

**DETAILED PROJECT REPORT  
UNDER INTEGRATED WATERSHED  
MANAGEMENT PROGRAMME  
PANCHAYAT SAMITI, DESURI (PALI)  
NAME OF WATER SHED- PALI (IWMP) XV  
GRAM PANCHYAT COVERED - 02  
VILLAGES BENEFITED -04  
TOTAL GEOGRAPHICAL AREA -5616 HA.**

**FOREST AREA**

**1000**

**HA**

**EFFECTIVE AREA**

**4616**

**HA.**

**PROJECT PERIOD**

**2010-11 TO**

**2017-18**

**MICRO/MACRO NO.**

**17/1,2,4,8T015**

Ghaner

CHAPTER - 1

INTRODUCTION

## **1.1 Introduction**

In India, where a lot of water goes waste, it is important to apply the technology of watershed management to solve its annual problems of droughts and floods. The demand for water exceeds its supply, Conflicts sharing water resources are on the rise. Planning and development of watersheds calls for a rigorous understanding of the occurrence and movement of water in the surface and sub-surface systems along with soil and nutrient losses in a watershed as the need arises for a proper watershed management of that area. In a country like India, where a lot of running water goes waste, it becomes very important to apply the technology of watershed management to solve its annual problems of droughts and floods.

Watershed management basically involves harmonizing the use of soil and water resources between upstream and downstream areas within a watershed toward the objectives of natural resource conservation, increased agricultural productivity and a better standard of living for its inhabitants. Identifying and addressing the significant externalities associated with watershed is critical for these objectives to be achieved in a sustainable manner.

In the 1980s and 1990s, agricultural scientists and planners aimed to promote rain-fed agriculture through watershed development. A watershed is an area from which all water drains to

a common point, making it an interesting unit for managing water and soil resources to enhance agricultural production through water conservation

## **1.2 Philosophy of Integrated watershed management Programme**

IWM planning is a comprehensive multi-resource management planning process, involving all stakeholders within the watershed, who together as a group, cooperatively work towards identifying the resource issues and concerns of the watershed, as well as develop and implement a watershed plan with solutions that are environmentally, socially and economically sustainable.

In India, the IWM efforts go back to 1970. There have been many changes in the implementation strategies during the following years. Until 1995, watershed development projects were officially coordinated by multi-sectoral programmes (with differing objectives) launched by the Government of India. After review in 1999 by the Ministry of Rural Development and the Ministry of Agriculture, a common set of operational guidelines, objectives, strategies and expenditure norms were established for watershed development programmes in 2001. These are

implemented through programmes such as DPAP (Drought-Prone Area Programme), DDP (Desert Development Programme) and IWDP (Integrated Watershed Development Programme).

The guidelines encourage the active involvement of non-governmental organizations, semi-governmental institutions and private enterprises, universities and training institutions. However, concerns are being raised that emphasis in watershed development programmes is still firmly based on the belief that water is an infinite resource, through development of groundwater abstraction and water harvesting techniques. IWM does not merely imply the amalgamation of different activities to be undertaken within a hydrological unit. It also requires the collation of relevant information so as to evaluate the cause and effect of all the proposed actions. The watershed is the smallest unit where the evaluation of human-induced impacts upon natural resources becomes possible. Therefore, although the 'Panchayat' remains the preferred implementation unit, the watershed should be the evaluation unit used in assessing impacts

### **1.3 Objectives of the IWMP**

The main objectives of the IWMP are to restore the ecological balance by harnessing, conserving and developing degraded natural resources such as soil, vegetative cover and water. The outcomes are prevention of soil run-off, regeneration of natural vegetation, rain water harvesting and recharging of the ground water table. This enables multi-cropping and the

introduction of diverse agro-based activities, which help to provide sustainable livelihoods to the people residing in the watershed area.

#### **1.4 Need of Watershed Development Programme**

Watershed Development Programme is prioritized on the basis of thirteen parameters namely Poverty Index, Percentage of SC/ST, Actual wages, Percentage of small and marginal farmers, Ground water status, Moisture Index, Area under rain-fed agriculture, Drinking water situation in the area, Percentage of the degraded land, Productivity potential of the land, Contiguity of another watershed that has already developed/treated, Cluster approach for plain or for hilly terrain

#### **1.5 Criteria and weightage for selection of Watershed**

State Remote Sensing Application Center, Jodhpur (SRSAC) has prepared "Watershed Atlas of Rajasthan ". Watersheds have been delineated into macro / micro in each block. These have been prioritized on the basis of two important parameters i) extent of availability of cultivable arable lands and ii) Drainage Density. Besides this priority watershed with preponderance of resource poor, SC/ST population is given importance. Willingness of community to participate, contribute in the programme and to take up responsibility of post project maintenance of the created assets. Weightage given to these criteria for selection is as follows:

**Table No. 1 Criteria and weightage for selection of watershed**

S. No.	Criteria	Maximum score	Ranges & scores			
i	Poverty index (% of poor to population)	10	Above 80 % (10)	80 to 50 % (7.5)	50 to 20 % (5)	Below 20 % (2.5)
ii	% of SC/ ST population	10	More than 40 % (10)	20 to 40 % (5)	Less than 20 % (3)	
iii	Actual wages	5	Actual wages are significantly lower than minimum wages (5)	Actual wages are equal to or higher than minimum wages (0)		
iv	% of small and marginal farmers	10	More than 80 % (10)	50 to 80 % (5)	Less than 50 % (3)	
v	Ground water status	5	Over exploited (5)	Critical (3)	Sub critical (2)	Safe (0)
vi	Moisture index/ DPAP/ DDP Block	15	-66.7 & below (15) DDP Block	-33.3 to -66.6 (10) DPAP Block	0 to -33.2 (0) Non DPAP/ DDP Block	
vii	Area under rain-fed agriculture	15	More than 90 % (15)	80 to 90 % (10)	70 to 80% (5)	Above 70 % (Reject)
vii i	Drinking water	10	No source (10)	Problematic village (7.5)	Partially covered (5)	Fully covered (0)

ix	Degraded land	15	High – above 20 % (15)	Medium – 10 to 20 % (10)	Low- less than 10 % of TGA (5)	
x	Productivity potential of the land	15	Lands with low production & where productivity can be significantly enhanced with reasonable efforts (15)	Lands with moderate production & where productivity can be enhanced with reasonable efforts (10)	Lands with high production & where productivity can be marginally enhanced with reasonable efforts (5)	
xi	Contiguity to another watershed that has already been developed/ treated	10	Contiguous to previously treated watershed & contiguity within the micro-watersheds in the project (10)	Contiguity within the micro-watersheds in the project but non contiguous to previously treated watershed (5)	Neither contiguous to previously treated watershed nor contiguity within the micro-watersheds in the project (0)	
xii	Cluster approach in the plains (more than one contiguous micro-watersheds in the	15	Above 6 micro-watersheds in cluster (15)	4 to 6 micro-watersheds in cluster (10)	2 to 4 micro-watersheds in cluster (5)	

	project)					
xii	Cluster approach in the hills (more than one contiguous micro-watersheds in the project)	15	Above 5 micro-watersheds in cluster (15)	3 to 5 micro-watersheds in cluster (10)	2 to 3 micro-watersheds in cluster (5)	
	<b>Total</b>	<b>150</b>	<b>150</b>	<b>90</b>	<b>41</b>	<b>2.5</b>

Based on these thirteen parameters a composite ranking was given to Desuri watershed project as given in table No. 1.1

Total number of families under BPL is 61 which are less than 50 per cent of the total households. The percentage of SC/ST is about 68 per cent to the total population. Rain fed agriculture forms the primary occupation of the watershed due to the fact that ground water is very deep and there is no source of irrigation. More than 50 per cent of the farmers are small and marginal by nature and the actual wages earned by the labour is more than the minimum wages.

Since the rainfall received is erratic and irregular, the moisture index is low and the area is classified under DDP block. The Pali XV Ghanerav watershed falls in the continuity with other watersheds namely Ghanerav -15/3,6,7,8,9, Ghanerav - 16/4,5,6,7,8,. Cluster approach was followed taking into consideration nine micro-watersheds covering a total area of 5616 ha.

**Table No. 1.1 Weightage of the watershed**

S. No.	Distt	Block	Project Name	Proposed project area	Type of project (Hilly / Desert / others)	Proposed cost Lakh
1	Pali	Desuri	Pali XV	4616	Desert	693

## 1.6 Project Background

SI NO	Micro-watershed No.	Name of Gram panchayat	Name of Village covered	Area/ha
1	17/1,2,15	Ghanerav	Garasia coloni	2303
2	17/4	Ghanerav	Ghanerav	350
3	17/8,9,12,13	Dudapura	Dudapura	823
4	17/10,11,14	Dudapura	Chhoda	1140
5	Total			4616

project (Pali-XV) is located in Desuri Panchayat Samiti, Desuri District of pali (Rajasthan) State. The project is a cluster of eleven micro-watersheds

The total project area of the watershed is about 5616 ha of

which 4616 ha. has been undertaken to be treated under Integrated Watershed Management Programme (IWMP) starting year 2010-11.

The nearest town is Desuri which is about 6 Km from Ghanerav and is well connected by pucca road. The watershed includes area of two villages Ghanerav, Garasia coloni Dudapura and Chhoda. Seervi Jat, Dewasi and SC communities are the primary inhabitants of the watershed. The

livelihood of these people is primarily based on rain-fed agriculture, animal husbandry, wage labour, cow, goat and sheep rearing..

**Table no. 2: Basic Project Information**

S. No.	Name of Project	Villages		Area (ha.)	Gram Panchayats	District	Area Falling in Project in Ha./GP	Cost in GP	Total Project Cost
		Name	Census Code						
1	Pali	Ghanerav	0246700	350	Ghanera	Pali	2653	397.9	692.40 lakh

	XV				v		5 lakh
2		Garasia coloni	0246700	230 3	Ghanera v	Pali	
3		Dudapura	02466700	823	Dudapu ra	Pali	294.4
4		Chhoda	02466600	114 0	Dudapu ra	Pali	1963 5lakh
5		Total					4616

**Table no. 3: Watershed information**

Name of the project	Watershed to be treated	Village	Watershed type
Pali XV	17/1	Garasia Coloni	Micro W/s

	17/2	Garasia Coloni	Micro W/s
	17/4	Ghanerav	Micro W/s
	17/8	Dudapura	Micro W/s
	17/9	Dudapura	Micro W/s
	17/10	Chhoda	Micro W/s
	17/11	Chhoda	Micro W/s
	17/12	Dudapura	Micro W/s
	17/13	Dudapura	Micro W/s
	17/14	Chhoda	Micro W/s
	17/15	Garasia Coloni	Micro W/s

Ghaner

CHAPTER - 2

PROJECT IMPLEMENTING  
AGENCY

## **2.1 Project Implementing Agency**

The Project Implementing Agency (PIA) is selected by State Level Nodal Agency (SLNA) for Integrated Watershed Management Programme (IWMP) in Rajasthan. The PIA for Pali XV Ghanerav 2010-11 Watershed (Pali XV) is Assistant Engineer Panchayat Samiti Desuri. The PIA is a block level nodal agency responsible for smooth implementation of watershed project. The objectives of PIA are supervising, planning, implementing and promoting watershed development project and related development activities as per guide lines. The PIA has dedicated and experienced staff

Institutional arrangement ( SLNA, WCDC,PIA,WDT, WC and Secratry)

SLNA Detail:-

- Member secratry post :- CEO
- Designation &Address :- Director of watershed development and Soil conservation
- Telephon No. :- 0141-2227189

➤ Fax No

:- 0141-2227189

➤ E-mail

:- [dir\\_wdsc@dataone.in](mailto:dir_wdsc@dataone.in)

PIA Particulars :-

S.NO	Particulars	Detail of PIA
1	Name of PIA	Shri Sanjay Dave
2	Designation	AEn watershed development & conservation Rohat Pali
3	Address with contact no. website	
4	Telephone	02934-254128
5	Fax	02934-254128
6	E-mail	<a href="mailto:paiwmppsdesuri@gmail.com">paiwmppsdesuri@gmail.com</a>

WCDC Detail :-

S.NO.	Particulars	Details of WCDC
1	PM, WCDC	SH.Rajendra Singh Choudhary
2	Address with contact no.website	

3	Telephone No.	02932-221682
4	Fax	02932-221682
5	E-mail	<a href="mailto:Dwdu.pali@gmail.com">Dwdu.pali@gmail.com</a>

WDT Particulars:-

S.NO.	Name of WDT Member	M/F	Age	Qualification	Experience in watershed (year)	Roles /Function
1	Mr,Gordhan Lal	M		L.S.A (Diploma)	3	Live stoke activity
2	Mr. Ashok Kumar	M		Senior Seco. Agriculture	2	Agriculture base activity
3	Ms. Bhavika Maheshvary	F		M.B.A (HR) M.A Sociology	1	Social work in Watershed

### **2.1.1 Roles and Responsibilities of WDT**

- 1 Assist Gram Panchayat / Gram Sabha in constitution of the Watershed Committee and their functioning.
- 2 Organizing and nurturing User Groups and Self - Help Group.
- 3 Mobilizing women to ensure that the perspectives and interests of women are adequately reflected in the watershed action plan.
- 4 Conducting the participatory base - line surveys, training and capacity building.
- 5 Preparing detailed resource development plans including water and soil conservation or reclamation etc. to promote sustainable livelihoods at household level.

- 6 Common property resource management and equitable sharing.
- 7 Preparing detailed Project Report (DPR) for the consideration of Gram sabha.
- 8 Undertake engineering surveys, prepare engineering drawings and cost estimates for any structures to be built
- 9 Monitoring, checking, assessing, and undertaking physical verification and measurements of the work done.
- 10 Facilitating the development of livelihood opportunities for the landless.
- 11 Maintaining project accounts.
- 12 Arranging physical, financial and social audit of the work undertaken.
- 13 Setting up suitable arrangement for post-project operation, maintenance and future development of the assets created during the project period

### **2.1.2 SWOT Analysis of the PIA**

#### **Strength:**

- 1 Dedicated and experience staffs and multidisciplinary team
- 2 Strong linkages with national and state level institutions, agricultural universities, for capacity building and technical guidance.
- 3 Scientific planning in watershed project with the help of SRSAC, Pali

- 4 District level monitoring, coordination & cooperation committee.
- 5 Well establishment of PRIs for social audits.
- 6 Watershed Dept. have long experience in watershed works and has won five national productivity awards

**Weakness:**

- 1 Lack of proper supporting staff.
- 2 Not even a single permanent staff
- 3 No seperat space for staff in existing panchayat samiti office building.
- 4 Unwanted political and public interference.

**Opportunities:**

- 1 Sustainable livelihood generation landless and asset less.
- 2 Improvement of socio-economic status of poor's.
- 3 Awareness generation among the illiterates through IEC activities by usage of new ICT activities.
- 4 Reduction of migration rate.
- 5 Usage of new technologies of watershed modeling and GPS for monitoring the watershed activities.
- 6 Over all integrated development of rural peoples

7 Independent DWDU, PIA & Watershed committee to over all monitoring and execution of activities.

**Threats:**

- (1) Lack of sustainable agriculture development.
- (2) Delay of releasing project fund from the higher authority.
- (3) Lack of contribution and cooperation from local peoples.
- (4) Low and erratic rainfall in the project area.
- (5) Low literacy rate in the project area.

CHAPTER - 3

BASIC INFORMATION OF  
WATERSHED

### 3.1 Geography and Geo-hydrology

#### 3.1.1 Land use pattern

The net geographical area of watershed is about 5616 ha out of which 1000 ha is forest area. There is no wasteland. About 85.72 % of land is under agriculture from which 80.26 % is under rain-fed and a kharif crop is taken, 1.98 % of land is irrigated land. 14.28% land is under permanent pastures.

**Table no. : 6 Land use pattern**

S. No.	Name of watershed	Project Area	Forest area (ha)	Land under agri. Use (ha)	Rain-fed area (ha)	Permanent pasture	Wasteland	
							Cultivable (ha)	Non cultivable (ha)
1	Pali XV IWMP Ghanerav 2010-11	4616	1000	2470	3705	997	39	0

#### 3.1.2 Soil and topography

Ghanerav watershed project (Pali XV) falls under North West Rajasthan Agro Climatic Zone. The soil is mainly sandy loam and. The soil is brown to very dark grayish brown in surface colour. The depth of soil is moderate to deep about 25 to 75 cm. The predominant texture of soil is loamy sand and silt and clay. The soil fertility is very poor with low nitrogen, phosphorus and potash. The soil falls in *Aridsol* and *Inseptisols* order. The topography of the area is moderate ranging from 0-10% slope

**Table no. : 7 Soil type and topography**

S. No.	Name of Agro-climatic zone covers w/s area	Area in ha	Name of villages	Major soil types		Topography
				Type	Area	

Ghanerav

1	II b	4616	Ghanerav, Garasia coloni , Dudapura, Chhoda	Alluvial	4616	Moderate slope
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**Table no. : 8 Flood and drought condition**

S. No.	GP	Flood (Incidence)	Drought (Incidence)
1	Ghanerav	Nil	Once in three year
2	Dudapura	Nil	Once in three year



S. No.	Year	Rainfall (mm)	Temperature (degree centigrade)		Highest intensity of rainfall (mm in a day)	Annual Rainy days
			Maximum	Minimum		
1	2009	426	35.5	21.5	21	40
2	2008	384	33.8	19.2	19	35
3	2007	639	34	19.6	33	60
4	2006	1182	34.4	19.8	62	98
5	2005	575	33.4	18.8	30	50
6	2004	522	34.5	19.5	27	45
7	2003	734	35.2	19.4	38	65
8	2002	348	34.6	19.6	18	30
9	2001	698	33.8	19.2	37	60
10	2000	378	33.3	19.1	20	32

The rainfall is scanty which has resulted in recurrent phenomenon of drought in every two to three years. The average rainfall of this area is about 526 mm (from past five year data) with a highest intensity of 121 mm within span of a day. This uneven distribution is leading to runoff of soil every year to the streams resulting in silting of the village tank.

**Table no. : 10 Physiography and relief**

**Table no. : 11 Slope Detail of watershed**

S. No.	Slope %	Area
1	0-1%	1111.19
2	<b>1-3%</b>	<b>1326.29</b>
3	<b>3-5%</b>	<b>993.21</b>
	<b>Total</b>	<b>4616</b>

**Table no.: 12 Erosion status in project Area**

Cause	Type of erosion	Area affected (ha)	Run off(mm/ year)	Average soil loss (Tonnes/ ha/ year)
Water erosion				
a	Sheet	2200	350	8
b	Rill	1000	382	6
c	Gully	1416	415	5
Sub-Total		4616		
Wind erosion		NA	NA	NA
Total for project		4616	-	-

Project Area is affected by water erosion & wind erosion both, such that loss of soil fertility takes place every year. Production depleting year by year. It is major problem of watershed.

### 3.1.3 Land and Agriculture

Lack of surface water source and very deep ground water has limited the sufficient base for irrigation as well as drinking purpose. The average land holding is about 3.75 ha ranging from 1 to 20 ha. Lack of irrigation source forces the majority of the farmers to migrate to ensure their livelihood. This affects directly the demographic profile of the watershed. The major crops cultivated by the farmers are Bajra (Pearl millet). Some of the farmers have Tube well as source of irrigation and take up Rabi crop also. The soil and moisture conservation measures such as earthen bunds and farm bunds in the area will help them to take up rabi crop of Arandi and cumin in the residual moisture.

**Table no. : 13 Land ownership details**

**(a)**

S.NO	Type of Farmer	Total house hold	Land holding (ha) Irrigation source wise		
			Irrigated	Rainfaid	Total
1	Large	72	403	796	1199
2	Small	640	513	943	1456
3	Marginal	421	319	648	967
4	Land less	250	0	0	0
5	No.of BPL House hold	304	0	96	96
6	TOTAL	1687	1235	2470	3718

**Table No: 16 Crop details**

S. No.	Village	Net sown area (ha.)							Wheat	Gram
		Maize	Gowar	Bajra	Moon g	Sarsoi	Til			
1.	Ghanerav Garasia coloni Dudapura Chhoda	980	580	244	416	568	250	570	97	

Crop Shown	Kharif				Rabi				Total	
	Variety	Area	Production	Productivity	Crop Shown	Variety)	Area	Production	Productivity	Other
(Kg/ha)					(Kg/ha)					
Bajra	RAJ-121 RHB-58	244	488	2000- .2500	Wheat,	Raj-3077 Ra-j4083	570	3210	5000- 6000	
Gowar	Maru GuarRG M-112	580	696	100-.1200	Gram	Pussa 256 Local	97	116	1100- 1500	
Moong	Pusav. <b>RMG 62</b>	416	115	1000-1200	Mustere d	Varuna T 59 Pussa Bold	568	1126	2000- 2200	
Maiz	Ganga-5 Desi	980	475	400-500						
Til	RT-46 RT-125	250	220	800-900						

**Table:- Crope Production Comparing Detail**

Name of Crope					
	INDIA	Highest average in Rajasthan	Highest average in Agro climatic Zone	Districk	Project Area
Wheat	2708	2912	2835	2800	2756
Maze	1912	1086	1095	1016	1050
Gram	845	636	860	843	810
Mustered	1095	1194	1025	1019	1006
Coriendar	1063	1208	0	0	0

Table 2.5 Existing area under horticulture / Vegetables / Floriculture (ha)					
Activity	Area	Species	Varieties	Recommended varieties	Production
<b>Horticulture</b>					
Guava	0	0	Allahabadi	0	0
Lemon	2.5	0	Kagji	Pant Lemon	300 Qts
Anwals	0.1	0	-	NA 6, 7 Gujrat 1	85 Qts
Sitafal	5	0	Desi		353 Qts
<b>Vegetables</b>					
Onion	1	0	Pusa Red,	Nasik Red L 53	60 Qts
Tomato	5	0	Desi		1000 Qts
Brinjal	0.5	0	Pant	Pusa Ankur, Hisar Samal	12 Qts

Table 2.4.b Abstract of cropped Area (ha)	
Area under Single crop	2470
Area under Double crop	1235
Area under Multiple crop	410

**Table 2.8 Existing area under fodder (ha)**

S.No	Item	Unit	Area/Quantity
1	Existing Cultivable area under Fodder	Ha	354
2	Production of Green fodder	Tonns/year	251
3	Production of Dry fodder	Tonns/ Year	1069

4	Area under Pastures	Ha	997
5	Production of fodder	Tonns/year	159
6	Existing area under Fuel wood	Ha	0
7	Supplementary feed	Kgs/ day	15
8	Silage Pits	No	0
9	Availability of fodder	MT	2842
10	Deficiency of fodder	MT	3581

- Increase in area under fodder crops
- Increase in productivity of fodder crops
- Development of pastures
- And reduction in large number of livestock production through replacement by few but productive animals

**Table 2.9 Agriculture implements**

S. No	Implements	Nos.
1	Tractor	56
2	Sprayers-manual/ power	21
3	Cultivators/Harrows	35
4	Seed drill	19
5	Any Other Thresher & Bund Farmer	41

### 3.1.4 Livestock

Majority of community in the watershed depends on cows and buffaloes for milk. Lack of rain reduced the fodder availability for animals in watershed area. This leads to migration to other parts of the country with their herds of goats and sheep. Milk production is very low and there is no dairy co operative in the watershed.

**Table No : 18 Livestock milk production**

S. No.	Village	Population in no.	Yield milk/mutton Wool/tonne	Dry material requirement per year 7 kg. per animal	Total requirement MT.
1	Cow	1145	2145	2318	2318
2	Buffalo	1302	3268	2698	2698
3	Goat/sheep	12668	3135	25902	25902
4	Camel	53	0	121	121
5					

**Table No: 20 Drinking water**

**II. Technical Features**

**Table 2.14 Ground Water**

S.No	Source	No.	Functional depth (FT)	Dry	Area irrigated (ha)	Water availability(d ays)
i)	Dug wells	840	50-80 ft	110	835	65 days
ii)	Shallow tube wells	10	-	2	-	-
iii)	Pumping sets	150	-	9	-	-
iv)	Deep Tube Wells	26	200-250 ft	1	400	210 days
Total		<b>764</b>		<b>381</b>	<b>1235</b>	

**Table 2.15 Availability of Drinking water**

S.No	Name of the village	Drinking water requirement Ltrs / day	Present availability of drinking water Ltrs / day	No. of drinking water sources available	No. functional	No. requires repairs	No. defunct
1	Ghanerav	16452	14528	18	12	5	1
2	Garasia coloni	2500	2355	3	2	1	0
3	Dudapura	4590	4100	7	5	1	0
4	Chhoda	4255	3522	5	4	1	0

**WATER BUDGETING****Macro/Micro No.**

17/1,2,4,8To15

(A) Area (Calculated from revenue record)

1. Good Catchment where runoff is maximum &amp; infiltration is minimum like hillocks, plateau etc

2. Average catchment-cultivated land, forest land with vegetation.

3. Bad catchment where runoff is minimum &amp; infiltration is maximum e.g. Sandy soil

(B) AVERAGE ANNUAL RAINFAL DATA (AVAILABLE AT TEHSIL)

Proportion of Estimated Runoff of rainfall : To be worked out from strange's Table for Rajsamand tehsil Disstt. Rajsamand for **600mm** total mansoon rainfall.

Type of W/S	Area of W/S	Factor Cum/ha	Expected Yeild Cum
Good	997	845.25	842714.25
Average	3470	630	2186100
Bad	149	420	62580
Total	4625	1895.25	3091394.25

#### STORAGE OF RUNOFF BY EXISTING STRUCTURES

S.No.	Name of Structure	No./Area	Storage Capacity (Cum)
1	Tank/Talab/Nadi	7	24500
2			
3			
4			
5			
Total			

#### STORAGE OF RUNOFF BY PROPOSED STRUCTURES

S.No.	Name of Structure	No./Area	Storage Capacity (Cum)
1	WHS	7	24500
2	MMS	15	37500
3	Farm pond	14	7000
4	tanka	32	640
			69,640

Total Runoff trapped = Existing Strs +Proposed Strs. =24500+69640=94140

% Runoff trapped =3.04%

## 3.2 Socio-Economic Profile

### 3.2.1 Demographic Status

Pali XV watershed project has a total of 1951 households with a population of 5807 (as per base-line survey) out of which 2984 are male and 2823 female .The sex ratio is 946 female to 1000 male. There are 304 BPL families. The average family size is 5. The literacy rate is very low i.e. 26 per cent; male literacy rate is 34 per cent (of total male population) and female literacy rate is as low as 17 per cent (of total female population). It is noticeable that only five persons have reached up to graduation standard. The major castes in the watershed are Rajput, Jat, Devasi and Schedule Caste. Majority of population is involved in agriculture and animal husbandry.

### 3.2.2 Migration Pattern

People migrate during summer season to different parts of state and country like Pali, Bangalore, Mumbai and Pune as daily wagers and construction workers. Lack of irrigation facility, employment and fodder availability force these people to migrate to other places.

**Table No: 24 Migration details**

Name of village	No. of persons migrating	No. of days per year of migration	Major reason (s) for	Distance of destination of migration from the village (km)	Occupation during migration	Income from such occupation (Rs. In lacs) Per Person / year (Lakhs)
Ghanerav	219	200	No Employment	250	Labour	0.60
Garasia coloni	50	250	No Employment	23	Labour	0.62
Dudapura	86	198	No Employment	24	Labour	0.72
Chhoda	28	225	No Employment	28	Labour	0.64

--	--	--	--	--	--	--

The existing livelihoods Village are given below –

Table 2.12 (a) Major activities (On Farm)		
Name of activity	No of House holds	Average annual income from the (in lacs)
Cultivators	2	13.23
Dairying	6	3.2
Poultry	2	0.50
Piggery	0	0.0
Landless Agri. Labourers	989	120.30

**Major activity**

Name of activity	Households/individuals	Average annual income from the (in lacs)
Artisans	0	0.00
Carpenter	30	18.00
Blacksmith	15	5.10
Leather Craft	20	6.12
Porter	111	27.75
Mason	244	18.30
Others specify (Cycle Repair ,STD,Craft etc)	120	41.04

**Other infrastructure facility available**

S. N	Parameters	Ghanerav	Garasia coloni	Dudapura	Chhoda
1	villages connected to the main road by an all-weather road	YES	YES	YES	No
2	villages provided with electricity	YES	YES	YES	YES
3	households without access to drinking water	Phed	All	All	All
Educational institute					
4	Primary(P)/ Secondary(S) / Higher secondary vocational institution(VI) Primary, Secondary	H.S	Upper primary	Primary, Secondary	Upper Primary
5	villages with access to Primary Health centre	Yes	No	Yes	No
6	villages with access to Veterinary Dispensary	Yes	No	No	No
7	villages with access to Post Office	Yes	No	Yes	No
8	villages with access to Banks	Yes	No	No	No

9	villages with access to Markets / Mandi	Yes	No	No	No
10	Village acces with agro industries	No	No	No	No
11	Total quantity of surplus milk Liter/Kg				
12	Milk collection center	Yes	No	Yes	No
13	Village with acces to aangan wadi	5	1	2	1
14	Any other acility	Police choki	-----	-----	-----
15	Nearest KVK	PALI	PALI	PALI	PALI
16	Co-operative society	Yes	No	No	No
17	Ngo	NO	No	No	No
	Credi institute				
18	Bank	Yes	NO	No	No
19	Co-operative society	Yes	No	No	No
20	Agro service center	Yes	No	NO	No

The Pali XV Ghanerav watershed comes under semiarid zone. So farmers grow crops according to the rainfall. If they get good rainfall they generally grow high value crops like mustard, cumin, wheat, Moong etc. In case of low rainfall they go for Til And jowar. So we can say that monsoon decides cropping patterns of Ghanerav watershed.

**The Pali XV Ghanerav watershed area has low productivity because of the following reasons:-**

**i) Full dependence on monsoon**

Ghanerav 2010-11 watershed is dependent on monsoon. Water is essential input in agriculture. Due to the absence of proper irrigation facility, most of the cultivated area depends on the uncertain monsoon. Therefore, the success or failure of the monsoon determines the success or failure of agriculture production. The rainfall is unreliable due to two factors: untimely and inadequate

**ii) Low use of fertilizer per unit cropped area**

Farmers do not use sufficient fertilizer due to lack of water, scarcity of fertilizer in market and insufficient money for fertilizer. Many a times they don't get fertilizer at the right time.

**iii) Traditional farming methods**

This also leads to low productivity. There is a lot of ignorance about the use of new farming methods and technologies such as multiple cropping. They don't use FYM and other input in a proper way that is why they don't get 100% output. So these factors contribute to low productivity.

**iv) Lack of adequate farm machinery**

Even today a large number of farmers in Ghanerav watershed use traditional methods of ploughing and irrigation. They don't have adequate machinery like seed drill, Combine harvester etc. So, old machineries take more time in tillage practices

**iv) Lack of good quality seeds and fertilizers:**

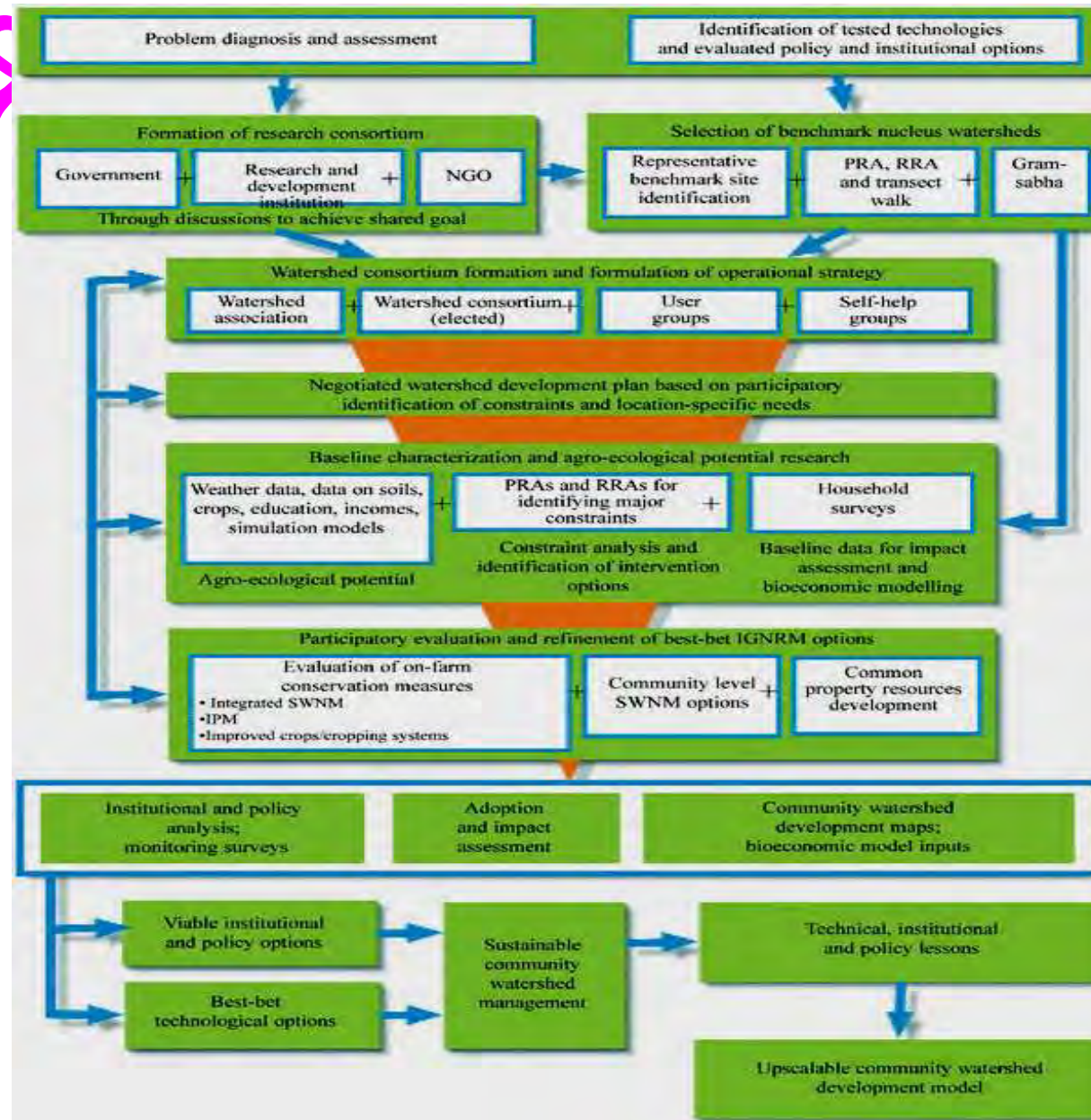
Good quality seed, fertilizer and pesticide are important factor in agriculture productivity. The use of good quality leads to higher land productivity. In Ghanerav , however, there are two limitations in the use of fertilizer. First these fertilizers are most useful in irrigated

Ghanerav

condition. But in Ghanerav most of the land depends on rainfall, mostly farmers use nitrogenous fertilizers especially urea. This has resulted in disproportionate use of fertilizer depleting the quality of land

**v) Lack of other facilities such as storage and marketing**

5-10% of agriculture product damage after harvesting due to scarcity of proper storage and proper market for sale. So he sells to local traders at the low prices. Farmers mainly face proper means of transportation and roads. and second problem is farmers don't have proper storage facilities.



# WATERSHED ACTIVITIES

## **Watershed Activities**

Watershed management adopted by Government of regions of semi-arid tropics. characterized by low and fertility, poor infrastructure development, low literacy and high incidence of migration. Several studies have identified that there is a dire need of a systematic and scientific approach to deal with watershed development. The common guidelines generate a fresh and flexible framework for the next generation watershed development.

### **4.1 Scientific Planning**

#### **(i) Cluster Approach**

This envisages a broader vision of Geo-hydrological unit which involves treating a cluster of micro-watershed. The Pali XV 2010-11 watershed

as a strategy has been India especially in the rain-fed These regions are undependable rain, low soil

project consists of nine micro-watersheds namely 17/1,2,4,8,9,10,11,12,13,14,15 Further Pali XV 2010-11 watershed project is in continuation with other watersheds

### **(ii) Base line survey**

To assess the impact of any watershed development programme a detailed base line survey has to be conducted. This acts a benchmark for any intervention during and post implementation of any development programme. A detailed base line survey was undertaken by WDT which involved household census survey, Bio-physical survey and village level data collection. Household census survey includes a detailed questionnaire which was filled by visiting each and every household in the villages. This gave in the details of the demographic profile of the village, the literacy percentage, SC/ST population, number of BPL household, cattle population, and net consumption rate in the village, average milk production of the cattle and various schemes running and their benefits.

Bio-physical survey was undertaken to identify various natural resources available in the villages. It included the soil typology, well in the area, crop taken in the field, cropping pattern, fertilizer used and various sources of irrigation in the field.

### **(iii) Participatory Rural Approach (PRA)**

The past experience of watershed has given tremendous input to focus on creating accountability of the stakeholders towards the programme. This has created an emphasis to include all the stakeholder communities and their local indigenous technological knowledge while planning for any activity. Participatory Rural Approach provides a new path for planning, implementing, monitoring and post-withdrawal activities with a complete accountability of the stakeholders. Various PRA techniques like resource mapping, social mapping and season calendars were used to understand the physical and social orientation of the village in general and the watershed in specific. Various tools like matrix ranking, Venn Diagram were used to identify various local vegetations, fodder crops, various institution and their significance in the life of farmers.

<b>S. No.</b>	<b>Names of village</b>	<b>Amount earmarked for EPA</b>	<b>Entry Point Activities planned</b>	<b>Actual outcome</b>
1	Ghanerav	2.10	Solar Lights, (22)	Successfully Soght out the Problem of light
2	Garasia coloni	13.818	Solar Lights, (9)	
3	Dudapura	4.938	Solar Lights, (6)	
4	Chhoda	6.84	Solar Lights, (5)	

5	Total	27.696	-	
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The PRA programe are conducting village wise date

S.NO	Name of village	Date of PRA
1	Ghanerav	20/12/2011
2	Garasia coloni	22/12/2011
3	Dudapura	23/12/2011
4	Chhoda	26/12/2011



#### **(iv) Use of GIS and Remote sensing for planning**

Use of various high science tools has been promoted at various stages of watershed development.

##### **(A) Prioritization**

Geographical Information System (GIS) has been used for prioritization process. Various parameters were taken into account like Geo-morphological, Soil, BPL population, Ground water status, Drinking water situation and Slope percent. These were all given proper weightage according to the DoLR specification. This helped in prioritization of various watershed area.

##### **(B) Planning**

Wapcos limited Gurgaon Haryana has provided various maps like slope map, contour map, Land use land cover map, Satellite image maps were used to identify each and every water conservation structures available in the project area. Contour map of vertical interval of 1 meter at a scale of 1:10000 was used for identifying various locations for soil and water conservation structures.

### (C) Topographical survey of DLT

There is a good drainage line in the watershed, so for treatment of drainage line a topographical survey was essential. This help in selection of site for LSCD, Nallah bunding and Masonry check dams.

**Table No. 27 Details of Scientific planning and Inputs in the project**

S. No.	Scientific criteria / inputs used	Whether Scientific criteria used
<b>1</b>	<b>A. Planning</b>	
a.	Cluster approach	Yes
b.	Whether technical back-stopping for the project has been arranged? If yes, mention the name of the institute	
c.	Baseline survey	Yes
d.	Hydro-geological survey	Yes
e.	Contour mapping	Yes
f.	Participatory Rural Approach (PRA)	Yes
g.	Remote sensing data	Yes
h.	Ridge to valley treatment planning	Yes
i.	Online IT connectivity between -	
	(1) Project and DRDA cell / ZP	Yes
	(2) DRDA and SLNA	Yes
	(3) SLNA and DoLR	Yes
j.	Availability of GIS layers -	
	(1) Cadastral map	
	(2) Village boundaries	Yes
	(3) Drainage	Yes
	(4) Slope map	Yes

	(5) Land use	Yes
	(6) Ground water status	No
	(7) Watershed boundaries	Yes
<b>2</b>	<b>Inputs</b>	
	(1) Bio- pesticides	No
	(2) Organic manure	Yes
	(3) Vermi-compost	Yes
	(4) Bio-fertilizer	No
	(5) Water saving devices	Yes
	(6) Mechanized tools / Implements	Yes
	(7) Bio-fencing	Yes
	(8) Automatic water level recorders & sediment samplers	No

## 4.2 Watershed Development Approach and Strategy

The developmental strategy is two pronged- technical and social, both integrated for sustainable development of natural resources. Social strategy is for creating awareness and capacity building of community for self-motivation and long term commitment to the project for its sustainability. Technical strategy is for planning designing & implementation of activities for development of natural resources

### 4.2.1 Social Strategy

- Participatory Approach for empowerment of Community: People's participation is the key to sustainable watershed development programmes.
- Demand Driven Project Proposals of the community and Flexibility in choice of Technology.
- Equity for Resource Poor and Women: In all watershed development projects thrust is on improving equity by addressing needs of all sections of community
- Social Audit

- Linkages of Watershed community with Panchayat Raj Institutions: An important element of long term sustainability is to forge linkages with permanent institutions in the area. So, linkages are forged between the Panchayats and the watershed communities.

#### **4.2.2 Technical Strategy**

- Ridge to Valley approach
- In-situ moisture conservation
- Reduce Runoff velocity
- Rain Water harvesting with the approach of 'Water Budgeting
- Alternate land use i. e. Horticulture, Agro forestry, Pasture development & forestry plantation based on land capability classification.
- Flexibility in choice of Technology: Taking account of the high degree of heterogeneity in the socio economic and agro ecological conditions in rain fed areas, a high degree of flexibility is provided in the choice of appropriate, at the watershed level
- Low cost, replicable & indigenous technologies

s.

### **4.3 Institution building**

PALI-XV

### 4.3.1 Watershed Committee (WC)

Watershed committee is constituted by Gram Sabha to implement the watershed project with technical support of WDT. The committee is registered under society registration act 1860. The Gram Sabha of the Gram Panchayat select the chairman of the watershed committee with the secretary who will be a paid functionary. In Ghanerav watershed four watershed committee were formed namely Ghanerav w/s committee of Ghanerav gram panchayat , Madpur w/s committee of Narlai gram panchayat, Narlai w/s committee of Narlai gram panchayat and Madpur w/s committee of Madpur gram panchayat Madpur. Since the watershed covers area of four gram panchayat so separate watershed committee were constituted.

Detail of watershed committees (WC)  
Watershed committees Ghanerav

Nname of the District	Name of project	Name of Wcs	Date of Registration As a society (dd/mm/yy)	Designation	Name	M/F	Category	E.qualification
				<b>Sarpanch</b>	<b>Sh.Gulab Khatri</b>	<b>M</b>	<b>S.C</b>	<b>XII</b>
				<b>Director</b>	<b>Sh. DInesh Adiwai</b>	<b>M</b>	<b>S.C</b>	<b>B.A</b>
				<b>Secratry</b>	<b>Sh. Chogaram</b>	<b>M</b>	<b>S.C</b>	<b>XII</b>
				<b>Member</b>	<b>Sh.Smile Khan</b>	<b>M</b>	<b>General</b>	<b>B.A</b>

PALI	IWMP XV	GHANERA V	--	Member	Sh.Sukan lal	M	S.C	Xth
				Member	Sh.Bhawer Singh	M	OBC	XII
				Member	Sh.Ogad ram	M	OBC	Vth
				Member	Sh.Gulab Khan	M	General	VIIIth
				Member	Sh.Kishan Singh	M	OBC	Xth
				Member	Smt.Susila Kanwer	F	General	Xth
				Member	Smt.Sita devi	F	OBC	Vth
				Member	Sh.kalu ram	M	ST	
				Member	Sh.Jita ram	M	SC	Vth

### Details of Bank Account :

For each water shed committee, the separate saving bank account has been opened with the name of Sarpanch, Secretary WC and WDT member (Junior Engineer). One separate Watershed Development Fund (WDF) account will be opened for each committee. In the WDF Account no transaction will be done only the contribution received from beneficiaries will be deposited. The details of bank account are :

S.No	Watershed Committee	Account No.		Bank Name
		Saving A/C No.	WDF A/C No.	
1.	Ghanerav			
2.	Dudapura			

### 4.3.2 Self Help Group

Self Help Groups are motivated, small homogenous groups organized together through credit and thrift activities. Self Help Group initiative especially for women help uplift their livelihood, generally Self Help Groups include landless and poor men and women.

Before formation of the SHGs during PRA activities focused group discussion (FGDs) were held with the women, which came up with the following observations

- a) Lack of proper credit facilities due to low intervention of formal financial credit institution.

- b) Excessive exploitation of weaker section by money lenders
- c) Lack of attitude for saving among poor people.
- d) Lack of knowledge on credit and thrift activity and banking.

Status of new SHG is shown in table no.33

**Table 2.13(a) Status of Existing SHG:-**

Sr.No.	Name of SHG	Members	Activity involved	Monthly Saving	Fund available	Connectivity Bank	Source of assistance	Training received
1	Parvati	10	-	300	5000	-	-	-
2	Shiv shakti	10	-	500	5000	-	-	-
3	Radha	10	-	500	7500	-	-	-
4	Jhilani	11	-	550	5500	-	-	-
5	Santosh	10	-	700	6300	-	-	-
6	Sai Baba	10		600	4800	-	-	
7	Datar	13	-	650	5200	-	-	-
8	Sarswati	12	-	600	6600	-	-	-
9	Jagdamba	10		500	3000	-		
10	Shiv Shambhu	10	-	300	1200	-	-	-
11	Maha laxmi	10	-	500	500-	-	-	-

### 4.3.3 User Group

User Groups are normally formed to manage an activity or asset created under the programme on a long term basis. The User Group collect user charges from their members, oversee the works and manage the benefits.

It was decided that each group would formulate certain internal rules and have a feeling of ownership with community spirit.

#### **Agriculture Land Development Users Group**

S.no	Name Of Users Group Member	Post	Village
1	Moti Singh \$%Arjun Singh Rajput	Member	Ghanerav
2	Ramaji \$% Bhikaji Choudhary	Member	Ghanerav
3	Narsa Ram \$% Kaluji Garasia	Member	Garasia Coloni
4	Ram Lal \$% Chuni Lal ji Mali	Member	Ghanerav
5	DevaRam \$% Motaji Ghanchi	Member	Ghanerav

### **Unagriculture Land Devlopment Comety**

S.no	Name Of Users Group Member	Post	Village
1	HiraLal \$%Bhikaji Lakhara	Member	Ghanerav
2	Hanif kha \$% Mishru Kha Musalman	Member	Ghanerav
3	Anwar \$% Yashum Khanji	Member	Ghanerav

### **Drainej Line Treatment**

S.no	Name Of Users Group Member	Post	Village
1	BabuLal S% Gunesh ji Luhar	Member	Ghanerav
2	VrdaRam S% Meghaji	Member	Ghanerav

### **Pashu Palan Devlopment Comety**

S.no	Name Of Users Group Member	Post	Village
1	Haji S%Firoj Kha Musaman	Member	Ghanerav
2	Rup Singh S% Roda singh Rajput	Member	Garasia coloni

#### **Mahila SHG Development comety**

S.no	Name Of Users Group Member	Post	Village
1	Narmda Devi Mufat Lal ji	Member	Ghanerav
2	Kani Bai S% Lakha Ram Garasia	Member	Garasia Coloni
3	Anwar \$% Yashum Khanji	Member	Ghanerav

## **4.4 Physical activities to be undertaken**

### **4.4.1 Entry Point Activity (EPA)**

EPA activities are taken up under watershed project to build a rapport with the village community at the beginning of the project, generally, certain important works which are in urgent demand of the local community are taken up. A group discussion was conducted with watershed development committee regarding the EPA activity. It was conveyed to the WC that an amount of Rs. 27.7 Lakh was allotted for EPA activity, which was 4% of total allocated budget. The villagers discussed various activities which they felt is important but after a brief discussion it was conveyed to them that only those activities can be taken which revive the common natural resources. It was also taken into priority that there should be an instrument of convergence which will result in sustainability of activities

#### **4.4.2.1 AGRO FORESTRY**

Suitable forestry plants like Khejri, Ardo, Desi Babool, Neem, Kumtha etc. are planted on the field boundaries to meet the fuel & fodder requirements of the farmer.

#### 4.4.2.2 MIXED HORTICULTURE

Table:- Crope Production Comparing Detail

Name of Crope					
	INDIA	Highest average in Rajasthan	Highest average in Agro climatic Zone	District	Project Area
Wheat	2708	2912	2835	2800	2756
Maze	1912	1086	1095	1016	1050
Gram	845	636	860	843	810
Mustered	1095	1194	1025	1019	1006
Coriendar	1063	1208	0	0	0

Table 2.5 Existing area under horticulture / Vegetables / Floriculture (ha)

Activity	Area	Species	Varieties	Recommended varieties	Production
<b>Horticulture</b>					
Guava	0	0	Allahabadi	0	0
Lemon	2.5	0	Kagji	Pant Lemon	300 Qts
Anwals	0.1	0	-	NA 6, 7 Gujrat 1	85 Qts
Sitafal	5	0	Desi		353 Qts
<b>Vegetables</b>					
Onion	1	0	Pusa Red,	Nasik Red L 53	60 Qts
Tomato	5	0	Desi		1000 Qts
Brinjal	0.5	0	Pant	Pusa Ankur, Hisar Samal	12 Qts

Suitable horticulture plants like Mango, Lemon, Guava, Ber, Pomegranate, Anwala etc. are grown with the crops, to improve the income & nutrition level of the cultivators. A water harvesting structure (Tanka) is constructed to fulfill the water requirement of horticulture plants



#### **4.4.2.3 CROP DEMONSTRATION**

To show the quantitative and qualitative difference between traditional and improved practices/ inputs and in order to motivate the farmers to adopt improved agricultural practices/ inputs recommended by the Research Institutions/ Department of Agriculture, demonstrations are conducted in a small area of 0.5 ha.

#### **4.4.2.4 ORGANIC FARMING SYSTEM/ COMPOST PITS**

Organic manure is decomposed agricultural waste and cow dung, which is applied in the field in place of chemical fertilizers. It is cheaper, locally available and without any kind of side effect.

#### **4.4.2.5 HOMESTEAD KITCHEN GARDENS**

Emphasis is given on developing backyard gardens to meet the day to day needs of the vegetables of the villagers.

#### **4.4.2.6 PASTURE DEVELOPMENT**

To meet the fuel, fodder, timber requirements of the community and to increase the carrying capacity of the degraded pastures, proper fencing, planting and over seeding of grasses like Dhaman, Sevan, Stylohameta is done on Govt./Panchayat and Pasture lands. Conservation measures are also adopted to conserve soil and water. Contour furrows/ trenches are excavated on the contours and pits are dug in the trenches for plantation.



#### **4.4.2.7 FENCING**

Fencing is necessary to protect the production measures and pastures developed on non arable lands. The fencing is designed in such a way that it intercepts runoff and conserves rain water. Different types of fencing are as under:

##### **1. DITCH CUM BUND (DCB)**

This is most popular method of fencing. A ditch of particular cross section considering the type of the soil is dug around the pasture area. The aim is to prevent cattle from entering the protected area. The soil so excavated is used for construction of a bund. It can be fortified with local species of vegetation.

##### **2. STONE WALL FENCING**

Stone wall fencing is done in area where stone is locally available especially in hilly areas. The stone wall is constructed to prevent the cattle from entering the protected area.

#### **4.4.3 CONSERVATION MEASURES**

##### **4.4.3.1 CONTOUR CULTIVATION**

Cultivation is done along the contours. This forms the mini barriers across the flow path of the runoff, which conserves rain water in situ & check soil erosion. Effectiveness of contour cultivation varies with slope, crop cover and soil. It is most effective on moderate slope ranging from 1 to 5%

##### **4.4.3.2 CONTOUR BUND/ CONTOUR VEGETATIVE HEDGE**

Contour bunds are small earthen bunds constructed along the contour on the agriculture lands to check soil erosion and conserve sufficient moisture to grow crops. These bunds are purified with locally available vegetation like Khus, Munja, Dhaman and Stylo Hamata are raised on the bund.



#### **4.4.3.3 V DITCH**

These are constructed parallel to contour in areas of gentle slope to conserve in situ moisture and to check velocity of run off.

#### **4.4.3.4 STAGGERED TRENCHES**

Number of rows of trenches are dug in hilly areas having steep slopes. Distance between two trenches is kept equal to the length of a trench. Adjacent rows are staggered to reduce the maximum length of runoff for better retention. These trenches check the velocity of runoff as well as conserve in-situ moisture and check soil erosion.

#### **4.4.3.5 WATER HARVESTING STRUCTURE (TANKA)**

Tanka is a covered masonry runoff storage tank which collects runoff water from artificial catchment constructed around it. It is also an age old practice in the desert areas and is used for harvesting surface runoff water for life saving irrigation and drinking purposes.



#### **4.4.3.6 LOOSE STONE CHECK DAM**

These structures are constructed in small and medium size gullies using locally available stones/ boulders as dry masonry. A waste weir is also provided to discharge the peak runoff safely from the catchment.



#### **4.4.3.7 EARTHEN DAM**

These are constructed in medium to large size gullies by making earthen embankment in the nallah bed across the drainage line duly supported by locally available vegetation/ grass. They are provided where separate surplus arrangement for water is available at site.



#### **4.4.3.8 DUG OUT POND (NADI)**

It is a water harvesting structure constructed in middle to large drainage lines across the flow to store surplus runoff . The pond is constructed near the point of use where maximum water can be stored requiring minimum amount of earth work. The earthen bund is fortified with vegetation and waste weir.



#### **4.4.3.9 MASONRY CHECK DAM**

It is a weir like masonry structure constructed across the natural drain/ nallah which intercepts the runoff from local catchment and stores it for optimum utilization. This helps in recharging of surrounding wells. The stored water can also be used for lift or flow irrigation as well as for drinking purposes of human and livestock population. Due to these direct and indirect benefits, masonry check dam is in great demand in the rural areas.



Ghaneray

CHAPTER - 5

PROPOSED  
DEVELOPMENT PLAN

**Component Wise & Yearwise Breakup of watershed Activities**

Area    Unit Cost    Total Cost  
4616    0.15    692.40

Consolidated-Pali-XV

(A)

**Preparatory phase activities capacity building trainings & EPA**

Activity	Yearwise													
	Total		1st year		2nd year		3rd year		4th year		5th year		6th year	
	%	Fin	%	Fin	%	Fin	%	Fin	%	Fin	%	Fin	%	Fin
1 Admn.	10.00	69.24	1.00	6.92	2.00	13.85	2.00	13.85	2.00	13.85	2.00	13.85	1.00	6.92
2 Monitoring	1.00	6.92	0.10	0.69	0.20	1.38	0.20	1.38	0.20	1.38	0.20	1.38	0.10	0.69
3 Evaluation	1.00	6.92	0.00	0.00	0.00	0.00	0.00	0.00	0.35	2.42	0.30	2.08	0.35	2.42
4 EPA	4.00	27.70	4.00	27.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 I & CB	5.00	34.62	1.50	10.39	1.50	10.39	0.50	3.46	1.00	6.92	0.00	0.00	0.50	3.46
6 DPR	1.00	6.92	1.00	6.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>22.00</b>	<b>152.33</b>	<b>7.60</b>	<b>52.62</b>	<b>3.70</b>	<b>25.62</b>	<b>2.70</b>	<b>18.69</b>	<b>3.55</b>	<b>24.58</b>	<b>2.50</b>	<b>17.31</b>	<b>1.95</b>	<b>13.50</b>

(B) Natural resource management

Activity	Unit no	Unit cost	Total cost	Yearwise											
				1st year		2nd year		3rd year		4th year		5th year		6th year	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
<b>Conservation measures for arable land</b>															
1 Earthen Bund (withwest ware)	2510		221.63					500.00	44.15	1167.00	103.04	640	56.51	200	17.93
2 Tanka (Lack Rs./No.)	32	1.00	32.00					16.00	16.00	8.00	8.00	8	8		
3 Farm pond	14	1.50	21.00					7.00	10.50	4.00	6.00	3	4.5		
<b>Total (A)</b>			<b>274.63</b>					<b>70.65</b>		<b>117.04</b>		<b>69.01</b>		<b>17.93</b>	
<b>Conservation measures for non arable land</b>															
Pasture Development	120	1000	1.20					30.00	0.30	50.00	0.50	25	0.25	15	0.15
1 V-ditch (Rs.per Ha)	120	20000	24.00					35.00	7.00	50.00	10.00	25	5	10	2
2 Water Harvesting Structure	7	5	35.00					3.00	15.00	2.00	10.00	2	10		
<b>Total (B)</b>			<b>60.20</b>					<b>22.30</b>		<b>20.50</b>		<b>15.25</b>		<b>2.15</b>	
<b>Drainage line treatment</b>															
1 MMS (No.)	15	3.0	45.00					5.00	15.00	5.00	15.00	2	6	3	9
2 LSCD(Rs per meter)	158	5000	7.90					45.00	2.25	35.00	1.75	40	2	38	1.9
<b>Total (C)</b>			<b>52.90</b>					<b>17.25</b>		<b>16.75</b>		<b>8.00</b>		<b>10.90</b>	
<b>Total (A + B + C)</b>			<b>387.73</b>					<b>110.20</b>		<b>154.29</b>		<b>92.26</b>		<b>30.98</b>	

*Component Wise & Yearwise Breakup of watershed Activities*

*(C) Production System and micro enterprise*

Activity	no	Unit cost	Total cost	Yearwise												
				1st year		2nd year		3rd year		4th year		5th year		6th year		
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	
<b>Production measures for arable land</b>																
1	Horticulture plantation of tanka	16	36000	5.76					10	3.60	5.00	1.80	1	0.36		0.00
2	Horticulture plantation of khet talai	6	50000	3.00					2	1.00	2.00	1.00	2	1.00		0.00
3	Only Horticulture	23	30000	6.90					8	2.40	13.00	3.90	2	0.60		0.00
4	Vermi Compost	45	23000	10.35					10	2.30	25.00	5.75	10	2.30		0.00
5	Crop Demonstration	724	1000	7.24					217	2.17	290.00	2.90	145	1.45	72	0.72
	<b>Total (A)</b>			<b>33.25</b>		<b>0.00</b>		<b>0.00</b>		<b>11.47</b>	<b>0.00</b>	<b>15.35</b>		<b>5.71</b>		<b>0.72</b>
<b>Production measures for non arable land</b>																
<i>Pasture Development</i>																
1	Plantation	120	20000	24					40	8.00	60.00	12.00	20	4		0.00
2	Fencing	120	10000	12					50	5.00	50.00	5.00	20	2		0.00
				<b>36.00</b>		<b>0.00</b>		<b>0.00</b>		<b>13.00</b>	<b>17.00</b>		<b>6.00</b>		<b>0.00</b>	
<b>Micro Enterprise &amp; Other Livelihood Generation Activities (9%)</b>																
1	Revolving Fund to SHG	150	0.25	37.39						7.48		14.96		11.22		3.74
2	Revolving Fund to enterprising individuals	25	0.25	6.23						1.25		2.49		1.87		0.62
3	Grant in aid to Federation of SHG	10	2	18.69						3.74		7.48		5.61		1.87
				<b>62.32</b>		<b>0.00</b>		<b>0.00</b>		<b>12.46</b>		<b>24.93</b>		<b>18.69</b>		<b>6.23</b>
	<b>Total (B)</b>			<b>131.57</b>		<b>0.00</b>		<b>0.00</b>		<b>36.93</b>		<b>57.28</b>		<b>30.40</b>		<b>6.95</b>
	<b>Total (A + B)</b>			<b>519.30</b>		<b>0.00</b>		<b>0.00</b>		<b>147.13</b>		<b>211.57</b>		<b>122.66</b>		<b>37.93</b>
	<b>(D) Consolidation</b>			<b>20.77</b>												<b>20.77</b>
	<b>Project Total</b>			<b>692.40</b>		<b>52.62</b>		<b>25.62</b>		<b>165.83</b>		<b>236.15</b>		<b>139.97</b>		<b>72.21</b>

**Component Wise & Yearwise Breakup of watershed Convergence Activities**

Area      Unit Cost      Total Cost  
4616      0.15      692.4  
Convergence with NREGA & Agriculture  
(E) ext.department

Consolidated-Pali-XIII

Activity	no	Unit cost	Total cost	Yearwise												
				1st year		2nd year		3rd year		4th year		5th year		6th year		
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	
<b>Agriculture ext.department</b>																
1	Drip irrigation of tanka	24	0.11	2.64					11	1.21	7	0.77	6	0.66		
2	Drip irrigation of khet talai	10	0.21	2.10					6	1.26	3	0.63	1	0.21		
	Drip irrigation of Only Horticulture	50	0.21	10.50					21	4.41	28	5.88	1	0.21	0	0.00
3	Sprinkler Irrigation							0	0.00	0	0.00					
A	Marginal & small farmers	50	0.12	6.12					19	2.33	25	3.06	6	0.73		
B	Large farmer	38	0.10	3.96					10	1.04	19	1.98	9	0.94		
	<b>Total (A)</b>			<b>25.32</b>				<b>0</b>	<b>10.25</b>	<b>0</b>	<b>12.32</b>		<b>2.75</b>		<b>0.00</b>	
<b>NREGA</b>																
1	Nadi Excavation & Paj making	10	5.5	55.00					3	16.50	5	27.50	1	5.50	1	5.50
2	Tanka work Cat-4	27	1.7	45.90					9	15.30	8	13.60	7	11.90	3	5.10
3	Apna Khet Apna Kaam	150	1.5	225.00					40	60.00	45	67.50	45	67.50	20	30.00
4	Anicuts	2	5.0	10.00					1	5.00	1	5.00				
	<b>Total (B)</b>			<b>335.90</b>					<b>96.80</b>		<b>113.60</b>		<b>84.90</b>		<b>40.60</b>	
	<b>Total (A + B)</b>			<b>361.22</b>					<b>107.05</b>		<b>125.92</b>		<b>87.65</b>		<b>40.60</b>	
	<b>Grand Total</b>			<b>1053.62</b>					<b>272.88</b>		<b>362.07</b>		<b>227.63</b>		<b>112.81</b>	

CHAPTER - 6

ACTIVITY WISE  
ABSTRACT OF COST

*Component Wise & Yearwise Breakup of watershed Activities*

Area Unit Cost Total Cost  
2653 0.15 397.95

G.P. Ghanerav

(A)

**Preparatory phase activities capacity building trainings & EPA**

Activity	Yearwise													
	Total		1st year		2nd year		3rd year		4th year		5th year		6th year	
	%	Fin	%	Fin	%	Fin	%	Fin	%	Fin	%	Fin	%	Fin
1 Admn.	10.00	39.80	1.00	3.98	2.00	7.96	2.00	7.96	2.00	7.96	2.00	7.96	1.00	3.98
2 Monitoring	1.00	3.98	0.10	0.40	0.20	0.80	0.20	0.80	0.20	0.80	0.20	0.80	0.10	0.40
3 Evaluation	1.00	3.98	0.00	0.00	0.00	0.00	0.00	0.00	0.35	1.39	0.30	1.19	0.35	1.39
4 EPA	4.00	15.92	4.00	15.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 I & CB	5.00	19.90	1.50	5.97	1.50	5.97	0.50	1.99	1.00	3.98	0.00	0.00	0.50	1.99
6 DPR	1.00	3.98	1.00	3.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>22.00</b>	<b>87.55</b>	<b>7.60</b>	<b>30.24</b>	<b>3.70</b>	<b>14.72</b>	<b>2.70</b>	<b>10.74</b>	<b>3.55</b>	<b>14.13</b>	<b>2.50</b>	<b>9.95</b>	<b>1.95</b>	<b>7.76</b>

(B) Natural resource management

Activity	Unit no	Unit cost	Total cost	Yearwise											
				1st year		2nd year		3rd year		4th year		5th year		6th year	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
<b>Conservation measures for arable land</b>															
1 Earthen Bund with Waste Weir	1443		127					287	25.37	671	59.22	368	32.48	115	10.31
2 Tanka	18	1.00	18					9	9.20	5	4.60	5	4.60		0.00
3 Farm Pond	8	1.50	12					4	6.03	2	3.45	2	2.59		0.00
<b>Total (A)</b>			<b>158</b>		<b>0.00</b>		<b>0.00</b>		<b>40.61</b>		<b>67.27</b>		<b>39.66</b>		<b>10.31</b>
<b>Conservation measures for non arable land</b>															
Pasture development	69	1000	0.69					17	0.17	29	0.29	14	0.14	9	0.09
1 V-ditch	69	20000	13.79					20	4.02	29	5.75	14	2.87	6	1.15
2 Water Harvesting Structure	4	5	20.12					2	8.62	1	5.75	1	5.75		0.00
<b>Total (B)</b>	<b>0</b>		<b>34.60</b>		<b>0.00</b>		<b>0.00</b>		<b>12.82</b>		<b>11.78</b>		<b>8.76</b>		<b>1.24</b>
<b>Drainage line treatment</b>															
1 MMS	9	3.0	25.86					3	8.62	3	8.62	1	3.45	2	5.17
2 LSCD	91	5000	4.54					26	1.29	20	1.01	23	1.15	22	1.09
<b>Total (C)</b>			<b>30.40</b>		<b>0.00</b>		<b>0.00</b>		<b>9.91</b>		<b>9.63</b>		<b>4.60</b>		<b>6.26</b>
<b>Total (A + B + C)</b>			<b>222.84</b>		<b>0.00</b>		<b>0.00</b>		<b>63.34</b>		<b>88.68</b>		<b>53.03</b>		<b>17.81</b>

*Component Wise & Yearwise Breakup of watershed Activities*

*(C) Production System and micro enterprise*

Activity	no	Unit cost	Total cost	Yearwise											
				1st year		2nd year		3rd year		4th year		5th year		6th year	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
<b>Production measures for arable land</b>															
1	Horticulture plantation of tanka	9	36000	3.31				6	2.07	3	1.03	1	0.21		0.00
2	Horticulture plantation of khet talai	3	50000	1.72				1	0.57	1	0.57	1	0.57		0.00
3	Only Horticulture	13	30000	3.97				5	1.38	7	2.24	1	0.34		0.00
4	Vermi Compost	26	23000	5.95				6	1.32	14	3.30	6	1.32		0.00
5	Crop Demonstration	416	1000	4.16				125	1.25	167	1.67	83	0.83	41	0.41
	<b>Total (A)</b>			<b>19.11</b>					<b>6.59</b>		<b>8.82</b>		<b>3.28</b>		<b>0.41</b>
<b>Production measures for non arable land</b>															
<i>Pasture Development</i>															
1	Plantation	69	20000	13.79				23	4.60	34	6.90	11	2.30		0.00
2	Fencing	69	10000	6.90				29	2.87	29	2.87	11	1.15		0.00
				<b>20.69</b>					<b>7.47</b>		<b>9.77</b>		<b>3.45</b>		<b>0.00</b>
<b>Micro Enterprise &amp; Other Livelihood Generation Activities (9%)</b>															
1	SHG			21.49					4.30		8.60		6.45		2.15
2	Revolving Fund to SHG			3.58					0.72		1.43		1.07		0.36
3	Group of SHG			10.74					2.15		4.30		3.22		1.07
				<b>35.82</b>					<b>7.16</b>		<b>14.33</b>		<b>10.74</b>		<b>3.58</b>
	<b>Total (B)</b>			<b>75.62</b>					<b>21.23</b>		<b>32.92</b>		<b>17.47</b>		<b>4.00</b>
	<b>Total (A + B)</b>			<b>298.46</b>					<b>84.56</b>		<b>121.60</b>		<b>70.50</b>		<b>21.80</b>
	<b>(D) Consolidation</b>			<b>11.94</b>					<b>0.00</b>		<b>0.00</b>		<b>0.00</b>		<b>11.94</b>
	<b>Project Total</b>			<b>397.95</b>					<b>7.60</b>		<b>3.70</b>		<b>87.26</b>		<b>125.15</b>

*Component Wise & Yearwise Breakup of watershed Convergence Activities*

Area    Unit Cost    Total Cost  
2653    0.15    397.95  
Convergence with NREGA & Agriculture  
(E) ext.department

Ghanerao

Activity	no	Unit cost	Total cost	Yearwise												
				1st year		2nd year		3rd year		4th year		5th year		6th year		
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	
<b>Agriculture ext.department</b>																
1	Drip irrigation of tanka	14	0.11	1.52					6	1	4	0	3	0	0	0
2	Drip irrigation of khet talai	6	0.21	1.21					3	1	2	0	1	0	0	0
	Drip irrigation of Only Horticulture	29	0.21	6.03					12	3	16	3	1	0	0	0
3	Sprinkler Irrigation	0		0.00					0	0	0	0	0	0	0	0
A	Marginal & small farmers	29	0.12	3.52					11	1	14	2	3	0	0	0
B	Large farmer	22	0.10	2.28					6	1	11	1	5	1	0	0
	<b>Total (A)</b>			<b>14.55</b>					<b>5.89</b>		<b>7.08</b>		<b>1.58</b>		<b>0.00</b>	
<b>NREGA</b>																
1	Nadi Excavation & Paj making	6	5.5	31.61					2	9	3	16	1	3.16	1	3.16
2	Tanka work Cat-4	16	1.7	26.38					5	9	5	8	4	6.84	2	2.93
3	Apna Khet Apna Kaam	86	1.5	129.32					23	34	26	39	26	38.79	11	17.24
4	Anicuts	1	5.0	5.00					1	5						
	<b>Total (B)</b>			<b>192.31</b>					<b>57.00</b>		63		<b>48.80</b>		<b>23.33</b>	
	<b>Total (A + B)</b>			<b>206.86</b>					<b>62.89</b>		<b>70.08</b>		<b>50.38</b>		<b>23.33</b>	
	<b>Grand Total</b>			<b>604.81</b>					<b>150.15</b>		<b>195.23</b>		<b>123.38</b>		<b>59.02</b>	

*Component Wise & Yearwise Breakup of watershed Activities*

Area    Unit Cost    Total Cost  
1963    0.15    294.45

## (A) Preparatory phase activities capacity building trainings &amp; EPA

Activity	Yearwise													
	Total		1st year		2nd year		3rd year		4th year		5th year		6th year	
	%	Fin	%	Fin	%	Fin	%	Fin	%	Fin	%	Fin	%	Fin
1 Admn.	10.00	29.45	1.00	2.94	2.00	5.89	2.00	5.89	2.00	5.89	2.00	5.89	1.00	2.94
2 Monitoring	1.00	2.94	0.10	0.29	0.20	0.59	0.20	0.59	0.20	0.59	0.20	0.59	0.10	0.29
3 Evaluation	1.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.35	1.03	0.30	0.88	0.35	1.03
4 EPA	4.00	11.78	4.00	11.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 I & CB	5.00	14.72	1.50	4.42	1.50	4.42	0.50	1.47	1.00	2.94	0.00	0.00	0.50	1.47
6 DPR	1.00	2.94	1.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total</b>	<b>22.00</b>	<b>64.78</b>	<b>7.60</b>	<b>22.38</b>	<b>3.70</b>	<b>10.89</b>	<b>2.70</b>	<b>7.95</b>	<b>3.55</b>	<b>10.45</b>	<b>2.50</b>	<b>7.36</b>	<b>1.95</b>	<b>5.74</b>

## (B) Natural resource management

Activity	Unit no	Unit cost	Total cost	Yearwise											
				1st year		2nd year		3rd year		4th year		5th year		6th year	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
<b>Conservation measures for arable land</b>															
1 Earthen Bund with Waste Weir	1067		94.25					213	18.78	496	43.82	272	24.03	85	7.62
2 Tanka	14	1.00	13.61					7	6.80	3	3.40	3	3.40		0.00
3 Farm Pond	6	1.50	8.93					3	4.47	2	2.55	1	1.91		0.00
<b>Total (A)</b>			<b>116.79</b>		<b>0.00</b>		<b>0.00</b>		<b>30.04</b>		<b>49.77</b>		<b>29.35</b>		<b>7.62</b>
<b>Conservation measures for non arable land</b>															
Pasture development	51	1000	1					13		21		11	0.11	6	0.06
1 V - ditch	51	20000	10					15	3	21	4	11	2.13	4	0.85
2 Water Harvesting Structure	3	5	15					1	6	1	4	1	4.25		0.00
<b>Total (B)</b>			<b>25.60</b>		<b>0.00</b>		<b>0.00</b>		<b>9.36</b>		<b>8.51</b>		<b>6.49</b>		<b>0.91</b>
<b>Drainage line treatment</b>															
1 MMS	6	3.0	19					2	6	2	6	1	3	1	4
2 LSCD	67	5000	3					19	1	15	1	17	1	16	1
<b>Total (C)</b>			<b>22.50</b>		<b>0.00</b>		<b>0.00</b>		<b>7.34</b>		<b>7.12</b>		<b>3.40</b>		<b>4.64</b>
<b>Total (A + B + C)</b>			<b>164.89</b>		<b>0.00</b>		<b>0.00</b>		<b>46.74</b>		<b>65.40</b>		<b>39.23</b>		<b>13.17</b>

*Component Wise & Yearwise Breakup of watershed Activities*

*(C) Production System and micro enterprise*

Activity	no	Unit cost	Total cost	Yearwise											
				1st year		2nd year		3rd year		4th year		5th year		6th year	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
<b>Production measures for arable land</b>															
1	Horticulture plantation of tanka	7	36000	2.45				4	1.53	2	0.77		0.15	0	0.00
2	Horticulture plantation of khet talai	3	50000	1.28				1	0.43	1	0.43	1	0.43	0	0.00
3	Only Horticulture	10	30000	2.93				3	1.02	6	1.66	1	0.26	0	0.00
4	Vermi Compost	19	23000	4.40				4	0.98	11	2.45	4	0.98	0	0.00
5	Crop Demonstration	308	1000	3.08				92	0.92	123	1.23	62	0.62	30.619	0.31
<b>Total (A)</b>				<b>14.14</b>	<b>0.00</b>	<b>0.00</b>		<b>4.88</b>	<b>6.53</b>		<b>2.43</b>		<b>0.31</b>		
<b>Production measures for non arable land</b>															
<i>Pasture Development</i>															
1	Plantation	51	20000	10.21				17	3.40	26	5.10	9	1.70		0
2	Fencing	51	10000	5.10				21	2.13	21	2.13	9	0.85		0
				<b>15.31</b>	<b>0.00</b>	<b>0.00</b>		<b>5.53</b>	<b>7.23</b>		<b>2.55</b>		<b>0.00</b>		
<b>Micro Enterprise &amp; Other Livelihood Generation Activities (9%)</b>															
1	SHG			15.90					3.18		6.36		4.77		1.59
2	Revolving Fund to SHG			2.65					0.53		1.06		0.80		0.27
3	Group of SHG			7.95					1.59		3.18		2.39		0.80
				<b>26.50</b>	<b>0.00</b>	<b>0.00</b>		<b>5.30</b>	<b>10.60</b>		<b>7.95</b>		<b>2.65</b>		
<b>Total (B)</b>				<b>41.81</b>	<b>0.00</b>	<b>0.00</b>		<b>10.83</b>	<b>17.83</b>		<b>10.50</b>		<b>2.65</b>		
<b>Total (A + B)</b>				<b>55.95</b>	<b>0.00</b>	<b>0.00</b>		<b>15.71</b>	<b>24.36</b>		<b>12.93</b>		<b>2.96</b>		
<b>(D) Consolidation</b>				<b>8.83</b>											<b>8.83</b>
<b>Project Total</b>				<b>294.45</b>	<b>22.38</b>	<b>10.89</b>		<b>70.39</b>	<b>100.21</b>		<b>59.53</b>		<b>30.71</b>		

*Component Wise & Yearwise Breakup of watershed Convergence Activities*

*Area Unit Cost Total Cost*

*1963 0.15 294.45*

*(E) Convergence with NREGA & Agriculture ext. department*

*Dudapura*

Activity	no	Unit cost	Total cost	Yearwise															
				1st year		2nd year		3rd year		4th year		5th year		6th year					
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin				
<b><i>Agriculture ext. department</i></b>																			
1	Drip irrigation of tanka	10	0.11	1.12					5	1	3		3						
2	Drip irrigation of khet talai	4	0.21	0.89					3	1	1								
	Drip irrigation of Only Horticulture	21	0.21	4.47					9	2	12	3							
3	Sprinkler Irrigation	0		0.00															
A	Marginal & small farmers	21	0.12	2.60					8	1	11	1	3						
B	Large farmer	16	0.10	1.68					4		8	1	4						
	<b>Total (A)</b>			<b>10.77</b>					<b>0.00</b>		<b>0.00</b>		<b>5.39</b>		<b>5.38</b>		<b>0.00</b>		<b>0.00</b>
<b><i>NREGA</i></b>																			
1	Nadi Excavation & Paj making	4	5.5	23.39					1	7	2	12		2		2			
2	Tanka work Cat-4	11	1.7	19.52					4	7	3	6	3	5	1	2			
3	Apna Khet Apna Kaam	64	1.5	95.68					17	26	19	29	19	29	9	13			
4	Anicuts	1	5.0	5.00							1	5.00		0.00		0			
	<b>Total (B)</b>			<b>143.59</b>					<b>0.00</b>		<b>0.00</b>		<b>40.00</b>		<b>52.00</b>		<b>36.10</b>		<b>17.27</b>
	<b>Total (A + B)</b>			<b>154.36</b>					<b>0.00</b>		<b>0.00</b>		<b>45.39</b>		<b>57.38</b>		<b>36.10</b>		<b>17.27</b>
	<b>Grand Total</b>			<b>448.81</b>					<b>22.38</b>		<b>10.89</b>		<b>115.78</b>		<b>157.59</b>		<b>95.63</b>		<b>47.97</b>

CHAPTER - 7

ANNUAL  
ACTION PLAN

## Component Wise & Yearwise Breakup of watershed Activities

Unit

Area Cost Total Cost

2653 0.15 397.95

### Preparatory phase activities capacity building trainings & EPA

G.P. Ghanerav

(A)

Activity		Yearwise													
		Total		1st year		2nd year		3rd year		4th year		5th year		6th year	
		%	Fin	%	Fin	%	Fin	%	Fin	%	Fin	%	Fin	%	Fin
1	Admn.	10.00	39.80	1.00	3.98	2.00	7.96	2.00	7.96	2.00	7.96	2.00	7.96	1.00	3.98
2	Monitoring	1.00	3.98	0.10	0.40	0.20	0.80	0.20	0.80	0.20	0.80	0.20	0.80	0.10	0.40
3	Evaluation	1.00	3.98	0.00	0.00	0.00	0.00	0.00	0.00	0.35	1.39	0.30	1.19	0.35	1.39
4	EPA	4.00	15.92	4.00	15.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	I & CB	5.00	19.90	1.50	5.97	1.50	5.97	0.50	1.99	1.00	3.98	0.00	0.00	0.50	1.99
6	DPR	1.00	3.98	1.00	3.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	<b>Total</b>	<b>22.00</b>	<b>87.55</b>	<b>7.60</b>	<b>30.24</b>	<b>3.70</b>	<b>14.72</b>	<b>2.70</b>	<b>10.74</b>	<b>3.55</b>	<b>14.13</b>	<b>2.50</b>	<b>9.95</b>	<b>1.95</b>	<b>7.76</b>

### (B) Natural resource management

Activity		Unit no	Unit cost	Total cost	Yearwise											
					1st year		2nd year		3rd year		4th year		5th year		6th year	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
<b>Conservation measures for arable land</b>																
1	Earthen Bund with Waste Weir	1443		127					287	25.37	671	59.22	368	32.48	115	10.31
2	Tanka	18	1.00	18					9	9.20	5	4.60	5	4.60		0.00
3	Farm Pond	8	1.50	12					4	6.03	2	3.45	2	2.59		0.00
	<b>Total (A)</b>			<b>158</b>		<b>0.00</b>		<b>0.00</b>		<b>40.61</b>		<b>67.27</b>		<b>39.66</b>		<b>10.31</b>
<b>Conservation measures for non arable land</b>																
	Pasture development	69	1000	0.69					17	0.17	29	0.29	14	0.14	9	0.09

1	V - ditch	69	20000	13.79					20	4.02	29	5.75	14	2.87	6	1.15
2	Water Harvesting Structure	4	5	20.12					2	8.62	1	5.75	1	5.75		0.00
	<b>Total (B)</b>	<b>0</b>		<b>34.60</b>		<b>0.00</b>		<b>0.00</b>		<b>12.82</b>		<b>11.78</b>		<b>8.76</b>		<b>1.24</b>
	<b>Drainage line treatment</b>	<b>0</b>		<b>0</b>												
1	MMS	9	3.0	25.86					3	8.62	3	8.62	1	3.45	2	5.17
2	LSCD	91	5000	4.54					26	1.29	20	1.01	23	1.15	22	1.09
	<b>Total (C)</b>			<b>30.40</b>		<b>0.00</b>		<b>0.00</b>		<b>9.91</b>		<b>9.63</b>		<b>4.60</b>		<b>6.26</b>
	<b>Total (A + B + C)</b>			<b>222.84</b>		<b>0.00</b>		<b>0.00</b>		<b>63.34</b>		<b>88.68</b>		<b>53.03</b>		<b>17.81</b>

*Component Wise & Yearwise Breakup of watershed Activities*

*Production System and micro  
(C) enterprise*

Activity	no	Unit cost	Total cost	Yearwise												
				1st year		2nd year		3rd year		4th year		5th year		6th year		
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	
<b>Production measures for arable land</b>																
1	Horticulture plantation of tanka	9	36000	3.31					6	2.07	3	1.03	1	0.21		0.00
2	Horticulture plantation of khet talai	3	50000	1.72					1	0.57	1	0.57	1	0.57		0.00
3	Only Horticulture	13	30000	3.97					5	1.38	7	2.24	1	0.34		0.00
4	Vermi Compost	26	23000	5.95					6	1.32	14	3.30	6	1.32		0.00
5	Crop Demonstration	416	1000	4.16					125	1.25	167	1.67	83	0.83	41	0.41

<i>Total (A)</i>				<b>19.11</b>		<b>0.00</b>		<b>0.00</b>		<b>6.59</b>		<b>8.82</b>		<b>3.28</b>		<b>0.41</b>
<i>Production measures for non arable land</i>																
<i>Pasture Development</i>																
1	<i>Plantation</i>	69	20000	13.79				23	4.60	34	6.90	11	2.30			0.00
2	<i>Fencing</i>	69	10000	6.90				29	2.87	29	2.87	11	1.15			0.00
				<b>20.69</b>		<b>0.00</b>		<b>0.00</b>	<b>7.47</b>		<b>9.77</b>		<b>3.45</b>			<b>0.00</b>
<i>Micro Enterprise &amp; Other Livelihood Generation Activities (9%)</i>																
1	<i>SHG</i>			21.49					4.30		8.60		6.45			2.15
2	<i>Revolving Fund to SHG</i>			3.58					0.72		1.43		1.07			0.36
3	<i>Group of SHG</i>			10.74					2.15		4.30		3.22			1.07
				<b>35.82</b>		<b>0.00</b>		<b>0.00</b>	<b>7.16</b>		<b>14.33</b>		<b>10.74</b>			<b>3.58</b>
<i>Total (B)</i>				<b>75.62</b>		<b>0.00</b>		<b>0.00</b>	<b>21.23</b>		<b>32.92</b>		<b>17.47</b>			<b>4.00</b>
<i>Total (A + B)</i>				<b>298.46</b>		<b>0.00</b>		<b>0.00</b>	<b>84.56</b>		<b>121.60</b>		<b>70.50</b>			<b>21.80</b>
	<i>(D) Consolidation</i>			<b>11.94</b>		<b>0.00</b>		<b>0.00</b>	<b>0.00</b>		<b>0.00</b>		<b>0.00</b>			<b>11.94</b>
<i>Project Total</i>				<b>397.95</b>		<b>7.60</b>		<b>3.70</b>	<b>87.26</b>		<b>125.15</b>		<b>73.00</b>			<b>35.69</b>

*Component Wise & Yearwise Breakup of watershed Convergence Activities*

Unit      Total  
 Area    Cost      Cost  
 2653    0.15    397.95

*Convergence with NREGA &*

*(E) Agriculture ext.department*

*Ghanerav*

Activity	no	Unit cost	Total cost	Yearwise																
				1st year		2nd year		3rd year		4th year		5th year		6th year						
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin					
<b><i>Agriculture ext.department</i></b>																				
1	<i>Drip irrigation of tanka</i>	14	0.11	1.52					6	1	4	0	3	0	0	0				
2	<i>Drip irrigation of khet talai</i>	6	0.21	1.21					3	1	2	0	1	0	0	0				
	<i>Drip irrigation of Only Horticulture</i>	29	0.21	6.03					12	3	16	3	1	0	0	0				
3	<i>Sprinkler Irrigation</i>	0		0.00					0	0	0	0	0	0	0	0				
A	<i>Marginal &amp; small farmers</i>	29	0.12	3.52					11	1	14	2	3	0	0	0				
B	<i>Large farmer</i>	22	0.10	2.28					6	1	11	1	5	1	0	0				
	<b><i>Total (A)</i></b>			<b>14.55</b>						<b>0.00</b>		<b>0.00</b>		<b>5.89</b>		<b>7.08</b>		<b>1.58</b>		<b>0.00</b>
<b><i>NREGA</i></b>																				
1	<i>Nadi Excavation &amp; Paj</i>	6	5.5	31.61					2	9	3	16	1	3.16	1	3.16				

	<i>making</i>															
2	<i>Tanka work Cat-4</i>	16	1.7	26.38				5	9	5	8	4	6.84	2	2.93	
3	<i>Apna Khet Apna Kaam</i>	86	1.5	129.32				23	34	26	39	26	38.79	11	17.24	
4	<i>Anicuts</i>	1	5.0	5.00				1	5							
	<i>Total (B)</i>			<b>192.31</b>			<b>0.00</b>		<b>0.00</b>		<b>57.00</b>	63	<b>48.80</b>		<b>23.33</b>	
	<i>Total (A + B)</i>			<b>206.86</b>			<b>0.00</b>		<b>62.89</b>		<b>70.08</b>		<b>50.38</b>		<b>23.33</b>	
	<i>Grand Total</i>			<b>604.81</b>			<b>7.60</b>		<b>3.70</b>		<b>150.15</b>		<b>195.23</b>		<b>123.38</b>	<b>59.02</b>

*Component Wise & Yearwise Breakup of watershed Activities*

Unit

Area Cost Total Cost

1963 0.15 294.45

**Preparatory phase activities capacity building trainings & EPA**

G.P. Dudapura

(A)

Activity		Yearwise													
		Total		1st year		2nd year		3rd year		4th year		5th year		6th year	
		%	Fin	%	Fin	%	Fin	%	Fin	%	Fin	%	Fin	%	Fin
1	Admn.	10.00	29.45	1.00	2.94	2.00	5.89	2.00	5.89	2.00	5.89	2.00	5.89	1.00	2.94
2	Monitoring	1.00	2.94	0.10	0.29	0.20	0.59	0.20	0.59	0.20	0.59	0.20	0.59	0.10	0.29
3	Evaluation	1.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.35	1.03	0.30	0.88	0.35	1.03
4	EPA	4.00	11.78	4.00	11.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	I & CB	5.00	14.72	1.50	4.42	1.50	4.42	0.50	1.47	1.00	2.94	0.00	0.00	0.50	1.47
6	DPR	1.00	2.94	1.00	2.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	<b>Total</b>	<b>22.00</b>	<b>64.78</b>	<b>7.60</b>	<b>22.38</b>	<b>3.70</b>	<b>10.89</b>	<b>2.70</b>	<b>7.95</b>	<b>3.55</b>	<b>10.45</b>	<b>2.50</b>	<b>7.36</b>	<b>1.95</b>	<b>5.74</b>

(B) Natural resource management

Activity		Unit no	Unit cost	Total cost	Yearwise											
					1st year		2nd year		3rd year		4th year		5th year		6th year	
					Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
<b>Conservation measures for arable land</b>																
1	Earthen Bund with Waste Weir	1067		94.25					213	18.78	496	43.82	272	24.03	85	7.62
2	Tanka	14	1.00	13.61					7	6.80	3	3.40	3	3.40		0.00
3	Farm Pond	6	1.50	8.93					3	4.47	2	2.55	1	1.91		0.00
	<b>Total (A)</b>			<b>116.79</b>		<b>0.00</b>		<b>0.00</b>		<b>30.04</b>		<b>49.77</b>		<b>29.35</b>		<b>7.62</b>
<b>Conservation measures for non arable land</b>		0														
	Pasture development	51	1000	1					13		21		11	0.11	6	0.06
1	V - ditch	51	20000	10					15	3	21	4	11	2.13	4	0.85
2	Water Harvesting Structure	3	5	15					1	6	1	4	1	4.25		0.00
	<b>Total (B)</b>			<b>25.60</b>		<b>0.00</b>		<b>0.00</b>		<b>9.36</b>		<b>8.51</b>		<b>6.49</b>		<b>0.91</b>

<i>Drainage line treatment</i>																
1	<i>MMS</i>	6	3.0	19					2	6	2	6	1	3	1	4
2	<i>LSGD</i>	67	5000	3					19	1	15	1	17	1	16	1
<i>Total (C)</i>				<b>22.50</b>		<b>0.00</b>		<b>0.00</b>		<b>7.34</b>		<b>7.12</b>		<b>3.40</b>		<b>4.64</b>
<i>Total (A + B + C)</i>				<b>164.89</b>		<b>0.00</b>		<b>0.00</b>		<b>46.74</b>		<b>65.40</b>		<b>39.23</b>		<b>13.17</b>

*Component Wise & Yearwise Breakup of watershed Activities*

*Production System and micro  
(C) enterprise*

<i>Activity</i>	<i>no</i>	<i>Unit cost</i>	<i>Total cost</i>	<i>Yearwise</i>												
				<i>1st year</i>		<i>2nd year</i>		<i>3rd year</i>		<i>4th year</i>		<i>5th year</i>		<i>6th year</i>		
				<i>Phy</i>	<i>Fin</i>	<i>Phy</i>	<i>Fin</i>	<i>Phy</i>	<i>Fin</i>	<i>Phy</i>	<i>Fin</i>	<i>Phy</i>	<i>Fin</i>	<i>Phy</i>	<i>Fin</i>	
<i>Production measures for arable land</i>																
1	<i>Horticulture plantation</i>	7	36000	2.45					4	1.53	2	0.77		0.15	0	0.00

	<i>of tanka</i>															
2	<i>Horticulture plantation of khet talai</i>	3	50000	1.28				1	0.43	1	0.43	1	0.43	0	0.00	
3	<i>Only Horticulture</i>	10	30000	2.93				3	1.02	6	1.66	1	0.26	0	0.00	
4	<i>Vermi Compost</i>	19	23000	4.40				4	0.98	11	2.45	4	0.98	0	0.00	
5	<i>Crop Demonstration</i>	308	1000	3.08				92	0.92	123	1.23	62	0.62	30.619	0.31	
	<b>Total (A)</b>			<b>14.14</b>		<b>0.00</b>		<b>0.00</b>	<b>4.88</b>		<b>6.53</b>		<b>2.43</b>		<b>0.31</b>	
	<b>Production measures for non arable land</b>															
	<i>Pasture Development</i>															
1	<i>Plantation</i>	51	20000	10.21				17	3.40	26	5.10	9	1.70		0	
2	<i>Fencing</i>	51	10000	5.10				21	2.13	21	2.13	9	0.85		0	
				<b>15.31</b>		<b>0.00</b>		<b>0.00</b>	<b>5.53</b>		<b>7.23</b>		<b>2.55</b>		<b>0.00</b>	
	<b>Micro Enterprise &amp; Other Livelihood Generation Activities (9%)</b>															
1	<i>SHG</i>			15.90					3.18		6.36		4.77		1.59	
2	<i>Revolving Fund to SHG</i>			2.65					0.53		1.06		0.80		0.27	
3	<i>Group of SHG</i>			7.95					1.59		3.18		2.39		0.80	
				<b>26.50</b>		<b>0.00</b>		<b>0.00</b>	<b>5.30</b>		<b>10.60</b>		<b>7.95</b>		<b>2.65</b>	
	<b>Total (B)</b>			<b>41.81</b>		<b>0.00</b>		<b>0.00</b>	<b>10.83</b>		<b>17.83</b>		<b>10.50</b>		<b>2.65</b>	
	<b>Total (A + B)</b>			<b>55.95</b>		<b>0.00</b>		<b>0.00</b>	<b>15.71</b>		<b>24.36</b>		<b>12.93</b>		<b>2.96</b>	
	<b>(D) Consolidation</b>			<b>8.83</b>											<b>8.83</b>	
	<b>Project Total</b>			<b>294.45</b>		<b>22.38</b>		<b>10.89</b>	<b>70.39</b>		<b>100.21</b>		<b>59.53</b>		<b>30.71</b>	

Component Wise & Yearwise Breakup of watershed Convergence Activities

Unit  
 Area Cost Total Cost  
 1963 0.15 294.45  
 Convergence with NREGA &  
 (E) Agriculture ext.department

Dudapura

Activity	no	Unit cost	Total cost	Yearwise											
				1st year		2nd year		3rd year		4th year		5th year		6th year	
				Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin	Phy	Fin
<b>Agriculture ext.department</b>															
1	Drip irrigation of tanka	10	0.11	1.12					5	1	3		3		
2	Drip irrigation of khet talai	4	0.21	0.89					3	1	1				
	Drip irrigation of Only Horticulture	21	0.21	4.47					9	2	12	3			
3	Sprinkler Irrigation	0		0.00											
A	Marginal & small	21	0.12	2.60					8	1	11	1	3		

	<i>farmers</i>															
B	<i>Large farmer</i>	16	0.10	1.68				4		8	1	4				
	<i>Total (A)</i>			<b>10.77</b>		<b>0.00</b>		<b>0.00</b>		<b>5.39</b>		<b>5.38</b>		<b>0.00</b>		<b>0.00</b>
	<b>NREGA</b>															
1	<i>Nadi Excavation &amp; Paj making</i>	4	5.5	23.39				1	7	2	12		2		2	
2	<i>Tanka work Cat-4</i>	11	1.7	19.52				4	7	3	6	3	5	1	2	
3	<i>Apna Khet Apna Kaam</i>	64	1.5	95.68				17	26	19	29	19	29	9	13	
4	<i>Anicuts</i>	1	5.0	5.00						1	5.00		0.00		0	
	<i>Total (B)</i>			<b>143.59</b>		<b>0.00</b>		<b>0.00</b>		<b>40.00</b>		<b>52.00</b>		<b>36.10</b>		<b>17.27</b>
	<i>Total (A + B)</i>			<b>154.36</b>		<b>0.00</b>		<b>0.00</b>		<b>45.39</b>		<b>57.38</b>		<b>36.10</b>		<b>17.27</b>
	<b>Grand Total</b>			<b>448.81</b>		<b>22.38</b>		<b>10.89</b>		<b>115.78</b>		<b>157.59</b>		<b>95.63</b>		<b>47.97</b>

CHAPTER - 8

# PROJECT OUTCOMES



CHAPTER - 9

TECHNICAL DESIGN &  
ESTIMATES

### 1. Project Outcome :

By the end of the project, in the project area, it is expected that the water level in the tube-well increases considerably and sufficient water for man and productivity should be increased after the completion of the project. Few parameters which are expected to be increased after the completion of the project are as follow :

S. No.	Parameters	Before Execution of Project	Expected Increase after the Completion of the Project
<b>1</b>	<b>Availability of water</b>		
a.	Average Water Table in the Wells	650 ft	300-350 ft.
b.	Available Water in the	Wells/Tube Wells	Wells/Tube Wells/Ponds
<b>2.</b>	<b>Agriculture/ Horticulture</b>		
a.	Total Sowing Area		
b.	(Net) Sown Area (ha)		
c.	Production of Major		

	Crops: <ul style="list-style-type: none"> <li>• Wheat</li> <li>• Bajara</li> <li>• Moong</li> </ul>	26-29 quintal/ ha. 15-18 quintal/ ha. 3.5-4 quintal/ ha.	35-40 quintal/ ha. 20-25 quintal/ ha. 5-6 quintal/ ha.
d.	Production of Rajka	600-700 quintal	800-1000 quintal
e.	Average Production of Horticulture Plants	50-100 quintal	350-500 quintal (Different types of fruits plants Mango, Guava, Ber, Papaya, etc)
<b>3.</b>	<b>Live Stock</b>		
a.	Milk Production	3-7 kg/ animal	7-12 kg/ animal
b.	Animal Diseases	By regular camps, the various diseases will be reduced	
<b>4.</b>	<b>Livelihood</b>		
a.	Average income of family by introduction of other micro enterprises	Rs.2500-3000 per month	Rs.4000-5000 per month

b.	SHG Groups	10	190 The various homogenous groups will be constituted and the training of different activities will be given, especially for land less families.
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During the project period (5-7 years), the various activities will be done. The natural resource management activities will be done in between the project phase. The proposed NRM works in arable, non arable land and drainage line treatment will increase the water table, production of agriculture/horticulture crops. Similarly the livestock will increase the milk production. the year wise various outcomes of the project are as follows :

S. No.	Activity	Unit	Before Project	During the Project Period						
				I Yr	II Yr	III Yr	IV Yr	V Yr	VI Yr	VII Yr
1.	Engineering Structure									

a.	Contour Bund, CVH, Restoration of Old structures, Gully Control Structure	Hect.	Nil				1000	2000	700		
b.	Earth Bunds, WHS, Anicut	No.	Nil								
<b>2.</b>	<b>Increase of Agriculture Production due to construction of above Engineering Structure</b>										
a.	Rabi Season (Main Crops)										
	• Wheat	Qtl/ ha	29	29	29	35	37	39	40	40-50	
	• Mustard		12	12	12	14	15	16	18	18-20	
b.	Kharif Season (Main Crops)										
	• Bajra	Qtl/ ha	12.5	12.5	12.5	14	15	18	20	20-25	
	• Guar		5.50	5.5	5.5	6.0	8	9	10	10-12	
<b>3.</b>	<b>Increase of Area of Agriculture Production of Engineering Structure</b>										

a.	Rain fed Area	Ha.	1350			3%	5%	7%	8%	10%
b.	Irrigated Area	Ha.	385			3%	5%	7%	8%	10%
c.	Vegetable Area	Ha.	20			3%	5%	7%	8%	10%
d.	Pasture Development	Ha.	Nil			10	20			
<b>4.</b>	<b>Water Table Depth</b>									
	• May	m.	190			160	150	140	130	120
	• September	m.	170			155	145	135	125	115
	• December	m.	180			158	148	138	128	118
<b>5.</b>	<b>Availability of Drinking Water</b>		<b>Dec.</b>	<b>Dec.</b>	<b>Dec.</b>	<b>Dec.</b>	<b>Jan.</b>	<b>Jan.</b>	<b>March</b>	<b>May</b>
<b>6.</b>	<b>Survival of Plants</b>									
	• Horticulture Plants	Nos.	20	30	500	2500	5000	8000	10000	10000
	• Forestry Plants	Nos.	100	50	450	1000	2500	4000	6000	8000

<b>7.</b>	<b>Milk Production per animal</b>									
	• Cow	Kg.	4.5	4.5	4.5	5.5	5.5	6	7	7
	• Buffalo	Kg.	7.5	7.5	7.5	8	8	8	9	9
	• Goat	Kg.	2.00	2.0	2.0	2.0	2.5	3	3	3
<b>8.</b>	<b>Control on Migration</b>	<b>No.</b>	<b>Nil</b>			<b>10%</b>	<b>30%</b>	<b>40%</b>	<b>70%</b>	<b>80%</b>

### **Critical Assumption**

- No severe droughts/ unexpected floods/ natural disasters
- Adequate funds are allocated for the same and released on time.
- There is no significant pest/ disease attack, and if so, then it will have been contained before irreversible damage is done.
- Adverse market conditions do not persist long.
- Sound macro-economic and growth conditions continue and the benefits are widely distributed particularly in the rural areas.
- Facilitating agencies and resource providers have the required competent staff so that timely and appropriate technical advice and services are provided to farmers whenever required.
- The Capacity Building Plan is implemented, monitored and modified to address evolving needs and feedback from participants.

- The execution of the Women's Empowerment Pedagogy is regularly monitored by the District and State level Implementing Agencies

### Means of Verification of indicators

- Baseline surveys like household income ,expenditure, health and nutrition etc at the beginning, mid-term and end of the project period
- Annual participatory assessment by communities during project period.
- Regular project monitoring reports prepared by project monitoring teams/ agencies.
- Membership and other Records, Minutes of Meetings maintained by the SHGs, WCs/ Individual beneficiaries/project-related village and local bodies/PRIs.
- External review missions
- Data maintained by Government department (Revenue, Agriculture, Groundwater, Irrigation, Animal Husbandry

### EXPECTED OUT COMES

1	2	3	4	5	6
S. No.	Item	Unit of measurement	Pre-project Status	Expected Post-project Status	Remarks
1	Status of water table (Depth to	Meters	80	75	

	Ground water level)				
2	Ground water structures repaired/ rejuvenated	No.	-	-	
3	Quality of drinking water	Description	Good	Good	
4	Availability of drinking water	Description	12 month	12 month	
5	Change in irrigated Area	Ha	1235	1350	
6	Change in cropping/ land use pattern	Description			
7	Area under agricultural crop	Ha			
	i Area under single crop	Ha	2470	2480	
	ii Area under double crop	Ha	1235	1300	
	iii Area under multiple crop	Ha	410	450	
8	Change in cultivated Area	Ha			
9 yield of major crops of area	Yield of Bajra	q/ha	15-18	20-25	
	Yield of Wheat	q/ha	26-29	35-40	
	Yield of Gram	q/ha	19-25	22-28	
	Yield of Mustard	q/ha	10-14	12-18	
10 production of major crops of area	Production of Bajra	ton	15	19	
	Production of Wheat	ton	25	30	
	Production of Gram	ton	18	22	
	Production of Mustard	ton	15	22	
11	Area under vegetation	Ha	3-5	5-8	
12	Area under horticulture	Ha	125	200	
13	Area under fuel	Ha	-	-	
14	Area under Fodder	Ha	2842	2870	
15	Fodder production	Q	159	170	

16	Milk production	Litres/day	5-7	7-12	
17	SHGs Active	No.	11	200	
18	No. of livelihoods	No.	3000	3100	
19	Income	Rs.in la			
20	Migration	No.			
21	SHG Federations formed	No.	-	10	

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### CHAPTER - VIII Enclosures -

- a. Location –District, block, village, watershed location map
- b. Map of \_\_\_\_\_ IWMP Project (Watershed Boundary demarcation in cadastral & Topo Sheet)
- c. PRA Map (along with photos & paper drawing)
- d. Treatment map (Indicate proposed works)

- e. Cadastral Map on watershed boundary
- f. Information on Soils, Soil fertility, Land capability, Soil chemical problems like salinity, alkalinity
- g. Land Use Land Cover map
- h. Information on existing water harvesting structures & well inventory along with GPS co-ordinates.
- i. High resolution, latest Remote Sensing Satellite data

**Documents of Agreements:**

Proceedings of gram sabha for EPA approval

Proceedings of gram sabha Resolution for committee constitution

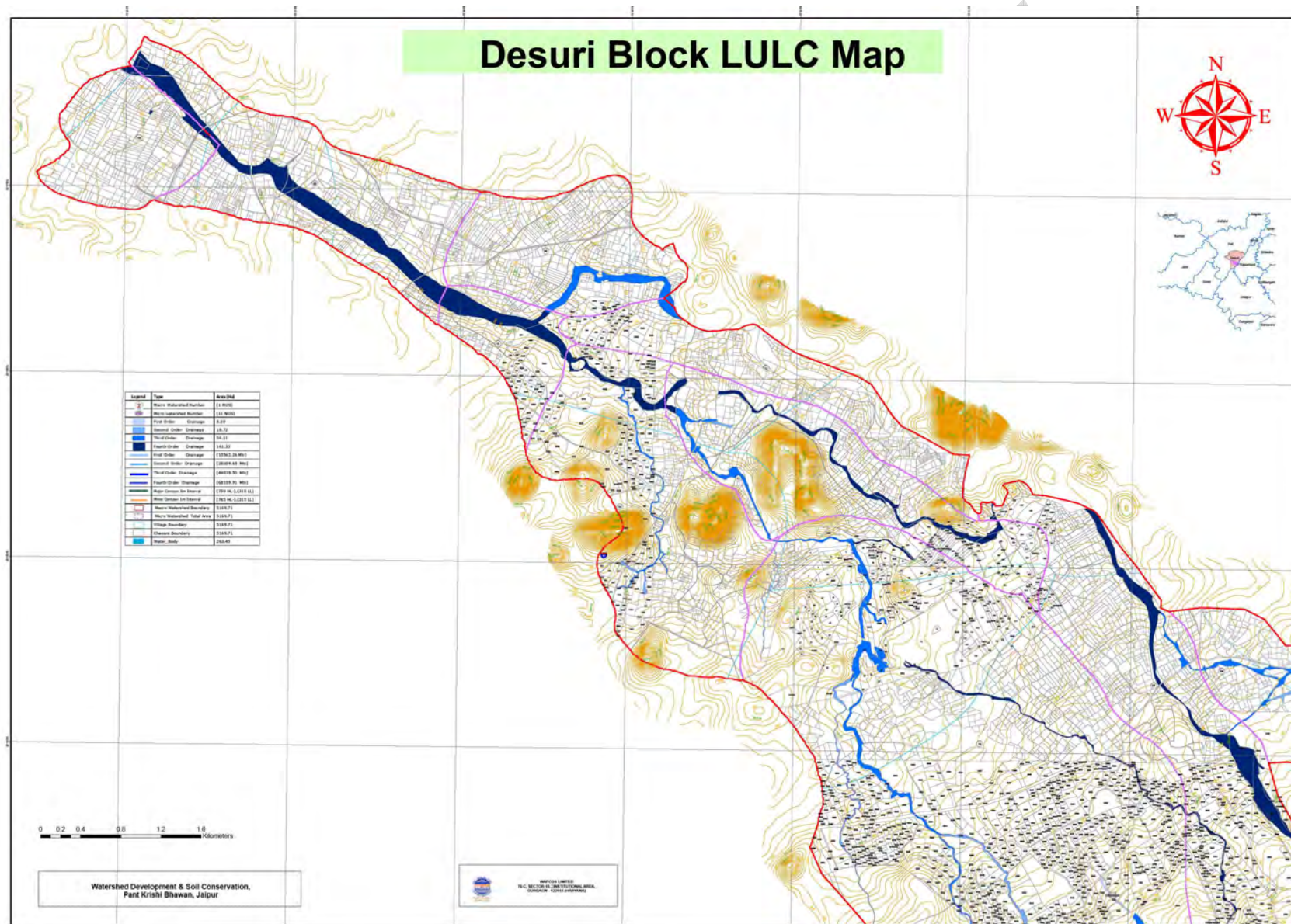
Proceedings of gram sabha for DPR approval

DPR approval by district

Watershed Committee Registration certificate

MoU – PIA – DWMA, PIA – WC (in case of NGO as PIA)





Ghanerao

PALI-XV