	6	14	6	16	6	18	24	55
7.	Kottacheruvu	5	7	6	7	5	9	5	10	21	33
8.	Madakasira	5	14	5	7	2	8	5	9	17	38
9.	O.D. Cheruvu	5	11	5	7	5	9	5	9	20	36
10.	Pamidi	4	11	5	10	5	11	5	13	19	45
11.	Rayadurg	3	7	5	11	5	14	5	15	18	47
12.	Tadipatri	4	8	5	8	5	10	5	11	19	37
	Total	55	110	61	110	57	134	62	148	235	502

Source: DWMA, Anantapuram.

IWMP-III

IWMP Batch-III is started in 2011-2012 in the district. 125 watershed projects were sanctioned to the district under this programme. 31 mandals in the district are covered under this programme. A total area of 9,70,110 hectares was proposed to be covered under this programme.

Overall under IWMP-I, II, III batch, 323 watershed projects are sanctioned to Anantapuram district covering 181 Gram Panchayats. Total number of habitations covered under this programme is 666. 70 mandals in the district are covered under the three batches of IWMP.

The immediate impact of the watersheds has been creation of work to the villagers who are extremely happy with the watershed works. The selection of site, the design and cost factors are being closely supervised by quality control cells functioning at district level. There is a clear change in the cropping pattern from groundnut to dry land horticulture.

As on 2013 all 63 mandals are covered under watershed management. Of the 2406 villages, 669 are covered under watersheds covering an area of 4.065 lakhs Ha. So far, 1171 micro watersheds are under implementation with 141 under EAS, 552 under DDP, 502 under Hariyali, 323 under IWMP, 20 under APHM and 100 under APRLP. Under RIDF VI 89 villages and under RIDF VIII phase-1, 198 villages are covered though they are not regular watersheds. There are 41 PIAs of which 33 are Government PIAs and 8 are NGO PIAs. There are 4094 UGs and 2833 SHGs in the 813 watersheds.²⁷

A glance of number of watersheds sanctioned, year of sanctioning, mandals covered and area treated under DDP, Hariyali and IWMP is given in Table 5.6.

It is derived from the table a total of 1171 watersheds were sanctioned to the district under DDP, Hariyali and IWMP from 1999-2012, treating an area of 411010.84 hectares. All the 63 mandals were covered under the watershed programme in the district.

Table 5.6
TOTAL NUMBER OF WATERSHEDS IN ANANTAPURAM DISTRICT
(DDP, HARIYALI and IWMP)

Sl. No	Scheme	No. of Watersheds Sanction	Year of Sanction	Mandals Covered	Area treated (in Hectares)
1	DDP-V	96	1999 – 00	55	39585.17
2	DDP-VI	60	2000 – 01	39	33464.33
3	DDP-VII	80	2001 – 02	42	44064.83
4	DDP-VIII	110	2002 – 03	56	60725.50
5	Hariyali-I	110	2003 – 04	55	55084.00
6	Hariyali-II	110	2004 – 05	61	53435.17
7	Hariyali-III	134	2005 – 06	57	59847.17
8	Hariyali-IV	148	2006 - 07	62	64804.67
9	IWMP-I	82	2009-10		59,205
10	IWMP-II	116	2010-11		1,03,397
11	IWMP-III	125	2011-12		79110
	Total	1171			411010.84

Source: DWMA Anantapuram.

REFERENCES

1. www.agriculturesnetwork.org
2. Rukmani, R., Manjula, M., *Designing Rural Technology Delivery Systems for Mitigating Agricultural Distress: A study of Anantapuram district*, M S Swaminathan Research Foundation, Chennai, 2009, p.15.
3. Ibid., p.17.
4. *Ground Water Information Anantapuram district, Andhra Pradesh*, Southern Region, Hyderabad, Central Ground Water Board Ministry of Water Resources, Government of India, July 2007. p.1.
5. Rukmani, R., Manjula, M., *Designing Rural Technology Delivery Systems for Mitigating Agricultural Distress: A study of Anantapuram district*, M S Swaminathan Research Foundation, Chennai, 2009, p.73.
6. www.anantapur.gov.in/
7. *District Water Management Agency, Anantapuram.*
8. Rukmani, R., Manjula, M., *Designing Rural Technology Delivery Systems for Mitigating Agricultural Distress: A study of Anantapuram district*, M S Swaminathan Research Foundation, Chennai, 2009, p.73.
9. Ibid.
10. Ibid.
11. Ibid.
12. Surendra Kumar, *Watershed Development- A Study on Voluntary Action*, MPhil in Rural Development, 1997 p. 45.
13. Rukmani, R., Manjula, M., *Designing Rural Technology Delivery Systems for Mitigating Agricultural Distress: A study of Anantapuram district*, M S Swaminathan Research Foundation, Chennai, 2009, p.73.
14. Ibid., p. 73.
15. Ibid., p. 73.
16. Ibid., p. 75.

17. Ibid., p. 79.
18. *G.O.Ms.No.482, PR&RD (RDIII)* Department, Dt.14.11.1998.
19. *G.O.Ms.275, PR&RD (RDII)* Department, Dt.05.09.2001.
20. Ibid.
21. *GO.MS.No.84 PR&RD (RD-IV)* Department Dt.22-03-03.
22. <http://www.rd.ap.gov.in/DWMA.htm>.
23. Ibid.
24. http://www.rd.ap.gov.in/PPTandPDF/Chinta_tho_Nischinta_AT_P_Tamarind.pdf.
25. <http://www.rd.ap.gov.in>.
26. *District Water Management Agency, Anantapuram.*
27. Ibid.