

Report for the Base Line Survey

IGWDP Gujarat



Submitted to: **NABARD, AHMEDABAD**

Submitted by:

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1 PROJECT OVERVIEW

NABARD and the German Agency (KfW) have planned to implement initially eight projects under the Indo German Watershed Development Program (IGWDP) in the state of Gujarat. The areas of implementation of these projects will be Dahod, Panchmahal, Sabarkantha and Vadodara districts. These selected areas are mainly populated by ST/SC, the most marginalized and resource poor in the society. The Project aims to accomplish the following:

- Rehabilitation of degraded watersheds through people's participation in the selected SC/ST dominated and resource poor areas of Gujarat.
- Building the capacity of the rural poor in these areas for tackling the problems related to agriculture, allied activities and income generation activities etc.

The Project implementation span is envisaged to be of about six years, including the initial capacity building phase. A great emphasis has been envisaged for people's participation. The Project intends to partner with the Project Implementation Agencies (PIAs) to facilitate effective participation by people. The PIAs, therefore, are one of the key stakeholders in this project.

a) Research Background

NABARD decided to conduct a baseline study. This study aims to assess the pre and post situation of formation of watershed in the particular area. Thus it can be called a comparative study which will give an idea of the need of such watersheds and its impact on people's general living conditions. This Baseline study can form the basis upon which the project will assess progress by setting clear and specific benchmarks on relevant variables. The study, therefore, comprised a comprehensive quantitative survey to collect data on key variables and indicators as per the project framework. Apart from the socio-economic characteristics, it aims at providing a frame of reference and database for programme planning, monitoring, evaluation and impact assessment.

NABARD asked COHESION to carry out this Study. The Baseline Survey has been carried out in the four selected watersheds, **between December 2006 to June, 2007**, where IGWDP has been planned. The watersheds have been selected, in consultation with NABARD, using the following criteria:

- a) Number of villages and households in a watershed.
- b) Representation of different geographical areas.

It was decided to cover about 300 households in each watershed. The watersheds have been selected from the following geographical areas:

- a) Dahod taluka, Dahod district.
- b) Jhalod taluka, Dahod district.
- c) Kawant taluka, Vadodara district
- d) Megharaj taluka, Sabarkantha district.

b) Objectives of the Survey

The main aim of the survey is pre and post development evaluation of the watersheds in the areas and to ascertain the impact of interventions and also to develop a comparison between treated and untreated watersheds. The Objectives of the Study are as follow:

‘To find out the initial situation with respect to all aspects - agriculture, animal husbandry, social, total income of the households in different economic strata and an estimated value of the total income of the village from all sources.’

II METHODOLOGY

To answer these questions, data was gathered through qualitative and quantitative techniques.

a) Sampling Technique and data collection process:

100% of the Households or about 300 households per watershed, which ever was less were covered for quantitative survey. The watershed wise households surveyed are as follows:

Dahod: 252

Jhalod: 304

Vadodara: 309

Sabarkantha: 311

Random sampling technique was used to select about 300 households when number exceeded 300 households in a watershed. Common information for hamlets and villages were also collected through separate questionnaires. The total households studied were 1176. This sample in our opinion is quite robust for statistically significant analysis considering that the focus here is to measure relative change in the project indicators.

The local language was used for the interview and questionnaires.

b) Pilot study

A pilot study of 40 Households was carried out in Dahod area before the start of the main study. It may also be added that even before preparation of questionnaires, visits were made to watersheds and discussions held with representatives of PIAs to develop better understanding of the field situation.

Based on the pilot and consultation with NABARD, the questionnaires were finalized for the study.

c) Data Analysis

All data from the interview forms was entered into the computer in a format compatible with standard statistical programs - SPSS. Output tables were generated based on this for different parameters and those have been used for the analysis and report preparation.

COHESION

Information about Falias

	Dahod	Vadodara	Jhalod	Sabarkantha
Villages	Agawada	Kochvad, Keladra & Baidia	Karamba & Saramariya	Gaibachada, Dandhia & Navaghara
Number of Falias Surveyed	6	13	4	9
Distance of school				
Less than 500 meters	2	9	1	5
501 – 1000 meters	0	3	2	3
More than 1000 meters	4	1	1	1
Nurse	6	13	2	6
Anganwadi	2	12	4	7
Gram Sevak	4	6	-	6
Talati	5	7	3	9
Bank account of Group	2	11	-	7
Member in panchayat / Sarpanch	2	5	3	5
Covered by Milk Society	0	6	0	6
Covered by Farmers Society	0	8	0	0
Need for Development work				
Hand pump / Drinking water/Bore / Check dam	1	10	2	4
RCC road	-	7	3	4
Anganwadi	-	-	1	-
Electricity	-	2	-	-
Community Hall	-	1	-	-
Telecom Service	-	2	-	-
Cattle trough	-	1	-	-
Ration shop	-	1	-	-
Toilet/Drainage	-	-	-	2

III FINDINGS - SABARKANTHA AREA

Three villages – Gaywachharda, Navaghara and Dhandia – of Meghraj Taluka in Sabarkantha district are covered under IGWDP. Land in these three villages is 533, 540.6 and 625.5 Ha respectively. Total area to be covered under watershed is 1479.5 Ha. It includes 120.5 Ha of Forest land.

Total households proposed to be covered are 574 in these three villages. The villages are located at distance of about 7-10 KMs from Meghraj – the taluka head quarters and the nearest market is also there. These villages have only primary school and the high school is at Meghraj. There are SHGs and a Milk Society. There have been some developmental initiatives taken up in the past in the watershed area, such as check dams, nala plugs, farm ponds, field bunding, sanitation units and kacha road.

1 POPULATION CHARACTERISTICS

1.1 Caste Classification

87.5%, 3%, 11.6% and 6% of **311 households surveyed** belong to ST, SC, OBC and General categories respectively.

Table 1: Caste Classification of the Respondents

	Number	Percentage
Caste		
Scheduled caste	1	0.3
Scheduled tribe	272	87.5
Other backward caste	36	11.6
General	2	0.6
Number of households surveyed	311	

1.2 Sex Ratio

Table 2: Household Population and Literacy Status

	Above 14 years		0-14 years		Total Population	
	Male	Female	Boys	Girls	Male	Female
Sum	650	571	283	305	933	876
Average	2.1	1.8	0.9	1.0	3.0	2.8
Education						
Not gone to school	25.3	59.3	27.3	31.2	26.0	49.3
1-7 class	29.6	10.9	58.0	53.1	39.1	25.9
8-10 class	37.8	24.9	14.8	15.1	30.1	21.4
11-12 class	6.5	3.2	0.0	0.7	4.3	2.3
Graduate	0.8	1.5	0.0	0.0	0.5	1.0
Post graduate	0.0	0.2	0.0	0.0	0.0	0.1
Total Population	650	571	283	305	933	876

COHESION

Table 2 indicates that the average household size is 5.8. The sex ratio of the studied households is 939, which is higher than state and national figure of 921 and 933 respectively.

1.3 Literacy

Table 2 indicates that 25.3% of the males (15 years+) are reported to be illiterate, while the information for females on this parameter is as high as 59.3%, showing gender discrimination. Other 67.4% and 35.8% of the males and females respectively have attended school up to 10th standard. In other words, more than 93% of the population has studied maximum up to 10th standard. For the children falling in the age group below 15 years, the literacy rate for girls has improved considerably as 31.2% girls were reported not going to the school. Of the Households reporting reasons for children not going to school, 87.5% mentioned that the school is far away. Other 12.5% reported poor economic condition as the reason for this.

1.4 Occupational status

The overall economy of the village is agrarian with 97.1% of the households stating agriculture as their primary occupation, as shown in Table 3. Only 2.6% of the households were found to be engaged in casual labor as their primary occupation, although the same was reported as secondary occupation for as many as 68.2 % of the families. 24.1% of the households stated animal husbandry as their secondary occupation.

Table 3: Occupational status of Respondents

	Number	Percentage
Main Occupation		
Agriculture	302	97.1
Casual labour	8	2.6
Skilled worker	1	0.3
Secondary Occupation		
Agriculture labour	6	1.9
Casual labour	212	68.2
Service	10	3.2
Animal husbandry	75	24.1
No secondary occupation	8	2.6
Number of household surveyed	311	

2 STATUS OF SHELTER

The shelter of the families residing in the village is predominantly Kachha, with 82.6% of the families living in such houses. Only 5.8% reported living in Pucca houses. 45% of the households reported having electric connection. Only 2.6% and 7.4% of the households reported having toilet and bathroom respectively.

Table 4: Type of house and facilities available

Type of house	Number	Percentage
Katchha	257	82.6
Semi-pucca	36	11.6
Pucca	18	5.8
Electricity connection		
Yes	140	45.0
No	171	55.0
Toilet		
Yes	8	2.6
No	303	97.4
Bathroom		
Yes	23	7.4
No	288	92.6
Number of household surveyed	311	

3 OWNERSHIP OF HOUSEHOLD ASSETS

Table 5: Ownership of Household Assets

Household Asset	No. of Households owning	Percentage
Radio	20	6.4
TV	12	3.9
VCD/DVD	6	1.9
Tape recorder	21	6.8
Telephone	6	1.9
Mobile	13	4.2
Refrigerator	5	1.6
Cooler	1	0.3
Fan	37	11.9
Sewing Machine	1	0.3
Cycle	39	12.5
Two wheeler	16	5.1
Four wheeler	3	1.0
Tractor	2	0.3
Others	1	0.3

The asset holding of the population has been reported as low. A simple asset like a bicycle is also reported to be owned by as low as 12.5% of the families, while 5.1% and 1% reported having two and four wheelers respectively. There is a small percentage (4.2%) of mobile users also. Only 3.9% and 6.4% reported having TV and radio respectively, showing limited sources of information.

4 INFORMATION ON LAND AND OTHER RELATED RESOURCES

4.1 Land Ownership

Table 6 indicates that all the households surveyed reported having own land and average land holding is 2.2 acres. There are 1.6% households who reported having barren land. 63% of the households reported having irrigated land and their average irrigated land holding is 1.3 acres. 62.4% of the households reported having ground water – well/bore well – as source of irrigation, while only 0.6% reported irrigating from pond. Electric motor/pump is the major mode of irrigation with 46.4% of the households reported using this. There are 1.3% households who reported buying water from others and average price is Rs. 42.50 per hour

Table 6: Land ownership and irrigation related information

	Number	Percentage	Average land (Acres)
HHs having own land	311	100.0	2.2
HHs having irrigated land	196	63.0	1.3
HHs having barren land	5	1.6	1.2
Source of irrigation*			
Well / Bore well	194	62.4	-
Pond	2	0.6	-
Mode of irrigation			
Electric motor / pump	145	46.4	-
Diesel pump	10	3.3	-
Motor	41	13.3	-
HHs buying water from outside	4	1.3	-
Average price for water	Rs. 42.5 per hour		-

4.2 Pattern of Landholding

The pattern of landholding has also been analyzed and presented in the table 7. There are only 6.8% households reported possessing more than 4 acres of land. In contrast to this, 64.3% households reported having only up to 2 acres of land. Only 7.4% households reported having more than 2 acres of irrigated land. **The total cultivable land has been reported as 684 acres, of which 238 acres is irrigated land.**

Table 7: Land holding information

HHs having own land	Number	Percentage
Up to 1 acre	61	19.6
1.1 - 2 acres	139	44.7
2.1 - 3 acres	45	14.5
3.1 - 4 acres	45	14.5
4+ acres	21	6.8
HHs having irrigated land		

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Do not have	115	37.0
Up to 1 acre	100	32.2
1-2 acres	73	23.5
2-3 acres	6	1.9
3-4 acres	13	4.2
4+ acres	4	1.3
HHs having barren land		
Do not have	306	98.4
Up to 1 acre	3	1.0
1-2 acres	2	0.6

4.3 Information about Wells

Table 8: Well Information

	Last year	
	Number	Percentage
Water availability		
January	26	17.2
February	70	46.4
March	9	6.0
April	3	2.0
May	8	5.3
June	5	3.3
July	3	2.0
August - September	2	1.4
October	3	2.0
December	8	5.3
Not reported	14	9.3
Level of water after Diwali (in feet)		
Up to 10	24	15.9
11- 20	23	15.2
21- 30	15	9.9
31- 40	14	9.3
41- 50	20	13.2
50 +	27	17.9
Current situation of well		
Working condition	28	18.5
Not in working condition	123	81.5
Steps to be taken to restart the well		
Not repairable/ cannot do anything	14	9.3
Need to deepen well	89	58.9
Can Repair it	20	13.3
No. of HHs reported Well information	151	

COHESION

151 households reported information on wells. 28(18.5%) of these reported well in working condition at the time of survey. Other 58.9% reported that there is need to deepen the wells, while 9.3% reported that the wells are not in repairable condition. Most of the wells dried after February. 31.1% of these reported the level of water after Diwali up to 20 feet.

5 CROP RELATED INFORMATION

5.1 Crops Sown in different Seasons

As mentioned earlier, 100% households reported practicing agriculture. 100%, 64.6% and 9.6% of households reported cultivating crops in monsoon, winter and summer seasons respectively. Multiple cropping in a season is practiced by 92.6% in monsoon, 33.8% in winter and 9.6% in summer season. The crops most commonly cultivated are *Maize, Tuver, adad and cotton* in monsoon and *Chana and Wheat* in winter season, while mainly fodder is grown in summer season. The details related to crops sown in different seasons are shown in Table 8.

Table 9: Crop information by seasons

	Monsoon	Winter	Summer
HHs reported taking crops	311 (100.0)	201 (64.6)	30 (9.6)
HHs taking two or more crops	288 (92.6)	105 (33.8)	4 (1.3)
No. of household having land	311		
Type of crops	No of farmers	No of farmers	No of farmers
Maize	311	0	0
Paddy	42	0	0
Gram	0	55	0
Wheat	0	193	2
Tuver	207	0	0
Adad	111	0	0
Juvar	0	1	6
Chilly	1	0	0
Cotton	106	0	0
Groundnut	0	1	5
Pearl millet	0	0	1
Fodder	3	1	13
Castor	0	47	0
Moong	2	0	0
Rapeseed	0	31	0
Vegetables	1	0	2
Fennel	0	8	0
Sesame	3	0	0
Ginger	1	0	0
Moth	0	1	0

COHESION

5.2 Average yield for Different Crops

Table 10: Agriculture yield crop wise

Type of crops	No of HHs taking crops	Land used(Acre)		Production (kg)		Product used at home		Seed used Hybrid (%)
		Total	Avg per HH	Total	Avg per acre	Total	Average	
Monsoon								
Maize	311	333.2	1.1	195580	584.5	159512	512.9	18.8
Paddy	42	32.8	0.8	9170	279.6	5700	135.7	17.5
Tuver	207	145.2	0.7	56584	385.5	10816	52.5	13.6
Adad	111	76.8	0.6	22137	288.2	3757	36.9	3.8
Chilly	1	0.2	0.2	100	500.0	0	0.0	0.0
Cotton	102	81.8	0.8	27920	341.3	121	1.2	49.0
Fodder	3	2.8	0.9	700	250.0	700	233.3	0.0
Castor	4	2.2	0.6	1900	863.6	0	0.0	25.0
Moong	2	0.8	0.4	80	100.0	60	30.0	50.0
Rapeseed	1	0.4	0.4	100	250.0	0	0.0	100.0
Vegetables	1	0.2	0.2	10	50.0	10	10.0	100.0
Sesame	1	0.4	0.4	30	75.0	30	30.0	0.0
Ginger	1	0.4	0.4	600	1500.0	200	200.0	0.0
Sub-total		678.0						
Winter								
Gram	54	32.7	0.6	13605	416.1	2975	55.1	11.1
Wheat	191	157.0	0.8	204864	1304.9	171124	895.9	8.4
Sorghum	1	0.4	0.4	0	0.0	0	0.0	0.0
Cotton	4	4.0	1.0	2220	555.0	0	0.0	0.0
Maize	1	0.2	0.2	200	1000.0	200	200.0	0.0
Groundnut	1	0.4	0.4	100	250.0	0	0.0	0.0
Fodder	1	0.8	0.8	1000	1250.0	1000	1000.0	0.0
Castor	26	15.8	0.6	6960	440.5	0	0.0	34.6
Rapeseed	29	17.2	0.6	6620	384.9	125	4.3	34.5
Fennel	5	2.4	0.5	4110	1712.5	0	0.0	20.0
Sesame	2	0.6	0.3	120	200.0	20	10.0	0.0
Moth	1	0.2	0.2	40	200.0	40	40.0	0.0
Sub-total		231.7						
Summer								
Sorghum	6	2.0	0.3	1500	750.0	1500	250.0	0.0
Groundnut	5	2.2	0.4	1120	509.1	120	24.0	0.0
Pearl millet	1	0.4	0.4	200	500.0	200	200.0	100.0
Fodder	13	8.2	0.6	17090	2084.1	12090	930.0	15.4
Vegetables	2	1.2	0.6	200	166.7	20	10.0	50.0
Sub-total		14.0						

COHESION

Gross cropped area is 923.7 acres with monsoon, winter and summer contributing 678, 231.7 and 14 acres respectively. Details related to crops for different seasons are as follows:

Monsoon:

- Maize is the main crop grown by everybody in monsoon. The annual production of Maize is 195580 kg in the surveyed households and the average yield per acre is 584.5 KGs.
- Tuber is cultivated by 207 (67%) of the households and the average yield per acre is 385.5 KGs.
- Adad is cultivated by 111 (36%) of the households and the average yield per acre is 288.2 KGs.
- Cotton is cultivated by 102 (33%) of the households and the average yield per acre is 341.3 KGs.
- Use of hybrid seeds has been mainly in cotton and maize with 49% and 19% of the households using these out of those reported growing these crops.

Winter:

- Wheat is cultivated by 191 (61%) of the households and the average yield per acre is 1304.9 KGs
- Chana (Gram) is cultivated by 54 (17%) of the households and the average yield per acre is 416.1 KGs.
- Use of hybrid seeds has been mainly in Castor and Rape seed with 34.6% and 34.5% of the households using these out of those reported growing these crops.

Summer:

- There is very little cultivation in summer. The major crop sown is fodder by 15 (5%) of the households.

Maize, wheat and fodder are generally sown for meeting the households' needs while significant quantity of other major crops, such as cotton, tuber, adad, gram etc are sold in the market.

Cropping Intensity

Net cropped area (NCA) of the households surveyed: 684.2 acres

Gross cropped area (GCA) of the households surveyed: 923.7 acres

$CI = (GCA/NCA) * 100 = 135$

The Cropping Intensity, therefore, has been found to be 135

5.3 Source of Seeds

Table 11: Place of buying seeds

Source of Seeds	Number	Percentage
Home	6	1.9
Shop / Agro shop	104	33.4
From village	229	73.6
Sarkari Mandi / Sangh / Society	1	0.3
Outside village	2	0.6

COHESION

Seeds are mainly bought from markets and use of own seeds is quite less.

6. ANIMAL RESOURCES

Table 12: Ownership of Cattle

	Number of HHs owning cattle	Percentage	No of Cattle	
			Total	Average
Cow	190	61.1	282	1.5
Buffaloes	215	69.1	330	1.5
Bullock	268	86.2	462	1.7
Sheep	5	1.6	20	4.0
Goat	219	70.4	586	2.7
Other**	15	4.8	58	3.9
No. of households surveyed	311			

**Other includes mainly chicken

As per the survey, the livestock most commonly owned by the villagers is 'Bullock', with as many as 86.2 % households owning the same. After bullocks, it is 'Goat' with 70.4%, 'Buffalo' with 69.1% and 'Cow' with 61.1% households. Per household average of cattle ownership is largest in case of Goat, Bullock and Buffalo. All the cows are of local breed and there is no cross breed cow in the houses surveyed.

7 DRINKING WATER

Table 13: Source of drinking water, responsibility of fetching water, average distance and time by season

	Monsoon	Winter	Summer
Source of drinking water			
Well	11.7	8.6	7.3
Hand Pump	54.1	56.3	58.4
Bore well	34.2	35.1	34.3
Responsibility of fetching water			
Female	98.3	98.6	98.3
Male	12.8	12.1	13.1
Boys	1.4	1.4	1.2
Girls	23.9	23.3	23.0
Average distance (in meter)	296	297	300
Average time (in minute)	34	33	34
Number of household surveyed	311		

Drinking water sources are mainly hand pumps and bore wells throughout the year. Almost 56% and 35% of the households meet their drinking water needs from hand pumps and bore wells respectively.

COHESION

The responsibility of fetching water is with more than one person in a family and largely (98%) lies with women throughout the year. The men too share responsibility to some extent (13%). In case of young boys and girls, it was found that girls shared larger responsibility than boys. The average distance to fetch water is around 300 meter all through the year. The average time spent for fetching water is around 34 minutes.

8 VEGETATION COVER

8.1 Availability of fuel wood

About 51% of the families collect the fuel wood from forest in all the three seasons. Another about 20% have farm as the source for fuel. Here again the responsibility of collecting fuel primarily lies with women. The average distance walked by villagers to fetch fuel wood is around 1615 meters throughout the year. The time consumed in fetching fuel is more than two and half hours.

Table 14: Source of Fuel, responsibility of collecting fuel, average distance and time by season

	Monsoon	Winter	Summer
Source of fuel			
Forest / Mountain	51.6	52.1	51.4
Buy from market/outside	3.6	3.6	3.7
Farm	20.3	19.7	19.6
From surrounding place	22.0	22.2	22.7
From other place	1.1	1.1	1.1
Relative	0.3	0.3	0.3
Within the village	1.1	1.1	1.1
Responsibility of collecting fuel			
Female	97.0	97.0	96.0
Male	22.8	24.1	21.0
Boys	4.1	3.9	4.3
Girls	17.6	16.3	16.5
Average distance (in meter)	1603	1624	1620
Average time (In minute)	157	158	159
No. of household surveyed	311		

8.2 Availability of fodder

During monsoon, winter and summer, 97.2%, 89.2% and 76.7% of the households collect fodder from farms respectively. 16.7% of the households buy fodder from market during summer. Responsibility of collecting fodder is with women and girls. Men take more responsibility in summer, especially when it is to be purchased from the market.

There is no system of banning open grazing in the watershed area.

Table 15: Source of Fodder and other related information

	Monsoon	Winter	Summer
Source of fodder			
Forest / Mountain	1.9	0.7	3.3
Buy from market/outside	0.0	0.4	16.7
Farm	97.2	91.7	71.3
Home	0.3	6.1	2.7
From other place	0.3	0.7	5.3
Within the village	0.3	0.4	0.7
Responsibility of collecting fodder			
Female	97.2	89.2	76.7
Male	16.5	8.3	25.3
Boys	1.6	0.7	2.0
Girls	17.7	14.4	14.7
Average distance (in meter)	317	312	959
Average time (In minute)	74	62	95
Number of household surveyed	311		

9. FOOD SECURITY

From the Table 16, we can see that 138 (44.4%) households have food security across the year. 18.6% of the households are secured on this account for less than six months in a year. The average food security is for 8.9 months in a year.

Table 16: Food security

	Number	Percentage
Food security		
1-3 months	16	5.1
4-6 months	42	13.5
7-9 months	107	34.4
10+ months	138	44.4
Not reported	8	2.6
Average month food security	8.9 months	
Number of household surveyed	311	

10. GENDER DIVISION OF LABOUR

Though the individual households did not report significant variation gender division of labour but the PRA done has demonstrated that women and men work daily for about 14 and 10 hours respectively.

Table 17: Average working hours of Women and Men in Monsoon

Average working hours at	Male	Women
- Working place	7.6	7.0
- Home	2.1	2.9

11. CREDIT SCENARIO

25(8%) of the households reported availing loan in the last two years from various sources. 42.7% reported that they did not require loan. 18.2% and 18.9% reported high interest rate and unable to repay respectively as the major reasons for not availing the loan. About 5% of the households even reasoned that no one gives them loan, while 8% reported non-availability of information on loan accessibility.

Table 18: Loan availed in last two years

	Number	Percentage
HHs availed the loan from outside	25	8.0
HHs availed loan more than once in last 2 years	4	1.2
Reasons for not availing loan*		
Not required	122	42.7
Interest rate is high	52	18.2
Unable to repay / delays in repayment	54	18.9
No information on loan accessibility	23	8.0
No one give us loan	13	4.5
Not reported	37	12.9
No. of HHs not availed the loan in last 2 years	286	

* Percentages based on those who did not avail the loan from outside

Table 19: Loan availed by sources and reason

	Number	Percentage
Loan amount		
Up to Rs. 1000	1	3.4
1001 – 5000	9	31
5001 – 10000	2	6.9
Above 10000	17	58.6
Average amount of loan availed	22645	
Source of loan		
Relative / friends	4	13.8
Money lender	4	13.8
From village	1	3.4
Society / Mandli	3	10.3
Bank	17	58.6
Rate of interest (Per month)		
1-5 percent	22	75.9
6-10 percent	5	17.2
10+ percent	2	6.9

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Reasons for availing loan*	Number	Percentage
Medical reason	3	10.3
Agriculture purpose	20	69.0
Bought animals	1	3.4
Education	3	10.3
To buy Tractor	2	6.9
Number of households availed the loan	25	

58.6% of the 25 households availing loan reported loan amount to be more than Rs 10000, while 34.4% reported it up to Rs 5000. Average loan amount is Rs 22645. The major sources for taking loan are formal institutions, i.e. banks and Society – 68.9% reported this, while moneylender reported by 13.8%. Regarding rate of interest, 75.9% of the households reported 1 to 5% per month, while 6.9% reported more than 10% p.m. The main reasons for availing loan were for agriculture (69%), medical (10.3%) and education (10.3%). Tractor as a reason was reported by 6.9%.

12. STATUS ON MIGRATION

The households reporting migration in the last normal and drought years are 14.1% and 17.4% respectively. The period of migration is different, as against 3.8 months in normal year; the average duration is reported as 5.7 months in drought year. The main reason stated for migration is for employment with 95.5% of the households migrating in normal year reporting this. Drought is another major reason reported in the drought year.

Table 20: Household Migrated, duration and reason of migration

	Last year		Last drought year	
HHs reported migration	44 (14.1)		54 (17.4)	
Average HHs members migrated	1.5		1.7	
Average HHs Male members migrated	1.0		0.9	
Average HHs Female members migrated	0.4		0.5	
Average HHs Children members migrated	0.2		0.3	
Number of months migrated	3.8		5.7	
Reason for migration	No.	Percent	No.	Percent
For employment	42	95.5	35	64.8
Due to debt	1	2.3	-	-
Crop destroyed	1	2.3	-	-
Due to drought	0	0	19	35.3
Not reported	0	0	0	0
Number of household reported migration	44		54	

There is not much difference in the average working hours of men and women at work place i.e. about 7.5 hours. The women work more at home i.e. for 2.6 hours in comparison to 1.9 hours reported for men.

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Table 21: Average working hours of Women and Men in Migration period

Average working hours at	Male	Women
- Working place	7.6	7.5
- Home	1.9	2.6
Number of household migrated	44	

13. INCOME SCENARIO – A GLIMPSE

The villagers are largely dependent on agriculture in a normal year but other livelihood activities are also adopted as part of livelihood portfolio. It can be inferred from the table that 99.7% of households reported dependence on agriculture in a normal year but on the other side there is overlapping and 93.6% and 62.7% reported agriculture, labour and animal husbandry respectively as the other options of livelihood, thus managing a diverse portfolio of activities to sustain their livelihoods. The situation of agriculture as a livelihood option gets clearer as even in a normal year, it is reported to generate a per household annual income of Rs. 11992, while this information for agriculture labour is Rs. 15349, i.e. 28% more than agriculture. The figures in a drought year are Rs. 17174 and Rs. 7053 respectively, i.e. 143% more for agriculture labour than agriculture. Livestock as a supplementary source of livelihood has been reported by 62.7% and 54.7% of the households in the normal and drought year respectively. Forest product also contributes to the basket of livelihood. The average income per household has been reported as Rs. 36,635 and Rs. 30,566 in the normal and drought year respectively. It is noteworthy that 55% of the households report earning more than Rs 30,000 p.a. in a normal year, while the corresponding figure in a drought year is just 31.5%.

Based on these findings, the total annual income of the 574 households in the watershed is estimated to be Rs. 2,10,28,685, i.e. about Rs. 2.1 crores. Migration accounts for about 9.88% of this income.

Table 22: Source of Income

	Last Year			Last Drought year		
	Number	%	Average Income (Rs.)	Number	%	Average Income (Rs.)
Agriculture	310	99.7	11992	255	82.0	7053
Animal husbandry	195	62.7	7195	170	54.7	5885
Agriculture labour	291	93.6	15349	294	94.5	17174
Forest product	137	44.1	4967	136	43.7	3949
Other	24	7.7	46917	24	7.7	46708
HHs income						
Rs.10001-20000	22	7.1	-	51	16.4	-
Rs.20001-30000	118	37.9	-	162	52.1	-
Rs.30001-50000	129	41.5	-	74	23.8	-
Rs.50001-100000	38	12.2	-	20	6.4	-
Rs. 100001+	3	1.0	-	3	1.0	-
Not reported	1	0.3	-	1	0.3	-
Average income	36635			30566		

IV FINDINGS - VADODARA AREA

Three villages – Kochwad, Keladhara and Baidiya – of Kawant Taluka in Vadodara district are covered under IGWDP. Total area to be covered under watershed is 1264 Ha.

1 POPULATION CHARACTERISTICS

1.1 Caste Classification

87.4%, 4.2%, 8.1% and 0.3% of the **total 309 households surveyed** belong to ST, SC, OBC and General categories respectively.

Table 1: Caste Classification of the Respondents

	Number	Percentage
Caste		
Schedule caste	13	4.2
Schedule tribe	270	87.4
Other backward caste	25	8.1
General	1	0.3
Number of households surveyed	309	

1.2 Sex Ratio

The total population of the surveyed households is 2407. The sex ratio is 943 which is higher than state and national figure of 921 and 933 respectively. The average size of the family is 7.8.

Table 2: Household Population and Literacy Status

	Above 14 years		0-14 years		Total Population	
	Male	Female	Boys	Girls	Male	Female
Sum	734	661	505	507	1239	1168
Average	2.4	2.1	1.6	1.6	4.0	3.8
Education						
Not gone to school	68.8	91.8	49.4	57.7	60.5	76.9
1-7 class	18.8	6.1	45.6	40.2	30.2	21.0
8-10 class	12.3	2.1	5.0	2.1	9.2	2.1
Total Population	734	661	505	507	1239	1168

1.4 Literacy

Literacy rate among men above the age group of 14 years is 31% and that of women is as low as 8.2%, showing gender discrimination. For the children falling in the age group below 15 years the literacy rate for boys was 50.6% and for girls 42.3%. The appalling state of literacy is clearly visible from the fact that out of the total population only 5% reach the 10th standard and no adult has studied beyond 10th standard. The main reason for children not going to school is poor economic

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conditions, resulting in children getting involved in domestic and occupational work at a young age.

1.4 Occupational status

The overall economy of the village is agrarian with 91% of the households stating agriculture as their primary occupation. The secondary occupation of 81% of the households was working as casual labour. Almost 18% reported of not having any livelihood diversification other than agriculture making them completely dependant on agriculture.

Table 3: Occupational status of Respondents

	Number	Percentage
Main Occupation		
Agriculture	281	90.9
Casual labour	28	9.1
Secondary Occupation		
Agriculture labour	4	1.3
Casual labour	250	80.9
No secondary occupation	55	17.8

2 STATUS OF SHELTER

70% of the population lives in Kutcha houses and 26.5% lives in semi pucca houses. Only 4% lives in pucca houses. Electricity connection is present in 55% of the houses. 7% of the population has bathroom and only 4% of the population has toilet made in their houses.

Table 4: Type of house and facilities available

Type of house	Number	Percentage
Katchha	216	69.9
Semi-pucca	82	26.5
Pucca	11	3.6
Electricity connection		
Yes	170	55.0
No	139	45.0
Toilet		
Yes	12	3.9
No	297	96.1
Bathroom		
Yes	23	7.4
No	286	92.6

3 OWNERSHIP OF HOUSEHOLD ASSETS

The asset holding of the population has been reported as very low. A simple asset like a bicycle is also reported to be owned by as low as 10.7% of the families, while 1.9%, 0.3% and 0.6% reported having two wheelers, four wheelers and tractors respectively. There is a very small percentage (1%) of mobile users and 1.6% having phone. This along with only 0.6% and 2.6% reported having TV and radio respectively, shows limited means of information and communication

Table 5: Ownership of Household Assets

Household Asset	No. of Households owning	Percentage
Radio	8	2.6
TV	2	0.6
VCD/DVD	2	0.6
Tape recorder	6	1.9
Telephone	5	1.6
Mobile	3	1.0
Refrigerator	1	0.3
Cooler	0	0.0
Fan	17	5.5
Sewing Machine	3	1.0
Cycle	33	10.7
Two wheeler	6	1.9
Four wheeler	1	0.3
Tractor	2	0.6
Others	9	2.9

4 INFORMATION ON LAND AND OTHER RELATED RESOURCES

4.2 Land Ownership

302 (97.7%) of the households surveyed reported having own land and average land holding is 2.1 acres. There are 1.7% households who reported having barren land. 77 (24.9%) of the households reported having irrigated land and their average irrigated land holding is 1.0 acres. 26.9% of the households reported having ground water – well/bore well – as source of irrigation, while only 2.2% reported irrigating from river/canal. Diesel pump is the major mode of irrigation with 26.2% of the households reported using this. There are 2.9% households who reported buying water from others and average price is Rs. 54.40 per hour. **The total cultivable land has been reported as 998 acres, of which 79 acres is irrigated land.**

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Table 6: Land ownership and irrigation related information

	Number	Percentage	Average land (Acres)
HHs having own land	302	97.7	2.1
HHs having irrigated land	77	24.9	1.0
HHs having barren land	10	3.2	1.7
Source of irrigation*			
Well / Bore well	83	26.9	-
River / Canal	7	2.2	-
Others	13	4.2	-
Mode of irrigation			
Electric motor / pump	3	1.0	-
Diesel pump	81	26.2	-
Motor	1	0.3	-
HHs buying water from outside	9	2.9	-
Average price for water	54.4		-

4.2 Pattern of Landholding

Table 7: Land holding information

HHs having own land	Number	Percentage
Up to 1 acre	48	15.5
1.1 - 2 acres	107	34.6
2.1 - 3 acres	96	31.1
3.1 - 4 acres	32	10.4
4+ acres	17	5.5
HHs having irrigated land		
Do not have	232	75.1
Up to 1 acre	50	16.2
1-2 acres	17	5.5
2-3 acres	7	2.3
3-4 acres	2	0.6
4+ acres	1	0.3
HHs having barren land		
Do not have	299	96.8
Up to 1 acre	2	0.6
1-2 acres	6	1.9
2-3 acres	1	0.3
4+ acres	1	0.3
Number of household surveyed	309	

The pattern of landholding has also been analyzed and presented in the table. There are only 17 (5.5%) households reported possessing more than 4 acres of land. In

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contrast to this, 50.1% households reported having only up to 2 acres of land. Only 3.2% households reported having more than 2 acres of irrigated land.

4.3 Information about Wells

100 households reported information on wells. 59% of these reported well in working condition at the time of survey. 27% and 2% reported that deepening of wells and repairing respectively will bring those in working condition. Most of the wells dried after March. 43% of these reported the level of water after Diwali up to 20 feet.

Table 8: Well Information

	Last year	
	Number	Percentage
Water availability		
Jan - Feb	6	6.0
March	27	27.0
April	14	14.0
May	5	5.0
June - August	8	8.0
October	13	13.0
November	12	12.0
December	12	12.0
Not reported	3	3.0
Level of water after Diwali (in feet)		
Up to 10	23	23.0
11- 20	20	20.0
21- 30	20	20.0
31- 40	11	11.0
41- 50	4	4.0
50 +	4	4.0
Not reported	18	18.0
Current situation of well		
Working condition	59	59.0
Not in working condition	40	40.0
Steps to be taken to restart the well		
Do not know / No information about it	6	6
Digging down well	27	27
Can Repair it	2	2
Water level is very low	3	3
Others	10	10
No. of HHs reported Well information	100	

5 CROP RELATED INFORMATION

5.1 Crops Sown in different Seasons

As mentioned earlier, 99% households reported practicing agriculture. 99% and 18.4% of households reported cultivating crops in monsoon and winter seasons respectively. Multiple cropping in a season is practiced by 98.1% in monsoon and 3.2% in winter season. The crops most commonly cultivated are Maize, Tuver, paddy and cotton in monsoon and maize again in winter season. The details related to crops sown in different seasons are shown in Table 8.

Table 9: Crop information by seasons

	Monsoon	Winter
HHs reported taking crops	306 (99.0)	57(18.4%)
HHs taking two or more crops	303 (98.1)	10 (3.2%)
Type of crops	No of farmers	No of farmers
Maize	306	47
Paddy	225	
Chana (Gram)		2
Wheat		1
Tuver	114	
Adad	63	
Sorghum	44	
Cotton	128	
Groundnut	2	
Onion	0	1
Pearl millet		1
Fodder	1	3
Sugarcane	0	1
Castor	0	1

5.2 Average yield for Different Crops

Monsoon:

- Maize is the main crop grown by 306 (99%) in monsoon. The annual production. The average yield per acre is 207.4 KGs.
- Paddy is cultivated by 225 (72.8%) of the households and the average yield per acre is 223.9 KGs.
- Cotton is cultivated by 128 (41.4%) of the households and the average yield per acre is 598.3 KGs.
- Tuver is cultivated by 114 (36.9%) of the households and the average yield per acre is 68.2 KGs.
- Adad is cultivated by 63 (20%) of the households and the average yield per acre is 157.9 KGs.
- Use of hybrid seeds has been mainly in cotton and maize with 51.2% and 24.4% of the households using these out of those reported growing these crops.

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Table 10: Agriculture yield crop wise

Type of crops	No of HHs taking crops	Land used		Production (kg)		Product used at home		Seed used Hybrid (%)
		Total	Avg per HH	Total	Avg per acre	Total	Average	
Monsoon								
Maize	306	426.6	1.4	88495	207.4	82185	268.6	24.4
Paddy	225	262.6	1.2	58780	223.9	52335	232.6	17.1
Tuver	114	183.8	1.6	12535	68.2	9890	86.8	7.3
Adad	63	29.2	0.5	4610	157.9	4390	69.7	0.0
Sorghum	44	18.7	0.4	5315	284.5	4560	103.6	0.0
Cotton	128	59.3	0.5	35465	598.3	7600	59.4	51.2
Groundnut	2	0.6	0.3	500	833.3	400	200.0	0.0
Fodder	1	0.4	0.4	200	500.0	200	200.0	0.0
Sub-total		981.2						
Winter								
Maize	47	29.4	0.6	12435	423.0	11235	239.0	0.0
Gram	2	0.6	0.3	100	166.7	100	50.0	11.1
Wheat	1	0.4	0.4	100	250.0	100	100.0	8.4
Onion	1	0.4	0.4	40	100.0	40	40.0	0.0
Pearl millet	1	0.4	0.4	40	100.0	40	40.0	0.0
Fodder	3	0.0	0.0	0	0.0	0	0.0	0.0
Sugarcane	1	0.4	0.4	1000	2500.0	0	0.0	0.0
Castor	1	1.2	1.2	50	41.7	0	0.0	0.06
Sub-total		32.8						

Gross cropped area is 1014 acres with monsoon, winter and summer contributing 981.2, 32.8 and 0 acres respectively. Details related to crops for different seasons are as follows:

Winter:

- Maize is cultivated by 47 (15.2%) of the households and the average yield per acre is 423 KGs
- Wheat is cultivated by only 1 (0.3%) of the households and the average yield per acre is 250 KGs
- Chana (Gram) is cultivated by only 2 (0.6%) of the households and the average yield per acre is 166.7 KGs.

Cotton is the only cash crop. Major proportion of the rest of crops is used for meeting the households' needs.

Cropping Intensity

Net cropped area (NCA) of the households surveyed: 998.2 acres

Gross cropped area (GCA) of the households surveyed: 1014 acres

$$CI = (GCA/NCA) * 100 = 103.3$$

The Cropping Intensity, therefore, has been found to be 103.3.

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5.3 Source of Seeds

Seeds are mainly bought from markets. However, use of own seeds is also quite prevalent. 128 (41.4%) farmers reported using own seeds. 41 (13.3%) reported procuring the seeds from the village. Only 7.1% farmers reported purchasing from Cooperative Society.

Table 11: Place of buying seeds

Source of Seeds	Number	Percentage
Home	128	41.4
Shop / Agro shop	74	23.9
Katavara	1	0.3
Kundanpur	45	14.6
Kavatand Bediya	140	45.3
From village	41	13.3
Cooperative	22	7.1

6. ANIMAL RESOURCES

As per the survey, the livestock most commonly owned by the villagers is 'Bullock', with as many as 86.1 % households owning the same. After bullocks, it is 'Cow' with 44.7%, 'Buffalo' with 44.3% and 'Goat' with 42.4% households. Per household average of cattle ownership is largest in case of Goat, Bullock and Buffalo. All the cows are of local breed and there is no cross breed cow in the houses surveyed.

Table 12: Ownership of Cattle

	Number of HHs owning cattle	Percentage	No of Cattle	
			Total	Average
Cow	138	44.7	209	1.5
Buffaloes	137	44.3	225	1.6
Bullock	266	86.1	462	1.7
Goat	131	42.4	428	3.3
Other (<i>mainly chicken</i>)	32	10.4	124	3.9
No. of households surveyed	309			

7 DRINKING WATER

The main source of drinking water is hand pump throughout the year. Almost 82% of the households meet their drinking water needs from hand pumps. The responsibility of fetching water is with more than one person in a family and largely (97.5%) lies with women throughout the year. The men too share responsibility to some extent (14%). In case of young boys and girls, it was found that girls (21.7%) shared larger responsibility than boys (3.7%) The average distance to fetch water is around 120 meter all through the year. The average time spent for fetching water is around 56 minutes.

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Table 13: Source of drinking water, responsibility of fetching water, average distance and time by season

	Monsoon	Winter	Summer
Source of drinking water			
Well	5.5	4.9	4.5
Hand Pump	81.0	82.2	82.3
Others	13.5	12.9	13.2
Responsibility of fetching water			
Female	99.0	96.4	97.1
Male	14.1	13.9	14.2
Boys	3.5	3.6	3.9
Girls	22.8	21.0	21.3
Average distance (in meter)	115	118	125
Average time (in minute)	55	54	57

8 VEGETATION COVER

8.1 Availability of fuel wood

About 88% of the families collect the fuel wood from farm in all the three seasons. Another about 8% have forest / mountain as the source for fuel. The proportion of farm in summer decreases marginally and increases to almost same extent for forest. The responsibility of collecting fuel primarily lies with women (94%). The men (20%) and the girls (16.5%) too share responsibility to some extent. The average distance walked by villagers to fetch fuel wood is around 783 meters throughout the year. The time consumed in fetching fuel is more than one and half hours.

Table 14: Source of Fuel, responsibility of collecting fuel, average distance and time by season

	Monsoon	Winter	Summer
Source of fuel			
Forest / Mountain	7.5	6.9	10.7
Buy from market/outside	1.1	0.6	1.5
Farm	88.3	90.9	83.4
From surrounding place	2.0	0.9	0.9
From other places	1.1	0.3	3.4
Relative	0.0	0.3	0.0
Responsibility of collecting fuel			
Female	96.0	93.1	92.6
Male	22.1	18.2	18.7
Boys	1.7	1.6	1.5
Girls	15.8	16.9	16.9
Average distance (in meter)	760	802	787
Average time (In minute)	95	100	97

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8.2 Availability of fodder

Farm is the major source of fodder for monsoon and winter seasons. During monsoon, winter and summer, 90.8%, 91.8% and 63.6% of the households collect fodder from farms respectively. 29.8% of the households buy fodder from market during summer. Responsibility of collecting fodder is with women (67%) and men (59%). Men take more responsibility in summer, especially when it is to be purchased from the market. There is no practice of 'Ban on free grazing'.

Table 15: Source of Fodder, responsibility of collecting fodder, average distance and time by season

	Monsoon	Winter	Summer
Source of fodder			
Forest / Mountain	1.5	1.0	0.0
Buy from market/outside	2.2	6.6	29.8
Farm	90.8	91.8	63.6
Home	0.9	0.7	0.0
Govt. storage	0.6	0.3	1.7
From other place*	4.4	0.0	5.0
Responsibility of collecting fodder			
Female	72.5	70.5	57.9
Male	58.2	55.1	62.9
Boys	7.6	5.9	6.0
Girls	7.6	6.6	7.3
Average distance (in meter)	1519	1387	3034
Average time (In minute)	169	165	308
Number of household surveyed	309		

9. FOOD SECURITY

160 (51.8%) households have food security across the year. 15.7% of the households are secured on this account for less than six months in a year. The average food security is for 9 months in a year.

Table 16: Food security

	Number	Percentage
Food security		
1-3 months	4	1.3
4-6 months	44	14.2
7-9 months	86	27.8
10+ months	160	51.8
Not reported	15	4.9
Average month food security	9 months	

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10. GENDER DIVISION OF LABOUR

A gender division of labour has been analyzed. Though the individual households did not report significant variation, but the PRA done has demonstrated that women and men work daily for about 15 and 12 hours respectively.

Table 17: Average working hours of Women and Men in Monsoon

Average working hours at	Male	Women
- Working place	9.7	9.7
- Home	4.3	4.5

11. CREDIT SCENARIO

Table 18: Loan availed in last two years

	Number	Percentage
HHs reported availed the loan from outside	118	38.2
HHs availed loan more than once in last two year	39	12.9
Reasons for not availed loan*		
Not required	60	31.4
Have family support	7	3.7
Interest rate is high	16	8.4
Labour work	12	6.3
Unable to repay	15	7.9
Children are working and send the money	1	0.5
Others	28	14.7
Not reported	57	29.8
Number of HHs not availed the loan in last 2 years	191	

* Percentages based on those who did not avail the loan from outside

118(38.2%) of the households reported availing loan in the last two years from various sources. 41.9% reported that they did not require loan as their children, family and livelihoods sources met their needs.. 8.4% and 7.9% reported high interest rate and unable to repay respectively as the major reasons for not availing the loan. Only 9.8% of the households availing loan reported loan amount to be more than Rs 10000, while 72% reported it up to Rs 5000. The average loan amount is Rs 5719. The major sources for taking loan are from both formal and informal sources. 46.3% reported institutions, i.e. banks and Society, as sources, while 28.6% reported it to be moneylenders and village leaders. 17.7% reported relatives / friends also as source. 54.3% of the households reported paying more than 10% per month as the rate of interest, while 23.2% reported paying 1 to 5% p.m. The main reasons for availing loan were for agriculture (53%) and household expenses (22.6%).

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Table 19: Loan availed by sources and reason

	Number	Percentage
Loan amount		
Up to Rs. 1000	17	10.4
1001 – 5000	101	61.6
5001 – 10000	30	18.3
Above 10000	16	9.8
Average amount of loan availed	5719	
Source of loan		
Relative / friends	29	17.7
Money lender	41	25.0
Village Patel / Sarpanch / Mukhi/others in village	6	3.6
Society	14	8.5
Bank	62	37.8
Others	12	7.3
Rate of interest (Per month)		
1-5 percent	38	23.2
6-10 percent	28	17.1
10+ percent	89	54.3
Not reported	9	5.5
Reasons for availing loan*		
Marriage	4	2.4
HHs expenses	37	22.6
Agriculture purpose	87	53.0
Personal reasons	7	4.3
Number of households availed the loan	118	

12. STATUS ON MIGRATION

The households reporting migration in the last normal and drought years are almost same (91%). The period of migration is different, as against 4.3 months in normal year, the average duration is reported as 5.6 months in drought year. The main reason stated for migration is for employment with 98.6 and 95.1% of the households reporting this in normal and drought years respectively. Drought is another reason reported in the drought year.

Table 20: Household Migrated, duration and reason of migration

	Last year	Last drought year
HHs reported migration	282 (91.3)	281(90.9%)
Average HHs members migrated	2.3	2.3
Average HHs Male members migrated	1.2	1.2
Average HHs Female members migrated	0.7	0.8
Average HHs Children members migrated	0.4	0.3

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Number of months migrated	4.3		5.6	
Reason for migration	Number	Percent	Number	Percent
For employment	278	98.6	267	95.1
Crop failure/drought	4	1.4	14	5.0
Number of household reported migration	282		281	

There is not much difference in the average working hours of men and women at work place i.e. about 7.6 hours. The women work more at home.

Table 21: Average working hours of Women and Men in Migration period

Average working hours at	Male	Women
- Working place	7.6	7.6
- Home	3.3	3.9
Number of household migrated	282	

13. INCOME SCENARIO – A GLIMPSE

Table 22: Source of Income

	Last Year			Last Drought year		
	Number	Percentage	Average Income(Rs.)	Number	Percentage	Average Income(Rs.)
Agriculture	304	98.4	8934	273	88.3	6063
Animal husbandry	11	3.6	968	1	0.3	500
Agriculture labour	151	48.9	4123	143	46.3	5206
Forest product	2	0.6	1500	1	0.3	500
Casual labour	164	53.1	21213	164	53.1	22285
HHs income						
Up to Rs. 5000	14	4.5	-	43	13.9	-
Rs. 5001-10000	98	31.7	-	99	32.0	-
Rs. 10001-20000	99	32.0	-	64	20.7	-
Rs. 20001-30000	27	8.7	-	15	4.9	-
Rs. 30001-50000	34	11.0	-	31	10.0	-
Rs. 50001-100000	32	10.4	-	33	10.7	-
Above Rs. 100000	2	0.6	-	2	0.6	-
Not reported / No income	3	1.0	-	22	7.1	-
Average income	22107			19597		
No. of households surveyed	309					

The villagers have agriculture as means of income in a normal year but other livelihood activities are also adopted as part of livelihood portfolio. It can be inferred from the table that 98.4% population is dependent on agriculture but on the other side there is overlapping and 48.9%, 3.6% and 53.1% have agriculture labour, animal husbandry and casual labour respectively also as the sources of income, thus

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managing a diverse portfolio of activities to sustain their livelihoods. On the contrary in the drought year, agriculture and animal husbandry contribute much lesser and the contribution of agriculture labour and casual labour increases marginally. Contribution of agriculture labour and casual labour is to a great extent in both normal and drought years, also signifying the vulnerabilities these bring forth.

The average income per household has been reported as Rs. 22107 and Rs. 19597 in the normal and drought year respectively. 36.2% of the households report earning less than Rs 10000 p.a. in a normal year, while the corresponding figure in a drought year is 45.9%, indicating the majority of households falling in this range. 32% and 20.7% of the households report earning in the range of Rs 10001-20000 p.a. in normal and drought years respectively,

Based on these findings, the total annual income of the 383 households in the watershed is estimated to be Rs. 84,66,981.

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V FINDINGS - DAHOD AREA

Two villages - Agawada and Limdi – of Dahod Taluka in Dahod district are covered under IGWDP. **Total area to be covered under watershed is 1142 Ha**, of which 120 Ha is forest land.

Total households proposed to be covered is 263. The villages are located at distance of about 25 KMs from Dahod – the taluka head quarters and the nearest market is 25 KMs from these villages. The villages have only primary school. There are other institutions, such as SHGs and Milk Societies, in the villages. There have been no developmental initiatives taken up in the past in the watershed area.

1 POPULATION CHARACTERISTICS

1.1 Caste Classification

All the 252 (100%) households surveyed belonged to Schedule tribes.

1.2 Sex Ratio

The total population in the households surveyed is 2723. The sex ratio is 958 which is higher than state and national figure of 921 and 933 respectively. The average size of the family is 10.8.

Table 1: Household Population and Literacy Status

	Above 14 years		0-14 years		Total Population	
	Male	Female	Boys	Girls	Male	Female
Sum	748	732	643	600	1391	1332
Average	3.0	2.9	2.6	2.4	5.5	5.3
Education						
Not gone to school	90.8	97.3	61.4	69.6	77.2	84.9
1-7 class	6.6	2.6	35.0	28.4	19.8	14.2
8-10 class	2.6	0.8	3.6	2.0	3.1	1.0
11-12 class	0.0	0.0	0.0	0.0	0.0	0.0
Graduate	0.0	0.0	0.0	0.0	0.0	0.0
Post graduate	0.0	0.0	0.0	0.0	0.0	0.0

1.5 Literacy

Literacy rate among men above the age group of 14 years is 9.0% and that of women is as low as 3.4%. For the children falling in the age group below 14 years the literacy rate for boys was 38.6% and for girls 30%. The appalling state of literacy is clearly visible from the fact that out of the total population only 2% reach the 10th standard and no one beyond 10th standard. Of the Households reporting reasons for children not going to school, 33.5% mentioned that there is no school in the village. The other major reasons were migration (34.8%) and school is far away (12.4%).

1.4 Occupational status

The overall economy of the village is agrarian with 88.5% of the households stating agriculture as their primary occupation, as shown in Table 2. Only 28% of the households were found to be engaged in casual labor as their primary occupation, although the same was reported as secondary occupation for as many as 83.3 % of the families.

Table 2: Occupational status of Respondents

	Number	Percentage
Main Occupation		
Agriculture	223	88.5
Casual labour	29	11.5
Skilled worker	0	0
Secondary Occupation		
Agriculture labour	26	10.3
Casual labour	210	83.3
Service	1	0.4
Business	1	0.4
No secondary occupation	14	5.6
Number of household surveyed	252	

2 STATUS OF SHELTER

The shelter of the families residing in the village is predominantly Kachha, with 85% of the families living in such houses. Only 2% reported living in Pucca houses. 29.8% of the households reported having electric connection. Only 0.8% of the households reported having toilet and bathroom.

Table 3: Type of house and facilities available

Type of house	Number	Percentage
Kachha	214	84.9
Semi-pucca	33	13.1
Pucca	5	2.0
Electricity connection		
Yes	75	29.8
No	177	70.2
Toilet		
Yes	2	0.8
No	250	99.2
Bathroom		
Yes	2	0.8
No	250	99.2

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Number of household surveyed	252
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3 OWNERSHIP OF HOUSEHOLD ASSETS

The asset holding of the population has been reported as low. A simple asset, like bicycle, is reported to be owned by only 16.7% of the families, while 2.4% and 0.8% reported having two and four wheelers respectively. Mobile phone is owned by 8%. Only 2.0% and 4.8% reported having TV and radio respectively, showing limited sources of information.

Table 4: Ownership of Household Assets

Household Asset	No. of Households owning	Percentage
Radio	12	4.8
TV	5	2.0
Tape recorder	8	3.2
Telephone	5	2.0
Mobile	20	7.9
Fan	4	1.6
Cycle	42	16.7
Two wheeler	6	2.4
Four wheeler	2	0.8
Tractor	1	0.4

4 INFORMATION ON LAND AND OTHER RELATED RESOURCES

4.3 Land Ownership

Table 5: Land ownership and irrigation related information

	Number	Percentage	Average land (Acres)
HHs having own land	250	99.2	2.1
HHs having irrigated land	14	5.6	1.2
HHs having barren land	14	5.6	1.2
Source of irrigation*			
Pond	14	5.6	-
Others	1	0.4	-
Mode of irrigation			
Electric motor / pump	2	0.8	-
Diesel pump	12	4.8	-
HHs buying water from outside	3	1.2	-
Average price for water	Rs. 83.00		

Table 5 indicates that 99.2% of the households reported having own land, with average land holding of 2.1 acres. 5.6% households reported having irrigated land and their average irrigated land holding is 1.2 acres. 6% of the households have some source of irrigation. They use mostly diesel pump for irrigation. 1.2% households reported buying water and average price is Rs. 83.00 per hour. **The total cultivable land has been reported as 525 acres, of which 17 acres is irrigated land.**

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4.2 Pattern of Landholding

The pattern of landholding has also been analyzed and presented in the table 6. There are only 8.3% households reported possessing more than 4 acres of land. In contrast to this, 76.9% households reported having only up to 2 acres of land. Only 0.8% households reported having more than 2 acres of irrigated land.

Table 6: Land holding information

HHs having own land	Number	Percentage
Do not have	2	0.8
Up to 1 acre	111	44.0
1.1 - 2 acres	83	32.9
2.1 - 3 acres	16	6.3
3.1 - 4 acres	19	7.5
4+ acres	21	8.3
HHs having irrigated land		
Do not have	237	94.0
Up to 1 acre	10	4.0
1-2 acres	3	1.2
2-3 acres	1	0.4
3-4 acres	0	0
4+ acres	1	0.4
HHs having barren land		
Do not have	238	94.4
Up to 1 acre	9	3.6
1-2 acres	2	0.8
2-3 acres	1	0.4
3-4 acres	2	0.8
Number of household surveyed	252	

4.3 Information about Wells

There has been no well in the village for irrigation purpose.

5 CROP RELATED INFORMATION

5.1 Crops Sown in different Seasons

As mentioned earlier, 98% population is dependant on agriculture. All these households reported cultivating crops in monsoon season and 93% in winter as well. Multiple cropping is practiced by 65% in monsoon and 47% in winter season. The crops most commonly cultivated are *Maize*, *Paddy* and *Tuver* in monsoon and *Chana* and *Wheat* in winter. Maize is the main crop grown by everybody in monsoon. The details related to crops sown in different seasons are shown in Table 7.

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Table 7: Crop information by seasons

	Monsoon	Winter	Summer
HHs reported taking crops	250 (100.0)	232 (92.8)	1 (0.4)
HHs taking two or more crops	162 (64.8)	118 (47.2)	-
Number of household having land	250		
Type of crops			
Maize (Maize)	250 (100.0)	15 (6.5)	-
Dangar (Paddy)	140 (56.0)		-
Gram		218 (94.0)	
Wheat		121 (52.2)	-
Tuver	49 (19.6)		-
Adad	4 (1.6)	-	-
Sorghum	7 (2.8)	-	-
Chilies	-	-	1 (100.0)
Number of household taking crops	250	232	1

5.2 Average yield for Different Crops

Table 8: Agriculture yield crop wise

Type of crops	No of HHs taking crops	Land used		Production (kg)		Product used at home		Seed used Hybrid (%)
		Total	Avg per HH	Total	Avg per acre	Total	Average	
Monsoon								
Maize	250	374.1	1.5	89605	240	88375	353.5	17
Paddy	140	95.1	0.7	23750	250	23530	168.1	9
Tuver	49	26.3	0.5	7380	280	6880	140.4	9
Adad	4	1.4	0.4	380	271	380	95.0	2
Sorghum	7	4.4	0.6	860	195	860	122.9	2
Sub-total		501.3						
Winter								
Chana (Gram)	218	272.6	1.3	45230	166	42410	194.5	33
Wheat	121	118.2	1.0	28705	243	27855	230.2	17
Maize	15	23.3	1.6	3220	138	3220	214.7	0
Sub-total		414.1						
Summer								
Chilly	1	0.2	0.2	20	100	20	20.0	0.0
Sub-total		0.2						

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There are very few crops being grown in different seasons. Gross cropped area is 915.6 acres with monsoon, winter and summer contributing 501.3, 414.1 and 0.2 acres respectively. The overall agricultural produce is mainly for self consumption. Very few houses reported selling their produce in outside markets. The crops being sold out by 8 households include Chana (5), Tuver (2) and Paddy (1). The details, such as area, production, yield and type of seeds for major crops sown in different seasons, are as follows:

Monsoon:

- Maize is the main crop grown by everybody having land. The annual production of Maize is 89605 kg in the surveyed households and the average yield per acre is 240 KGs. Only 17% households are using hybrid varieties, rest all use local seed variety.
- Paddy is cultivated by 140 (56%) of the households and the average yield per acre is 250 KGs. Only 9% households are using hybrid varieties.
- Tuver is cultivated by 49 (19.6%) of the households and the average yield per acre is 280 KGs. Only 9% households are using hybrid varieties.

Winter:

- Wheat is cultivated by 121 (52.2%) of the households and the average yield per acre is 243 KGs. Only 17% households are using hybrid varieties.
- Chana (Gram) is cultivated by 218 (94%) of the households and the average yield per acre is 166 KGs. 33 % households are using hybrid varieties.
- Maize is cultivated by 15 (6%) of the households in winter and the average yield per acre is 138 KGs. No household reported using hybrid variety.

Cropping Intensity

Net cropped area (NCA) of the households surveyed: 525 acres

Gross cropped area (GCA) of the households surveyed: 915.6 acres

$$CI = (GCA/NCA)*100 = 174.4$$

The Cropping Intensity, therefore, has been found to be 174.4

5.3 Source of Seeds

Seeds are mainly bought from markets (62.7%) and use of own seeds is reported in 37.3% cases.

Table 11: Place of buying seeds

Source of Seeds	Number	Percentage
Home	94	37.3
Shop / Agro shop	172	62.7

6. ANIMAL RESOURCES

The livestock most commonly owned by the villagers is 'Bullock', with as many as 78% households owning the same. After bullocks, it is 'Goat' with 53%, Cow with 52%, buffalo with 23% and Chicken amongst the other livestock. Per household average of cattle ownership is the largest in the cases of Goat, Chicken and Bullocks.

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All the cows are of local breed and there is no cross breed cow in the houses surveyed.

Table 12: Ownership of Cattle

	Number of HHs owning cattle	Percentage	No of Cattle	
			Total	Average
Cow	131	52.0	229	0.9
Buffaloes	58	23.0	127	0.5
Bullocks	196	77.8	431	1.7
Sheep	17	6.7	202	0.8
Goat	133	52.8	576	2.3
Other**	69	27.4	593	2.4
No of household surveyed	252			

**Other includes mainly chicken

7 DRINKING WATER

Drinking water sources are mainly pond and well throughout the year. About 61% of the households meet their drinking water needs from pond throughout the year. The dependence on pond increases very marginally in summer as the water level in well goes down. The well meets the drinking water needs of 31% of the households.

Table 13: Source of drinking water, responsibility of fetching water, average distance and time by season

	Monsoon	Winter	Summer
Source of drinking water			
Well	31.3	31.3	30.6
Pond	60.3	61.9	63.9
River	0.8	0.4	0.4
Hand Pump	5.6	4.8	4.4
Others	2.8	2.0	1.2
Responsibility of fetching water			
Female	96.0	96.0	93.7
Male	17.9	18.3	27.0
Boys	3.6	3.6	3.6
Girls	9.9	10.3	9.9
Average distance (in meter)	740	755	769
Maximum distance reported			3000
Average time (in minute)	89	91	101
Maximum time reported			300
Number of household surveyed	252		

The responsibility of fetching water is with more than one person in a family and largely (96%) lies with women throughout the year. It reduces very marginally in the summer season. The men too share responsibility to some extent, which is 17.9% in monsoon and increases to 27% in summer. In case of young boys and girls, it was found that girls shared larger responsibility than boys. The average distance which

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people travel to fetch water is around 750 meter all through the year. This distance increases to 3000 meter in times of acute shortage of water in the nearby sources. The average time spent by women for fetching water is around one and a half hours, which increases to five hours during periods of water shortage.

8 VEGETATION COVER

8.1 Availability of fuel wood

80% of the families collect the fuel wood from farms during both monsoon and winter seasons, while about 70% families collect fuel from the farms in summer season. The other source is forests from which 13%, 15% and 17% of the families collect during monsoon, winter and summer season respectively. The responsibility of collecting fuel primarily lies with women mainly, though in case of fuel, men still have a greater responsibility of fetching as compared to fetching water. The average distance covered by villagers to fetch fuel wood is around 630 meter in monsoon and winter and 1446 meter in summer. The time consumed in fetching fuel is around one and a half hour in monsoon and winter and two hours in summer

Table 14: Source of Fuel and other related Information

	Monsoon	Winter	Summer
Source of fuel			
Forest / Mountain	13.5	15.1	16.7
Buy from market/outside	1.6	0.4	3.6
Farm	81.0	79.4	69.8
From surrounding place	4.4	6.0	6.8
From other place*	2.0	1.2	6.0
Relative	0.4	0.4	0.8
Not going to collect the fuel	0.4	0.4	0.8
Responsibility of collecting fuel			
Female	94.0	92.9	88.1
Male	41.7	39.3	50.4
Boys	2.0	0.8	0.8
Girls	6.0	6.0	6.0
Average distance (in meter)	648	618	1446
Average time (In minute)	88	82	134
Number of household surveyed	252		

*Reported different name of the places

8.2 Availability of fodder

During monsoon, 82% of the households collect fodder from farms. Rest of the families collect from other mentioned sources in the table. In winter also, 69% families collect fodder from farms. In summer, only 12% households are dependant on farms for fodder. 47% buy from outside market, 10% from Government storage and 20% from other sources. There is no practice of 'Ban on free grazing'.

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Table 15: Source of Fodder and other related Information

	Monsoon	Winter	Summer
Source of fodder			
Forest / Mountain	0.8	0.8	0.8
Buy from market/outside	0.4	4.8	47.2
Farm	81.7	68.7	11.5
Home	2.0	4.8	0.4
Govt. storage	0.0	0.8	10.3
From other place	5.6	10.8	19.8
Not going to collect fodder/Not reported	11.5	11.5	11.5
Responsibility of collecting fodder			
Female	80.2	72.2	15.5
Male	35.3	38.5	79.8
Boys	1.6	1.6	2.0
Girls	5.2	4.0	2.4
Average distance (in meter)	497	1333	7339
Average time (In minute)	87	132	676

9. FOOD SECURITY

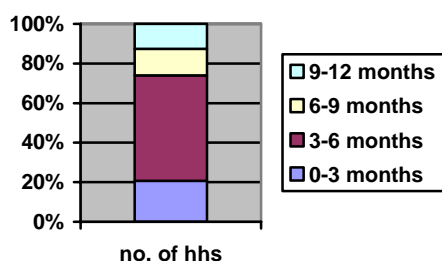
From the Table 16, we can see that only 31 households have food security across the year. 52% of the households are secured for four to six months in a year, while 20.2% have it for less than 3 months. The average food security is for 5.6 months in a year.

Table 16: Food security

	Number	Percentage
Food security		
1-3 months	51	20.2
4-6 months	131	52.0
7-9 months	33	13.1
10+ months	31	12.3
Not reported	6	2.4
Average month food security	5.6 months	
Number of household surveyed	252	

* Percentage adds more than 100 due to multiple sources

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10. GENDER DIVISION OF LABOUR

A gender division of labour has been analyzed. Though the individual households reported women working for slightly more time but the PRA done has demonstrated that women and men work daily for about 14.5 and 11 hours respectively.

Table 17: Average working hours of Women and Men in Monsoon

Average working hours at	Male	Women
- Working place	8.2	7.9
- Home	3.2	4.5

11. CREDIT SCENARIO

Almost 59% of the households availed loan from various sources. Out of 41% households who did not avail the loan, majority were having one or the other source of income to meet their requirements. Out of the 103 households who did not avail loan, 36% did not take loan because they were getting the required income from agriculture whereas 24% were earning from labor work. 33% stated that they do not require the loan and 15% stated that interest rate on the loan was too high to pay

Table 18: Loan availed in last two years

	Number	Percentage
HHs reported availed the loan from outside	149	59.1
HHs availed loan more than once in last two year	49	19.4
Reasons for not availed loan*		
Not required	34	33.0
Have family support	1	1.0
Interest rate is high	15	14.6
Getting money form agriculture	37	35.9
Labour work	25	24.2
Unable to repaid	5	4.9
Children are working and send the money	5	4.9
Others	2	2.0
Not reported	4	3.9
Number of HHs not availed the loan in last 2 years	103	

* Percentages based on those who did not avail the loan from outside. The total percentage exceeds 100% as multiple reasons were stated by single respondents

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38.1% of the 149 households availing loan reported loan amount to be more than Rs 10000, while 41.2% reported it up to Rs 5000. The average loan amount is Rs 15633. The major sources for taking loan are money lenders (60%) and Village Patel / Sarpanch / Mukhi (37.7%). 80.2% of the households reported paying 12% per month as the rate of interest, which is highly exorbitant. The main reasons for availing loan were for household expenses (47%), marriage (44.3%), medical reason (10.7%) and agriculture purpose (22.8%).

Table 19: Loan availed by sources and reason

	Number	Percentage
Loan amount		
Up to Rs. 1000	7	3.6
1001 – 5000	74	37.6
5001 – 10000	41	20.8
Above 10000	75	38.1
Average amount of loan availed	15633	
Source of loan		
Relative / friends	13	8.8
Money lender	89	59.7
Village Patel / Sarpanch / Mukhi / Talati / Mantri	56	37.7
From village	32	21.5
Saving / Society	2	1.4
Shops	4	2.7
Not reported	1	0.7
Rate of interest		
1-5 percent	17	8.6
6-10 percent	19	9.6
Above 10 percent**	158	80.2
Not reported	3	1.5
Reasons for availing loan		
Marriage	66	44.3
Medical reason	16	10.7
HHs expenses	70	47.0
Agriculture purpose	34	22.8
Bought animal	3	2.0
Repayment of debt / loan	2	1.3
Personal reasons	2	1.4
Not reported	4	2.7
Number of household availed the loan	149	

** All the HHs reported 12 percent rate of interest

12. STATUS ON MIGRATION

Table 20: Household Migrated, duration and reason of migration

	Last year		Last drought year	
HHs reported migration	239 (94.8)		-	
Average HHs members migrated	6.2		6.1	
Average HHs Male members migrated	2.1		2.1	
Average HHs Female members migrated	1.9		2.0	
Average HHs Children members migrated	2.2		2.0	
Number of months migrated	8.7		10.2	
Reason for migration	Number	Percent	Number	Percent
For employment	196	82.0	186	77.8
Due to debt	3	1.2	2	0.8
No agriculture / water / agri-land in the village	7	2.9	15	6.3
For children and family	36	15.0	23	10.0
Not reported	12	5.0	23	9.6
Number of household reported migration	239			

The migration rate is very high with almost 95% of the families migrating in a normal year. Comparing the statistics of a normal and a drought year, it can be said that the situation is almost same as during a normal year, migration is reported for 8.7 months and it is 10.2 months for drought year. This highlights the incompetence of the area to generate local livelihoods thus forcing them to migrate for work every year. 196 (82%) households reported 'For employment' as the main reason for migration, even in a normal year with almost a similar number in drought year too.

There is not much difference in the average working hours of men and women at work place i.e. about 10 hours. The women work for about one hour more daily at home i.e. 3.8 hours.

Table 21: Average working hours of Women and Men in Migration period

Average working hours at	Male	Women
- Working place	10.3	10
- Home	2.8	3.8
Number of household migrated	239	

13. INCOME SCENARIO – A GLIMPSE

The villagers are largely dependent on agriculture in a normal year but other livelihood activities are also adopted as part of livelihood portfolio. It can be inferred from the table that 98% population is dependent on agriculture but on the other side there is overlapping and 94% is dependent on other options of livelihood as well, thus managing a diverse portfolio of activities to sustain their livelihoods. On the contrary in the drought year the dependence shifts largely to other activities. In a typical drought year 91% of the population got involved in non-farming activities for earning their livelihoods and only 14% could derive livelihoods from farming

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activities. This figure is important in the sense that it highlights the absence of structured livelihood system in the village which provides alternatives in case one of the options becomes less income generating. One more fact which is worth noticing here is that although livestock owned averages one for most of the households, but still their dependence on livestock as a source of livelihood is just 2%. This means that livestock based products are used for self consumption only.

The average income per household has been reported as Rs. 39740 and Rs. 35386 in the normal and drought year respectively. It is noteworthy that 26.6% of the households report earning more than Rs 50,000 p.a. in a normal year, while the corresponding figure in a drought year is 15.9%.

Based on these findings, the total annual income of the 263 households in the watershed is estimated to be Rs. 1,04,51,377, i.e. about Rs. 1.04 crores. Migration accounts for about 79% of this income.

Table 22: Source of Income

	Last Year			Last Drought year		
	Number	Percent	Average	Number	Percent	Average
Agriculture	246	97.6	9733	36	14.3	6261
Animal husbandry	2	0.8	6000	1	0.4	1000
Agriculture labour	5	2.0	10000	3	1.2	14333
Other	237	94.0	31890	229	90.9	37764
	Last Year		Last Drought year			
	Number	Percentage	Number	Percentage		
HHs income						
Up to Rs. 5000	3	1.2	3	1.2		
Rs. 5001-10000	5	2.0	4	1.6		
Rs. 10001-20000	34	13.5	39	15.5		
Rs. 20001-30000	61	24.2	52	20.6		
Rs. 30001-50000	81	32.1	96	38.1		
Rs. 50001-100000	62	24.6	40	15.9		
Above Rs. 100000	5	2.0	0	0.0		
Not reported / No income	1	0.4	18	7.1		
Average HHs income	39740		35386			
No. of household surveyed	252					

VI FINDINGS - JHALOD AREA

Two villages – Karambha and Saramariya – of Jhalod Taluka in Dahod district are covered under IGWDP. Land in these two villages is 1227.4 and 904.9 Ha respectively. Total area to be covered under watershed is 925 Ha, of which 12 Ha is Gaucher land, 33 Ha uncultivable land and rest 880 Ha cultivable land.

Total households proposed to be covered is 763 in seven hamlets of these two villages. The villages are located at distance of about 20 KMs from Jhalod – the taluka head quarters and the nearest market is 10 KMs from these villages. The main villages have high school and panchayat office. All hamlets have ICDS centres. However, primary school is not there in all the hamlets and children have to walk up to 1 KM to go to other hamlet for primary school. There are no other institutions, except panchayats, such as SHGs or Milk Societies. There have been no developmental initiatives taken up in the past in the watershed area.

1 POPULATION CHARACTERISTICS

1.1 Caste Classification

All the 304(100%) households surveyed belonged to Schedule tribes.

1.2 Sex Ratio

The total population in the households surveyed is 2232. A highly noteworthy feature is that the sex ratio is 1009 which is higher than state and national figure of 921 and 933 respectively. The average size of the family is 7.3.

Table 1: Household Population and Literacy Status

	Above 14 years		0-14 years		Total Population	
	Male	Female	Boys	Girls	Male	Female
Sum	655	674	456	447	1111	1121
Average	2.2	2.2	1.5	1.5	3.7	3.7
Education						
Not gone to school	80.5	89.9	53.2	55.7	69.1	76.3
1-7 class	10.6	6.4	42.5	39.7	23.9	19.7
8-10 class	9.0	3.7	4.3	4.6	7.0	4.0
> 10 class	0.0	0.0	0.0	0.0	0.0	0.0

1.3 Literacy

Literacy rate among men above the age group of 14 years is 19.6% and that of women is as low as 10.1%. For the children falling in the age group below 14 years, the literacy rate for boys was 44.3% and for girls 30.9%. The appalling state of literacy is clearly visible from the fact that out of the total adult population, only 5.9% reached the 10th standard and no one beyond that. 82.2% mentioned poor economic and related family problems as the major reason for children not going to school. The other major reason was that the school is far away (13.6%).

1.4 Occupational status

The overall economy of the village is agrarian with 93.7% of the households stating agriculture as their primary occupation, as shown in Table 2. Only 6.3% of the households were found to be engaged in casual labor as their primary occupation, although the same was reported as secondary occupation for as many as 76.6 % of the families. It is noteworthy that the respondents in the following sections expressed animal husbandry as a source of income but no one stated it as either primary or secondary occupation.

Table 2: Occupational status of Respondents

	Number	Percentage
Main Occupation		
Agriculture	285	93.7
Casual labour	19	6.3
Secondary Occupation		
Agriculture labour	24	7.9
Casual labour	233	76.6
Service	1	0.3
No secondary occupation	46	15.1
Number of household surveyed	304	

2 STATUS OF SHELTER

The shelter of the families residing in the village is predominantly Kachha, with 82.9% of the families living in such houses. Only 2% reported living in Pucca houses. 60.5% of the households reported having electric connection. Only 0.7% and 1% of the households reported having toilet and bathroom respectively.

Table 3: Type of house and facilities available

	Number	Percentage
Type of house		
Kachha	252	82.9
Semi-pucca	46	15.1
Pucca	6	2.0
Electricity connection		
Yes	184	60.5
No	120	39.5
Toilet		
Yes	2	0.7
No	302	99.3
Bathroom		
Yes	3	1.0
No	301	99.0

3 OWNERSHIP OF HOUSEHOLD ASSETS

The asset holding of the population has been reported as low. A simple asset like a bicycle is also reported to be owned by as low as 4.3% of the families, while 1% reported having two-wheeler. 1.6% own mobile phone. Only 1% and 2.3% reported having TV and radio respectively, showing limited sources of information.

Table 4: Ownership of Household Assets

Household Asset	No. of Households owning	Percentage
Radio	7	2.3
TV	3	1.0
Tape recorder	3	1.0
Mobile	5	1.6
Refrigerator	1	0.3
Cooler	0	0.0
Fan	7	2.3
Sewing Machine	1	0.3
Cycle	13	4.3
Two wheeler	1	0.3
Tractor	1	0.3

4 INFORMATION ON LAND AND OTHER RELATED RESOURCES

4.1 Land Ownership

Table 5: Land ownership and irrigation related information

	Number	Percent	Average land (Acres)
HHs having own land	304	100.0	1.4
HHs having irrigated land	186	61.2	0.7
HHs having barren land	16	5.3	0.4
HHs reported partnership in cultivation	1	0.3	1.2
Source of irrigation			
Well / Bore well	165	54.3	-
Pond	20	6.6	-
Dam/Check dam	2	0.7	-
Mode of irrigation			
Electric motor / pump	21	6.9	-
Diesel pump	131	43.1	-
Others – rented, etc	7	2.3	-
HHs buying water from outside	23	7.6	-
Average price for water	Rs. 66.50		-

Table 5 indicates that 100% of the households surveyed reported having own land and average land holding is 1.4 acres. There are 5.3% households who reported

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having barren land. 61.2% of the households reported having irrigated land and their average irrigated land holding is 0.7 acres. The major sources of irrigation were well/borewell (54.3%) and pond (6.6%). They use mostly diesel pump for irrigation. 7.6% households reported buying water at an average price of Rs. 66.50 per hour. **The total cultivable land has been reported as 425 acres, of which 135 acres is irrigated land.**

4.2 Pattern of Landholding

Table 6: Land holding information

HHs having own land	Number	Percentage
Up to 1 acre	137	45.1
1.1 - 2 acres	110	36.2
2.1 - 3 acres	35	11.5
3.1 - 4 acres	13	4.3
4+ acres	9	3.0
HHs having irrigated land		
Do not have	118	38.8
Up to 1 acre	152	50.0
1-2 acres	26	8.6
2-3 acres	8	2.6
HHs having barren land		
Do not have	288	94.7
Up to 1 acre	15	4.9
1-2 acres	0	0
2-3 acres	1	03
Number of household surveyed	304	

The pattern of landholding has also been analyzed. There are only 3% households reported possessing more than 4 acres of land. In contrast to this, 81.3% households reported having only up to 2 acres of land. Only 2.6% households reported having more than 2 acres of irrigated land.

4.3 Information about Wells

172 households reported information on wells. 95(55.2%) of these reported well in working condition at the time of survey. 88 (51.1%) households suggested deepening the wells will bring those in working condition, while 9.3% reported that the wells are not in repairable condition. 15.7% suggested need for blast in the well. Most of the wells (74.3%) dried after February. 77.9% of these reported the level of water after Diwali up to 20 feet.

Table 7: Well Information

	Last year	
	Number	Percentage
Water availability		
January	2	1.2
February	29	16.9
March	18	10.5
April	13	7.6
May	13	7.6
June	16	9.3
July – August	11	6.4
October	4	2.3
November	31	18.0
December	31	18.0
Not reported	4	2.3
Level of water after Diwali (in feet)		
Up to 10	80	46.5
11- 20	54	31.4
21- 30	24	14.0
31- 40	7	4.1
41- 50	1	0.6
50 +	2	1.2
Current situation of well		
Working condition	95	55.2
Not in working condition	77	44.8
Steps to be taken to restart the well		
Should be deepened	88	51.1
Can repair it	18	10.5
Water level is very low	1	0.6
Financial problem	1	0.6
Blast needed in the well	27	15.7
Others	14	8.1
Number of HHs reported Well information	172	

5 CROP RELATED INFORMATION

5.1 Crops Sown in different Seasons

As mentioned earlier, 100% population is dependant on agriculture. All these households reported cultivating crops in monsoon season and 76.6% in winter as well. Multiple cropping is practiced by 85.2% in monsoon and 42.8 in winter season. The crops most commonly cultivated are Maize, Paddy, Tuber and Soya bean in monsoon and Chana and Wheat in winter. Maize is the main crop grown by everybody in monsoon. The details are shown in Table 8.

Table 8: Crop information by seasons

	Monsoon	Winter	Summer
HHs reported taking crops	304 (100%)	233 (77%)	1 (0.3)
HHs taking two or more crops	259 (85%)	130 (43%)	-
No. of household having land	304		
Type of crops	Monsoon	Winter	Summer
Maize (Maize)	304(100%)	3(1%)	-
Dangar (Paddy)	241(79%)		-
Gram		150(49%)	
Wheat		206 (68%)	-
Tuver	31 (10.2%)		-
Adad	17 (5.6%)	-	-
Sorghum	1 (0.3)	-	-
Soya bean	26(8.6%)		
Eranada (Castor)	-	2(0.7%)	-
Mag (Moong)	1 (0.3)		1 (0.3)

5.2 Average yield for Different Crops

Table 9: Agriculture yield crop wise

Type of crops	No of HHs taking crops	Land used		Production (kg)		Product used at home		Seed used Hybrid (%)
		Total	Avg per HH	Total	Avg per acre	Total	Average	
Monsoon								
Maize	304	238.4	0.8	61120	256.4	55560	182.2	6.9
Paddy	241	142.4	0.6	33165	232.9	28115	116.7	7.9
Tuver	31	18.7	0.6	2850	152.4	2450	79.0	6.5
Adad	17	6.3	0.4	1100	174.6	820	48.2	5.9
Sorghum	1	0.4	0.4	20	50.0	20	20.0	0.0
Moong	1	2.0	2.0	60	30.0	60	60.0	0.0
Soya bean	26	9.4	0.4	1850	196.8	1060	40.8	3.8
Sub-total		417.6						
Winter								
Chana (Gram)	150	90.6	0.6	12940	142.8	11415	76.1	10.7
Wheat	206	116.6	0.6	39525	339.0	33130	160.8	11.2
Maize	3	0.8	0.3	650	812.5	650	216.7	0
Castor	2	0.8	0.4	80	100.0	0	0	0
Sub-total		208.8						
Summer								
Moong	1	0.8	0.8	200	250.0	200	200.0	0.0
Sub-total		0.8						

There are very few crops being grown in different seasons. Gross cropped area is 627.2 acres with monsoon, winter and summer contributing 417.6, 208.8 and 0.8

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acres respectively. The overall agricultural produce is mainly for self consumption, i.e. about 80% of production, except soya bean – 43% of its production is sold. The details, such as area, production, yield and type of seeds for major crops, are as follows:

Monsoon:

- Maize is the main crop grown by everybody having land. The annual production of Maize is 61120 kg in the surveyed households and the average yield per acre is 256.4 KGs. Only 6.9% households are using hybrid varieties, rest all use local seed variety.
- Paddy is cultivated by 241 (79%) of the households and the average yield per acre is 232.9 KGs. Only 7.9% households are using hybrid varieties.
- Tuber is cultivated by 31 (10.2%) of the households and the average yield per acre is 152.4 KGs. Only 6.5% households are using hybrid varieties.
- Soya bean is cultivated by 26 (8.6%) of the households and the average yield per acre is 196.8 KGs. Only 3.8% households are using hybrid varieties.

Winter:

- Wheat is cultivated by 206 (67.8%) of the households and the average yield per acre is 339 KGs. Only 11.2% households are using hybrid varieties.
- Chana (Gram) is cultivated by 150 (49.3%) of the households and the average yield per acre is 142.8 KGs. 10.7 % households are using hybrid varieties.
- Maize is cultivated by 3 (1%) of the households and the average yield per acre is 216.7 KGs

Cropping Intensity

Net cropped area (NCA) of the households surveyed: 425.6 acres

Gross cropped area (GCA) of the households surveyed: 627.2 acres

$CI = (GCA/NCA) * 100 = 147.4$

The Cropping Intensity, therefore, has been found to be 147.4.

5.3 Source of Seeds

Seeds are mainly bought from markets. Only 3% reported use of own seeds.

Table 10: Place of buying seeds

Source of Seeds	Number	Percentage
Home	9	3.0
Shop / Agro shop	55	18.1
From village	2	0.7
Limdi (Nearby town)	297	97.7
Not reported	1	0.3

6. ANIMAL RESOURCES

As per the survey, the livestock most commonly owned by the villagers is ‘Bullock’, with as many as 80.9% households owning the same. After bullocks, it is Cow with 60.2%, Goat with 42.8%, buffalo with 33.6% and Chicken amongst the other

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livestock. Per household average of cattle ownership is the largest in the cases of Goat, Chicken and Bullocks. All the cows are of local breed and there is no cross breed cow in the houses surveyed.

Table 11: Ownership of Cattle

	Number of HHs owning cattle	Percentage	No of Cattle	
			Total	Average
Cow	183	60.2	291	1.6
Buffaloes	102	33.6	164	1.6
Bullocks	246	80.9	462	1.9
Sheep	1	0.3	4	4.0
Goat	130	42.8	356	2.7
Other**	13	4.3	37	2.8
Number of household surveyed	304			

**Other includes mainly chicken

7 DRINKING WATER

Drinking water sources are mainly hand pumps, well and pond. Almost 57% of the households meet their drinking water needs from hand pumps throughout the year, while about 33% do it from wells. The responsibility of fetching water is with more than one person in a family and largely (96%) lies with women throughout the year. The men (32%) too share responsibility to some extent. In case of young boys and girls, latter (13.5%) shared larger responsibility than boys (8.9%). The average distance which people travel to fetch water is around 467 meter all through the year. The average time spent for fetching water is around 70 minutes.

Table 12: Source of drinking water, responsibility of fetching water, average distance and time by season

	Monsoon	Winter	Summer
Source of drinking water			
Well	34.2	32.6	34.5
Pond	9.2	9.2	8.9
Hand Pump	56.9	58.2	55.3
Others	0.0	0.0	1.0
Responsibility of fetching water			
Female	96.7	95.4	95.4
Male	32.9	31.3	32.6
Boys	8.9	7.9	8.9
Girls	13.5	13.5	13.2
Average distance (in meter)	467	450	483
Average time (in minute)	69	69	72
Number of household surveyed	304		

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8 VEGETATION COVER

8.1 Availability of fuel wood

59.5%, 57.6% and 51.6% of the families collect the fuel wood from farms during monsoon, winter and summer season respectively. The other source is forests from which 35.9%, 35.5% and 33.6% of the families collect during monsoon, winter and summer season respectively. Some households reported buying from outside market too and it increases from 16.5% in monsoon to 25% in summer. The responsibility of collecting fuel primarily lies with women (94%). Although in case of fuel, men (64%) still have a greater responsibility of fetching as compared to fetching water. The average distance covered to fetch fuel wood is around 2070 meter in monsoon and winter, which increases to 2495 meter in summer. The time spent is around four hours in all the seasons.

Table 13: Source of Fuel and other related Information

	Monsoon	Winter	Summer
Source of fuel			
Forest / Mountain	35.9	35.5	33.6
Buy from Limdi and other markets	16.5	17.4	25
Farm	59.5	57.6	51.6
From surrounding place	2.0	2.0	3.9
Relative	0.3	0.0	0.0
Others	0.0	2.0	4.9
Responsibility of collecting fuel			
Female	98.0	97.0	87.8
Male	65.1	62.8	63.8
Boys	9.9	8.6	7.9
Girls	8.2	7.6	7.6
Average distance (in meter)	2028	2112	2495
Average time (In minute)	230	237	252
Number of household surveyed	304		

8.2 Availability of fodder

During monsoon 75.7% and 16.8% of the households collect fodder from farms and forest respectively. Rest of the families collect from other mentioned sources in the table. In winter also, 78.3% and 9.9% of the households collect fodder from farms and forest respectively. In summer only 28.9% and 17.4% households respectively are dependant on farms and forest for fodder respectively, while 53.7% buy from outside market.

There is no practice of 'Ban on free grazing'.

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Table 14: Source of Fodder, responsibility of collecting fodder, average distance and time by season

	Monsoon	Winter	Summer
Source of fodder			
Forest / Mountain	16.8	9.9	17.4
Buy from Limdi and other markets	7.5	9.9	53.7
Farm	75.7	78.3	28.9
Within the village	0.3	2.3	5.9
Responsibility of collecting fodder			
Female	93.1	90.5	58.6
Male	59.9	55.3	71.4
Boys	5.9	6.9	3.9
Girls	6.9	7.2	4.3
Average distance (in meter)	1775	1780	4819
Average time (In minute)	195	183	400
Number of household surveyed	304		

9. FOOD SECURITY

From the Table 16, we can see that only 13 (4.3%) households have food security across the year. 44.7% of the households are secured for four to six months in a year, while 39.5% have it for less than 3 months. It, therefore, shows that 84.2% of the households have food security for less than 6 months in a year. The average food security is for 4.4 months only in a year.

Table 15: Food security

	Number	Percentage
Food security		
1-3 months	120	39.5
4-6 months	136	44.7
7-9 months	24	7.9
10+ months	13	4.3
Not reported	11	3.6
Average month food security	4.4 months	

10. GENDER DIVISION OF LABOUR

A gender division of labour has been analyzed. Though the individual households reported women working for slightly more time but the PRA done has demonstrated that women and men work daily for about 14.5 and 10.5 hours respectively.

Table 16: Average working hours of Women and Men in Monsoon

Average working hours at	Male	Women
- Working place	8.5	8.5
- Home	3.6	4.3

11. CREDIT SCENARIO

Almost 51% of the households availed loan from various sources. Out of 148 (48.7%) households who did not avail the loan, 27.7% stated that they do not require the loan and 12.2% stated that interest rate on the loan was too high to pay. 21.6% reported that they do not have information on loan accessibility.

Table 17: Loan availed in last two years

	Number	Percentage
HHs reported availed the loan from outside	156	51.3
HHs availed loan more than once in last two year	20	6.6
Reasons for not availed loan*		
Not required	41	27.7
Have family support	6	4.1
Interest rate is high	18	12.2
Labour work	16	10.8
Unable to repay	6	4.1
No information on loan accessibility	32	21.6
Not reported	56	37.8
Number of HHs not availed the loan in last 2 years	148	

* Percentages based on those who did not avail the loan from outside. The total percentage exceeds 100% as multiple reasons were stated by single respondents

22.6% of the loans availed were reported to be for more than Rs 10000, while 50.5% reported it up to Rs 5000. The average loan amount is Rs 10293. The major sources for taking loan are money lenders (33.3%) and Village Patel / Sarpanch / Mukhi (33.9%). 23% of the households reported paying more than 10% per month as the rate of interest. In 45.7% cases, the monthly interest paid was reported to be between 6 to 10%. The main reasons for availing loan were for household expenses (45.1%), marriage (16.1%) and agriculture purpose (21.5%).

Table 18: Loan availed by sources and reason

	Number	Percentage
Loan amount		
Up to Rs. 1000	3	1.6
1001 – 5000	91	48.9
5001 – 10000	50	26.9
Above 10000	42	22.6
Average amount of loan availed	10293	
Source of loan		
Relative / friends	10	5.4
Money lender	62	33.3
Village Patel / Sarpanch / others in village	63	33.9
Saving / Society /Mandli	22	11.8
Bank	8	4.3

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Limdi / Surat	9	4.8
Not reported	12	6.5
Rate of interest**		
1-5 percent	37	19.9
6-10 percent	85	45.7
Above 10 percent	43	23.0
Not reported	21	11.3
Reasons for availing loan		
Marriage	30	16.1
Medical reason	3	1.6
HHs expenses	84	45.1
Agriculture purpose	40	21.5
Bought animals	2	1.1
Repayment of debt / loan	2	1.1
Personal reasons	7	3.8
Not reported	18	9.7
Number of household availed the loan	186	

12. STATUS ON MIGRATION

The migration rate is very high with almost 90% of the families migrating in a normal as well as drought year. Comparing the statistics of a normal and a drought year it can be said that the period for migration has been reported as 4.8 months for former, while it is 6.8 months for latter. The main reason stated for migration is for employment in both normal (87.3%) and drought (79.2%) year.

Table 19: Household Migrated, duration and reason of migration

	Last year		Last drought year	
HHs reported migration	274 (90.1)		274 (90.1)	
Average HHs members migrated	3.4		3.3	
Average HHs Male members migrated	1.6		1.5	
Average HHs Female members migrated	1.3		1.3	
Average HHs Children members migrated	0.4		0.4	
Number of months migrated	4.8		6.8	
Reason for migration	Number	Percent	Number	Percent
For employment	239	87.3	217	79.2
No agriculture / water / agri-land in the village	1	0.4	-	-
For children and family	-	-	1	0.4
Crop destroyed	31	11.3	28	10.3
Not reported	4	1.5	29	10.6
No. of household reported migration	274			

There is not much difference in the average working hours of men and women at the migrated place.

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Table 20: Average working hours of Women and Men in Migration period

Average working hours at	Male	Women
- Working place	8.2	7.8
- Home	3.2	3.5

13. INCOME SCENARIO – A GLIMPSE

Table 21: Source of Income

	Last Year			Last Drought year		
	Number	Percentage	Average	Number	Percentage	Average
Agriculture	301	99.0	5388	242	79.6	2485
Animal husbandry	63	20.7	3660	55	18.1	1655
Agriculture labour	149	49.0	10664	131	43.1	14126
Forest product	21	6.9	5048	16	5.3	3125
Other	267	87.8	20848	237	78.0	32904
	Last Year		Last Drought year			
	Number	Percentage	Number	Percentage		
HHs income						
Up to Rs. 5000	-	-	2	0.7		
Rs. 5001-10000	3	1.0	10	3.3		
Rs. 10001-20000	87	28.6	54	17.8		
Rs. 20001-30000	100	32.9	85	28.0		
Rs. 30001-50000	81	26.6	103	33.9		
Rs. 50001-100000	31	10.2	45	14.8		
Above Rs. 100000	1	0.3	4	1.3		
Not reported / No income	1	0.3	1	0.3		
Average HHs income	29980		34181			
Number of household surveyed	304					

The villagers have agriculture as means of income in a normal year but other livelihood activities are also adopted as part of livelihood portfolio. It can be inferred from the table that 99% population is dependent on agriculture but on the other side there is overlapping and 49%, 20.7%, 6.9% and 87.8% have agriculture labour, animal husbandry, forest products and others respectively also as the sources of income, thus managing a diverse portfolio of activities to sustain their livelihoods. On the contrary in the drought year, agriculture and animal husbandry contribute much lesser and the contribution of agriculture labour and other sources increases. It also shows the marginal agriculture being practiced both in normal as well as drought year.

The average income per household has been reported as Rs. 29980 and Rs. 34181 in the normal and drought year respectively. Though the income in drought year has

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been reported more but major part of it is earned through distressed migration, having its own socio-economic issues. 59.5% of the households report earning more between Rs 20000 to 50,000 p.a. in a normal year, while the corresponding figure in a drought year is 61.9%, indicating the majority of households falling in this range.

Based on these findings, the total annual income of the 763 households in the watershed is estimated to be Rs. 2,28,74,258, i.e. about Rs. 2.29 crores. Migration accounts for about 61% of this income.

VII CONCLUSION

This study aims to assess the pre situation of development of watersheds in four different geographical areas of the Project area of IGWDP Gujarat. The study, therefore, has been instrumental in collecting data on key variables and indicators, defined in consultation with NABARD before the commencement of the Study, taking into account the project framework. This has enabled finding out the initial situation with respect to all aspects - agriculture, animal husbandry, social, total income of the households in different economic strata and an estimated value of the total income of the village from all sources. The preceding sections give quantitative information on these variables for each of the four watersheds. This, therefore, will provide a frame of reference for impact assessment as similar study is planned by NABARD after the Project too. This will also help in enabling a comparison between treated and untreated watersheds.

As the purpose of baseline is to give non-judgmental and self-explanatory information, it is prudent not to give recommendations regarding project planning and feasibility related aspects. We, therefore, have presented the information taking into consideration the objectives of the Study. A separate exercise is being carried out as feasibility study by the respective partner of IGWDP. However, it is apt to mention the following learning obtained during this Study, which can be useful for carrying out similar study, especially during post project situation assessment:

- a) Sampling: About 300 households in each watershed is a good representative sample and is quite robust for statistically significant analysis. Care needs to be taken that there is representation of different geographical areas. As villages in IGWDP Gujarat project areas have a number of hamlets, it is important to have proper representation of these in the sample.
- b) Methodology for data collection:
 - a. Besides questionnaire, PRA gives very useful and realistic information, if done properly. PRA, carried out in a watershed, before filling of the questionnaire, helps in getting more realistic information for latter too. As there will be significant common information to be collected for hamlets and villages, it can be done through separate questionnaires.
 - b. Pre-testing of tools in about 5% of households gives useful inputs for data collection in the final survey.
 - c. It is important to involve local investigators in the data collection. They should be fluent in local language. The data collection team should be trained for techniques related to data collection. This helps in developing common understanding on different aspects related to data collection. It is also important to sensitize them on dos and don'ts related to data collection.
- c) Data Analysis:

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Output tables should be generated for different parameters and shared with NABARD for their feedback. The feedback helps in modifying the output tables according to the specific requirements. Use of statistical programs, e.g. SPSS, is quite useful for this.