CONTENTS (IWMP II)

CHAPTER- 1

METHODOLOGY

INTRODUCTION

The Government of India (GOI) has adopted watershed management as anational policy since 2003. Several studies have highlighted that appropriate natural resource management shall results in enhancement in agricultural productivity. In order to achieve food security, minimize the water conflicts and reduce poverty, it has become essential to increase productivity of rainfed / dry land farming by utilization of available natural resources.

In Haryana, watershed activities were undertaken by Department of Agriculture (Soil Conservation), Forest Department and Rural Development Department. The existing scheme of watershed, like DPAP, DDP, Haryali & IWDP were brought under one umbrella in the name of Integrated Watershed Management Programme in the year 2008. The scheme is basically for rainfed area. Common Guidelines were framed by National Rainfed Area Authority. Rural Development Department is the Nodal Department for implementation of IWMP through State Level Nodal Agency.

In order to implement watershed area (IWMP II) programme a systematic survey has been conducted to know the potentiality of each village / Micro-Watershed. With this view, a baseline survey in IWMP II comprising of eleven micro watershedsBhango (2C5G1h6), Sundh (2C5G1k2), Gangani(2C5G1h9), Kota Khandewla (2C5G1h8), Bissar Akbarpur (2C5G1h3), Baghanki (2C5G1g6), Mohmadpur Ahir (2C5G1h5), Dadu (2C5G1h7), Hassanpur Toaru (2C5G1h2), Para (2C5G1g8) and Jafrabad (2C5G1h4). The base line survey conducted shall be considered as bench mark against which the results of project could be compared at the end of the implementation. It would also be helpful in guiding watershed programmes and to plan its goal in identifiable terms and be used as future reference. PRA techniques and transect walk

were conducted with the Gram Sabha members and beneficiaries for building confidence in participation during project planning.

1.1 SCIENTIFIC PLANNING

1.1.1 Cluster Approach

This envisages a broader vision of Geo-hydrological unit which involves treating the cluster (IWMP II) of 11 micro watersheds namelyBhango (2C5G1h6), Sundh (2C5G1k2), Gangani(2C5G1h9), Kota Khandewla (2C5G1h8), Bissar Akbarpur (2C5G1h3), Baghanki (2C5G1g6), Mohmadpur Ahir (2C5G1h5), Dadu (2C5G1h7), Hassanpur Toaru (2C5G1h2), Para (2C5G1g8) and Jafrabad (2C5G1h4) with their respective codes.

1.1.2Base Line Survey

Bench mark survey was conducted for collection of base line data on various bio-physical and socio-economic aspects initiated by the following methods:-

1.1.3 Collection of Primary Data

The project was sanctioned in 30th Steering committee meeting for IWMP on 30.01.2013 and the preparatory phase started in 2013. Initially, a meeting was arranged with officials of concerned departments and technical experts located at Bhango, Sundh, Gangani, Kota Khandewla, Bissar Akbarpur, Baghanki, Mohmadpur Ahir, Dadu, Hassanpur Toaru, Para and Jafrabadmicro- watersheds. During this meeting, preliminary detail of the proposed project including location of villages and criteria of selection and PPR was thoroughly discussed.

In order to have first hand information, a joint visit in the project area was made along with PRI members. In this survey, physical location of the watershed, drainage pattern, land use and other problems related to the area were assessed. Sarpanches and local people were involved in the discussions and needs and scope of watershed works were taken up.

The survey of India toposheets (Survey of India) of the area available on the 1:50000 scales of the project area were procured and all assigned villages were marked on the copies of the toposheets (Survey of India) as well as on the maps prepared by Soil and Land Use Survey of India (SLUSI).

The primary data related to land holding, crop area and production were collected from agriculture and revenue records of the village, the socio economic data of the target villages were procured from Anganwari workers and Panchayat Secretary in the village and district.

1.1.4 Collection of Secondary data

The data of Demography, socio-economic, infrastructure, land use, primary and secondary occupation, major crops grown and the production of crops and seasonal vegetable, marketing facilities, fodder production, agro-forestry crops, livestock and milk production, status of self help groups, previous watershed schemes and works undertaken under MGNREGA etc. was gathered with the help of the lined departments. Additional information was gathered by group and individual discussions with women groups, landless and other poor sections of the society. The issues concerning water availability, use of common property resources, fuel and fodder availability, wage employment opportunity and other major concerns were discussed, debated and recorded.

1.2 PARTICIPATORY RURAL APPRAISAL

The due process of Participatory Rural Appraisal was followed in which village committees were sensitized about project activities. An appraisal of land resources, water resources, forest and pasture land resources, common property resources, production system and livestock resources was carried out by collecting data from primary and secondary sources. Group meeting were organized at common places and problem and possible solution were debated, discussed and efforts were made to reach agreement on activities required under the projects. This was followed by transect walks across the entire area of the village and spots indicated by the community. The jointly agreed activities/proposals were discussed and recorded. Similarly, discussions were held about entry point activities and activities were finalized keeping

in view the availability of funds in the project. Through discussions were held on farm production activities and innovative techniques of improving crop, fruit and milk production. The women groups were sensitized about income generating activities and skill improvement by various types of trainings. The department field staff facilitated the process of participation at the planning stage. The department officials simultaneously stated the process of forming watershed committees for each village. The roles and responsibilities of all stake holders as per guidelines , the mechanism of fund flows, cost sharing arrangement in different components and operational mechanism of the projects was thoroughly discussed with the community and Watershed Committees (WC) in detail.

1.2.1Participatory Net Planning

The action plan was formulated based on the PRA, Geo-hydrological condition, Drainage pattern, Soil class, Soil erosion, forest and agriculture land. The project proposals were deliberated in the Gram Sabha meetings which were approved with required amendments.

Based on the experience of the experts working in the area and catchment area characteristics each structures like Dug out Pond, Cement Stone Masonry structures (Inlet & Outlet), Earthen Embankment with pucca outlet, Small Earthen Embankments, Gully Plugs, Check Dams, Percolation embankments, Marginal Bandhs and Percolation ponds etc.were recommended to conserve and store water used for life saving additional irrigation potential in the rainfed area and to avoid further degradation of the land.

1.2.2 Community Participants in Social Mapping

The village communities were apprised about project activities. Group meetings were organized at common places, problems and possible solutions were debated, discussed and efforts were made to reach agreement on activities required under the project. Social mapping involving local community was prepared. Infrastructure services and other village resources such as ponds, wells, agriculture land etc. were mapped.

1.2.3 Transect Walk

Reconnaissance survey was carried out through transect walk in order to identify the needs, treatments required and worksites. The sites were marked on the maps and different treatment measures required were recommended.

1.2.4 Focus Group Discussions

Focus Group Discussions (FGD) were conducted in order to obtain communities' approval on various identified needs. It was helpful in complementing the assessment emerged from PRA and to derive the opinion of the communities on various issues.

Gram Sabha member's participation in group discussion

1.3 USE OF GIS TECHNOLOGY FOR PLANNING

A scientific tool has been promoted at various stages of watershed development planning.

Various maps were prepared such as Base map, Present Land Use, Drainage, Contours, Slope, Soil Classification, Land Capability Classification, Soil Fertility, Ground Water Depth and Quality, Proposed and existing activities of works. The micro-watershed codes have been assigned as per the SLUSI maps.

1.3.1 Prioritization

With the assistance of Geographical Information System (GIS),various layers were created like Topography(slope), Drainage and contour, Groundwater conditions, Slope, soil and Land Capability classes. All these parameters were given weight age as per the guidelines issued by Govt. of India. The map prepared was used during the field visit for finalization of works.

1.3.2 Planning

Based on the land use and Topographical maps in addition to social maps (PRA) prepared by the participants, analysis was carried out for the planning in micro- watersheds. The action plan was formulated using maps of Drainage pattern, Soil class, Soil erosion, forest, hydrology and present land use. The project proposals were deliberated in the Gram Sabha meetings which were approved with required amendments.

Based on the experience of the experts working in the area and catchment area characteristics each structure like Dug out Pond, Cement Stone Masonry structures (Inlet & Outlet), Earthen Embankment with pucca outlet, Small Earthen Embankments, Gully Plugs, Check Dams, Percolation embankments, Marginal Bandhs and Percolation ponds etc.were provided in consultation with the Gram Sabha Members. However finally only those activities are included which were suggested by the Gram Sabha according to their needs.

1.3.3 Hydrological modeling

The relevant hydrological parameters were used for delineation of micro- watersheds as per the existing drainage system. The works/ activities under drainage line treatment are proposed as per topography, present land use, site conditions and run- off in consultation with WC. These maps were generated as per SLUSI coding system. The maps are produced by developing different layers using GIS technology.

Table 1. Detail of scientific planning and inputs in IWMP projects

S.No.	Scientific Criteria/input used	Whether Scientific Criteria was used
A	**Planning**	

S.No.	Scientific Criteria/input used	Whether Scientific Criteria was used
	Cluster approach	Yes
	Hydro-geological survey	Yes
	Contour Mapping	Yes
	Participatory net planning (PNP)	Yes
	Remote sensing data-especially soil	Yes
	Ridge to valley treatment	Yes
	Online IT connectivity between	Yes
	1. Project and DRDA cell/ZP	Yes
	2. DRDA and SLNA	Yes
	3. SLNA and DoLR	Yes
	Availability of GIS layers	Yes
	1. Survey of India map/imagery /SLUSI map	Yes
	2. Micro- Watershed Boundary	Yes
	3. Drainage pattern	Yes
	4. Soil (soil fertility status)	Yes
	5. Land use	Yes
	6. Ground water status	Yes
B	Inputs	-
	Bio pesticides	Yes
	Organic manure	Yes
	Vermi- compost	Yes
	Bio Fertilizer	Yes
	Water saving devices	Yes
	Mechanical tools	Yes
	Bio fencing	No

S.No.	Scientific Criteria/input used	Whether Scientific Criteria was used
	Nutrient Budgeting	No
	Automatic water level recorder & sedimentation samplers	No

1.4 Preparation of Action Plan and Approval

Based on the need and problems in watershed area; a draft action plan was prepared and placed before the concerned watershed development committee as per schedule circulated by Additional Deputy Commissioner for approval of the Watershed Committees. After detailed deliberations and incorporation of relevant recommendation/ suggestions, the action plan was approved in the meeting of Gram Sabha. The resolution of each village falling in the watershed has been received. The record is available with the PIA and WAPCOS.

CHAPTER – 2

PROJECT BACKGROUND

2.1 PROJECT BACKGROUND

Integrated Watershed Management Programme (IWMP II) project is falls in Tauru block of Mewat district in Haryana state. The project is a cluster of eleven micro- watersheds namely Bhango (2C5G1h6), Sundh (2C5G1k2), Gangani (2C5G1h9), Kota Khandewla (2C5G1h8), Bissar Akbarpur (2C5G1h3), Baghanki (2C5G1g6), Mohmadpur Ahir (2C5G1h5), Dadu (2C5G1h7), Hassanpur Toaru (2C5G1h2), Para (2C5G1g8) and Jafrabad (2C5G1h4). The total geographical area of the project is **5786 ha** out of which **4806 ha** has been undertaken to be treated under IWMP II starting from year 2012-2013. The project is divided into eleven micro watersheds. The Base map is shown in Annexure I.

Table 1: Basic Project Information

Sr. No	Name of the project	Name of the micro watersheds	Code No.	Name of the villages	Block	District	Area of the Project (ha)	Area proposed to be treated (ha)	Total Project cost (Rs lacs)	PIA
1	Gangani	Bhango	2C5G1h6	Bhango	Taoru	Mewat	531	465	55.8	ASCO, Mewat
				Chehalka	Taoru	Mewat				
3	Gangani	Sondh	2C5G1k2	Sondh	Taoru	Mewat	591	550	66	
4	Gangani	Gangani	2C5G1h9	Gangani	Taoru	Mewat	554	465	55.8	
5	Gangani	Kota Khandewla	2C5G1h8	Kota Khandewla	Taoru	Mewat	534	415	49.8	
6	Gangani	Bissar Akbarpur	2C5G1h3	Bissar Akbarpur	Taoru	Mewat	514	425	51	

Sr. No	Name of the project	Name of the micro watersheds	Code No.	Name of the villages	Block	District	Area of the Project (ha)	Area proposed to be treated (ha)	Total Project cost (Rs lacs)	PIA
7	Gangani	Baghanki	2C5G1g6	Baghanki			504	416	49.92	
				Kherki						
9	Gangani	Mohmmadpur Ahir	2C5G1h5	Mohmmadpur Ahir			488	425	51	
10	Gangani	Dadu	2C5G1h7	Dadu			499	415	49.8	
				Sarai						
				Bissar Akbarpur (Part)						
13	Gangani	Hassanpur Taoru	2C5G1h2	Hassanpur Taoru			482	405	48.6	
				Beri Nisfi Sohna						
15	Gangani	Para	2C5G1g8	Para			572	415	49.8	
				Kalwari						
17	Gangani	Jafrabad	2C5G1h4	Jafrabad			514	410	49.2	
				Sheikhpur						
				Sabras						
				Sunthaka						
					Grand Total		5783	4806	576.72	

2.2 NEED OF WATERSHED DEVELOPMENT PROGRAMME

Watershed development programme is prioritized on the basis of thirteen parameters namely;

i. poverty index,
ii. percentage of SC,
iii. actual wages,
iv. percentage of small and marginal farmers,
v. ground water status,
vi. moisture index,
vii. area under rain fed agriculture,
viii. drinking water situation in the area ,
ix. percentage of degraded land,
x. productivity potential of land,
xi. continuity of any other watershed already developed/treated,
xii. cluster approach for plain terrain,
xiii. cluster approach for hilly terrain,

The criteria and weightage of each of the parameters has been given in **Table 2**.

Table 2. Criteria and Weightage for Selection of Watershed

Sr. No.	Criteria	Maximum Score	Ranges and Scores			
i.	Poverty index (% of poor to population)	10	Above 80 % (10)	80 to 50 % (7.5)	50 to 20 % (5)	Below 20% (2.5)
ii.	% of SC/ST population	10	More than 40 % (10)	20 to 40 % (5)	Less than 20% (3)	
iii.	Actual wages	5	Actual wages are significantly lower than minimum wages (5)	Actual wages are equal to or higher than minimum wages (0)		
iv.	% of small and marginal farmers	10	More than 80 % (10)	50 to 80 % (5)	Less than 50% (3)	
v.	Ground water status	5	Over exploited (5)	Critical (3)	Sub Critical (2)	Safe (0)
vi.	Moisture index/ DPAP/DDP block	15	-66.7 & below (15) DDP block	-33.3 to -66.6 (10) DPAP Block	0 to -33.2 (0) Non DPAP/DDP Block	
vii	Area under rain fed agriculture	15	More than 90 % (15)	80 to 90 % (10)	70 to 80 % (5)	Below 70 % (Reject)
viii	Drinking water	10	No source (10)	Problematic village (7.5)	Partially covered (5)	Fully covered(0)
ix	Degraded land	15	High-above 20 % (15)	Medium-10 to 20 % (10)	Low-less than 10 % of TGA (5)	
x	Productivity potential of the land	15	Lands with low production & where productivity can be significantly enhanced with reasonable efforts (15)	Lands with moderate production & where productivity can be enhanced with reasonable efforts (10)	Lands with high production & where productivity can be marginally enhanced with reasonable efforts (5)	
xi	Contiguity to another watershed that has already been developed/treated	10	Contiguous to previously treated watershed & contiguity within the micro-watersheds in the project (10)	Contiguity within the micro-watersheds in the project but non contiguous to previously treated watershed (5)	Neither contiguous to previously treated watershed nor contiguity within the micro-watersheds in	

Sr. No.	Criteria	Maximum Score	Ranges and Scores			
					the project (0)	
xii	Cluster approach in the plains (More than one contiguous micro-watersheds in the project)	15	Above 6 micro-watersheds in cluster (15)	4 to 6 micro-watersheds in cluster (10)	2 to 4 micro-watersheds in cluster (5)	
xiii	Cluster approach in the hilly tract (More than one contiguous micro-watersheds in the project)	15	Above 5 micro-watersheds in cluster (15)	3 to 5 micro-watersheds in cluster (10)	2 to 3 micro-watersheds in cluster (5)	
	Total	**150**	**150**	**93**	**37**	**2.5**

Based on above criteria and weightage of 93.0 concerning these thirteen parameters, a composite ranking was given to Gangani Watershed (IWMP II) project as given in **Table- 3.**

The total numbers of families under BPL are in the range of 50-80% of the total number of households in the village. Hence a score of 7.5 was allotted. Rain fed agriculture is in the range of 70- 80 percent, hence a score of 5 is alloted and more than 80 % farmers are small and marginal, so the scoring was done 10.The ground water of the project area is over-exploited, hence the ground water status score is 5. The percentage of schedule castes in this watershed is less than 20 percent of the total population, hence 3 score was allotted. With all the parameters taken together gives the watershed score to be 93.0.

Table- 3: Weightage of the Project

District	Name of the project	No. of micro-watersheds proposed to be covered	Proposed project area (ha)	Type of project (Hilly/ Desert/ Others)	Proposed cost (Rs. in lakh)	Weight age under the criteria												
						i	ii	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	Total
Mewat	Gangani Watershed (IWMP II)	11	4806	Hilly-Sub-Hilly	576.72	7.5	3	0	10	5	0	5	7.5	15	15	5	10	10	93

Name of the Project	No. of Micro-Watersheds to be Treated	Watershed codes	Watershed regime/type/order
Gangani Watershed (IWMP II)	11	2C5G1h6, 2C5G1k2, 2C5G1h9, 2C5G1h8, 2C5G1h3, 2C5G1g6, 2C5G1h5, 2C5G1h7, 2C5G1h2, 2C5G1g8 and 2C5G1h4	Others

2.3 OTHER ONGOING DEVELOPMENT PROJECTS / SCHEMES IN THE PROJECT VILLAGES

These villages being backward have been on top priority of a number in developmental projects. These programmes are Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS). The micro watershed wise ongoing development programme in the project area is tabulated in Table 5.

Table 5. Ongoing Developmental Programs in the Project Area

S. No.	Name of the Program /Project	Name of Micro watersheds	Sponsoring agency	Objective	Estimated number of beneficiaries for year 2012-13
1	MGNREGA	Bhango	DRDA, Mewat	To provide assured employment of 100 days in a year to unskilled labour and development of village.	193
2	MGNREGA	Sondh	DRDA, Mewat	To provide assured employment of 100 days in a year to unskilled labour and development of village.	---
3	MGNREGA	Gangani	DRDA, Mewat	To provide assured employment of 100 days in a year to unskilled labour and development of village.	--
4	MGNREGA	Kota Khandewla	DRDA, Mewat	To provide assured employment of 100 days in a year to unskilled labour and development of village.	0
5	MGNREGA	Bissar Akbarpur	DRDA, Mewat	To provide assured employment of 100 days in a year to unskilled labour and development of village.	10
6	MGNREGA	Baghanki	DRDA, Mewat	To provide assured employment of 100 days in a year to unskilled labour and development of village.	--
7	MGNREGA	Mohmmadpur Ahir	DRDA, Mewat	To provide assured employment of 100 days in a year to unskilled labour and development of village.	101

8	MGNREGA	Dadu	DRDA, Mewat	To provide assured employment of 100 days in a year to unskilled labour and development of village.	0
9	MGNREGA	Hassanpur Taoru	DRDA	To provide assured employment of 100 days in a year to unskilled labour and development of village.	0
10	MGNREGA	Pada	DRDA	To provide assured employment of 100 days in a year to unskilled labour and development of village.	14
11	MGNREGA	Jafrabad	DRDA	To provide assured employment of 100 days in a year to unskilled labour and development of village.	30

The District Rural Development Agency has undertaken various schemes under watershed development programme and the status is presented in **Table 6.**

Table 6: Previous Watershed Programme in the Project Area (if any)

Names of Districts	Total micro-watersheds in the District		Micro-watersheds covered so far						Net watersheds to be covered	
			Dept. of Land Resources		Other Ministries/ Depts.		Total watersheds covered			
			Pre-IWMP projects (DPAP +DDP +IWDP)		Any other watershed project					
	No.	Area (ha.)	No.	Area (ha.)	No.	Area (ha.)	No.	Area (ha.)	No.	Area (ha.)
Mewat	271	149588	23	12700	67	36780	90	49480	181 (balance) 19	100108 (balance) 9056

CHAPTER – 3

BASIC INFORMATION OF THE PROJECT AREA

GEOGRAPHY AND GEOHYDROLOGY

The Gangani Watershed (IWMP-II) falls in Tauru Block of District Mewat. The area of watershed lies in between 28˚15'00''to 28˚19'30'' N Latitude & 76˚55'30'' to 77˚00'00'' east longitude with general elevation varies between 254-321 m (MSL) above mean sea level. Area experiences 563 mm rainfall and about 80 percent of its annual rainfall is received in the month of July to September. The Drainage and Contour map is presented in **Annexure-II.**

3.1 LAND USE PATTERN

The village wise land use pattern is tabulated in **Table-1.** Land use map is shown in **Annexure-III.**

Table. 1 Land use pattern of Gangani Watershed (IWMP II)

S. No.	Name of watershed	Names of Micro watersheds	Geographical Area of the village	Land under agricultural use	Rain fed area	Wasteland	
						Cultivable	Non-cultivable
1	Gangani Sub-Watershed (IWMP II)	Bhango (part)	531	206	140	6	319
2		Sundh (part)	591	273	232	11	307
3		Gangani (part)	554	317	228	-	437
4		Kota Khandewla (part)	534	183	64	-	351
5		Bissar Akbarpur (part)	514	256	167	1	257
6		Baghanki (part)	504	317	229	9	178
7		Mohmadpur Ahir (part)	488	150	87	159	179

8		Dadu + Bissar Akbarpur (part)	499	378	294	1	120
9		Hassanpur Toaru	482	388	311	34	60
10		Para	572	498	341	13	61
11		Jafrabad	517	458	351	9	50
			5786	**3424**	**2444**	**243**	**2319**

(Source – District Census Handbook, 2001 Mewat)

3.2 SOIL AND TOPOGRAPHY

The soils of Gangani Watershed are Loamy sand to sandy clay loam with coarse fragments in lower horizon along the foothills and sandy loam to sandy clay loam in the most of the area. The topography of the area ranges from nearly level to gentle slope in the lower area and gentle to steep slopes on ridge/hillocks. Soils are subject to susceptible to severe to very severe erosion hazard in upper areas and moderate to severe in lower areas. The slope ranges from less than 1 to 5% and above. Most of the area of micro watersheds falls under 1-3% slopes. Slope map is presented in **Annexure IV.**

s**Table 2. Soil type and Topography**

Sr. No.	Name of Micro Watersheds	Code	Geographical area (ha)	Major Soil types	Topography
1.	Bhango	2C5G1h6	531	Loamy sand to sandy clay loam with coarse fragments in pockets	Nearly level to gentle slope in the lower area and gentle to steep slopes on ridge/hillocks
2.	Sondh	2C5G1k2	591		
3.	Gangani	2C5G1h9	554		
4.	Kota Khandewla	2C5G1h8	534		
5.	Bissar Akbarpur	2C5G1h3	514		
6.	Baghanki	2C5G1g6	504		
7.	Mohmmadpur Ahir	2C5G1h5	488	Loamy sand to sandy clay loam	
8.	Dadu	2C5G1h7	499	Loamy sand to sandy clay loam with coarse fragments in pockets	

9.	Hassanpur Taoru	2C5G1h2	482	Loamy sand to sandy clay loam	
10.	Para	2C5G1g8	572	Loamy sand to sandy clay loam	
11.	Jafrabad	2C5G1h4	517	Loamy sand to sandy clay loam	
			5786		

Source: - Department of Agriculture, Haryana

3.2.1 Flood and Drought Condition

The data collected from the revenue department reveals flood and drought conditions occur once in a five years. The absence of assured irrigation and drought resulted in low to very low yields of the crops.

Table 3. Flood and Drought condition

Sr. No.	Name of Micro- watersheds	Flood Incidence	Drought Incidence
1.	Bhango	Once in 5 Years	Once in 5 Years
2.	Sondh		
3.	Gangani		
4.	Kota Khandewla		
5.	Bissar Akbarpur		
6.	Baghanki		
7.	Mohmmadpur Ahir		
8.	Dadu		
9.	Hassanpur Taoru		
10.	Para		
11.	Jafrabad		

3.3 SOILS

3.3.1 Soil Erosion

In the identified eleven micro watersheds in nineteen villages, it is observed that due to thin vegetative cover to increase the loss of surface soil in the hilly and sand dune area of watershed. This results in degradation of agricultural land and loss of organic matter. Annual average rainfall of the district is 563 mm. Soil erosion is high and unscientific mining has also created severe problems in the area. Majority of the watershed Community are dependent on rain-fed agriculture due to lack of assured irrigation facility. Agriculture suffers due to area being rain fed and due to erratic rains in the region, resulting in further deterioration of socio economic conditions of community.

3.3.2 Soil Salinity/Alkalinity

There is low to moderate soil salinity in the Project and pH is normal and within the limits of 7.50 to 8.50.

Based on the soil samples analysis and reports the village wise distribution of pH is tabulated and shown in Table. 4.

Table 4. Soil pH and Salinity

Sr. No.	Name of Micro Watersheds	Name of Village	Soil pH	Type of salinity
1	Bhango	Bhango	7.6-8.4	Normal
2		Chehalka	7.5-8.2	Normal
3	Sondh	Sondh	7.8-8.3	Normal
4	Gangani	Gangani	7.5-8.2	Normal
5	Kota Khandewla	Kota Khandewla	7.9-8.3	Normal
6	Bissar Akbarpur	Bissar Akbarpur	7.7-8.4	Normal
7	Baghanki	Baghanki	-	-
8		Kherki	-	-
9	Mohmmadpur Ahir	Mohammadpur Ahir	7.6-8.5	Normal
10	Dadu	Dadu	7.5-8.0	Normal

11		Sarai	7.6-8.3	Normal
12	Hassanpur Taoru	Hassanpur Taoru	7.5-8.3	Normal
13		Beri Nisfi Sohna	8.0-8.5	Normal
14	Pada	Pada	8.0-8.4	Normal
15		Kalwari	7.5-8.4	Normal
16	Jafrabad	Jafrabad	7.5-8.0	Normal
17		Sheikhpur	7.7-8.3	Normal
18		Sabras	7.6-8.3	Normal
19		Sunthaka	7.9-8.0	Normal

3.3.3 SOIL CLASSIFICATION

The Soil map is presented in **Annexure V.** The fertility status of the project area, available nitrogen and available phosphorus are low. However, the available potash is medium. The fertility status map of the project area is exhibited in **Annexure-VI**.

3.3.4 Land Capability Classification

It is an interpretative grouping of soils based on inherent soil characteristics, external land features and environmental factors that limit the use of land. As per land capability classification, class III to class VII

The soils of the selected Watersheds have been grouped into three land capability classes. A brief description of each capability sub class is given as under and the **Land capability map is exhibited in Annexure-VII.**

Land capability subclass III e2s2

These soils are deep to very deep, light to coarse loamy texture located on slight to gentle slope. These soils are well drained, moderately permeable and moderate to severe erosion hazard.

Following recommendations are suggested for the economic use of this sub-class:

1. Land leveling should be subsidized, because farmers are not economically capable to bear the rate of land leveling.
2. Engineering measures like Check Dams, Percolation Embankments with other soil conservation measures be under taken.
3. Agronomic measures like Dry farming, strip& Mixed cropping with other soil conservation measures like agro forestry and rain-fed horticulture are recommended.
4. Masonry structure (outlet) should be constructed with field bunds and percolation embankments for rills control.

Land capability subclass IV e3s3

These soils are generally light in texture developed on nearly level to gentle sloping lands. The water holding capacity is poor to very poor and the water erosion hazard is severe to very severe.

Following recommendations are suggested for the economic use of this sub-class:

1. Special soil conservation measures should be adopted to check water erosion and increase ground water recharge; soils should be provided permanent vegetation (Agro-forestry) cover to check further deterioration of soils.
2. Soils would be cultivated in suitable crop rotation with adopting dry farming techniques.
3. Masonry structure should be constructed in field bunds and percolation embankment.
4. Land leveling should subsidies, because farmers are not economically capable to bear the rate of land leveling.
5. Construction of percolation ponds and embankments for increasing ground water recharge.

Land capability subclass VI es

These soils are shallow to deep, light in texture with coarse fragments, developed on gentle to steep slope and exposed rock-out crops. The water holding capacity is very poor and the water erosion hazard is severe to very severe.

Following recommendations are suggested for the economic use of this sub-class:

1. Specific and special soil conservation measures should be adopted to check water erosion and gully control; soils should be provided permanent vegetation (Afforestation) cover to check further deterioration of soils.
2. Soils would be suitable for pasture development; forestation, recreation activity and other major water conservation structures (Water harvesting structure, silt detention dam, etc).

3.3.5 Climatic Conditions

The average rainfall of the district is 563 mm (during the past 10 years data). The highest rainfall is 974 mm during the year 2006 and lowest in 2007 as 232 mm. The uneven rainfall distribution is leading to run off soil every year to the steams, rivulets and depressed area of the Gangani Watershed (IWMP II). The year wise rainfall from 2004 to 2013 is presented in **Table.5.**

Table 5. Rainfall during the years 2004-13

Sr. No.	Year	Rainfall (in mm)
1	2004	381
2	2005	503
3	2006	974
4	2007	232
5	2008	959
6	2009	450
7	2010	516
8	2011	344
9	2012	518
10	2013	755
	Average Rainfall	**563**

(Source: - Deputy Director Agriculture, Mewat)

The mean maximum temperature is 48˚ C (May and June) and mean minimum is 3.0˚ C (January) of the district and number of normal rainy days are 31.

3.3.6 Physiography and Reliefs

Physiographically, the area slope falls North- East to South- West. The general Elevation of the area is 254-321 m above mean sea level (as per google earth map). The elevation range and percentage slope distribution has been presented in **Table 6.**

Table 6. Physiography and Relief

Project Name	Elevation (MSL)	Slope Range (%)
Gangani Watershed (IWMP-II)	254-321 m	0.5 to 5 & above

3.4 LAND AND AGRICULTURE

The land holding pattern of the villages under Gangani Watershed shows that the majority of the land holding is below 3.0 ha. The lack of irrigation source has forced the majority of the small farmers and landless labours of Watershed to migrate from village to ensure there, employment and livelihood to nearest Industrial towns are Faridabad, Dharuhera, Manesar and Gurgaon. This affects directly the demographic profile of the villages.

The major crops Bajra, Arhar, green fodder and pulses in Kharif under rainfed conditions. The major crops during Rabi wheat, oilseeds, gram, green fodder and seasonal vegetables in rainfed/irrigated conditions. The soil and water conservation measures such as Engineering like Dug out Pond, Cement Stone Masonry structures (Inlet & Outlet), Earthen Embankment with pucca outlet, Small Earthen Embankments, Gully Plugs, Check Dams, Percolation embankments, Marginal Bandhs and Percolation ponds etc. The project would help the farmers to take crop production which will enhance the net production value. The following plants are commonly observed in the Project Area. The natural vegetation in the project area is exhibited in **Table 7.**

Table 7. Natural Vegetation

Sr. No.	Trees	Fruits	Shrubs & Grasses
1	Shisham	Orange	Dubb Grass

Sr. No.	Trees	Fruits	Shrubs & Grasses
2	Kikar	Ber	
3	Neem	Amla	
4	Arjun	Guava	
5	Pipal	Banana	
6	Safeda	Jamun	
7	Popular	Mango	

3.4.1 Land Ownership Details

The Caste wise land owned (in ha) is Tabulated in Table 8.

Table-8:- Land Ownership Details

GENERAL	OBC	SC	Total owners
3951	**450**	**1007**	**5413**

3.4.2 AGRICULTURE/PATTERN

Table 9. Agriculture/ Pattern

Sr. No.	Name of Micro Watersheds	Land under agriculture use (ha)	Net Sown area (ha)	
			One time	Two times
1	Bhango	206	178	124
2	Sondh	273	234	171
3	Gangani	317	276	192

Sr. No.	Name of Micro Watersheds	Land under agriculture use (ha)	Net Sown area (ha)	
			One time	Two times
4	Kota Khandewla	183	169	103
5	Bissar Akbarpur	256	223	152
6	Baghanki	317	274	201
7	Mohmmadpur Ahir	150	133	88
8	Dadu	378	324	236
9	Hassanpur Taoru	388	337	241
10	Para	498	423	318
11	Jafrabad	458	394	284
		3424	**2965**	**2110**

(Source: Department of Agriculture, Haryana)

3.4.3 IRRIGATION

Lack of Assured Irrigation Facilities

The present source of irrigation is ground water where the area is underlain by fresh to marginal water quality. The remaining cultivable area is under rainfed agriculture. The present source of irrigation in the watershed has been tabulated in **Table 10.**

Table 10. Irrigation Pattern.

S. No.	Name of Villages	Source 1: Canal		Source 2: Groundwater (Tube wells)	
		Availability months	Net area (ha)	Availability months	Net area (ha)
1	Bhango (part)	-	-	July to June	66
2	Sundh (part)	-	-	July to June	41

S. No.	Name of Villages	Source 1: Canal		Source 2: Groundwater (Tube wells)	
		Availability months	Net area (ha)	Availability months	Net area (ha)
3	Gangani (part)	-	-	July to June	89
4	Kota Khandewla (part)	-	-	July to June	119
5	Bissar Akbarpur (part)	-	-	July to June	89
6	Baghanki (part)	-	-	July to June	88
7	Mohmadpur Ahir (part)	-	-	July to June	63
8	Dadu + Bissar Akbarpur (part)	-	-	July to June	84
9	Hassanpur Toaru	-	-	July to June	77
10	Para	-	-	July to June	157
11	Jafrabad	-	-	July to June	107
					980

(Source – District Census Handbook Mewat**)**

3.4.4 CROPPING PATTERN (crop details)

Cropping Pattern

The village wise area production and productivity of each crop is tabulated in **Table 11 A and 11 B** (Rabi and Kharif)**.**

Table 11 A. Crop Details (Rabi)

Sr.	Name of	Village	Wheat	Oil Seed

No	Micro Watersheds		Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer
1	Bhango	Bhango	146	420480	2880	DAP/ Urea	129	155187	1203	DAP/ Urea
2		Chehalka	106	306552	2892	DAP/ Urea	39	46293	1187	DAP/ Urea
3	Sondh	Sondh	358	1028534	2873	DAP/ Urea	233	277969	1193	DAP/ Urea
4	Gangani	Gangani	29	83172	2868	DAP/ Urea	3	3528	1176	DAP/ Urea
5	Kota Khandewla	Kota Khandewla	114	329004	2886	DAP/ Urea	19	23104	1216	DAP/ Urea
6	Bissar Akbarpur	Bissar Akbarpur	339	970557	2863	DAP/ Urea	149	181929	1221	DAP/ Urea
7	Baghanki	Baghanki	-	-	-	-	-	-	-	-
8		Kherki	-	-	-	-	-	-	-	-
9	Mohmmadpur Ahir	Mohammadpur Ahir	170	491980	2894	DAP/ Urea	75	88275	1177	DAP/ Urea
10	Dadu	Dadu	133	386099	2903	DAP/ Urea	18	21348	1186	DAP/ Urea
11		Sarai	71	205119	2889	DAP/ Urea	19	23123	1217	DAP/ Urea
12	Hassanpur Taoru	Hassanpur Taoru	290	831430	2867	DAP/ Urea	56	66976	1196	DAP/ Urea
13		Beri Nisfi Sohna	101	292193	2893	DAP/ Urea	32	39296	1228	DAP/ Urea
14	Pada	Pada	168	489720	2915	DAP/ Urea	37	43808	1184	DAP/ Urea
15		Kalwari	104	299936	2884	DAP/	48	56448	1176	DAP/

Sr. No	Name of Micro Watersheds	Village	Wheat				Oil Seed			
			Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer
						Urea				Urea
16	Jafrabad	Jafrabad	74	212602	2873	DAP/ Urea	42	50442	1201	DAP/ Urea
17		Sheikhpur	70	203770	2911	DAP/ Urea	29	34423	1187	DAP/ Urea
18		Sabras	80	229920	2874	DAP/ Urea	30	35790	1193	DAP/ Urea
19		Sunthaka	51	147543	2893	DAP/ Urea	13	15782	1214	DAP/ Urea
	Total		**2404**	**6928611**			**971**	**1163721**		

Table 11 B. Crop Details (Kharif)

Sr. No	Name of Micro Watersheds	Village	Bajra				Arhar			
			Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer
1	Bhango	Bhango	198	299376	1512	DAP/ Urea	7	7014	1002	DAP/ Urea
2		Chehalka	113	169839	1503	DAP/ Urea	4	4064	1016	DAP/ Urea
3	Sondh	Sondh	475	724850	1526	DAP/ Urea	10	9870	987	DAP/ Urea

Sr. No	Name of Micro Watersheds	Village	Bajra				Arhar			
			Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer
4	Gangani	Gangani	29	43993	1517	DAP/ Urea	-	-	-	-
5	Kota Khandewla	Kota Khandewla	105	157185	1497	DAP/ Urea	2	2014	1007	DAP/ Urea
6	Bissar Akbarpur	Bissar Akbarpur	320	485120	1516	DAP/ Urea	4	3964	991	DAP/ Urea
7	Baghanki	Baghanki	-	-	-	-	18	18414	1023	DAP/ Urea
8		Kherki	-	-	-	-	1	1016	1016	DAP/ Urea
9	Mohmmadpur Ahir	Mohammadpur Ahir	167	254007	1521	DAP/ Urea	17	16745	985	DAP/ Urea
10	Dadu	Dadu	129	197886	1534	DAP/ Urea	19	19475	1025	DAP/ Urea
11		Sarai	76	114076	1501	DAP/ Urea	1	1014	1014	DAP/ Urea
12	Hassanpur Taoru	Hassanpur Taoru	224	339136	1514	DAP/ Urea	1	1008	1008	DAP/ Urea
13		Beri Nisfi Sohna	112	167552	1496	DAP/ Urea	12	11916	993	DAP/ Urea
14	Pada	Pada	154	236544	1536	DAP/ Urea	9	9324	1036	DAP/ Urea
15		Kalwari	120	180960	1508	DAP/ Urea	8	8032	1004	DAP/ Urea
16	Jafrabad	Jafrabad	95	144305	1519	DAP/ Urea	2	1972	986	DAP/ Urea
17		Sheikhpur	53	79871	1507	DAP/ Urea	10	9960	996	DAP/ Urea

Sr. No	Name of Micro Watersheds	Village	Bajra				Arhar			
			Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (kg)	Productivity (kg/ha) Avg.	Use of fertilizer
18		Sabras	100	149300	1493	DAP/ Urea	6	6162	1027	DAP/ Urea
19		Sunthaka	62	94488	1524	DAP/ Urea	1	1011	1011	DAP/ Urea
			2532	3838488			132	132975		

3.4.5 Livestock

Farmers in these villages have already been keeping the milch animals; mostly buffalos. The milk production of these animals (local breeds) is low (**Table 12)**. There is a need for the improvement of the local breed through artificial insemination, proper vaccination and nutritive feed. Introduction of cross breed cows and murrah buffalo with better milk production will popularize dairy farming in the area. Also, the farmyard manure procured from these animals will help improve the soil health.

Table 12. Village Wise Distribution of Milk Production in Gangani Watershed (IWMP II)

Sr. No	Name of Micro Watersheds	Buffalo(*Lit/per day/annum) for 6 months	Cow(*lit/per day/annum) for 6 months	Sheep	Goat	Camel
1	Bhango	625/5313/956250	710/3195/575100	--	860	--
2	Sondh	325/2925/526500	53/265/47700	--	122	4
3	Gangani	53/530/95400	13/72/12870	--	20	--
4	Kota Khandewla	325/2600/468000	125/500/90000	--	353	15
5	Bissar Akbarpur	455/4778/859950	140/630/113400	--	200	--
6	Baghanki	515/4893/880650	195/1073/193050	--		--

Sr. No	Name of Micro Watersheds	Buffalo(*Lit/per day/annum) for 6 months	Cow(*lit/per day/annum) for 6 months	Sheep	Goat	Camel
7	Mohmmadpur Ahir	267/2670/480600	82/492/88560	--	216	--
8	Dadu	608/5776/1039680	115/518/93150	--	107	2
9	Hassanpur Taoru	490/5145/926100	93/512/92070	--	325	--
10	Pada	362/3077/553860	69/311/55890	--	126	--
11	Jafrabad	492/4428/797040	90/540/97200	--	362	--

(Source: Animal Husbandry, Mewat)

***Average yield of Buffalo is 11-12 lit/day and Average yield of Cow is 5-6 lit/day**

3.4.6 Ground Water Concern

a) Depth to Water

The ground water hydrology focuses on occurrence and distribution of movement of water below the surface. Ground Water Cell of Haryana has fixed hydrograph station whose monitoring is undertaken during pre and post monsoon season. The water level data has been analyzed for the purpose of ground water studies in the watershed area. The ground water behavior in the watershed reveals the variation from 12 to 31 m. The village wise water level data has been tabulated in **Table 13.** Depth to water level map has been prepared and presented in the **Annexure VIII**.

Table 13. Village Wise Depth to Water Level of Gangani Watershed (IWMP II)

Sr. No.	Name of Micro Watersheds	Name of Villages	Pre- Project level (m)
1	Bhango	Bhango	28.10
2		Chehalka	13.65
3	Sondh	Sondh	13.65
4	Gangani	Gangani	26.95
5	Kota Khandewla	Kota Khandewla	26.95
6	Bissar Akbarpur	Bissar Akbarpur	30.90

Sr. No.	Name of Micro Watersheds	Name of Villages	Pre- Project level (m)
7	Baghanki	Baghanki	12.30
8		Kherki	14.10
9	Mohmmadpur Ahir	Mohammadpur Ahir	21.40
10	Dadu	Dadu	21.40
11		Sarai	26.95
12	Hassanpur Taoru	Hassanpur Taoru	21.40
13		Beri Nisfi Sohna	21.35
14	Pada	Pada	21.35
15		Kalwari	21.35
16	Jafrabad	Jafrabad	13.65
17		Sheikhpur	21.35
18		Sabras	21.35
19		Sunthaka	21.35

Based on the water samples analyzed of hydrograph stations fixed by ground water cell, the water quality distribution varies from fresh to marginal depth which is being exploited by development of tubewells in the area. The Watershed quality of the area is fresh under shallow depth in small pockets locating in the Eastern and the Western area of micro watershed located in village Bhango, Sheikpur and Kalwari is under fresh quality. The water quality map of the area is presented in **Annexure-IX**.

b) Water table fluctuation

From the availability of the data from the period June, 1974 to June, 2010 it is observed that the water table is declining at the rate of 0.91cm per year (Ground Water Cell, Haryana).

The seasonal fluctuation i.e. Pre and Post monsoon period is 1.5- 2.0m. The pattern of ground water depletion is almost uniform in the project area.

c) Rain water harvesting and Recharging

With the excessive withdrawal of the ground water for irrigation and drinking, the area falls in the over exploited category. There is a need to recharge the aquifers which have been de-saturated. The necessary provision of recharging has been provided in the project proposals.

3.4.7 DETAILS OF COMMON PROPERTY RESOURCES: The department of panchayats has maintained the record of common property resources of area under various institutions. The data has been taken has been collected DDPO, Mewat. The details of common property resource in Gangani Watershed (IWMP II) are tabulated in **Table 14.**

Table 14. Detail of Common Property Resources

Name of the Project	CPR Particulars	Total Area, ha (Area owned / in possession of)				Area available for treatment (ha)			
		Pvt. Person	Govt.	PRI	Any Other	Pvt. Person	Govt.	PRI	Any Other
Gangani Watershed (IWMP II)	Waste land	500	1000	700	81	500	1000	700	81
	Pasture	-	-	81	-	-	-	81	-
	Orchards	60.5	-	-	-	-	-	-	-
	Village wood lot	7	-	7.5	-	7	-	7	-
	Forest	-	74	-	-	-	-	74	-
	Village ponds, lake	-	14	-	-	-	14	-	-
	Community Buildings	-	22	-	-	-	22	-	-
	Weekly Mkts	-	-	-	-	-	-	-	-
	Permanent Mkts	0.5	-	--	-	0.5	-	--	-
	Temples/place of worship	-	-	4.4	-	-	-	4.4	-
	Others	-	-	3	-	-	-	3	-

3.5 SOCIO ECONOMIC AND LITERACY PROFILE

Land holdings: The area under the project is cultivated by small and marginal farmers. Almost 70 percent of the farmers fall under this category.

Poor economic conditions of farmers: The general socio economic condition of the farmers in this area is quite poor. They cannot use necessary agriculture inputs in a timely fashion due to financial constraints which adversely affects the crop yield.

Village wise household, total population and schedule caste population has been worked out from the census book and is tabulated in **table 15.** The literacy rate of micro watershed wise distribution is also exhibited in **Table 16**.

3.5.1 Demographic Status

Table 15. Demographic Status/ Population Pattern

Sr. No.	Name of villages	Total no. of houses	Total Population			SC			
			Male	Female	Total	Male	Female	Total	%age
1	Bhango	249	914	764	1678	138	113	251	15.0
2	Chehalka	656	2124	1915	4039	9	8	17	0.4
3	Sondh	520	1663	1553	3216	763	675	1438	44.7
4	Gangani	26	77	77	154	6	6	12	7.8
5	Kota Khandewla	260	1004	825	1829	160	142	302	16.5
6	Bissar Akbarpur	511	3286	1541	3286	201	200	401	12.2
7	Baghanki	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
8	Kherki	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
9	Mohmmadpur Ahir	851	2675	2416	5091	692	585	1277	25.1
10	Dadu	126	359	308	667	44	33	77	11.5
11	Sarai (Bissar Akbarpur (Part))	157	613	577	1190	161	155	316	26.6
12	Hassanpur Taoru	532	1644	1378	3022	303	254	557	18.4
13	Beri Nisfi Sohna	102	392	348	740	0	0	0	0.0
14	Para	148	431	377	808	305	267	572	70.8

Sr. No.	Name of villages	Total no. of houses	Total Population			SC			
			Male	Female	Total	Male	Female	Total	%age
15	Kalwari	519	1461	1289	2751	190	194	384	14.0
16	Jafrabad	171	609	612	1221	16	15	31	2.5
17	Sheikhpur	79	208	163	371	123	102	225	60.6
18	Sabras	220	759	698	1457	54	60	114	7.8
19	Sunthaka	12	39	33	72	0	0	0	0.0
		5139	**18258**	**14874**	**31592**	**3165**	**2809**	**5974**	**18.9**

(Source- District Census 2011)

Table 16. Village wise Literacy Rate in Gangani Watershed (IWMP II)

Sr. No.	Name of villages	Total population	Literacy					
			Total Literates	% age	Male	% age	Female	% age
1	Bhango	1678	640	38.1	489	76.4	151	23.6
2	Chehalka	4039	1562	38.7	1139	72.9	423	27.1
3	Sondh	3216	1646	51.2	1052	63.9	594	36.1
4	Gangani	154	89	57.8	51	57.3	38	42.7
5	Kota Khandewla	1829	1098	60.0	692	63.0	406	37.0
6	Bissar Akbarpur	3286	1999	60.8	1216	60.8	783	39.2
7	Baghanki	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
8	Kherki	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
9	Mohmmadpur Ahir	5091	3104	61.0	1863	60.0	1241	40.0
10	Dadu	667	468	70.2	275	58.8	193	41.2
11	Sarai (Bissar Akbarpur (Part))	1190	719	60.4	442	61.5	277	38.5
12	Hassanpur	3022	2093	69.3	1261	60.2	832	39.8

Sr. No.	Name of villages	Total population	Literacy					
			Total Literates	% age	Male	% age	Female	% age
	Taoru							
13	Beri Nisfi Sohna	740	303	40.9	222	73.3	81	26.7
14	Para	808	557	68.9	327	58.7	230	41.3
15	Kalwari	2751	1892	68.8	1145	60.5	747	39.5
16	Jafrabad	1221	649	53.2	407	62.7	242	37.3
17	Sheikhpur	371	241	65.0	145	60.2	96	39.8
18	Sabras	1457	716	49.1	488	68.2	228	31.8
19	Sunthaka	72	45	62.5	26	57.8	19	42.2
		31592	**17821**	**56.4**	**11240**	**63.1**	**6581**	**36.9**

(Source- District Census- 2011)

Table 17. EMPLOYMENT STATUS

Sr. No.	Name of villages	Schedule caste		Cultivators		Agricultural labourers		Household industry workers		Other workers	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1	Bhango	138	113	200	7	11	1	7	0	24	1
2	Chehalka	9	8	334	28	13	1	0	0	191	20
3	Sondh	763	675	116	42	99	16	9	4	341	30
4	Gangani	6	6	18	0	0	0	0	0	20	0
5	Kota Khandewla	160	142	186	17	13	0	11	5	206	53
6	Bissar Akbarpur	201	200	397	281	28	29	11	3	286	46
7	Baghanki	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
8	Kherki	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
9	Mohmmadpur Ahir	692	585	351	94	59	7	63	2	621	215

Sr. No.	Name of villages	Schedule caste		Cultivators		Agricultural labourers		Household industry workers		Other workers	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
10	Dadu	44	33	103	10	4	1	2	0	74	9
11	Sarai (Bissar Akbarpur (Part))	161	155	92	5	3	1	1	0	138	6
12	Hassanpur Taoru	303	254	316	42	27	0	6	4	214	45
13	Beri Nisfi Sohna	0	0	105	25	0	0	1	0	50	106
14	Para	305	267	14	5	15	13	5	0	113	28
15	Kalwari	190	194	201	24	18	5	2	1	373	32
16	Jafrabad	16	15	68	12	5	0	0	0	135	5
17	Sheikhpur	123	102	20	2	5	1	0	0	43	9
18	Sabras	54	60	59	3	24	0	5	0	124	4
19	Sunthaka	0	0	8	1	2	0	0	0	5	4

Source: Census 2011

3.5.2 MIGRATION PATTERN

The major reason for migration is lack of employment opportunities, small uneconomical holding, and lack of fodder availability in summer etc. The village wise migration, period, reason for migration and probe able income generation has been compiled and shown in **Table 18.**

Table 18. Migration Pattern in Gangani Watershed (IWMP II)

Sr. No.	Name of Micro Watersheds	Name of villages	Total Population	No. of persons migrating	No. of days per year of migration	Main reason for migration	Income during migration/ month/person
1	Bhango	Bhango	1678	252	90	1. Lack of job opportunity in project area. 2. Poor economic	5500
2		Chehalka	4039	565	60		5600
3	Sondh	Sondh	3216	322	75		5800
4	Gangani	Gangani	154	18	120		5500

Sr. No.	Name of Micro Watersheds	Name of villages	Total Population	No. of persons migrating	No. of days per year of migration	Main reason for migration	Income during migration/ month/person
5	Kota Khandewla	Kota Khandewla	1829	238	90	condition of household due to low wages in Agriculture Economy 3. Better employment opportunity outside the native place. 4. Land purchase by outsider from NCR	5600
6	Bissar Akbarpur	Bissar Akbarpur	3286	361	90		5700
7	Baghanki	Baghanki	N.A.	N.A.	N.A.		-
8		Kherki	N.A.	N.A.	N.A.		-
9	Mohmmadpur Ahir	Mohammadpur Ahir	5091	764	75		5500
10	Dadu	Dadu	667	80	100		5700
11		Sarai	1190	167	75		5800
12	Hassanpur Taoru	Hassanpur Taoru	3022	453	90		5500
13		Beri Nisfi Sohna	740	74	60		5850
14	Pada	Pada	808	81	60		5700
15		Kalwari	2751	413	75		5600
16	Jafrabad	Jafrabad	1221	159	120		5750
17		Sheikhpur	371	41	120		5700
18		Sabras	1457	204	90		5500
19		Sunthaka	72	9	90		5600

POVERTY: The distribution of the BPL and their percentage is presented in table 19.

Table 19. BPL Pattern

Sr. No.	Name of Micro watersheds	Name of villages	Total houses	Total Household-BPL	% of BPL HH
1	Bhango	Bhango	249	50	20.08
2		Chehalka	565	117	20.70
3	Sondh	Sondh	520	91	17.5

Sr. No.	Name of Micro watersheds	Name of villages	Total houses	Total Household-BPL	% of BPL HH
4	Gangani	Gangani	26	02	1.27
5	Kota Khandewla	Kota Khandewla	260	05	0.97
6	Bissar Akbarpur	Bissar Akbarpur	511	59	46.82
7	Baghanki	Baghanki	N.A.	N.A.	N.A.
8		Kherki	N.A.	N.A.	N.A.
9	Mohmmadpur Ahir	Mohammadpur Ahir	8.51	131	15.40
10	Dadu	Dadu	126	06	4.05
11		Sarai	157	07	2.69
12	Hassanpur Taoru	Hassanpur Taoru	532	29	16
13		Beri Nisfi Sohna	182		
14	Pada	Pada	148	21	4
15		Kalwari	519	28	5.40
16	Jafrabad	Jafrabad	171	42	24.56
17		Sheikhpur	79	16	20.25
18		Sabras	220	59	26.81
19		Sunthaka	12	03	25

(Source: District Administration Mewat, Haryana)

INFRASTRUCTURE DETAILS

All the villages are well connected by pucca road and primary or middle school exists in all villages. Health facilities are available in villages and have easy access to Health Centers. The village wise details of infrastructure are shown in **Table 20** and the facilities/ household assets in the villages under watershed is shown in **Table 21**.

Table 20. Village Infrastructure

Sr. No.	Name of Micro watersheds	Name of villages	Bank Y/N	Post office Y/N	School Primary/ High/ Sr. Sec	Milk Collection Centre Y/N	Pucca Road to Village Y/N	Health Facility Govt./Private Y/N	Veterinary facility Y/N
1	Bhango	Bhango	N	N	1 Middle	N	Y	N	N

Sr. No.	Name of Micro watersheds	Name of villages	Bank Y/N	Post office Y/N	School Primary/ High/ Sr. Sec	Milk Collection Centre Y/N	Pucca Road to Village Y/N	Health Facility Govt./Private Y/N	Veterinary facility Y/N
2		Chehalka	N	N	2 Pry./Middle	N	Y	N	N
3	Sondh	Sondh	N	Y	2 Pry./H. Sec.	N	Y	N	N
4	Gangani	Gangani	N	N	1 Pry.	N	Y	N	N
5	Kota Khandewla	Kota Khandewla	N	N	2 Pry./Middle	N	N	N	N
6	Bissar Akbarpur	Bissar Akbarpur	N	N	2 Pry./Middle	Y	Y	Y	N
7	Baghanki	Baghanki	N	N	-	N	N	N	N
8		Kherki	N	N	-	N	N	N	N
9	Mohmmadpur Ahir	Mohammad pur Ahir	Y	Y	2 Middle/Pry.	Y	Y	Y	Y
10	Dadu	Dadu	N	N	1 Pry.	Y	Y	N	N
11		Sarai	N	N	1 Pry.	N	Y	N	N
12	Hassanpur Taoru	Hassanpur Taoru	Y	Y	3, Pry., Sr. Sec. Pvt.	Y	Y	Y	Y
13		Beri Nisfi Sohna	N	N	2 Pry. and Sr. Sec.	N	N	N	N
14	Pada	Pada	N	N	2 Middle/Sec Bed College Pvt.	N	Y	N	N
15		Kalwari	Y	Y	2, Middle, Sr. Sec. Pvt.	Y	Y	N	Y
16	Jafrabad	Jafrabad	N	N	1 High/Sec.	N	Y	N	N
17		Sheikhpur	N	N	1 Primary	N	N	N	N
18		Sabras	N	N	1 Primary 1 Middle	Y	Y	N	N
19		Sunthaka	N	N	N	N	Y	N	N

FACILITIES/ HOUSEHOLD ASSETS

Table 21. Facilities/ Household assets in Gangani Watershed (IWMP II)

Sr. No.	Name of micro water sheds	Name of villages	Total no. of Houses	HHs with Safe latrines	HHs with phones		HHs with vehicles		HHs with TV sets	HHs with cooking gas	HHs with fridge
					Landline	Mobile	2 wheelers	4 wheelers			
1	Bhango	Bhango	239	125	-	810	150	04	50	50	72
2		Chehalka	565	275	-	1400	215	50	60	70	175
3	Sondh	Sondh	520	250	-	1650	180	20	300	125	150
4	Gangani	Gangani	26	95	-	90	15	5	120	11	05
5	Kota Khandewla	Kota Khandewla	260	150	-	860	150	45	175	75	60
6	Bissar Akbarpur	Bissar Akbarpur	511	175	-	1600	300	100	400	320	125
7	Baghanki	Baghanki	-	-	-	-	-	-	-	-	-
8		Kherki	-	-	-	-	-	-	-	-	-
9	Mohmmadpur Ahir	Mohammadpur Ahir	851	450	-	2400	375	100	700	500	420
10	Dadu	Dadu	126	70	-	423	100	20	110	100	90
11		Sarai	157	7	-	525	100	40	20	75	53
12	Hassanpur Taoru	Hassanpur Taoru	532	250	-	1550	350	100	375	350	360
13		Beri Nisfi Sohna	182	75	-	400	100	2	30	50	45
14	Pada	Pada	148	97	-	500	80	20	185	80	65
15		Kalwari	519	425	-	1650	325	100	400	360	340
16	Jafrabad	Jafrabad	171	95	-	600	125	15	50	40	70
17		Sheikhpur	79	50	-	270	100	11	75	70	62
18		Sabras	220	60	-	725	110	12	50	50	63
19		Sunthaka	12	10	-	50	10	4	10	8	4

3.5.3 LIVELIHOOD PATTERN: The livelihood from agriculture, animal husbandry, casual labour and others in the micro watershed (village wise) is shown in table 22.There is no major income from the common property resource to the individuals.

Table 22. Per capita (Household) income Gangani Watershed (IWMP II)

Sr. No.	Name of micro watersheds	Name of villages	Agriculture in Rs. P.A	Animal Husbandry in Rs. P.A	Casual labour in Rs. P.A	Others in Rs. P.A	Total income Rs.
1	Bhango	Bhango	3310	1210	7500	1750	13770
2		Chehalka	3210	1150	9100	1590	15050
3	Sondh	Sondh	3350	1210	8550	1670	14780
4	Gangani	Gangani	3102	1099	7950	1630	13781
5	Kota Khandewla	Kota Khandewla	3310	1260	8220	1650	14440
6	Bissar Akbarpur	Bissar Akbarpur	3540	1120	8550	1810	15020
7	Baghanki	Baghanki	-	-	-	-	-
8		Kherki	-	-	-	-	-
9	Mohmmadpur Ahir	Mohammadpur Ahir	3610	1236	8910	1830	15586
10	Dadu	Dadu	3310	1250	9110	1650	15320
11		Sarai	3250	1170	8900	1750	15070
12	Hassanpur Taoru	Hassanpur Taoru	3610	1150	8900	1850	15510
13		Beri Nisfi Sohna	3100	1140	8520	1650	14410
14	Pada	Pada	3410	1210	8410	1750	14780
15		Kalwari	3615	1175	8900	1890	16265
16	Jafrabad	Jafrabad	3420	1150	9110	1610	15290
17		Sheikhpur	3102	1150	8750	1750	14752

Sr. No.	Name of micro watersheds	Name of villages	Agriculture in Rs. P.A	Animal Husbandry in Rs. P.A	Casual labour in Rs. P.A	Others in Rs. P.A	Total income Rs.
18		Sabras	3310	1160	8720	1790	14980
19		Sunthaka	3102	1150	8720	1690	14662

3.5.4 Comparative Status of crop Productivity

Three major crops namely Wheat, Mustard and Bajra are sown in Watershed villages. Though main crops grown in this area is Wheat, Mustard and Bajra. Compared to rest of the district and the state, the average yield of these crops is quite low.

3.6 REASONS FOR LOW PRODUCTIVITY

- Lack of assured irrigation for agriculture.
- Poor availability and quality of ground water.
- Irregular and erratic rainfall: there is long span between two subsequent rainfalls in the area.
- Sudden change in climate of the area.
- Low organic carbon content.
- Poor physical and chemical properties of the soils are light in texture with boulders in pockets and poor fertility.
- Low water holding/ retention capacity.
- Moderate to rapid permeability.
- Poor phosphorous and medium potash nutrients availability.
- Acceptance of hybrid/ high yielding varieties are nil to negligible.
- Soil erosion.
- Essential micro- nutrient deficiency in the soil.
- Dependence of monsoon.

- Low fertilizer consumption per unit cropped area.
- Lack of economic condition of farmers.
- Lack of good quality of seeds and fertilizer.
- Lack of post harvesting facilities such as storage and marketing.

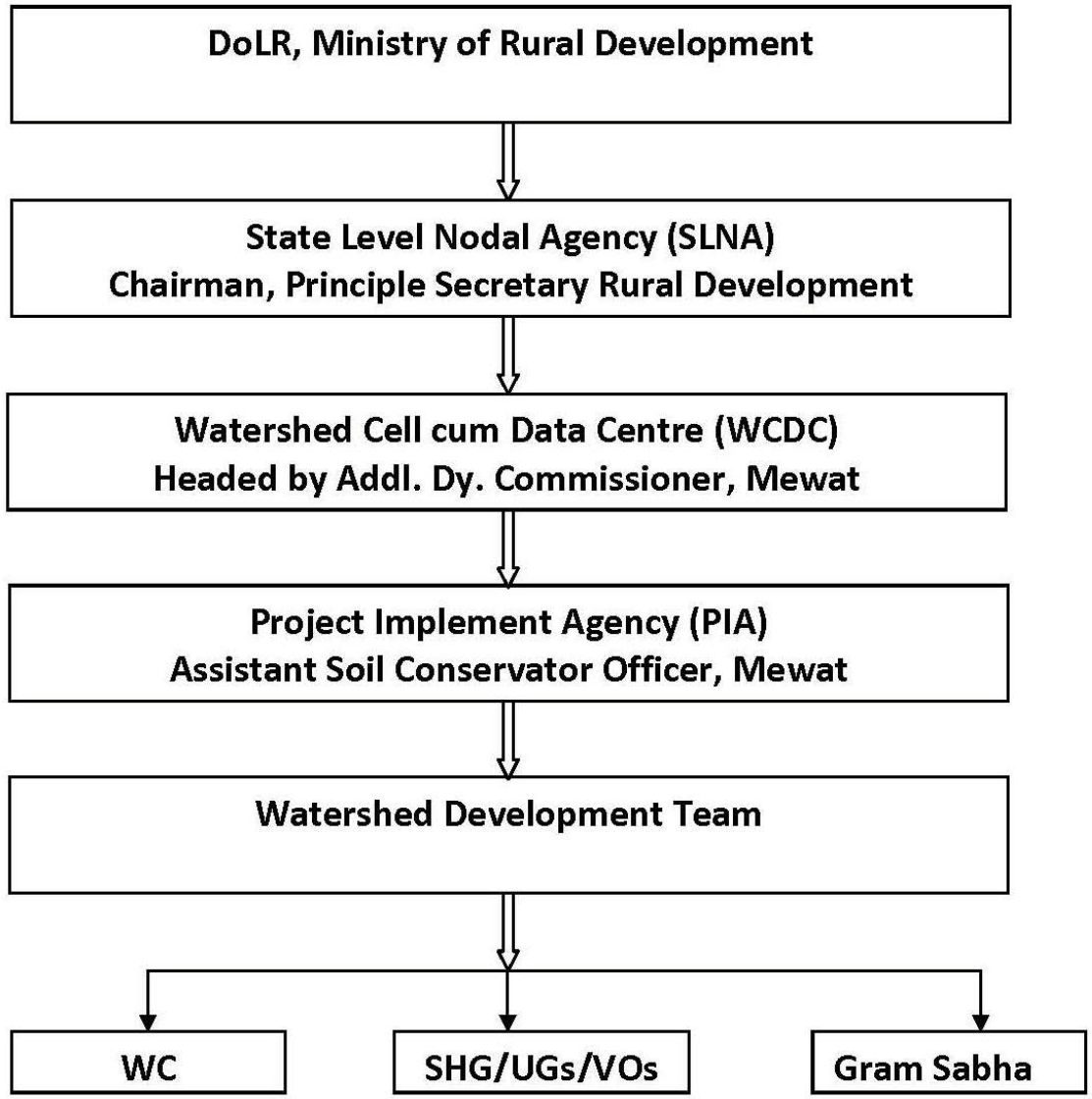
CHAPTER-4

PROJECT MANAGEMENT AGENCIES

4.1 INSTITUTIONAL ARRANGEMENT

Institutions play a major role in managing the projects. Realizing the importance of Community Participation, Decentralized Participatory Approach has been adopted for Watershed Management. Following decentralization and to achieve the objectives, there is a dire need for establishment of Institutional set up from National to Village Level (Micro Watershed Level), including cluster (Watershed Level) and district level. These institutions need to be oriented from time to time and also empowered so that they take up the assigned tasks and work as per their responsibilities from the start of the program to effective management of Project. Considering the prevalent circumstances, these institutions should take decisions at their respective level. The involvement and participation of beneficiaries and other stakeholders is desired to be encouraged right from the planning stage.

The institutional set up is given below:


DoLR, Ministry of Rural Development
State Level Nodal Agency (SLNA)
Chairman, Principle Secretary Rural Development
Watershed Cell cum Data Centre (WCDC)
Headed by Addl. Dy. Commissioner, Mewat
Project Implement Agency (PIA)
Assistant Soil Conservator Officer, Mewat
Watershed Development Team
WC
SHG/UGs/VOs
Gram Sabha

4.2 STATE LEVEL NODAL AGENCY, HARYANA

State Level Nodal Agency (SLNA) is headed by Chief Executive Officer and supported by Technical Experts is completely functional. The regular meetings with PIA and other stake holders are held to provide necessary guidance as per the revised, common guidelines, 2011. The main functions of SLNA are:

- To implement the approved perspective and strategy plan of watershed development for the state.
- Acts as Nodal Agency at State Level for appraisal and clearance.
- To establish and maintain a State Level data cell from the funds sanctioned to the State and connect it online with the National Level Data Centre.
- To provide technical support to Watershed Cell cum Data Centre throughout the state.
- To approve a list of independent institutions for capacity building of various stakeholders within the state and work out the overall capacity building strategy in consultation with NRAA/Nodal Ministry.
- To approve project implementing agencies identified/selected by WCDC/District Level Committee by adopting appropriate objective selection criteria and transparent systems.
- To establish monitoring, evaluation and learning systems at various levels (Internal and external/independent system).
- To ensure regular and quality online monitoring of watershed projects in the State in association with Nodal Agency at the Central Level and securing feedback by developing partnerships with independent and capable agencies.

4.3 WATERSHED CELL CUM DATA CENTRE, MEWAT

WCDC has been notified by SLNA and the same has been constituted. The team comprises of 3 to 4 subject matter specialists on Agriculture, Water Management, Social Mobilization and Management & Accounts. WCDC is be headed by Deputy Commissioner and Additional Deputy Commissioner has been designated as Project Manager under IWMP. The WCDC members comprise of Technical Expert, Computer Operator and Accountant. As per guideline 3 to 6 full time staff (3 in district with less than 25000 ha project area and 6 in districts with more than 25000 ha project area) would assist the Project Manager. The Project Manager will prepare well defined annual goals against which the performance will be monitored. The WCDC will be financially supported by the DoLR after review of available staff, infrastructure and actual requirement.

Organization of WCDC and its Objective

The primary objective is successful implementation of watershed programme. The organization bears the responsibility to assist and facilitate PIA from time to time. The broad functions of WCDC are as under:

- Providing technical support in planning and implementation of the project.
- Facilitation in preparation of Annual Action Plan.
- Monitoring and of project activities.
- Co-ordination with allied departments.
- Submission of various reports to SLNA.

4.4 Project Implementation Agency

The project Implementing Agencies (PIA), ASCO, Mewat is selected by the State Level Nodal Agency (SLNA) for Integrated Watershed Management Programme (IWMP) in Haryana. In the district Mewat, where the area of development is 25251 ha, a separate dedicated unit, called the Watershed Cell cum Data Centre has been established which will

oversee the implementation of watershed programme. The PIA is responsible for implementation of watershed project who has vast experience in soil and water conservation programs.

PIA will put dedicated watershed development team and will provide necessary technical guidance to the Gram Sabha /Watershed Committee for implementation of development plans for the watershed projects through Participatory Rural Appraisal Exercise.

PIA will also undertake:

a) Community Organization,
b) Trainings for the village communities,
c) Supervise Watershed Development Activities,
d) Inspect & authenticate project accounts,
e) Monitor & review the overall project implementation,
f) Set up institutional arrangements for post project operations and
g) Maintenance and further development of the assets created during the project period.

Table 1. PIA/ Project Implementing Agency

S.No.	Name of the Project	Details of PIA	
1	Gangani Watershed (IWMP II)	i) Type of organization	Govt. Department
		ii) Name of organization	Agriculture Department, Haryana
		iii) Designation & Address	Assistant Soil Conservation Officer, Mewat
		iv) Telephone	
		v) Fax	-
		vi) E-mail	ascomewat@gmail.com

The PIA is well competent to effectively manage this project and has a good rapport with the village community. The watershed committee members are giving them positive response in the preparatory phase. The overall responsibility of

the PIA would be to oversee the project progresses well and to provide technical knowhow as when required. PIA has qualified and highly experienced staff to accomplish this task and take this project forward and attain to a logical conclusion. PIA will be assisted by the Watershed Development Team.

4.4.1 Monitoring Level Staff at PIA Head Office

The highly experienced staff is engaged in the monitoring the project. The technical guidance to field staff from time to time is being provided. Meetings are being periodically held by head office with officials from the Mewat district to apprise themselves of the status of ongoing project.

4.5 Watershed Development Team

The watershed development team (WDT) is an integral part of the PIA. WDT would consist of subject specialists such as Agriculture, Animal Husbandry, Horticulture, Soil & Water Management and Forest. One woman member with experience in Social mobilization is also included in WDT. Assistant Soil Conservation Officer would be team leader of the WDTs. Team Leader will coordinate with other WDT members for smooth implementation of the project. One member of the WDT will be departmental official of the rank ADO (Soil Conservation)/ ADO (Agriculture) who will also be responsible for disbursement of funds along with Secretary Watershed Committee.

WDT will guide the watershed committee in the formulation of watershed action plan. An indicative list of the roles and responsibilities of the WDT would include among others, the following.

a) Constitution of Watershed Committee and its functioning,
b) Organizing and strengthening User groups, Self Help Groups,
c) Mobilizing women to ensure that the perspectives and interests of women are adequately reflected in the watershed action plan
d) Conducting Training and Capacity Building,
e) Common property resource management and equitable sharing

f) Preparing detailed resource development plan including Soil & Water Conservation,
g) Undertake engineering surveys,
h) Prepare engineering drawings and cost estimate for structures to be built.
i) Monitoring, checking, assessing, undertaking physical verification and measurements of the work done
j) Facilitating the development of livelihood opportunities for the landless
k) Maintaining project accounts
l) Arranging physical, financial and social audit of the work undertaken
m) Setting up suitable arrangements for post- project operation, maintenance and future development of the assets created during the project period.

4.6 WATERSHED COMMITTEE DETAILS

The process of formation of watershed committees of all villages has been completed and watershed committees have been formed in all villages. The representation on these committees consists of members from- SC, landless, women and members from self help groups and user groups. The committees would be imparted training for smooth management of the activities related to watershed.

Their representation of various groups is as under:

- Minimum of 50% members from SHGs and UGs, SCs, women and landless.
- One member from Watershed Development Team, especially women member (subject matter specialist in Social Science).

The Govt. of Haryana vide department memo No. PO (IWMP)-2012/1479 dated 05.03.2012 has decided to include the following members as members of the Watershed Committees.

- All alive ex-Sarpanches of concerned Gram Panchayats,

- ❖ Concerned member of Panchayat Samiti,
- ❖ Concerned member of Zila Parishad,

One of the members of Watershed Committees is nominated as Watershed Secretary to perform the following duties:

- ❖ Convening meetings of Watershed Committee, Gram Sabha,
- ❖ Maintaining all records and proceedings of the meetings.
- ❖ Follow up action on all decisions taken in the meetings.
- ❖ Ensuring people's participation.

4.6.1 Formation of Watershed Committees (WC)

The watershed committee has been constituted as per the guidelines para 6.3 (44) after convening a meeting of Gram Sabha. The schedule of the meeting was circulated by the Additional Deputy Commissioner well in advance. The watershed committees were constituted in each village as detailed in **(Table 2).**

Table 2. Watershed Committees (WC) Details

Name of Village	Name of President	Name of Secretary	Name of Members
Bhango	Sh. Ishak	-	Ishak, Ram Rati, Jai Kishan, Shakina, Brahmo Devi, Basir, Satya, Naresh, Sunita, Ikwal, Ramu
Chehalka	Khushideen	Shahun	Khursid Begam, Ushman, Bhajee, Raj Kumar, Hasan, Khurshid, Naresh, Amla, Suleman, Tahir
Kota Khandewla	Mehar Chand	Jagbir	Mehar Chand, Kalawati, Ram Kumar, Rinku, Suresh, Manbir, Satbir, Kamlesh, Pooja, Jagbir, Rambir, Ramesh
Bissar Akbarpur	Sh. Somal	Jai Prakash	Somal, Chandan, Radhe, Ombati, Babu Lal, Sano Rajan, Jagvir, Kamlesh, Parsandi, Jai Prakash, Jagbir, Saleem

Name of Village	Name of President	Name of Secretary	Name of Members
Baghanki	-	-	Krishana, Abhay Singh, Mange Ram, Suresh Devi, Anita, Harkesh, Balbir, Umesh Devi, Zile Singh, Manju Devi, Ashok Kumar, Gajraj Singh
Kherki	-	-	Krishana, Munshi Ram, Randhir, Sarswati, Surender Kaum Balbir Singh, Umesh Devi, Umesh Kumar, Sundri, Surat Singh, Dharam
Mohammadpur Ahir	Sh. Dharamvir	Rajkumar	Dharambir, Om Prakash, Ram Kishan, Kamla, Fateh Singh, Saukir Pal, Shyambati, Kamlesh, Meena Kumari, Raj Kumar, Ram Kishan
Dadu	Smt. Kamlesh	Billoo	Smt. Kamla, Kalisharan, Nanuka, Chanderbhan, Mohender Khursid, Kamlesh, Meena, Resham, Gita
Sarai	Smt. Bimla	Radhe Shyam	Bimla, Budhan, Bhagmal, Patasi, Asharam, Jagpal, Satya, Kamlesh, Radhe Shyam, Dhan Pal, Rishal
Hassanpur Taoru	Smt. Bimla	Mange Ram	Bimla Devi, Naresh, Auham, Bimla, Krishan, Bagda, Sunder Pal, Kamlesh, Mange Ram, Jagdish, Kaka
Pada	Sh. Bhim Singh	Karamvir	Bhim Singh, Mohender Singh, Kartar Singh, Sunder Pal, Kamlesh, Rani Devi, Karambir, Ran Singh Om Prakash
Kalwari	Smt. Rekha	Sh. Sunil Kumar	Rekha, Jai Mal, Phool Singh, Om Bati, Kishan, Jaibir, Kamlesh, Sunita, Laxmi, Sher Singh
Jafrabad	Smt. Farida Begam	Shaid Khan	Faridabad, Janu, Sarudi, Jaituni, Ashok, Harun, Ishak, Kamlesh, Zyad, Sahid Khan, Ushaman, Suleman

Name of Village	Name of President	Name of Secretary	Name of Members
Sheikhpur	Smt. Premwati	Rukumdeen	Prembati, Het Ram, Raju, Shakuntla, Phool Singh, Vijender, Kamlesh, Santa, Safundeen, Bhagwana, Kuldeep
Sabras	Smt. Asgari	Mubarik	Asgari, Hamida, Alijan, Khatuni, Rakesh, Pat Ram, Jai Pal, Kamlesh, Mubarik, Islamudeen, Apurb
Sunthaka	Smt. Rahmati	Shahun	Rahmati, Badshah, Surte, Jai Pal, Kamlesh, Lajmati, Krishan, Ishbar

As per the Government decision, Sarpanch of the village is the chairman of the watershed committee. The Secretary of the Watershed Committee has been appointed by the Watershed Committee in the meeting of Gram Sabha. The Secretary will be paid honorarium and would be independent from the functioning of Panchayat Secretary. The secretary would be dedicated in the project activities and would take care of the watershed supervision and would be fully responsible for organizing the meeting and maintenance of records. The main responsibilities of secretary are as under:

- Convening the meeting and recording the minutes of WC meeting and will be responsible for follow up the decision taken by the WC Committee.
- The secretary will be responsible for financial transactions of the project and will sign the cheques with WDT nominee on the behalf of WC.
- He will motivate the villagers for voluntary contribution and ensure equitable distribution of resources.

4.7 INSTITUTIONAL SETUP AT WATERSHED LEVEL

4.7.1 Self Help Groups

The formation of the self help group in all the villages is underway. It is proposed to form at least 1 self help group in each village. In each village Self Help Groups consisting of 10 to 15 members having common goal are being formed. The members of SHGs would be drawn from very poor families, BPL families, SC families, Land less families, Small and Marginal farmers SHG would be homogeneous in nature and would work together for their socio-economic up-liftment. SHGs need to be imparted. Under the project, each SHGs would be given revolving fund Rs. 25000 each after 6 months of the date of formation. The income generating activities would be identified. For adopting economic activities would depend upon the decision of Self Help Group. Accordingly the Orientation and Trainings for their skill up gradation would be arranged in the project as activity. It is the responsibility of Watershed Committee to form SHGs in their respective villages under the guidance of Watershed Development Team and Project Implementing Agency.

4.7.2 User Groups

The Watershed Committee will constitute user group in the watershed area with the help of the WDT. In each Watershed village, user groups are also being formed. Members of these groups would be the beneficiaries of the Watershed project. User group are formed to manage the activities and also asset created under the programme on the long term basis. These groups would also be homogeneous in nature. User groups shall be given technical support as and when required by Watershed Committee and Watershed Development Team. During the preparatory stage while discussing with the Gram Sabha member it was decided that each group would formulate certain internal rules and have a feeling of ownership with community spirit. The members would be from various categories like landless, small farmer, marginal farmer and large farmer.

CHAPTER- 5

BUDGETING

MICRO WATERSHED WISE/COMPONENTS AND THEIR YEAR WISE PHASING BUDGET UNDER IWMP

IWMP II GANGANI WATERSHED

5.1 BUDGETING

The State Level Nodal Agency will distribute funds to WCDC keeping in view the detailed annual action plan of each micro- watershed. The expenditure under the various component of the project will be carried out as per the guidelines. The activity wise allocations of funds as per the provision of budget components have been work out and exhibited in table. 1. The first step in the budgeting is dividing the cost of project into various components as detailed in the revised common guidelines. It would help the PIA in further identifying activities under different components and allocate appropriate funds.

MICRO WATERSHED WISE / COMPONENT WISE PHASING
YEAR WISE BUDGET PHASING UNDER IWMP II

Area in Hectares and Funds in Rs.

Table 1. Activity wise allocation of funds for Project Village

(BUDGET AT A GLANCE)

Name of the project	Project Area	Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
Gangani Watershed (IWMP II)		4806	57672000	Administrative costs	576720	576720	1730160	1730160	1153440	**5767200**
				Monitoring	0	0	0	576720	0	**576720**
				Evaluation	0	144180	144180	144180	144180	**576720**
				Entry point activities	2306880	0	0	0	0	**2306880**
				Institution and capacity building	0	2883600	0	0	0	**2883600**
				Detailed project report	576720	0	0	0	0	**576720**
				Watershed development works	0	4613760	9227520	9804240	8650800	**32296320**
				Livelihood activities for the asset less persons	0	0	1730160	2883600	576720	**5190480**
				Production system and micro enterprises	0	0	1730160	2306880	1730160	**5767200**
				Consolidation phase	0	0	0	0	1730160	**1730160**
				Total	**3460320**	**8218260**	**14562180**	**17445780**	**13985460**	**57672000**
				Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING
YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and
Funds in Rs.

Table 2. PHASING YEAR WISE (Name of the Micro Watershed: Bhango)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
465	5580000	Administrative costs	55800	55800	167400	167400	111600	**558000**
		Monitoring	0	0	0	55800	0	**55800**
		Evaluation	0	13950	13950	13950	13950	**55800**
		Entry point activities	223200	0	0	0	0	**223200**
		Institution and capacity building	0	279000	0	0	0	**279000**
		Detailed project report	55800	0	0	0	0	**55800**
		Watershed development works	0	446400	892800	948600	837000	**3124800**
		Livelihood activities for the asset less persons	0	0	167400	279000	55800	**502200**
		Production system and micro enterprises	0	0	167400	223200	167400	**558000**
		Consolidation phase	0	0	0	0	167400	**167400**
		Total	**334800**	**795150**	**1408950**	**1687950**	**1353150**	**5580000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING
YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and Funds in Rs.

Table 3. PHASING YEAR WISE (Name of the Micro Watershed: Sundh)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
550	6600000	Administrative costs	66000	66000	198000	198000	132000	**660000**
		Monitoring	0	0	0	66000	0	**66000**
		Evaluation	0	16500	16500	16500	16500	**66000**
		Entry point activities	264000	0	0	0	0	**264000**
		Institution and capacity building	0	330000	0	0	0	**330000**
		Detailed project report	66000	0	0	0	0	**66000**
		Watershed development works	0	528000	1056000	1122000	990000	**3696000**
		Livelihood activities for the asset less persons	0	0	198000	330000	66000	**594000**
		Production system and micro enterprises	0	0	198000	264000	198000	**660000**
		Consolidation phase	0	0	0	0	198000	**198000**
		Total	**396000**	**940500**	**1666500**	**1996500**	**1600500**	**6600000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING

YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and

Funds in Rs.

Table 4. PHASING YEAR WISE (Name of the Micro Watershed: Gangani)
(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
465	5580000	Administrative costs	55800	55800	167400	167400	111600	**558000**
		Monitoring	0	0	0	55800	0	**55800**
		Evaluation	0	13950	13950	13950	13950	**55800**
		Entry point activities	223200	0	0	0	0	**223200**
		Institution and capacity building	0	279000	0	0	0	**279000**
		Detailed project report	55800	0	0	0	0	**55800**
		Watershed development works	0	446400	892800	948600	837000	**3124800**
		Livelihood activities for the asset less persons	0	0	167400	279000	55800	**502200**
		Production system and micro enterprises	0	0	167400	223200	167400	**558000**
		Consolidation phase	0	0	0	0	167400	**167400**
		Total	**334800**	**795150**	**1408950**	**1687950**	**1353150**	**5580000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING
YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and Funds in Rs.

Table 5. PHASING YEAR WISE (Name of the Micro Watershed: Kota Khandewla)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
415	4980000	Administrative costs	49800	49800	149400	149400	99600	**498000**
		Monitoring	0	0	0	49800	0	**49800**
		Evaluation	0	12450	12450	12450	12450	**49800**
		Entry point activities	199200	0	0	0	0	**199200**
		Institution and capacity building	0	249000	0	0	0	**249000**
		Detailed project report	49800	0	0	0	0	**49800**
		Watershed development works	0	398400	796800	846600	747000	**2788800**
		Livelihood activities for the asset less persons	0	0	149400	249000	49800	**448200**
		Production system and micro enterprises	0	0	149400	199200	149400	**498000**
		Consolidation phase	0	0	0	0	149400	**149400**
		Total	**298800**	**709650**	**1257450**	**1506450**	**1207650**	**4980000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING
YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and Funds in Rs.

Table 6. PHASING YEAR WISE (Name of the Micro Watershed: Bissar Akbarpur)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
425	5100000	Administrative costs	51000	51000	153000	153000	102000	**510000**
		Monitoring	0	0	0	51000	0	**51000**
		Evaluation	0	12750	12750	12750	12750	**51000**
		Entry point activities	204000	0	0	0	0	**204000**
		Institution and capacity building	0	255000	0	0	0	**255000**
		Detailed project report	51000	0	0	0	0	**51000**
		Watershed development works	0	408000	816000	867000	765000	**2856000**
		Livelihood activities for the asset less persons	0	0	153000	255000	51000	**459000**
		Production system and micro enterprises	0	0	153000	204000	153000	**510000**
		Consolidation phase	0	0	0	0	153000	**153000**
		Total	**306000**	**726750**	**1287750**	**1542750**	**1236750**	**5100000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING
YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and
Funds in Rs.

Table 7. PHASING YEAR WISE (Name of the Micro Watershed: Baghanki)
(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
416	4992000	Administrative costs	49920	49920	149760	149760	99840	**499200**
		Monitoring	0	0	0	49920	0	**49920**
		Evaluation	0	12480	12480	12480	12480	**49920**
		Entry point activities	199680	0	0	0	0	**199680**
		Institution and capacity building	0	249600	0	0	0	**249600**
		Detailed project report	49920	0	0	0	0	**49920**
		Watershed development works	0	399360	798720	848640	748800	**2795520**
		Livelihood activities for the asset less persons	0	0	149760	249600	49920	**449280**
		Production system and micro enterprises	0	0	149760	199680	149760	**499200**
		Consolidation phase	0	0	0	0	149760	**149760**
		Total	**299520**	**711360**	**1260480**	**1510080**	**1210560**	**4992000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING
YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and
Funds in Rs.

Table 8. PHASING YEAR WISE (Name of the Micro Watershed: Mohmadpur Ahir)
(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
425	5100000	Administrative costs	51000	51000	153000	153000	102000	**510000**
		Monitoring	0	0	0	51000	0	**51000**
		Evaluation	0	12750	12750	12750	12750	**51000**
		Entry point activities	204000	0	0	0	0	**204000**
		Institution and capacity building	0	255000	0	0	0	**255000**
		Detailed project report	51000	0	0	0	0	**51000**
		Watershed development works	0	408000	816000	867000	765000	**2856000**
		Livelihood activities for the asset less persons	0	0	153000	255000	51000	**459000**
		Production system and micro enterprises	0	0	153000	204000	153000	**510000**
		Consolidation phase	0	0	0	0	153000	**153000**
		Total	**306000**	**726750**	**1287750**	**1542750**	**1236750**	**5100000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING
YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and
Funds in Rs.

Table 9. PHASING YEAR WISE (Name of the Micro Watershed: Dadu)
(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
415	4980000	Administrative costs	49800	49800	149400	149400	99600	**498000**
		Monitoring	0	0	0	49800	0	**49800**
		Evaluation	0	12450	12450	12450	12450	**49800**
		Entry point activities	199200	0	0	0	0	**199200**
		Institution and capacity building	0	249000	0	0	0	**249000**
		Detailed project report	49800	0	0	0	0	**49800**
		Watershed development works	0	398400	796800	846600	747000	**2788800**
		Livelihood activities for the asset less persons	0	0	149400	249000	49800	**448200**
		Production system and micro enterprises	0	0	149400	199200	149400	**498000**
		Consolidation phase	0	0	0	0	149400	**149400**
		Total	**298800**	**709650**	**1257450**	**1506450**	**1207650**	**4980000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING
YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and
Funds in Rs.

Table 10. PHASING YEAR WISE (Name of the Micro Watershed: Hassanpur Toaru)
(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
405	4860000	Administrative costs	48600	48600	145800	145800	97200	**486000**
		Monitoring	0	0	0	48600	0	**48600**
		Evaluation	0	12150	12150	12150	12150	**48600**
		Entry point activities	194400	0	0	0	0	**194400**
		Institution and capacity building	0	243000	0	0	0	**243000**
		Detailed project report	48600	0	0	0	0	**48600**
		Watershed development works	0	388800	777600	826200	729000	**2721600**
		Livelihood activities for the asset less persons	0	0	145800	243000	48600	**437400**
		Production system and micro enterprises	0	0	145800	194400	145800	**486000**
		Consolidation phase	0	0	0	0	145800	**145800**
		Total	**291600**	**692550**	**1227150**	**1470150**	**1178550**	**4860000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING
YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and
Funds in Rs.

Table 11. PHASING YEAR WISE (Name of the Micro Watershed: Para)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
415	4980000	Administrative costs	49800	49800	149400	149400	99600	**498000**
		Monitoring	0	0	0	49800	0	**49800**
		Evaluation	0	12450	12450	12450	12450	**49800**
		Entry point activities	199200	0	0	0	0	**199200**
		Institution and capacity building	0	249000	0	0	0	**249000**
		Detailed project report	49800	0	0	0	0	**49800**
		Watershed development works	0	398400	796800	846600	747000	**2788800**
		Livelihood activities for the asset less persons	0	0	149400	249000	49800	**448200**
		Production system and micro enterprises	0	0	149400	199200	149400	**498000**
		Consolidation phase	0	0	0	0	149400	**149400**
		Total	**298800**	**709650**	**1257450**	**1506450**	**1207650**	**4980000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

MICRO WATERSHED WISE/COMPONENT WISE PHASING
YEAR WISE BUDGET PHASING UNDER IWMP

Area in Hectares and Funds in Rs.

Table 12. PHASING YEAR WISE (Name of the Micro Watershed: Jafrabad)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
410	4920000	Administrative costs	49200	49200	147600	147600	98400	**492000**
		Monitoring	0	0	0	49200	0	**49200**
		Evaluation	0	12300	12300	12300	12300	**49200**
		Entry point activities	196800	0	0	0	0	**196800**
		Institution and capacity building	0	246000	0	0	0	**246000**
		Detailed project report	49200	0	0	0	0	**49200**
		Watershed development works	0	393600	787200	836400	738000	**2755200**
		Livelihood activities for the asset less persons	0	0	147600	246000	49200	**442800**
		Production system and micro enterprises	0	0	147600	196800	147600	**492000**
		Consolidation phase	0	0	0	0	147600	**147600**
		Total	**295200**	**701100**	**1242300**	**1488300**	**1193100**	**4920000**
		Percentage of total cost	**6%**	**14.25%**	**25.25%**	**30.25%**	**24.25%**	**100%**

CHAPTER – 6

PREPARATORY PHASES

During the first year, all activities involved by adopting participatory approach and empowerment of local institutions (WC, SHG, and UG). WAPCOS team assumed the role of facilitator during this phase. In this phase, the main activities are as follows:

6.1 AWARENESS GENERATION AND MOTIVATION FOR PARTICIPATION

Fortunately, due to the implementation of earlier watershed management projects and operation of various ongoing soil and water conservation schemes, there has been regular interaction of the departmental staff with the community. Because of positive result of earlier projects, people are responsive and are looking forward for projects intervention. The need for the soil and water conservation works have emerged due to persistent draught, which the area is facing. However, production system need lot of improvement and hence the need of awareness generation and motivation for collective efforts to face the malady of recurrent floods and draught.

6.1.1 Collection of Base Line Data and Hydrological Data

As explained earlier, baseline data from all possible sources is collected for the purpose of not only future impact assessment but also to design project intervention. Most of this was done at the PPR and DPR stages, which forms integral part of the preparatory phase. In addition, data on rain fall amount and distribution, weather conditions and frequency of floods and drought was compiled at DPR stage.

6.1.2 Formation of Village Level Institutions

It has been decided by the state that project activities shall be implemented throughout the watershed committees (WCs). In collaboration with the department, the village level WCs were formed by holding well-attended meeting in which all settlement and section of the society were represented. Due representation was given to women, landless and BPL families as per norms issued by DoLR.

The self- Help Groups were formed during earlier projects but most of them are inactive and non – functional. These groups shall be revived and new ones were to be formed depending upon willingness of the interest groups. Considering and understanding the type of activities these groups wish to pursue and their capacity building requirements were given importance and duly noted.

6.1.3 Preparation of DPR

PRA exercise and comprehensive data base have been carried out for DPR preparation. Meetings were held at district level, micro-watershed wise and village wise by involving the concerned departments and members of Gram Sabha on this aspect**.** The Draft Project Report was prepared on the basic information generated from primary and secondary sources. This also includes the outcome of participatory rural appraisal and outcome of transect walk and stakeholders' discussions. A list of scope of works that finally emerged was prepared. Based on the technical survey, detailed cost estimates were prepared for components including resource management, entry point activities and production system. A broad frame work for capacity building at all levels as per the guidelines of DoLR was prepared. The livelihood opportunities which emerged from local product and market facility were analyzed and outlines of the same were included. Since the financial provisions were decided according to the area proposed to be covered, these provisions were distributed across project activities. The project activities are sequenced into three phase's namely preparatory phase, work phase, consolidation and withdrawal phase. So, the activities were segregated in the sequence and explained in detail. Finally the details about budget and its spilt up into annual action plan were also attempted. Various maps using GIS were created likes Base map, Present Land Use, Geo-hydrological, Micro Watershed, Drainage, Contours, Slope, Soil

Classification, Land Capability Classification, Ground Water Depth and Quality, Proposed and existing Activities of works. All the works proposed in the DPR are location specific and are as per the local demand and socio- economic conditions of the watersheds.

Strength, Weakness, Opportunities, Threat (SWOT) analysis of IWMP

A critical analysis of main strength of the proposed project, evident weaknesses, opportunities available for successful implementation and scope of achieving set objectives was made. Attention is also paid to possible threat against which sufficient inbuilt safeguards are provided. Such an analysis was done for the project in hand and summaries of observations were made and are mentioned below for the all seven watersheds in Mewat district.

Strengths

- Moderate rain fall
- Strong linkage with national and state level institutes and KGK for capacity building and technical guidance.
- Most families are engaged in animal husbandry activities.
- Availability of drinking water.
- Good response to earlier watershed management programmes.
- Local residents are active in micro enterprises.

Weaknesses

- Erratic rainfall
- Lack of good quality fodder.
- Lack of advanced cattle breed.
- Low level of milk production.
- Lack of knowledge base regarding scientific cattle management.

- Prevalence of soil erosion
- No organized micro enterprises activities.
- Lack of technical skills.

Opportunities

- Rain Water harvesting/recharging for production.
- Promotion of organic farming.
- Promotion of horticultural activities (dry land plants).
- Provide training on dairy farming and other income generating activities.
- Promotion of nursery raising and pasture development.
- There would be horizontal integration and convergence of development programmes being organized and run by govt.

Threats

There are few negative issues that may have adverse effect

- Unreliable rainfall.
- Absence of assured irrigation.
- Lack of cooperation and contribution from local residents.
- Low literacy rate in the project area.
- Rapid climate change affecting crops.
- Lack of awareness of Dairy farming as a commercial activity.
- The area is underlain by marginal to saline ground water.
- Frequent droughts.

CAPACITY BUILDING- 5%

6.2 Capacity Building

1. Introduction

Watershed development is conceived as a strategy for protecting livelihoods of people inhabiting fragile ecosystems, which over period of time have become subject to multidimensional land degradation. Main stress has been to ensure availability of water for drinking and irrigation to support agro-horti-forestry operation vis-à-vis raise income level and provide adequate employment opportunities for communities living in such areas of concerns. As an intervention Integrated Wasteland Development is nearly 20 years old. The initiatives have been subject to periodic reviews by expert committees with a broader view to improve upon its strategy and components as well as match with the growing socio-ecological requirements

Para 9.VIII of common guidelines necessitate capacity building and training of all functionaries and stakeholders involved watershed programme on a war footing with definite action plan, requisite professionalism and all round competence.

2. Vision

A sincere effort to provide required professionalism and competence to the stakeholders associated with planning and implementation of IWMP in the state. This would include organisation development, human resource development, cooperation and network development and institutional development, all seen as a continuous process enabling functionaries to enhance their knowledge and skills and to develop the required orientation and perspectives thereby becoming more effective in discharging their roles and responsibilities.

3. Need

The term Capacity Development is understood as the development of people, organizations and society capability to manage resources effectively and efficiently in order to realize their own goals on a sustainable basis. In this context, four dimensions have to be distinguished:

- The development of the human resource or personnel development.
- The strengthening of the effectiveness and efficiency of organization or organizational development.
- The strengthening of cooperation between organizations and network development.
- The promotion of institutional frameworks for development.

Further, 47 projects have already been sanctioned in 2011-2012 in the state covering around 248 micro watersheds measuring 179531 hectares of area. The implementation of these new projects under the umbrella of common guidelines is reported to be in the initial stage under preparatory phase. The establishment of desired institutional setup at all levels, required level of awareness for ensuring effectiveness of all institutions and community participation is therefore necessitated for conclusive participation by all.

This also necessitates a comprehensive package to provide appropriate knowledge for speedy implementation of the projects in the state particularly in the districts.

4. Rationale

Para 81 of common guidelines for watershed development lays special emphasis on the following key elements of Capacity building strategy.

- Dedicated & decentralized institutional support & delivery mechanism
- Annual Action Plan for Capacity Building

- Pool of resource persons
- Well prepared training modules and reading materials
- Mechanism for effective monitoring and follow-up.

Keeping in firsthand experience of the state in launching 47 projects under IWMP and current state of planning and implementation under preparatory phase is to primarily prepared and build the capacity of different principal stakeholders of projects to speed up further implementation and also lay a strong foundation for subsequent phases.

5. Objectives

The main objectives of the current action plan for ongoing 13 projects are outlined as follows:-

- Create common understanding on different features and provisions of common guidelines as well as instructions directions issued from time to time by Central and State Governmental agencies.
- Develop proper conceptual understanding about integrated participatory watershed management including other issues such as equity, environmental and social sustainability among all implementing agencies at project and village levels, PRIs and local communities (**KNOWLEDGE**).
- Build necessary and required skills and managerial competence of all stakeholders about planning, implementation and management of various project activities using participatory approach (**SKILLS**).
- Help institutional growth of watershed committees at GP level.
- Strengthening community participation, ensuring positive involvement of communities and improvement of socio economic conditions in watershed areas (**ATTITUDES**).

Table 1. Statement of Targets under Proposed Training Action Plan at Micro Watershed Level to be conducted by WDT members of Mewat District

Sl. No.	Title of Training Programme and Duration	Level of Participants	Total persons	Trainees Per Programme	Number of Programmes
01	District Level Sensitization Workshop for Watershed Committees. **One Day**				
	Mewat	Members of Watershed Committees @ 10 per committee would also include accompanying WDT Members.	430	200-250	2
02	Block Level Functional Programmes for Secretaries of Watershed Committees. **Two Days**				
	Mewat	Secretaries of Village Watershed Committees	43	20-25	2
03	Project Level Sensitization Camps for WC **One Days**				
	Mewat	Members of Watershed Committees @ 10 Persons (Tentative) per WC	430	50	9
04	Village Level Awareness Camps on IWMP at Micro Watershed Level for User Groups **One Day**				
	Mewat	Approximately 50 prospective user groups per micro watershed.	950	50	19
05	Block Level Functional Programmes for SHGs [Leader, Secretary and Treasurer] under IWMP **One Day**				
	Mewat	Three persons (Leader, Secretary and Treasurer) per Self Help Group @ around one SHG per village.	126	50	3

Note: Training programmes under Sl. No. 01 are proposed to be conducted by HIRD in collaboration with SLNA and WCDCs.

6. Training Methods

A group of selected Watershed Development Team members would be trained on various methods to ensure that they are able to conduct the proposed interventions effectively with the help of some of the following methods.

- Interactive learning.
- Experience Sharing.
- Experimental Learning.
- Presentation of case studies.
- Classroom deliberations.
- Group [structured] exercises and discussions.

7. Tools

- Projectors
- Flip Charts
- Electronic films
- Print Material
- Other IEC material.

8. Resource Persons

8.1. Internal

Around two persons per WDT identified from the initial training activities by HIRD, Nilokheri would be trained on various aspects for designing and conducting the training programmes. It is expected that each WDT members would be required to function as a internal resource person for the proposed training programmes. Technical experts from each WCDC and PIA would also function as facilitators in the proposed training activities.

8.2. External

Further, in order to make the proposed interventions meaningful for achieving the broader objectives efforts would be made to liaison with various experts from district level line departments, agencies and state level institutions including HIRD as per the need of the programme.

9. Fund Requirement

The **approved revised norms for training for PRIs and RD functionaries" by MoRD, GoI in 2010** have been strictly used [for fixed and variable costs].

Table 2. Statement showing funds Requirement for training on IWMP in Haryana (Preparatory Phase – District Level)

Sr. No	Training Programmes for SLNA, WDT, PIA , Field Functionary , WDC member's , SHG & UG organize by HIRD	Total Funds
1	District Level Sensitization Workshop(s) for Watershed Committees	34987
2	Block Level Functional Programmes for Secretaries of Watershed Committees. Two Days	4556
3	Village Level Sensitization Camps for WC One Days	24366
4	Village Level Awareness Camps on IWMP at Micro Watershed Level for Prospective User Groups One Day	32748
5	Block Level Functional Programmes for SHGs [Leader, Secretary and Treasurer] under IWMP One Day	9032
	Total	**105689**

Table 3. Micro Watershed Wise Exposure cum training Visit for SLNA, WDT, PIA , Field Functionary , WDC, SHG & UG Members of IWMP II (Mewat)

S. No.	Target Group	Training Topics	No. of days	Budget per camp	No. of Camps	No. of Participants per camp	Cost for all participants per day	Cost per participant/ per day	Cost per person	Total Budget
1	Self Help Groups- 2 SHGs- micro watershed level	Orientation on IWMP, SHGs cum Exposure Visit	2	22000	5	11	55000	1000	2000	110000
2	User groups from each micro watershed	NRM, Post Project Management etc. –Exposure Visit	2	22000	5	11	55000	1000	2000	110000
3	Sub watershed Level- WDT Members	Part II-Module I to V-Exposure Visit Outside State- Conceptual, Technical, Social, Management of Finance, Monitoring and Evaluation.	4	66000	5	11	82500	1500	6000	330000
4	Sub watershed Level- PIA Members	Exposure Visit- Within Fundamentals of Watershed, Finance Management, Final Report on WDP etc	2	33000	5	11	82500	1500	3000	165000
5	District Level-WDC	Exposure visit to successful watershed/ University.	2	22000	5	11	55000	1000	2000	110000

S. No.	Target Group	Training Topics	No. of days	Budget per camp	No. of Camps	No. of Participants per camp	Cost for all participants per day	Cost per participant/ per day	Cost per person	Total Budget
6	District Level-Line Deptt., WDC	Exposure visit to successful watersheds within state.	2	22000	5	11	55000	1000	2000	110000
7	SLNA and District Level Controlling Officers	Exposure visit to successful watersheds outside state	4	66000	5	11	82500	1500	6000	330000
Total			**18**		**35**	**77**				**1265000**

Table 4. Farmer's / Beneficiaries training camps with Extension Programmes of IWMP II (Mewat)

S. No.	District	No. Micro watersheds	No. of Camps/ Year/ Micro watershed	Total No. of camps per Year	Total No. of camps for 5 Year's	Amount of per Camp	Amount per Micro watershed	Total Budget
1.	Farmer Training Camp in each season	11	2	22	110	12,000	1,20,000	13,20,000
2.	Propaganda & Documentation (Puppet show, documentary movies show, video-graphy, Photography, wall Painting, Display Board, pamphlets, leaf lets. Etc)	11	1	11	55	5000	25,000	2,75,000
3	Contingency charges							82,089
	Total							**16,77,089**

i) **Training Programmes for SLNA, WDT, PIA , Field Functionary , WDC member's , SHG & UG organize by HIRD = Rs. 1,05,689/-**

ii) **Micro Watershed Wise Exposure cum training Visit For SLNA, WDT, PIA , Field Functionary , WDC, SHG & UG Members**
= Rs. 12, 65,000/-

iii) **Farmer's / Beneficiaries training camps with Extension Program's = Rs. 16,77,089/-**

Grand Total = Rs. 28, 83,600/-

6.2.1. EXPECTED OUTCOME OF CAPACITY BUILDING

- All principal stakeholders would be covered under proposed training interventions by March, 2013.
- The knowledge level of different stakeholders on various provisions of Common Guidelines will increase to a significant level.

- The skill level of the principal stakeholders will be improved in managing watershed projects in consonance with the provisions of common guidelines and state government instructions.
- The programmes will help in ensuring that all stakeholders/agencies/institutions work with positive attitudes in order to utilize the benefit of the projects in fulfilling the objectives set forth.
- Programmes will create a sense of responsible partnership amongst various stakeholders.
- The programmes will also help in further identifying areas for future interventions.
- Improved participation of different stakeholders leading to speedy implementation of watershed development work phase.
- Experiences would help in consolidating other gaps for better planning and management of Capacity Building and Training interventions under new projects in future.

6.3 Entry Point Activities 4%

EPA activities are taken up under the watershed to build rapport with village community at the beginning of the project, generally certain important works which are in urgent demand of the local community are taken up. A group discussion was conducted in the Gram Sabha meeting/watershed committee regarding EPA activities. It was conveyed to the Gram Sabha that an amount of **Rs. 23, 06,880/-** was provided for EPA. The provision of IEC material for community will be met under EPA. The stake holders discussed the various activities which they felt is important but after the discussion the following activities were finalized. The convergence with the other project can also be undertaken.

Table 5. Entry Point Activities in Gangani Watershed (IWMP II)

(Rs. In Lacs)

Sr.No.	Block	Name of Project	No. of EPAs Identified	No. of EPAs Completed	No. of EPAs in progress	Name/Nature of EPA	Location	Expenditure
1.	Tauru	Gangani Watershed (IWMP II)	18	18	Nil	Roof Top Rain Water Harvesting	Hasanpur	165001
						Roof Top Rain Water Harvesting	Kota Khandewla	98844
						Roof Top Rain Water Harvesting	Bissar Akbarpur	128969
						Sullage water channel	Sundh	215198
						Sullage water channel	Sundh	44856
						Sullage water channel	Dadu	194026
						Sullage water channel	Sarai	216358
						Sullage water channel	Pada	208363
						Water Tank	Bissar Akbarpur	63300
						Cattle Crust	Bhango	24200
						Cattle Crust	Mohmadpur Ahir	24200
						Cattle Crust	Mohmadpur Ahir	24200
						Cattle Crust	Hassanpur	24200
						Water Tank	Kota Khandewla	63300
						Roof Top Rain Water Recharging system Repair	Kota Khandewla	
						Total		**14.95**

Total project Cost @ 4%= Rs. 23, 06,880/-

CHAPTER- 7

WORK PHASE

7.1 WATERSHED DEVELOPMENT WORKS - 56%

The Works identified after the detailed investigation and survey of the Project Area and identified works were discussed with the team of experts comprising of PIA associated with the field officers working in the area, Hydrologist and supported by Experts from Livelihood, Agriculture, Animal Husbandry and Horticulture. Participatory approach has been adopted to identify the activities under the project. The detailed discussions were held with watershed committees and works identified along with villagers after making visits to identified sites. The works mainly relate to soil and water conservation activities like Dug out Pond, Cement Stone Masonry structures (Inlet & Outlet), Earthen Embankment with pucca outlet, Small Earthen Embankments, Gully Plugs, Check Dams, Percolation embankments, Marginal Bandhs and Percolation ponds etc. The proposed project proposals were presented in the Gram Sabha meeting as per the schedule and were approved with certain changes. The works thus identified are given in the attached sheets along with estimates – micro watershed/village wise.

Proper publicity about the proposed project proposal through brochure , pamphlet, wall writing at common place must be carried out in the project areas.

Drainage line Treatment

Construction of Cement Stone/Brick Masonry structure /Inlet/ Outlet/ Drainage Channel/ Protection Wall

Existing System: The project area has an undulated and hummocks which are restrict to field operations to stabilized agriculture fields/ habitation located along the banks of ponds and agriculture land. The main objectives of these structures are in situ moisture conservation, soil conservation, field boundary stabilization, land leveling and safe disposal

of run off to protect agriculture fields. The land holding is small and loss of land badly affects the economy of the family. The projects executed under DDP/DPAP, stone masonry protection walls were constructed at strategic locations which saved the land of the farmers and banks of village ponds.

Proposed System: Run-off from upper area shall be reduced by Afforestation and rain water harvesting/ Earthen Structures for recharge which would also check the soil erosion. As per need, earthen embankment with pucca outlet are proposed at strategic locations on field boundaries of undulated area to protect the farm lands, bank of ponds, habitation and infrastructure.

7.2 Renovation for capacity enhancement and construction of new Ponds

Existing System: There is an acute scarcity of water for livestock as village ponds dry out in summer months. Most ponds are silted up and need desiltation. Some are leaking from sides and water is lost quickly. Most of ponds do not have proper inlets, out lets and ramps for water disposal. There is genuine demand for renovation for capacity enhancement construction of new ponds in the area.

Proposed Activity: Renovation and construction of new pond for increasing pondage are proposed. The provision for construction of inlet, outlet, ramp and protection walls are the basic need by project stakeholders which has been provided. In some villages, the constructions of new ponds are proposed, subject to availability of land and funds. In summer months, it is widely held that buffaloes must spend 3 to 4 hours in pond for cooling which save the animal from heat stress. Hence, there was much demand of ponds renovation for increase pondage capacity. Ponds as such are the best source of rainwater conservation and ground water recharge.

Gram Panchayat spend much money on renovation under different schemes but due to paucity of funds, works are taken up in piece meal and main works of protection measures are ignored. The stakeholders gave high priority for the construction of protection measures as lot of water was leaking from sides and cutting of banks by waves and animal intervention to reduce capacity of pond. In most villages, the first priority of the entire community is the construction of

protection measures of the ponds as these are considered sacred due to the presence of historic village temples nearby. Some of the works had been covered under entry point activities. It is also stressed to use the labor component from MGNREGA and material from provision from the IWMP so that maximum amount of rainwater is harvested.

7.3 Earthen Embankment with pucca outlet

Present Status: The most of area covered in project are undulated, sloppy, hilly and dune. There are feasible sites where Earthen Embankment with pucca outlet can be constructed to reduce erosion hazard and recharge of ground water. But this is not viable at individual level so the provision for as common cause has been provided in community basis.

Suggested Interventions: In quite a number of villages, sites have been identified for Earthen Embankment with pucca outlet, etc and provision has been kept as per the allocation of funds. In some watershed village paths have converted in nalas due to erosion to be strengthened by construction of earthen embankments with pucca outlet.

This phase has been started after the completion of the preparatory phase is by and large complete. It is considered as the heart of the program in which the DPR proposals shall be implemented in participatory mode. In this watershed management program, it was planned to rehabilitate the degraded watersheds by the control of runoff and soil loss by biological and masonry works for conservation measures. In this water stressed project area, rainwater harvesting to reduce soil erosion, recharge ground water, and improve moisture regime and use of harvesting water for human and livestock use. This was coupled with land development, production improvement, and promotion of subsidiary occupations for improved livelihoods. Many village ponds are silted, several are filled with filth and sewage water and giving foul smell. Repair renovation and protection walls of village ponds has emerged as an important activity. The scope of integrated watershed regeneration/rehabilitation works which emerged from the PRA is now presented.

Sample estimates are as follows:

Activities under NRM (56%) Micro Watershed Wise (IWMP II Mewat) is given below and the proposed Action Plan/ Treatment Plan map shown in **Annexure X.**

Name of Project: IWMP II		**Name of Watershed: Gangani**							**Name of Village : Kalwari**		
Sr. No.	Nature of work	Location		Catchment Area (Ha)	Command Area (Ha)	Submergence Area (sqm)	Storage Capacity (cum)	Unit	No. of work		Estimate cost Rs. in lacs	Objective
		Latitude (N)	Longitude (E)						Phy/ Area	Unit cost (Rs. in Lacs)		
1	Renovation of pond construction of Ramp & Retaining wall	28˚27.611'	76˚91.854	10 .00	2.00	4727	7090	No.	1 no	3.00	3.00	To provide drinking water for animals, Irrigation to fields, checking of soil erosion.& Ground water recharging.
2	Renovation of pond construction of Ramp & Retaining wall	28˚27.119'	76˚91.584	8.00	1.00	3781	5672	No.	1 no	3.00	3.00	To provide drinking water for animals, Irrigation to fields , checking of soil erosion.& Ground water recharging.
3	Roof Rain water harvesting in G.SS School	28˚27.225'	76˚91.575'	0.09	-	-	-	No.	1 no	3.00	3.00	Water harvesting & Ground water recharging.
4	Roof Rain water harvesting in G. G.M School	28˚27.208'	76˚91.750	0.05	-	-	-	No.	1 no	2.00	2.00	Water harvesting & Ground water recharging
5	Plantation in school, Panchayat land & Mandir	28˚27.208' 28˚27.113'	76˚91.750' 76˚91.638'	-	-	-	-	Hect.	2.0	0.40	0.80	To increase biomass cover
	Total cost										11.80	
	Available funds										11.09	

	Convergence	0.71	

Name of Project : IWMP II			**Name of Watershed: Gangani**					**Name of Village : Sheikhpur**			
Sr. No.	Nature of work	Location		Catchment Area (Ha)	Command Area (Ha)	Submergence Area (sqm)	Storage Capacity(cum)	Unit	No. of work		Estimate cost Rs. in lacs	Objective
		Latitude (N)	Longitude (E)						Phy / Area	Unit cost Rs.in.Lacs		
1	Renovation of pond construction of Ramp & Retaining wall	28˚25.747'	76˚92.925	12 .00	-	5672	8508	No.	1 no	5.00	5.00	To provide drinking water for animals, Irrigation to fields , checking of soil erosion.& Ground water recharging
2	Diversion channel / pipeline	28˚25.798'	76˚93.090	8.00	-	-	-	No.	1 no	2.00	2.00	To check flooding in low lying area and to feed water to village pond.
3	Land leveling * in panchayat land	28˚26.310'	76˚93.036'		-	-	-	Hect.	2.0	0.75	1.50	To level the panchayat land & to increase the income of the panchayat.
	Total cost										8.50	
	Available funds										6.38	
	Convergence										2.12	

* **Before executing detail topographic survey and assessment must be carried out before implementation.**

Name of Project: IWMP II		**Name of Watershed: Gangani**						**Name of Village : Dadu**				
Sr. No.	Nature of work	Location		Catchment Area (Ha)	Command Area (Ha)	Submergence Area (sqm)	Storage Capacity(cum)	Unit	No. of work		Estimate cost Rs. in lacs	Objective
		Latitude (N)	Longitude (E)						Phy/ Area	Unit cost Rs.in. Lacs		
1	Renovation of pond construction of Ramp & Retaining wall near old Bundh	28˚17.267'	76˚57.803'	15 .00	4.00	7090	10635	No.	1 no	5.00	5.00	To provide drinking water for animals, Irrigation to fields , checking of soil erosion.& Ground water recharging.
2	Renovation of pond construction of Ramp & Retaining wall near approach road.	28˚16.895'	76˚57.856'	10 .00	-	4727	7090	No.	1 no	3.00	3.00	To provide drinking water for animals,checking of soil erosion.& Ground water recharging.
3	Diversion channel / pipeline on the face of Naval's plot	28˚17.228'	76˚57.799'	3.00	-	-	-	No.	1 no	3.00	3.00	To check flooding in low lying area and to feed water to village pond.
4	Land leveling * in panchayat land	28˚16.897'	76˚57.849'	-	-	-	-	Hect.	3.0	0.75	2.25	To level the panchayat land & to increase the income of the panchayat.
	Total cost										13.25	
	Available funds										12.43	
	Convergence										0.82	

***Before executing detail topographic survey and assessment must be carried out before implementation.**

Name of Project IWMP II		**Name of Watershed: Gangani**							**Name of Village : Sunthaka**		
Sr. No.	Nature of work	Location		Catchment Area (Ha)	Command Area (Ha)	Submergence Area (sqm)	Storage Capacity (cum)	Unit	No. of work		Estimate cost Rs. in lacs	Objective
		Latitude (N)	Longitude (E)						Phy / Area	Unit cost (Rs.in.Lacs)		
1	Excavation of pond construction of Ramp & Retaining wall	28˚16.111'	76˚56.998'	8 .00	-	3700	5600	No.	1 no	3.00	3.00	To provide drinking water for animals, checking of soil erosion.& Ground water recharging
2	Diversion channel / pipeline	28˚15.925'	76˚56.853'	5.00	-	-	-	No.	1 no	2.00	2.00	To check flooding in low lying area and to feed water to village pond.
Total cost											5.00	
Available funds											4.03	
Convergence											0.97	

Name of Project IWMP II		**Name of Watershed: Gangani**									**Name of Village : Beri Nifsi**
Sr. No.	Nature of work	Location		Catchment Area (Ha)	Command Area (Ha)	Submergence Area (sqm)	Storage Capacity(cum)	Unit	No. of work		Estimate cost Rs. in lacs	Objective
		Latitude (N)	Longitude (E)						Phy / Area	Unit cost (Rs.in .Lacs)		
1	Renovation of pond construction of Ramp & Retaining wall near habitation.	28˚16.420'	76˚56.018'	15 .00	-	7100	10600	No.	1 no	5.50	5.50	To provide drinking water for animals, checking of soil erosion.& Ground water recharging
2	Land levelling * in panchayat land	28˚16.399'	76˚56.977'	-	-	-	-	Hect.	1.0	0.75	0.75	To level the panchayat land & to increase the income of the panchayat.
Total cost											6.25	
Available funds											5.04	
Convergence											1.21	

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Name of Project IWMP II		**Name of Watershed: Gangani**						**Name of Village : Bissar Akbarpur**			
Sr. No.	Nature of work	Location		Catchment Area (Ha)	Command Area (Ha)	Submergence Area (sqm)	Storage Capacity (cum)	Unit	No. of work		Estimate cost Rs. in lacs	Objective
		Latitude (N)	Longitude (E)						Phy / Area	Unit cost (Rs.in.Lacs)		
1	Excavation of pond construction of Ramp & Retaining wall near Mandir	28˚18.114'	76˚57.208'	14 .00	1.00	6617	9926	No.	1 no	5.00	5.00	To provide drinking water for animals, Irrigation to fields , checking of soil erosion.& Ground water recharging
2	Renovation of pond construction of Ramp & Retaining wall near school.	28˚18.244'	76˚56.738'	6.00	-	2836	4254	No.	1 no	3.00	3.00	To provide drinking water for animals, checking of soil erosion.& Ground water recharging
3	Roof Rain water harvesting in G.Middle School	28˚18.101'	76˚56.991'	0.05	-	-	-	No.	1 no	2.00	2.00	Water harvesting & Ground water recharging.
4	Water harvesting / Percolation structure near on the way of Kherki .	28˚18.208'	76˚56.740'	40.00	5.00	18907	28360	No.	1 no	12.00	12.00	Water harvesting & Ground water recharging, Check of soil erosion and Irrigation purpose.
5	Renovation / Desilting of old Silt Detention Dam.	28˚18.303'	76˚56.667'	8.00	-	3781	5672	No	1 no	3.00	3.00	Water harvesting & Ground water recharging, Check of soil erosion.
6	Plantation in school,Panchayat land.	28˚18.098' 28˚27.113'	76˚56.951' 76˚91.638'	-	-	-	-	Hect.	2.0	0.40	0.80	To increase biomass cover

7	Gully plug	28˚18.110'	76˚56.551'	6.00	-	2836	4254	No	no 3	1.00	3.00	Water harvesting & Ground water recharging, Check of soil erosion.
8	Check Dam	28˚18.180'	76˚56.680'	12.00	-	-	-	Cu m	125	0.02	2.50	Water harvesting & Ground water recharging, Check of soil erosion.
9	Land leveling * in Panchayat land.	28˚18.098'	76˚56.951'	-	-	-	-	Ha	2.0	0.75	2.00	To level the panchayat land & to increase the income of the panchayat.
	Total cost										33.30	
	Available funds										28.60	
	Convergence										4.70	

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Name of Project IWMP II		**Name of Watershed: Gangani**						**Name of Village : Sarai**				
Sr. No.	Nature of work	Location		Catchment Area (Ha)	Command Area (Ha)	Submergence Area (sqm)	Storage Capacity(cum)	Unit	No. of work		Estimate cost Rs. in lacs	Objective
		Latitude (N)	Longitude (E)						Phy/ Area	Unit cost Rs.in.Lacs		
1	Renovation of pond construction of Ramp & Retaining wall near Samsan Ghat	28˚17.846'	76˚58.588'	16 .00	1.00	7600	11300	No.	1 no	3.00	3.00	To provide drinking water for animals, Irrigation to fields , checking of soil erosion.& Ground water recharging.
2	Diversion channel / pipeline	28˚17.812'	76˚58.617'	5.00	-	-	-	No.	1 no	2.00	2.00	To check flooding in low lying area and to feed water to village pond.
3	Land Levelling *	28˚17.650'	76˚58.525'	-	-	-	-	Hect.	3.0	1.50	2.00	To level the panchayat land & to increase the income of the panchayat.
Total cost											7.00	
Available funds											6.05	
Convergence											0.95	

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Name of Project IWMP II		**Name of Watershed: Gangani**									
No.	Nature of work	Location		Catchment Area (Ha)	Command Area (Ha)	Submergence Area (sqm)	Storage Capacity(cum)	Unit	No. of work		Estimate cost Rs. in lacs	Objective
		Latitude (N)	Longitude (E)						Phy/ Area	Unit cost Rs.in. Lacs		
1	Excavation of pond construction of Ramp & Retaining wall at near Margina	28˚19.302'	76˚57.556'	11 .00	-	5199	7799	No.	1 no	3.00	3.00	To provide drinking water for animals, checking of soil erosion.& Ground water recharging.
2	Renovation of pond construction of Ramp & Retaining wall near Mandir	28˚19.008'	76˚58.147'	13.00	2.00	6145	9217	No.	1 no	5.00	5.00	To provide drinking water for animals ,checking of soil erosion.& Ground water recharging
3	Check Dam	28˚18.959'	76˚58.233'	17.00	-	-	-	Cum	350	0.02	7.00	Water harvesting & Ground water recharging, Check of soil erosion.
4	Marginal bundh north of village	28˚19.339'	76˚57.711'	6.00	-	2836	4254	No.	1 no	3.00	3.00	Soil and Water conservation measures.
5	Gully plug north of village	28˚19.359'	76˚57.655'	4.00	-	1891	2836	No	3 no	3.88	3.88	Water harvesting & Ground water recharging, Check of soil erosion.
6	Embankment / bundh repairing	28˚19.439'	76˚57.885'	8.00	-	3781	5672	Hect.	2.0	6.00	6.00	For control of Soil erosion and insitu moister conservation.
7	Land leveling * in Panchayat land. On the hill.	28˚19.001'	76˚57.410'	-	-	-	-	Hect.	7.50	3.20	3.20	To level the panchayat land & to increase the income of the panchaya
	Total cost										31.08	
	Available funds										27.90	
	Convergence										3.18	

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Name of Project IWMP II		**Name of Watershed: Gangani**							**Name of Village : Gangwani**			
Sr. No.	Nature of work	Location		Catchment Area (Ha)	Command Area (Ha)	Submergence Area (sqm)	Storage Capacity(cum)	Unit	No. of work		Estimate cost Rs. in lacs	Objective
		Latitude (N)	Longitude (E)						Phy/ Area	Unit cost (Rs. In Lacs)		
1	Renovation of pond construction of Ramp & Retaining wall. At the north side of village	28˚18.268'	76˚58.578'	13.00	1.00	6145	9217	No	1 no	4.00	4.00	To provide drinking water for animals, checking of soil erosion.& Ground water recharging
2	Renovation of pond construction of Ramp at the north side of village	28˚17.240'	76˚58.510'	16.00	2.00	7563	11344	No.	1 no	3.00	3.00	To provide drinking water for animals, checking of soil erosion.& Ground water recharging
3	Excavation of pond construction of Ramp & Retaining wall.At the north side of village	28˚17.536'	76˚58.980'	11.00	1.00	5199	7799	No.	1 no	5.00	5.00	To provide drinking water for animals, checking of soil erosion.& Ground water recharging
4	Renovation / Desilting of old Silt Detention Dam.	28˚18.235'	76˚58.512'	9.00	-	4254	6381	No.	2 no	3.00	6.00	Water harvesting & Ground water recharging, Check of soil erosion.
5	Water harvesting / Percolation structure / Embankment	28˚18.130'	76˚58.422'	45.00	-	21270	31905	No.	2 no	3.00	6.00	Water harvesting & Ground water recharging, Check of soil erosion..
6	Gully plug Construction of new and Desilting of old	28˚17.136'	76˚56.310'	3.00	-	1418	2127	No	3 no	1.50	4.50	Water harvesting & Ground water recharging, Check of soil erosion.

7	Check Dam	28˚18.180'	76˚56.680'	12.00	-	-	-	cu-m	125	0.02	2.50	Water harvesting & Ground water recharging, Check of soil erosion.
8	Land levelling * in Panchayat land.	28˚18.308'	76˚58.670'	-	-	-	-	Hect.	2.0	0.75	1.50	To level the panchayat land & to increase the income of the panchayat.
	Total cost										32.50	
	Available funds										31.20	
	Convergence										1.30	

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Name of Project IWMP II		**Name of Watershed: Gangani**						**Name of Village : Mohammadpur Ahir**				
Sr. No.	Nature of work	Location		Catchment Area (Ha)	Command Area (Ha)	Submergence Area (sqm)	Storage Capacity(cum)	Unit	No. of work		Estimate cost (Rs. in lacs)	Objective
		Latitude (N)	Longitude (E)						Phy/ Area	Unit cost (Rs. in Lacs)		
1	Excavation of pond construction of Ramp & Retaining wall. At the north	28˚17.027'	76˚58.661'	18.00	1.50	8500	12700	No	1 no	6.00	6.00	To provide drinking water for animals, checking of soil erosion.& Ground water recharging.
2	Roof Rain water harvesting in G.SSSchool	28˚08.741'	77˚20.658'	0.05	-	-	-	No.	1 no	3.50	3.50	Water harvesting & Ground water recharging.
3	Plantation in school,Panchayat land.	28˚08.741'	77˚20.658'	-	-	-	-	Hect.	1.0	0.40	0.40	To increase biomass cover.
4	Land leveling * in Panchayat land.	28˚17.046'	76˚58.721'	-	-	-	-	Hect.	26.0	0.75	19.50	To level the panchayat land & to increase the income of the panchayat.
	Total cost										29.40	
	Available funds										28.60	
	Convergence										0.80	

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Name of Project IWMP II												**Name of Watershed: Gangani**	**Name of Village : Bhangoh**
Sr. No.	Nature of work	Location		Catchment Area (Ha)	Command Area (Ha)	Submergence Area (sqm)	Storage Capacity (cum)	Unit	No. of work		Estimate cost Rs. in lacs		Objective
		Latitude (N)	Longitude (E)						Phy/ Area	Unit cost (Rs in Lacs)			
1	Renovation of pond construction of Ramp & Retaining wall near graveyard.	28˚16.610'	77˚00.338'	20.00	2.00	9453	14180	No.	1 no	5.00	5.00		To provide drinking water for animals, checking of soil erosion.& Ground water recharging.
2	Check Dam	28˚16.816'	76˚00.463'	8.00	-	-	-	Cum	150	0.02	3.00		Water harvesting & Ground water recharging, Check of soil erosion.
3	Construction of Silt Detention Dam.	28˚16.589'	77˚59.982'	6.00	-	2836	4254	No.	1 no	3.00	3.00		Soil and Water conservation measures.
4	Gully plug	28˚16.683'	76˚00.190'	4.00	-	1891	2836	No	6 no	1.00	6.00		Water harvesting & Ground water recharging, Check of soil erosion.
5	Diversion channel / pipeline on Phirni of village.	28˚16.297'	77˚00.100'	4.00	-	-	-	No.	1 no	3.00	3.00		To check flooding in low lying area and to feed water to village pond.
6	Land levelling * in Panchayat land on the hill.	28˚16.795'	77˚00.260'	-	-	-	-	Hect.	3.00	0.75	2.25		To level the panchayat land & to increase the income of the village Panchayat.
	Total cost										22.25		
	Available funds										20.83		
	Convergence										1.42		

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Name of Project IWMP II		**Name of Watershed: Gangani**						**Name of Village : Chahlka**			
Sr. No.	Nature of work	Location		Catchment Area (Ha)	Command Area (Ha)	Submergence Area (sqm)	Storage Capacity (cum)	Unit	No. of work		Estimate cost Rs. in lacs	Objective
		Latitude (N)	Longitude (E)						Phy / Area	Unit cost (Rs. in Lacs)		
1	Excavation of pond construction of Ramp Chowki wala pond.	28˚26.482'	77˚01.834'	16.00	3.00	7563	11344	No.	1 no	4.00	4.00	To provide drinking water for animals, Irrigation to fields , checking of soil erosion.& Ground water recharging.
2	Renovation of pond construction of Ramp & Retaining wall	28˚26.367'	77˚01.314'	9 .00	2.00	4254	6381	No.	1 no	3.00	3.00	To provide drinking water for animals,checking of soil erosion.& Ground water recharging.
3	Gully plug	28˚26.434'	77˚01.228'	6.00	-	2836	4254	No	3 no	1.00	3.00	Water harvesting & Ground water recharging,Check of soil erosion.
4	Plantation in school, Panchayat land.	28˚26.579'	77˚00.882'	-	-	-	-	Hect.	1.5	0.75	1.10	To increase biomass cover.
	Total cost										11.10	
	Available funds										10.42	
	Convergence										0.68	

Name of Project IWMP II		**Name of Watershed: Gangani**									**Name of Village : Sundh**
Sr. No.	Nature of work	Location		Catchment Area (Ha)	Command Area (Ha)	Submergence Area (sqm)	Storage Capacity (cum)	Unit	No. of work		Estimate cost Rs. in lacs	Objective
		Latitude (N)	Longitude (E)						Phy/ Area	Unit cost (Rs. in Lacs)		
1	Renovation of pond construction of Ramp & Retaining wall near school.	28˚15.726'	76˚59.4578'	18.00	2.00	8500	12700	No.	1 no	6.00	6.00	To provide drinking water for animals, checking of soil erosion.& Ground water recharging
2	Roof Rain water harvesting in G.middle School	28˚15.625'	76˚59.454'	0.08	-	-	-	No.	1 no	3.50	3.50	Water harvesting & Ground water recharging.
3	Diversion channel / pipeline near Pond	28˚15.742'	76˚59.465'	300	-	-	-	No.	1 no	4.50	4.50	To check flooding in low lying area and to feed water to village pond.
4	Diversion channel / pipeline on Phirni of village.	28˚15.964'	77˚59.158'	8.00	-	-	-	No.	1 no	5.00	5.00	To check flooding in low lying area and to feed water to village pond.
5	Plantation in school,Panchayat land.	28˚15.464'	76˚59.158'	-	-	-	-	Hect.	2.0	0.40	0.80	To increase biomass cover.

6	Gully plug Construction of new and Desilting of old.	28˚15.570'	76˚59.030'	9.00	-	4200	6300	No	1 no	1.00	5.00	Water harvesting & Ground water recharging, Check of soil erosion.
7	Renovation / Desilting of old Silt Detention Dam.	28˚15.999'	76˚59.258'	22.00	-	10400	15600	No.	3 no	3.00	9.00	Water harvesting & Ground water recharging, Check of soil erosion.
8	Land levelling * in Panchayat land.	28˚15.964'	76˚59.158'	-	-	-	-	Hect.	7.0	0.75	5.25	To level the panchayat land & to increase the income of the panchayat.
	Total cost										39.05	
	Available funds										37.00	
	Convergence										2.05	

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Name of Project IWMP II		**Name of Watershed: Gangani**									**Name of Village : Jafrabad**
Sr. No.	Nature of work	Location		Catchment Area (Ha)	Command Area (Ha)	Submergence Area (sqm)	Storage Capacity(cum)	Unit	No. of work		Estimate cost Rs. in lacs	Objective
		Latitude (N)	Longitude (E)						Phy/ Area	Unit cost (Rs. in Lacs)		
1	Excavation of pond construction of Ramp & Retaining wall near school.	28˚16.019'	76˚58.203'	16.00	2.50	7500	11300	No.	1 no	5.00	5.00	To provide drinking water for animals, checking of soil erosion.& Ground water recharging.
2	Plantation in school,Panchayat land.	28˚15.464'	76˚59.158'	-	-	-	-	Hect.	2.0	0.40	0.80	To increase biomass cover.
3	Renovation / Desilting of old Silt Detention Dam.	28˚16.013'	76˚58.161'	25.00	2.00	11800	17700	No.	1 no	6.00	6.00	Water harvesting & Ground water recharging, Check of soil erosion.
4	Land levelling * in Panchayat land.	28˚15.987'	76˚58.271'	-	-	-	-	Hect.	3.0	0.75	2.25	To level the panchayat land & to increase the income of the panchayat.
	Total cost										14.05	
	Available funds										8.40	
	Convergence										6.35	

- **Before executing detail topographic survey and assessment must be carried out before implementation.**

Name of Project IWMP II		**Name of Watershed: Gangani**						**Name of Village : Baghanki**				
Sr. No.	Nature of work	Location		Catchment Area (Ha)	Command Area (Ha)	Submergence Area (sqm)	Storage Capacity (cum)	Unit	No. of work		Estimate cost Rs. in lacs	Objective
		Latitude (N)	Longitude (E)						Phy/ Area	Unit cost Rs in Lacs		
1	Renovation of pond construction of Ramp & Retaining wall near habitation.	28˚19.036'	76˚55.659'	13.00	2.00	6145	9217	No.	1 no	5.00	5.00	To provide drinking water for animals,checking of soil erosion.& Ground water recharging.
2	Renovation of pond construction of Ramp & Retaining wall.near khodi wala Mandir.	28˚18.788'	76˚56.153'	9.00	1.00	4254	6381	No.	1 no	3.00	3.00	To provide drinking water for animals,checking of soil erosion.& Ground water recharging.
3	Gully plug Construction of new and Desilting of old.	28˚18.659'	76˚56.055'	7.00	-	3309	4963	No	1 no	1.00	3.00	Water harvesting & Ground water recharging,Check of soil erosion.
4	Renovation / Desilting of old Silt Detention Dam.	28˚18.871' 28˚18.900'	76˚55.449' 76˚55.953'	17.00	-	8035	12053	No.	2 no	3.00	6.00	Water harvesting & Ground water recharging,Check of soil erosion.
5	Land leveling * in Panchayat land.	28˚18.877' 28˚19.118'	76˚53.449' 76˚56.071'	-	-	-	-	Hect.	2.0	0.75	1.50	To level the panchayat land & to increase the income of the panchayat.
	Total cost										18.50	

	Available funds	17.47	
	Convergence	1.03	

*** Before executing detail topographic survey and assessment must be carried out before implementation.**

Name of Project : IWMP II		**Name of Watershed: Gangani**									**Name of Village : Kherki**
Sr. No.	Nature of work	Location		Catchment Area (Ha)	Command Area (Ha)	Submergence Area (sqm)	Storage Capacity (cum)	Unit	No. of work		Estimate cost Rs. in lacs	Objective
		Latitude (N)	Longitude (E)						Phy/ Area	Unit cost (Rs. in Lacs)		
1	Renovation of pond construction of Ramp & Retaining wall near habitation.	28˚18.624'	76˚56.153'	8.00	1.00	3781	5672	No.	2 no	5.00	5.00	To provide drinking water for animals, checking of soil erosion.& Ground water recharging.
2	Gully plug - Construction of new and De-silting of old.	28˚18.788'	76˚56.153'	11.00	-	5199	7799	No	2 no	1.00	2.00	Water harvesting & Ground water recharging, Check of soil erosion.
3	Renovation / De-silting of old Silt Detention Dam.	28˚18.889'	76˚56.156'	13.00	-	6145	9217	No.	1 no	3.00	3.00	Water harvesting & Ground water recharging, Check of soil erosion.
4	Land leveling * in Panchayat land.	28˚18.541'	76˚56.400'	-	-	-	-	Ha.	2.0	0.75	1.50	To level the panchayat land & to increase the income of the panchayat.
	Total cost										11.50	

	Available funds	10.48	
	Convergence	1.02	

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Name of Project: IWMP II				**Name of Watershed: Gangani**					**Name of Village : Hasanpur**			
Sr. No.	Nature of work	Location		Catchment Area (Ha)	Command Area (Ha)	Submergence Area (sqm)	Storage Capacity(cum)	Unit	No. of work		Estimate cost Rs. in lacs	Objective
		Latitude (N)	Longitude (E)						Phy/ Area	Unit cost (Rs. in Lacs)		
1	Renovation of pond construction of Ramp & Retaining wall '	28˚16.824'	76˚56.190'	20.00	2.00	9400	14100	No.	1 no	5.00	5.00	To provide drinking water for animals, checking of soil erosion.& Ground water recharging
2	Roof Rain water harvesting in G.GSS School	28˚16.763'	76˚56.316'	0.05	-	-	-	No.	1 no	3.00	3.00	Water harvesting & Ground water recharging.
3	Renovation of pond construction of Ramp & Retaining wall near Mandir	28˚16.834'	76˚56.109'	14.00	-	6600	9900	No.	1 no	4.00	4.00	To provide drinking water for animals, checking of soil erosion.& Ground water recharging
4	Diversion channel / pipeline near pond.	28˚16.649'	76˚56.347'	8.00	-	-	-	No.	1 no	4.50	4.50	To check flooding in low lying area and to feed water to village pond.
5	Diversion channel / pipeline near jailal farmhouse.	28˚16.781'	76˚56.531'	5.00	-	-	-	No.	1 no	3.50	3.50	To check flooding in low lying area and to feed water to village pond.

6	Land leveling * in Panchayat land.	28˚16.768'	76˚56.451'	-	-	-	-	Hect.	4.0	0.75	3.00	To level the panchayat land & to increase the income of the panchayat.
	Total cost										23.00	
	Available funds										22.18	
	Convergence										0.82	

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Name of Project IWMP II		**Name of Watershed: Gangani**						**Name of Village : Sabras**				
Sr. No.	Nature of work	Location		Catchment Area (Ha)	Command Area (Ha)	Submergence Area (sqm)	Storage Capacity (cum)	Unit	No. of work		Estimate cost Rs. in lacs	Objective
		Latitude (N)	Longitude (E)						Phy/ Area	Unit cost (Rs. in Lacs)		
1	Renovation of pond construction of Ramp & Retaining wall.near habitation.	28˚15.478'	76˚56.375'	16.00	1.00	7500	11300	No.	No1	4.00	4.00	To provide drinking water for animals,checking of soil erosion.& Ground water recharging.
2	Roof Rain water harvesting in G.Middle School.	28˚15.482'	76˚56.358'	0.06	-	-	-	No.	1 no	2.00	2.00	Water harvesting & Ground water recharging.
3	Diversion channel / pipeline.	28˚15.760'	76˚56.405'	6.00	-	-	-	No.	1 no	2.00	2.00	To check flooding in low lying area and to feed water to village pond.
4	Land leveling * in Panchayat land.	28˚15.356'	76˚56.265'	-	-	-	-	Hect.	2.0	0.75	1.50	To level the panchayat land & to increase the income of the panchayat.

	Total cost	9.50	
	Available funds	8.74	
	Convergence	0.76	

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Name of Project IWMP II			**Name of Watershed: Gangani**							**Name of Village : Pada**	
Sr. No.	Nature of work	Location		Catchment Area (Ha)	Command Area (Ha)	Submergence Area (sqm)	Storage Capacity (cum)	Unit	No. of work		Estimate cost Rs. in lacs	Objective
		Latitude (N)	Longitude (E)						Phy/ Area	Unit cost (Rs. in Lacs)		
1	Renovation of pond construction of Ramp & Retaining wall.	28˚17.203'	76˚55.480'	18.50	2.00	8700	13100	No.	1 no	6.00	6.00	To provide drinking water for animals, checking of soil erosion.& Ground water recharging
2	Roof Rain water harvesting in G.Middle School.	28˚19.000'	76˚55.239'	0.03	-	-	-	No.	1 no	2.00	2.00	Water harvesting & Ground water recharging.
3	Diversion channel / pipeline with Injection bore sardana plot to GPS.	28˚17.110'	76˚55.227'	6.00	-	-	-	No.	1 no	5.00	5.00	To check flooding in low lying area and to feed water to village pond.

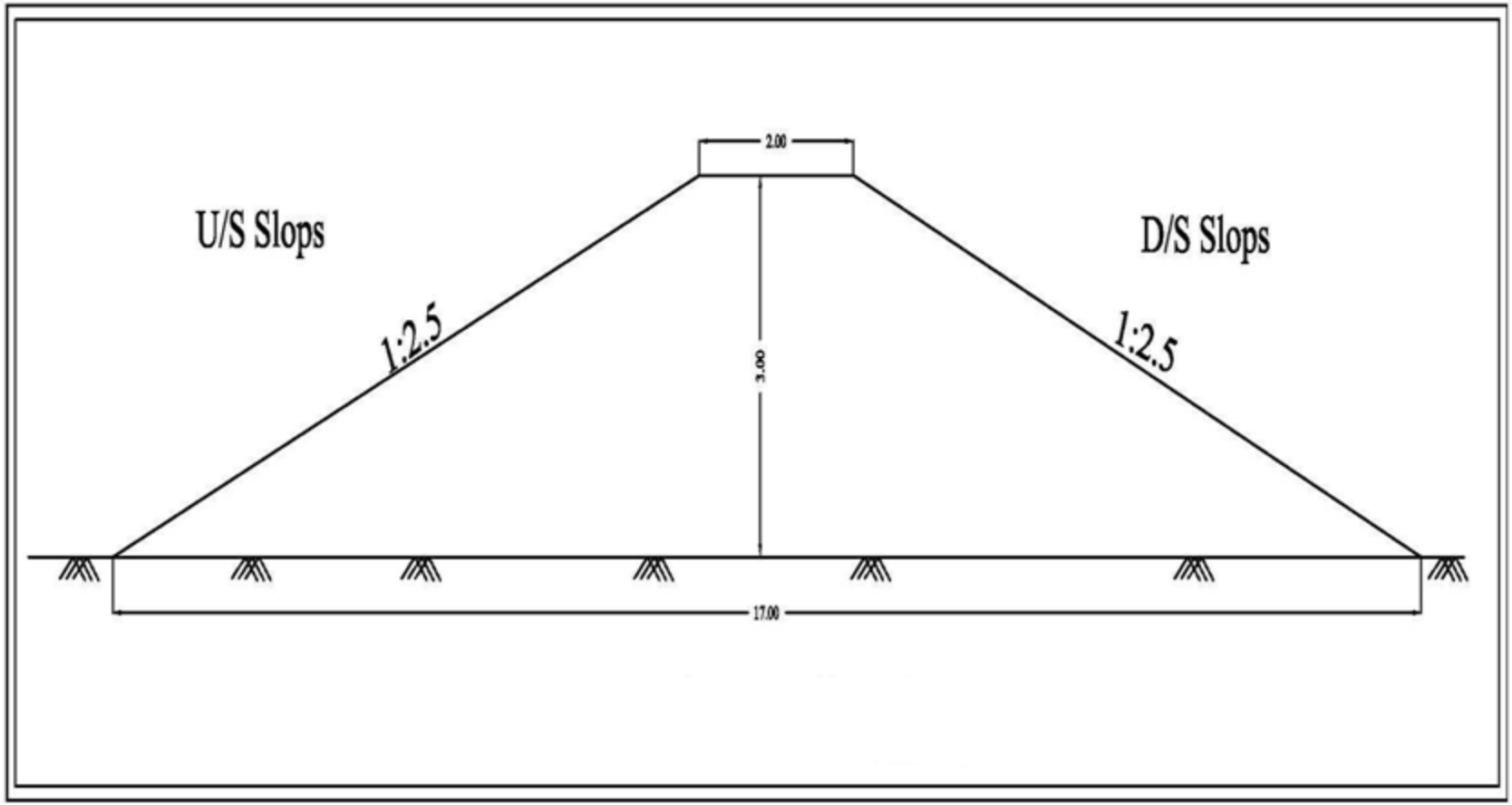
4	Diversion bund / gully plug with Injection well.	28˚17.112'	76˚55.186'	20.00	-	-	-	No	5 no	1.00	5.00	Ground water recharge checking of flooding low lying area.
5	Land leveling * in Panchayat land.	28˚16.990'	76˚55.791'	-	-	-	-	Hect.	2.0	0.75	1.50	To level the panchayat land & to increase the income of the panchayat.
	Total cost										19.50	
	Available funds										16.80	
	Convergence										2.70	

*** Before executing detail topographic survey and assessment must be carried out before implementation.**

Cost Sharing: During the PRA exercise and meeting with the stake holders from time to time, the beneficiaries agreed to contribute in form of material, labour and cash to 10% of structure cost. The watershed development funds and pattern of utilization would be decided by the UGs/ WDT and PIA during implementation programme.

Table 12. DETAILED ESTIMATE OF EARTHEN EMBANKMENT

	Let the Average length of the Embankment =	40 meters
	Let the Average Height of the Embankment =	3.0 meters
	Up Stream Slope of the Embankment =	1 : 2.5
	Down Stream Slope of the Embankment =	1 : 2.5



EARTHEN EMBANKMENT

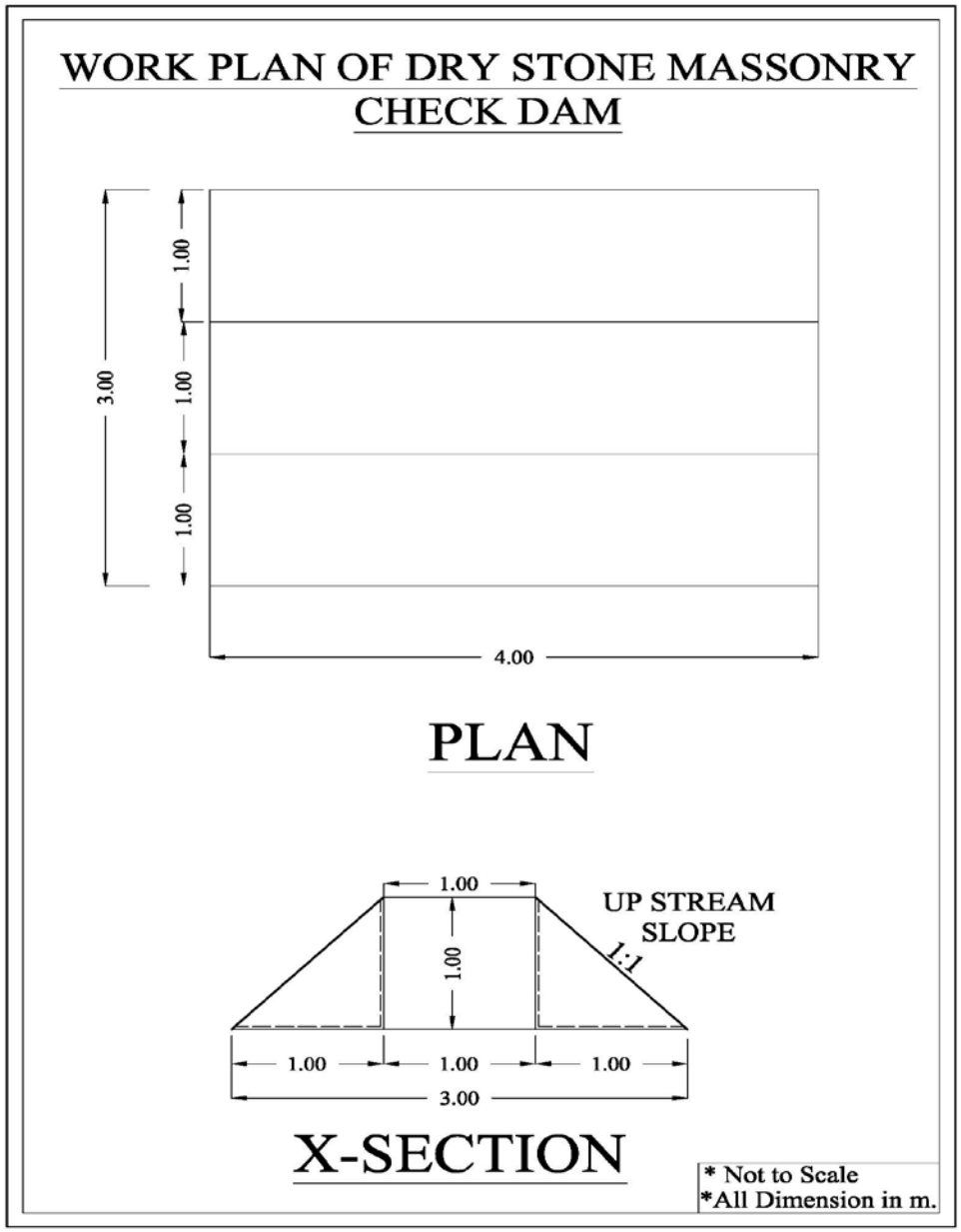
Leads Statement :-					
Cross Section Area = (Base + Top) ÷ 2 x Height i.e {(17.00 +2.00) ÷ 2} x 3.00 = 28.50 Square meters					
Horizontal leads = (Base/2) + (Cross section area/ 2 x 0.6) i.e. (17.00/2) + [{28.50}/(2 x 0.6)] =32.25 meters					
Vertical leads = (Height +0.60) x 0.4 x 10 i.e. (3.00 +0.60) x 0.4 x 10 = 14.40 meters					
Total leads = 32.25 meters + 14.40 meters = 46.65 meters					
Number of leads = (46.65 - 15.00) / 7.5 = 4.22 leads Or Say 5 No. of Leads					
Area of Jungle Clearance :-					
Area to be covered by the body of Dam = Length x Average base i.e. 40.00 x 17.00 = 680.00 Sq. meters					
Area from where E/W is to be excavated = Av. Length x leads i.e. 40.00 x 46.65 = 1866.00 Sq. meters					
Total Area = 680.00 + 1866.00 =	2546.00	Sq. meters.			
Volume of Loose soil to be removed :-					
Area to be covered by the body of Dam X Depth of loose soil i.e (680.00 x 0.30) =				204.00	cum
Volume of Earthwork in bund filling :-					
(Cross Section Area X Length) + Loose soil to be removed i.e.(28.50 x 40.00)+ 204.00 =				1344.00	cum
ABSTRACT OF COST					
S.No.	**Item of Work**	**Quantity**	**Rate**	**Unit**	**Amount**
1	Jungle clearance including uprooting of rank vegetarian, grass, bush woods etc H.S.R.6.26	2546.00 sq.m	Rs.66.80 + 300% C. Prem. =267.20	100 sq.m	6802.91
2	Removal of loose soil up to 0.3 m below Natural surface level H.S.R. 6.2 (b)	204.00 cum	Rs.586.60 + 350% C. Prem.= 2639.70	100 cum	5384.99
3	E/work excavation for making embank- ment undressed including breaking of Clods. H.S.R. 6.2 (b)	1344.00 cum	Rs.586.60 + 350% C. Prem.= 2639.70	100 cum	35477.57
4	Extra for admixture for single or kanker	1344.00 cum	Rs. 318.55 + 350% C.	100 cum	19265.97

	Exceeding 30% but up to 40%. H.S.R. 6.2 (h) ii		Prem.= 1433.48		
5	Extra for every 7.5 meter additional lead beyond 60mt but up to 255 m by the animal or animal driven cart (5 leads) H.S.R. 6.2 (c) (ii)	1344.00 cum	[(15.00 x 5 No.)+ 350% C. Prem.= 337.50	100 cum	4536.00
6	Dressing of earthwork H.S.R. 6.3 (i)	1344.00 cum	Rs.45.90 + 350 % C. Prem.= 206.55	100 cum	2776.03
Total =					**74243.4712**
Add Contingency at the rate of 3% =					2227.30
Grand Total =					**76470.78**

Table. 19. Detail Estimate of Dry Stone Masonry Check Dam

S No.	**Particulars**	**No.**	**Length (mts)**	**Breadth (mts)**	**D/H (mts)**	**Content (cums)**
1	Earth work in excavation of foundation in all type of soils. H.S.R. 6.6	1	4.00	3.00	(1.0+0.3+1.0)/3=0.77	9.24
2	Dry Stones Masonry work for purely temporary nature. H.S.R. 12.57	1	4.00	(3.0 +1.0) / 2 =2.00	1.00	8.00
	ABSTRACT OF COST					
S No.	**Particulars**	**Qty**	**Rates**		**Unit**	**Amount**
1	Earth work in excavation of foundation in all type of soils. H.S.R. 6.6	9.24 cum	1108.10 +350% C. Prem. =4986.45		100 cum	460.75
2	Rough Hammer dressing of S. boulders H.S.R. 12.55 ©	8.00 cum	35.00 + 250% C. Prem. =122.5		cum	980.00
3	Dry Stones Masonry work for purely temporary nature. H.S.R. 12.57	8.00 cum	35.30 + 250% C. Prem. =123.55		cum	988.40
4	Cost of Stone boulders stone boulders - 114 -anually locally @ 0.50 per person per	8.00 cum	945.00		P/day	7560.00

S No.	Particulars	No.	Length (mts)	Breadth (mts)	D/H (mts)	Content (cums)
	day for 164.00 cum.					
					Total =	**9989.15**
Add contingency at the rate of 3%						299.67
					Grand Total =	**10288.82**
Per cum Rate = 10288.82 /8.00 = 1286.10 or say Rs.1285/- only						



Work Plan of Dry Stone Masonry Check Dam

Table. 20. Detailed estimate of Pond

Detail Estimate of village Pond						
	Volume of Pond	=	A+AB+C x D			
			6			
		=	(50x50)+4(41x41)+(32x32)		X 3.00	
			6			
		=	5124 cum			
	Volume of Stone Pitching	=	Area X Depth/ Height			
		=	3824 X 0.15			
		=	423.60 cum			
			or say - 1461.55 cft.			
Leads Statement						
	Horizontal Leads	=	(length/2) +(cross section area/2 x 0.60)			
		=	80/2 + {(16.50 + 3)/2 x 2.25}/2 x0.60			
		=	61.94 mtr.			
	Vertical Leads	=	(Depth + Height) x 0.4 x 10			
		=	21.00 mtr.			
	Total Leads	=	{(61.94 + 21.00) - 15.00}/7.5			
		=	9 Leads			

Table. 21 Abstract of cost of estimate for Digging Village Pond

S.No.	Particulars	H.S.R. No.	Quantity	Rates	Unit	Amount
1	Excavation of earth work for digging of the vill. Pond	6.2 (b)	5124.00	2243.75	100 cum	114969.75
2	Extra for every 7.50 mtr. Additional lead upto 60 mtr. For 6 No. leads	6.2 (c')(i)	5124.00	496.29	100 cum	25429.90
3	Extra for admixture of shingle or Kanker upto 30%-40%		5124.00	1218.45	100 cum	62433.38
4	Extra for compaction in 25 cm layers but excluding rolling	6.2 (g_(i)	5124.00	260.48	100 cum	13347.00
5	Extra for watering in 25 cm layers as per specifications for compaction	6.2 (g_(ii)	5124.00	286.88	100 cum	14699.73
6	Extra for rolling in 25 cm layers as per specifications by sheep foot roller	6.2 (g)(v)	5124.00	401.62	100 cum	20579.01
					Total	**251458.76**
					Add. Contingency @2%	**5029.1753**
					Grand Total	**256487.94**
					Or say `	**2.60 Lac**

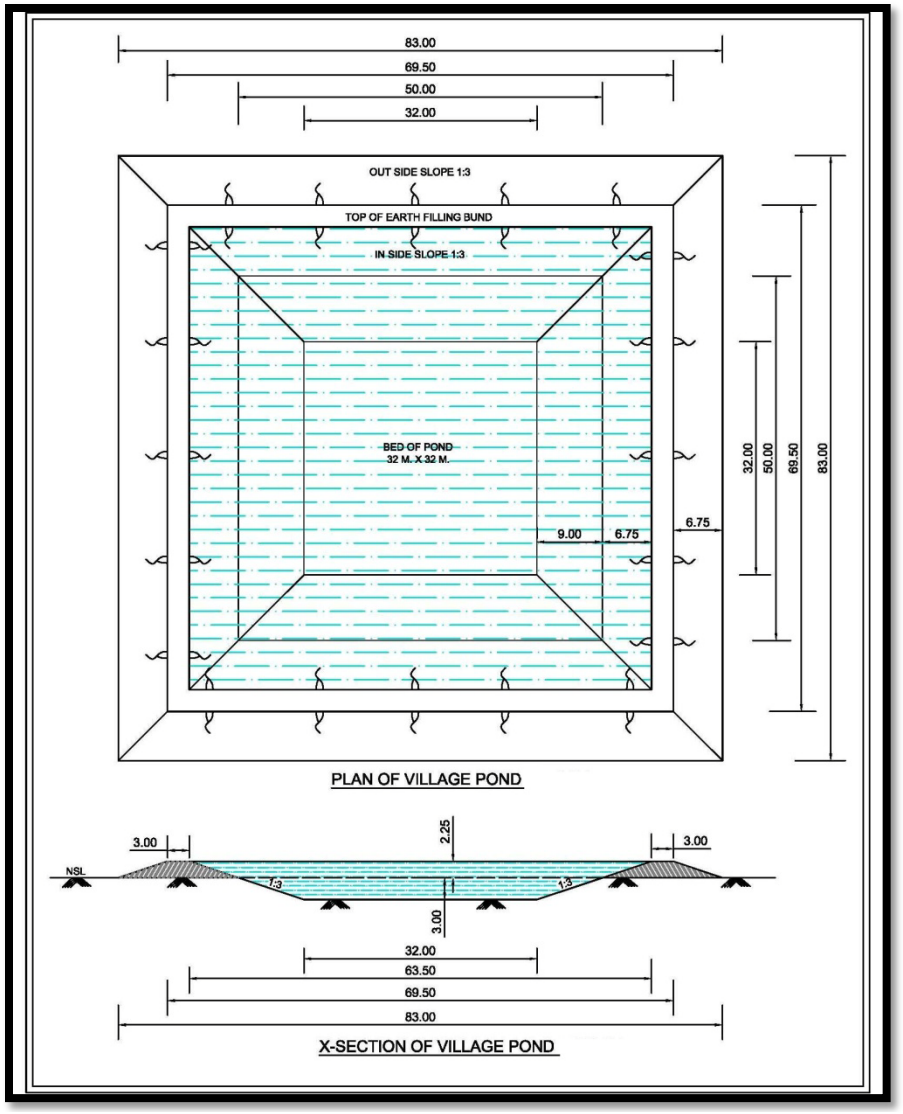

83.00
69.50
50.00
32.00
OUT SIDE SLOPE 1:3
TOP OF EARTH FILLING BUND
IN SIDE SLOPE 1:3
BED OF POND
32 M. X 32 M.
9.00
6.75
6.75
32.00
50.00
69.50
83.00
PLAN OF VILLAGE POND
3.00
2.25
3.00
NSL
1:3
1:3
3.00
32.00
63.50
69.50
83.00
X-SECTION OF VILLAGE POND

Table. 22 Estimate of Orchard Development in the Watersheds Per Hectare (Guava ,Amla & Ber)
A. Horticulture

Sr. No.	Particulars	Quantity	Unit	Rate	Amount
1	Soil working 1m x 1m x 1m size pits (225 Nos.) including cost of refilling(At the distance 20'x20')	225.00	cum	36.66	8248.50
2	Application of Farmyard Manure, including cost			L.S.	450.00
3	Cost of fertiliser/ pesticide @250gm/plant			L.S.	450.00
4	Cost of plants (including 15% etc. for mortality) including transportation and planting	260.00	Nos.	30/Plant	7800.00
5	Casualty replacement @ 10% of item No. 4 & 5				465.00
6	Cost of 2 weedings and hoeing			1.00/Pant	540.00
7	Contingency and unforeseen (3%)				492.00
				Total	**18445.50**
				Say `	**18500.00**
8	Maintenance cost 2nd year			L.S.	**1000.00**
	For next 5 years i.e. , ` 1000 x 5				**5000.00**
				Total	**24500.00**
				Say `	**24500.00**

Table. 23. Estimate of Agro- Forestry/ Afforestation

Plantation Model						
Cost statement of 1 Ha. Of activities of Plantation for 1st year (wage rate Rs. 94.13/-)						
Sr. No.	**Item of work**	**Unit**	**Qty.**	**SOR**	**Man days**	**Cost**
B	**Nursery**					
i	Raising of Plants in nursery	Nos.	660	18	5601.00	**11880.00**
C	**Carriage**					
i	Loading/ Unloading of plants up to 100 mtr.	Nos.	605	21.18	1.36	128.139
ii	Multistage carriage of plants					
a)	By tractor up to 10 km.	Nos.	605	18.83	12.10	1139.22
c)	By manual labour in plantation area	Nos.	605	42.36	2.72	256.28
					Total	**1523.63**
D	**Planting**					
ii	Soil working for patch sowing	M3	31.25	61.18	20.31	1911.88
	500 x 0.50 x 0.50 x 0.25					
iii	Planting of seeding including 10% replacement 20 x 30 cm.	Nos.	550	188.26	10.99	1035.43
					Total	**2947.31**
E	**Cultural operations & chemical treatment**					
i	Fertilizer application	Nos.	500	9.41	0.50	47.05
ii	Insecticide application	Nos.	500	9.41	0.50	47.05
iii	First Weeding & hoeing	Nos.	500	141.2	7.5	706.00
vi	Subsequent weeding & hoeing two time	Nos.	1000	94.13	10.00	941.30
					Total	**1741.40**

G	Material					
ii	Spade and pick axes	----	----	----	----	135.00
iii	Basket/Bucket	----	----	----	----	135.00
v	Fertilizer	----	----	----	----	135.00
vi	Insecticide	----	----	----	----	270.00
					Total	**675.00**

	G. Total =	**18767.34**
	or Say =	**18767.00**

PRODUCTION SYSTEM- 10%

7.3 PRODUCTION SYSTEM

7.3.1 Crop Production

Present Status: Agriculture is the mainstay of the inhabitants of the project area which is mainly rainfed and people gamble with the uncertain rains. The fertility of the soil is very poor especially in nitrogen and phosphorous because the organic carbon contained in the soil is very low and the available potash in the soil is medium. Mustard, Wheat and Bajra are the main crops. Due to frequent droughts, crop failures are common, and yield levels are low. Farmers maintain fodder plants on the field bunds. Because of extensive damage by wildlife, farmers are gradually shifting towards dairy farming. But there is acute shortage of green and dry fodder. Still traditional farm practices are followed such as manual weeding and hoeing, use of desi ploughs and bullock power in tillage operations. The systematic and regular soil testing has not been done. Only farm yard manure is added to maintain yield levels. Food grains are hardly sufficient for 6 to 8 months with small farmers. Post-harvest gain storage, food processing and value addition techniques are not prevalent.

Scope of Improvement: There appears tremendous scope in improving production systems of the project area. The following practices are suggested for better harvests:-

- Conservation farming concept based on getting highest yield per drop of water shall be introduced.
  This would also include better tillage practices for in-situ rain water conservation.
- Weather related contingent crop planning shall be introduced to reduce the impact of droughts.
- The varieties of wheat are old and shall be replaced with latest varieties.
- There is a good scope of introducing hybrid varieties of bajra. Intercropping of moong and urad is suggested with bajra.
- The application of fertilizers on soil test basis and minimum use of chemicals for weed and disease control shall be promoted.

- Farmers would be linked to farm advisory services and Krishi Vigyan Kendras.
- The dry land farming techniques should be adopted for better production.
- Agro-forestry with integration of trees like Neem, Acacia, Shisham would be promoted on large scale.
- Leguminous crops mainly Moong and mash short duration varieties needs to be introduced

7.3.2 Horticulture

Existing System: Ber, Amla and Guava are the most preferred fruit crop of the farmers and scattered plants of local citrus fruits are seen in farm lands. Some farmers have started raising Guava and Kinnow where irrigation facilities are available. Citrus fruits also raised but mostly for domestic use. There is no well organized marketing system in fruit plants. **Proposed System:** The average annual rainfall is 563 mm in the project area. The project areas are well connected by roads and the economic condition of the locals can be improved by introducing improved cultural practices of fruit plants coupled with rain water harvesting and efficient use of water. Large number of farmers are interested to increase area under Guava and Kinnow and requested for supply of good quality nursery raised plants. Several families have shown interest in raising Citrus fruits and amla. The following activities are proposed to promote horticulture in the area.

- Supply of quality seedlings arranged from approved nurseries as per choice of farmers.
- Soil testing up to a depth of 180 cm depth to ensure suitability of soil for fruit plants.
- Proper back up of technical support on orchard management by involving HAU Farm Advisory Service and department of horticulture.
- Appropriate safeguards from wildlife damage, frost damage and wind breaks.
- Arrangements for limited irrigation at least for first few years.
- Organizing SHGs around horticulture and joint purchase of inputs and marketing.

7.3.3 Vegetable cultivation

Present status: Vegetable cultivation as such for market purpose is not followed mainly because of the limitation of irrigation facilities. Most farmers raise vegetable crops in back yards for domestic use. Some poly houses have come up in the area with financial support from National Horticulture Mission and have started commercial cultivation of off season vegetables.

7.3.4 Promotion of Farm Forestry and Agro-forestry

Most of the privately owned non-arable the area is under mix of trees and bushes. Lantana, sarkanda and parthenium, the most obnoxious weeds have invaded such area.

- Planting of improved cultivars of Neem in the project as single rows on field bunds and also as blocks has been proposed to promote agro-forestry as an alternate source of income.

7.3.5 Livestock Improvement Including Fodder Production

Livestock rearing is the most important subsidiary occupation of the project villagers. In addition to selling milk for regular daily income, farm yard manure is most needed to maintain fertility and moisture retention of soils. Even landless families also maintain few numbers of animals. The animal breed improvement work was initiated in these villages under Arravali, DDP, DPAP projects and it is a regular program of the Animal Husbandry Department. However, the availability of animal health services at the door step is grossly lacking. The programs proposed under the project for livestock improvement include:

- In order to promote animal health care camps shall be organized and medicines for de-worming, mineral mixture shall be supplied in addition to awareness generation about prevention of animal diseases.
- Provision of quality seed of fodder crops and demonstration.

7.3.6 Marketing Arrangements and Proposal for Improvement

There is no organized system of marketing although market surplus is limited. The marketing of Wheat, Mustard and Bajra is not a problem because of fixed prices and government controlled procurement system. There is no organized system of marketing of vegetables and milk though both are source of income with many families.

The efforts through the project are made towards diversification of agriculture to include fruit and vegetable crops and dairy development. The transfer of area to these high value crops would depend on development of irrigation facilities, facilitation in input supplies, transfer of production technology, easy credit and market linkages. Efforts have been made to reactivate the non-functional SHGs and UGs. New watershed committees have been formed in each village. Farmers have shown interest in joint management of resources and join hands for processing, value addition and marketing.

Fortunately, the involvement of Rural Development Department means regular interaction with the district administration whose good offices would be used to involve rural banking institutions in funding support for SHGs, User Groups and other interest groups.

7.3.7 Detail of production system to be promoted

Based on the discussions during PRA, the scope of production systems was worked out and as per the provision of funds @ 10% of the budget, the following activities were finalized.

Table 24.Detail of Production System proposed to be promoted in the project village

S. No.	Particulars	Contents	No. of micro watersheds /Village	No. of beneficiaries per Village	No. of total beneficiaries	Cost per beneficiaries	Total

S. No.	Particulars	Contents	No. of micro watersheds /Village	No. of beneficiaries per Village	No. of total beneficiaries	Cost per beneficiaries	Total
1	Vermi Compost	Vermi compost is organic matter that is decomposed and recycled, used as fertilizer for soil amendment which is a key ingredient in organic farming. Under IWMP, financial assistance of 25% of total cost of Rs. 24000/- is provided.	11/19	15	285	6000	1710000
2	Green Manuring	Addition of organic matter required, which is deficient in project area. Under IWMP, financial assistance @ Rs. 500 for 20 Kg.s per farmer for 2 Acre (0.8 ha) holding is provided.	11/19	50	950	500	475000
3	Bio-fertilizers	For integrated nutrient management (combination of chemical fertilizers, organic manure, crop residue and nitrogen fixing. Under IWMP, financial assistance @ Rs. 40 per farmer for 2 Acre (0.8 ha) holding is provided.	11/19	100	1900	40	76000
4	Pest-Management	For integrated pest Management, the bio control technique has been reported eco-friendly for control of pests. A provision of Azadirachtin bio pesticide @ Rs. 250/lit. per farmer is provided.	11/19	75	1425	250	356250
5	Sprinkler irrigation	Sprinkler irrigation is a method of applying irrigation water which is similar to natural rainfall. Under IWMP, financial assistance @	11/19	5	95	7500	712500

S. No.	Particulars	Contents	No. of micro watersheds /Village	No. of beneficiaries per Village	No. of total beneficiaries	Cost per beneficiaries	Total
		25% of Rs. 30000/- or price fixed by agriculture department is provided.					
6	Drip Irrigation	Drip Irrigation is an irrigation method that saves water and fertilizer by allowing water to drip slowly to the roots of plants. Under IWMP, financial assistance @ 10% of Rs. 58000 per ha for horticulture fixed by Agriculture Department is provided.	11/19	10	190	5800	1102000
7	Lazer Leveling	Lazer Leveling is one such proven technology that is highly useful in conversation of irrigation water. Under IWMP, financial assistance @ 30% of Rs. 1075 per farmer is provided	11/19	100	1900	322.5	612750
8	Kitchen Gardening	To facilitate with inputs, seeds and equipments etc., for development of Kitchen Gardening. Under IWMP, financial assistance @ Rs. 50 per farmer per season (Rs. 100 per year) is provided.	11/19	150	2850	100	285000
9	Horticulture	Potential for Grafted Horticulture plants. Supply of plants @ Rs. 40/- per plant under IWMP 50 % cost share for cultivation of fruits like Citrus fruits, Guava, Amla, Ber floriculture and vegetables (especially, turmeric, garlic, onion and tomato)	11/19	100 .	1900 (19000 plants)	Rs.20 per plant	380000

S. No.	Particulars	Contents	No. of micro watersheds /Village	No. of beneficiaries per Village	No. of total beneficiaries	Cost per beneficiaries	Total
Total							5709500
Contingency, printing material other unforeseen items							57700

Total: Rs. 5767200/-

The provision of additional subsidy component under IWMP would be utilized by linking with the line department.

Note. The development of Horticulture, Animal Husbandry and Agro forestry has limited scope because of scattered & small land holding, wild life problems and drought conditions. The National Horticulture Mission has already implementing various schemes in the project area. The beneficiaries are taking advantages under their ongoing schemes.

In order to manage the fodder scarcity the latest rain fed varieties of fodder crop will be introduced on the recommendation of experts of Haryana Agriculture University and Central Soil and Water Conservation Research Institute, Chandigarh. Necessary provision for organizing the various training programme / exposure visits has been provided in the Capacity Building activity.

Under Agro forestry, tree species commonly planted is Neem. The impacts of such type's plantation have given extra source of income.

7.3.8. Vermin Compost

The vermin compost is one of the very useful organic manure. The vermin compost prepared by induction of various types worms (Earth Worm), to de compost and converted from raw animal dung to well de compost highly nutritive organic manure.

One of the important occupations of villagers is the animal husbandry. At present, the animal wastes are not being used by the villagers. This waste can be utilized as vermin- compost on the farm where the productivity and physical condition of the soil can be increased manifold. The animal waste can be used for preparation of vermin- compost. The available nutrients in vermin- compost are higher than country type farmyard manure. As per NHM guideline, the installation cost of structure of 1 vemin compost unit (size) 500 Sq. ft., the total cost of the unit would be is Rs. 60000/-. Out of this the 50% subsidy i.e. Rs.30000/- is met from the ongoing programme of horticulture department. The additional amount i.e. Rs. 10000/- will be born under IWMP Programme. The nutrition value of vermin compost is more than Farm Yard Manure and compost i.e. nitrogen- 1.2 to 1.6%, Phosphorous 1.5 to 1.8%, Potash 1.2 to 2% are just double.

Table 25: Model/ Estimate for a Vermin Compost Unit

Sr. No	Component	Expenditure to be incurred
1	Construction of shed of size 500 Sq. ft.@ Rs. 100 per Sq. ft. with pacca floor, beds and coverings etc.	50000/-
2	Cost on breeding material and purchase of worms etc.	8000/-
3	Tools and equipments etc.	2000/-
	Total	**60000/-**

Components of Vermin Compost Unit

1. **Shed**

Due to the high temperature in summer, shed structure is needed for vermin compost unit. It can be made by use of bricks/ concrete pillars. While designing the shed adequate room has to be left around the beds for easy movements of labours attending to the filling and harvesting the beds.

2. **Vermin- beds**

Scientific bed side depending upon the provision of filtered for drainage of excess water is prepared of about 75- 90 cm thick. The whole bed should be above the ground, the proper bed width to be not more than 1.5 m to allow easy access to the centre of the bed is constructed.

3. Land

About 125 sq. m. land is required to set up the vermin compost production. It should have 2- 3 sheds each of 180- 200 sq. ft. Good watering arrangement is required as the moisture is very essential for vermin compost production.

4. Seed Stock

This is important because worms multiply at the rate of 350 worms per cubic meter of bed space over a period of six months in a year.

5. Machinery

Farm machinery and implements are required for cutting the raw material in small pieces, conveying shredded raw material to the out sheds, loading, unloading, collection of compost, loosening of beds for aeration, shifting of the compost. Costs of providing necessary implements and the machinery have to be included in the project cost.

LIVELIHOOD ACTIVITIES FOR THE ASSET LESS PERSONS-9%

7.4 LIVELIHOOD SUPPORT TO SHG'S

The key issue of inclusion of this chapter is that about 70% of the population in the proposed villages depends on agriculture and allied activities, but it rarely provides sufficient means of survival to small and marginal farmers. During the base line survey, this aspect was discussed with the existing Self Help Group/ Gram Sabha members. The representative of WAPCOS, Sociologist of the team held comprehensive discussions on the possibilities of livelihood in the rainfed areas. The main objectives of these discussions were:

1. Assure one livelihood option to poor families.
2. Assured livelihood for at least 300 days in a year including MGNREGA.
3. At least one daily job per family mainly SCs/BPL/very poor families.

SHGs would be imparted Skill Training on HSRLM pattern and it is proposed to impart them trainings at Krishi Vigyan Kender (CCSHAU) Mewat and Haryana Institute of Rural Development, Nilokheri. Agriculture University, Hisar, Central Soil and Water Research and Training Institute, Chandigarh. It is proposed to lend revolving fund of Rs. 25000/- to each SHG/individual formed in the watershed villages. Since the members from SHGs/landless are very poor, they do not have resources to start micro enterprises, it is envisaged that they should be assisted and given loan of this amount in the shape of Revolving Fund Assistance (RFA) so that they do not get trapped by money lenders. Funds thus given on loan are recoverable from SHGs/individuals in easy installments. It is also proposed to impart skill training to at least 10 unemployed youth from each village and give them trainings of their choice so that they establish some small enterprises. It is further proposed to give them interest free loan of Rs. 12000/- each as Revolving Fund Assistance to meet their urgent needs of funds for establishing micro enterprises. Such funds recovered could either be given back to SHGs/individual or some other SHGs/individuals depending upon assessment of their respective needs. It is proposed to form 2 SHGs in each village and identify at least 10 youths in each village for imparting training and giving Revolving Fund.

The scheme would be implemented in phased manner in the project area and the project implementation agency will co-ordinate with the Community Resource Persons(CRP) already posted at the grass root level under Haryana State Rural Livelihood Mission(HSRLM). The SHG should follow five Sutras i.e.

1. Regular Meetings
2. Financial saving in the meetings
3. Internal Lending
4. Regular Recovery.
5. Proper maintenance of Account books.

Based on the above five Sutras, grading of SHG should be done.

The following activities are proposed in consultation with the Watershed committees.

7.4.1 Activities those are likely to be taken up by SHGs/individuals

1. Cutting and Tailoring
2. Embroidery
3. Mushroom cultivation
4. Plumbing
5. Carpentry
6. Bee keeping
7. Animal husbandry
8. Vermi composting
9. Cattle rearing and selling milk

10. Household wiring, Motor winding
11. Backyard poultry
12. Floriculture

The details of funds proposed to be utilized under this component are as under:

Table 26. Revolving Fund Assistance for SHGs

S.No.	Name of micro watersheds	No. of villages	Total SHGs	Amount of RFA per SHG	Total
1	Bhango	2	2	25000	50000
2	Sondh	1	1	25000	25000
3	Gangani	1	1	25000	25000
4	Kota Khandewla	1	1	25000	25000
5	Bissar Akbarpur	1	1	25000	25000
6	Baghanki	2	2	25000	50000
7	Mohmmadpur Ahir	1	1	25000	25000
8	Dadu	2	2	25000	50000
9	Hassanpur Taoru	2	2	25000	50000
10	Para	2	2	25000	50000
11	Jafrabad	4	4	25000	100000
	Total	**19**	**19**		**475000**

Table 27. Skill Trainings/Skill up gradation for SHGs

S.No.	Name of micro watersheds	No. of villages	Total SHGs	Amount of Training per SHG	Total
1	Bhango	2	2	35000	70000
2	Sondh	1	1	35000	35000
3	Gangani	1	1	35000	35000
4	Kota Khandewla	1	1	35000	35000
5	Bissar Akbarpur	1	1	35000	35000
6	Baghanki	2	2	35000	70000
7	Mohmmadpur Ahir	1	1	35000	35000

8	Dadu	2	2	35000	70000
9	Hassanpur Taoru	2	2	35000	70000
10	Para	2	2	35000	70000
11	Jafrabad	4	4	35000	140000
	Total	**19**	**19**		**665000**

Note: This training cost includes Travel, boarding/lodging, cost of training and faculty support for different discipline e.g. Bakery Product, Soap and detergent making, fisheries, Bee keeping, Vermi Compost, Domestic poultry, Mushroom cultivation, Plumbing, Carpentry, Food Processing, Animal Husbandry, Product Processing etc.

Table 28. Computer Training (6 months) for unemployed youth above 12th passed male and female both recommended by Watershed Development Committee

S.No.	Name of micro watersheds	No. of villages	No. of Persons in micro watershed	Amount of Training per trainee for 6 month	Total
1	Bhango	2	10	10000	100000
2	Sondh	1	5	10000	50000
3	Gangani	1	5	10000	50000
4	Kota Khandewla	1	5	10000	50000
5	Bissar Akbarpur	1	5	10000	50000
6	Baghanki	2	10	10000	100000
7	Mohmmadpur Ahir	1	5	10000	50000
8	Dadu	2	10	10000	100000
9	Hassanpur Taoru	2	10	10000	100000
10	Para	2	10	10000	100000
11	Jafrabad	4	20	10000	200000
	Total	**19**	**95**		**950000**

Note: The beneficiaries will contribute 10% as cost sharing of the livelihood support programme Rs. 950000 @ 10% cost sharing.

= 950000- 95000
= 855000/-

Table 29. One time assistance as Revolving Fund to unemployed youth who have successfully completed Computer Training for setting up a computer centre

S. No.	Name of micro watersheds	No. of villages	No. of Persons in micro watershed	Amount of Training per Trainee	Total
1	Bhango	2	6	25000	150000
2	Sondh	1	3	25000	75000
3	Gangani	1	3	25000	75000
4	Kota Khandewla	1	3	25000	75000
5	Bissar Akbarpur	1	3	25000	75000
6	Baghanki	2	6	25000	150000
7	Mohmmadpur Ahir	1	3	25000	75000
8	Dadu	2	6	25000	150000
9	Hassanpur Taoru	2	6	25000	150000
10	Para	2	6	25000	150000
11	Jafrabad	4	12	25000	300000
	Total	**19**	**57**		**1425000**

Note: This training cost includes Travel, boarding/lodging, cost of training and faculty support.

Note: The beneficiaries will contribute 10% as cost sharing of the livelihood support programme Rs. 1425000 @ 10% cost sharing.

= 1425000- 142500
= 1282500/-

Table 30. Cutting and Tailoring Centre for female beneficiaries

S. No.	Name of micro watersheds	No. of villages	No. of centre's	Requirement for sewing machines per village (2 No.)	Payment to trainer per months	Period of training for each centre	Total payment to trainer
1	Bhango	2	2	4	2000	6	24000
2	Sondh	1	1	2	2000	6	12000
3	Gangani	1	1	2	2000	6	12000
4	Kota Khandewla	1	1	2	2000	6	12000
5	Bissar Akbarpur	1	1	2	2000	6	12000
6	Baghanki	2	2	4	2000	6	24000
7	Mohmmadpur Ahir	1	1	2	2000	6	12000
8	Dadu	2	2	4	2000	6	24000
9	Hassanpur Taoru	2	2	4	2000	6	24000
10	Para	2	2	4	2000	6	24000
11	Jafrabad	4	4	8	2000	6	48000
	Total	**19**	**19**	**38**			**228000**

Total cost for 8 Centres

1. Payment to trainers 228000/-
2. Sewing Machine Cost 228000/- @ Rs 6000 per machine
3. Total 456000/-

Table 31. Embroidery Centre for female beneficiaries

S.No.	Name of micro watersheds	No. of villages	No. of centers	Payment to Trainer per Month	Period months	Payment to trainer for 6 months @ Rs. 2000 p.m	Total trainers	Grand Total
1	Bhango	2	2	2000	6	12000	2	24000

2	Sondh	1	1	2000	6	12000	1	12000
3	Gangani	1	1	2000	6	12000	1	12000
4	Kota Khandewla	1	1	2000	6	12000	1	12000
5	Bissar Akbarpur	1	1	2000	6	12000	1	12000
6	Baghanki	2	2	2000	6	12000	2	24000
7	Mohmmadpur Ahir	1	1	2000	6	12000	1	12000
8	Dadu	2	2	2000	6	12000	2	24000
9	Hassanpur Taoru	2	2	2000	6	12000	2	24000
10	Para	2	2	2000	6	12000	2	24000
11	Jafrabad	4	4	2000	6	12000	4	48000
	Total	**19**	**19**					**228000**

Payment to trainer: Rs.228000/-

Machine Cost: Rs.380000/- @ Rs. 20000/- per machine

Total Cost: Rs. 608000/-

Table 32. Livelihood Support

S.No.	Name of micro watersheds	No. of villages	Revolving fund assistance to individuals unemployed youth/ landless, women		
			Dairy Unit	Bee Keeping	Mushroom Production
1	Bhango	2	6	10	2
2	Sondh	1	3	5	1
3	Gangani	1	3	5	1
4	Kota Khandewla	1	3	5	1
5	Bissar Akbarpur	1	3	5	1
6	Baghanki	2	6	10	2
7	Mohmmadpur Ahir	1	3	5	1

8	Dadu	2	6	10	2
9	Hassanpur Taoru	2	6	10	2
10	Para	2	6	10	2
11	Jafrabad	4	12	20	4
	Total	**19**	**57**	**95**	**19**
	Rate (Rs)		**2400**	**2400**	**24000**
	Cost (Lakh Rs)		**1.368**	**2.28**	**4.56**

Contingency, printing material and other unseen items: Rs. 28180/-

Total funds available under this component are Rs. 5190480/-

In addition to HAU, the following institutions are also identified for imparting trainings:

i. HIRD, Nilokheri
ii. Agriculture, Technology and Extension, Hisar Agriculture University
iii. Central Soil and Water research and training Institute, Chandigarh
iv. Mushroom Training Centre, Sonipat and Solan
v. NIRD, Hyderabad
vi. Krishi Vigyan Kender (CCSHAU), Mewat

There appears to be great potential for these activities and these activities are likely to generate income of Rs. 2000/- to Rs. 2500/- per member per month. However no activities would be forced upon on any SHGs and they would be free to decide the activity they would like to opt for their additional income. The PIA can take up the activities as per the need and approval of the Watershed Committee. Based on their choice, Project report for the specified activity would be prepared and revolving fund of Rs. 20000/ Rs. 25000/- per SHG would be given for running their respective micro enterprise. If need arises for more funds for their Income Generation Activities at later stage, they would be assisted in getting loan from banks. SHGs thus formed would be provided all possible assistance to uplift for their Socio- Economic conditions.

CONVERGENCE

7.5 INTRODUCTION

The National Rural Employment Guarantee Act (NREGA), notified on September 7, 2005, marked a paradigm shift from the previous wage employment programmes with its rights-based approach that makes the Government legally accountable for providing employment to those who demand it. The act aims at enhancing livelihood security households in rural areas of the country by providing at least one hundred days of guaranteed wage employment in a financial year to every household whose audit members volunteer to do unskilled manual work. Such Inter sectoral convergence becomes instrumental towards.

- Establishing synergy among different government programmes in planning and implementation to optimize use of public investments
- Enhancing economic opportunities
- Strengthening democratic Processes
- Mitigating the effects of Climate Change
- Creating conditions for sustainable development.
- One of the significant areas for convergence is the Watershed Management Programme of the Dept. of Land Resources (DoLR) in the Ministry of Rural Development (MoRD),

Convergence is an evolving process and while broad principles can be laid out at the centre, the actual contours of convergence will be determined by the resources at the Central, State, District and the project level. Also, to fully identify the possibilities of convergence, it may be necessary to make a beginning with select programmes, so that the experience of implementation may further inform and refine strategies for convergence.

7.5.1 Convergence between MGNREGA and Watershed Programmes

Most of the activities under watershed development are covered under MGNREGA and there is a need for convergence to meet gap in requirement under IWMP. The labour component would be met out of funds made available under MGNREGA. The village wise details of the fund requirement are exhibited below (table. 33)

Detail of Convergence of IWMP and other schemes

Table 33. GAPS IN FUNDS REQUIREMENT – MICRO WATERSHED WISE

S.No	Name of micro watersheds	Total cost requirement for works	Total funds available under IWMP for works	Gap in funds requirement for works	Convergence with MGNREGA
1	Bhango	33.35	31.25	2.10	2.10
2	Sondh	39.05	37.00	2.05	2.05
3	Gangani	32.50	31.20	1.30	1.30
4	Kota Khandewla	31.08	27.90	3.18	3.18
5	Bissar Akbarpur	33.30	28.60	4.70	4.70
6	Baghanki	30.00	27.95	2.05	2.05
7	Mohmmadpur Ahir	29.40	28.60	0.80	0.80
8	Dadu	20.25	18.48	1.77	1.77
9	Hassanpur Taoru	29.25	27.22	2.03	2.03
10	Para	31.30	27.89	3.41	3.41
11	Jafrabad	37.05	27.55	9.50	9.50
	Total	**346.53**	**313.64**	**32.89**	**32.89**

- Under NREGA almost all the activities required for watershed development are permitted. Convergence between NREGA and Watershed Programmes of DoLR will be mutually beneficial for rain fed areas.

7.5.2 Non-Negotiable for works executed under MGNREGA

- Only Job Card holders to be employed for MGNREGA component.

- Muster rolls will be maintained on work site, with copies in the Gram Panchayat and to be electronically maintained on nrega.nic.in
- Wage payments will be through no-frills accounts in banks/post offices.

Need for Convergence: Since more than 56% of activities related to Watershed development are covered under MGNREGA, there is need for convergence to meet gap in Funds requirements under IWMP. Detailed survey had been conducted in Watershed villages and it has emerged that there is need for more funds to augment and strengthen the activities under IWMP. All seven micro watersheds need more funds to meet the gap. Therefore, some of the works are proposed to be converged with MGNREGA. The labour component would be met out of funds made available under MGNREGA.

7.5.3 Convergence with Forest Department

The unit cost of agro- forestry component for 1 ha area (1100 plant) for plantation and other activity is Rs. 18767/-. The provision of Rs. 15000/- per ha has given in IWMP programme. The rest amount of Rs. 3767/- will be convergent from lined department from departmental schemes or MGNREGA.

7.5.4 Convergence with Horticulture Department

National Horticulture Mission is implementing the horticulture development programme which includes construction of water harvesting structures, drip and sprinkler irrigation activities which would be undertaken in convergence with the horticulture department. Under this activity 58 ha horticulture development programme with the financial assistance of Rs. 23.2 lakh has been provided in the project proposals. This would also be undertaken by convergence with the horticulture department.

7.5.5 Convergence with Agriculture Department

The activities under NRM like Dug out Pond, Cement Stone Masonry structures (Inlet & Outlet), Earthen Embankment with pucca outlet, Small Earthen Embankments, Gully Plugs, Check Dams, Percolation embankments, Marginal Bandhs and Percolation ponds etc. where the machinery and material component is required and the unit cost exceeds for completion exceeds to the project provision, the same will be met in convergence with the similar activities of the agriculture.

7.5.6 Convergence with Animal Husbandry Department

The watershed falls in the water deficit conditions for production of fodder and depends upon the rain. The rainfall pattern is erratic. There is deficiency of green fodder and nutrients for the animals. The provision has been kept for providing mini kits for of life saving medicines/ mineral mixture, concentrate feed and fodder seeds. Since the provision of these kits is less than the required, hence this would be met with the lined department who has a provision under their ongoing programmes.

CHAPTER – 8

QUALITY AND SUSTAINABILITY

8.1 Monitoring and Evaluation

8.1.1 Plans for Monitoring and Evaluation:

Web based GIS system is being developed for Monitoring and Evaluation at various stages of project while in progress and post project stage. The satellite imageries are also helpful in monitoring all activities of the watershed area (Pre project, during project and post project). All the details relating to Watershed Activities would be available on website. The system is very useful to know the progress of the project at the click of the button. The higher officials would be able to monitor the progress and could generate the desired reports. The system would also help beneficiaries to know the area of importance, already treated area/ area to be treated. The system would serve an aiding tool to the planners and evaluators for judging the efficacy of the project.

8.1.2 Monitoring

Regular Monitoring of the project will have to be carried out at each stage to monitor the progress of the project. Different streams of monitoring are proposed as under:

1. Internal Monitoring by PIA/ WCDC
2. Progress and Process monitoring
3. GIS/ On line Monitoring
4. Sustainability monitoring
5. Self Monitoring by communities
6. Social Audits

7. Independent and external monitoring

Monitoring of watershed related activities will be carried out after completion of each phase. 1% amount of the project is earmarked under this component. Micro Watershed wise details are given below:

Table 1. Micro Watershed wise details

S.no	Name of the Micro Watersheds	Effective Area	Total Cost	Monitoring 1%
1	Bhango	465	55,80,000	55,800
2	Sundh	550	66,00,000	66,000
3	Gangani	465	55,80,000	55,800
4	Kota Khandewla	415	49,80,000	49,800
5	Bissar Akbarpur	425	51,00,000	51,000
6	Baghanki	416	49,92,000	49,920
7	Mohmadpur Ahir	425	51,00,000	51,000
8	Dadu	415	49,80,000	49,800
9	Hassanpur Toaru	405	48,60,000	48,600
10	Para	415	49,80,000	49,800
11	Jafrabad	410	49,20,000	49,200

8.2 EVALUATION

Each evaluation will include physical, financial, and social audit of all work done. The objective of evaluation of the project is to assess the status of watershed related interventions in the project. The evaluation will be taken up in three stages of the project. The Evaluation will be done by agencies empanelled on SLNA.

1% amount of the project is earmarked under this component. Micro Watershed wise details were as under:

Table 2. Micro Watershed wise details

S.no	Name of the Micro Watersheds	Effective Area	Total Cost	Evaluation 1%
1	Bhango	465	55,80,000	55,800
2	Sundh	550	66,00,000	66,000
3	Gangani	465	55,80,000	55,800
4	Kota Khandewla	415	49,80,000	49,800
5	Bissar Akbarpur	425	51,00,000	51,000
6	Baghanki	416	49,92,000	49,920
7	Mohmadpur Ahir	425	51,00,000	51,000
8	Dadu	415	49,80,000	49,800
9	Hassanpur Toaru	405	48,60,000	48,600
10	Para	415	49,80,000	49,800
11	Jafrabad	410	49,20,000	49,200

CONSOLIDATION PHASE- 3 %
Consolidation Phase = Rs. 17, 30,160 /-

8.3 CONSOLIDATION PHASE

This is another important activity under the project. In this phase, the resources augmented and economic plans developed in Phase II are made the foundation to create new nature based, sustainable livelihoods and raise productivity levels. There needs to be some mechanism at Watershed Level for the following crucial Activities as detailed below:

I. Managing/upgrading of all activities taken up under the Project.

II. Preparation of Project completion report and

III. Documentation of success stories

IV. Management of proper utilization of WDF

V. Mechanism for Quality and sustainability issues under the Project.

VI. Mechanism for fixation and collection of User Charges.

VII. Consolidation of works

VIII. Building the capacity of community based organizations to carry out the new agenda – post project period.

IX. Intensification of farm production systems/off farm livelihoods

X. Project Management related aspects

To take up these activities, it is proposed In the DPR as under:

Name of Micro watershed: Bhango

Table 3. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.33
2	Preparation of Project completion report	0.09
3	Documentation of success stories	0.08
4	Management of proper utilization of WDF	0.25
5	Mechanism for quality and sustainability issues under the Project	0.08
6	Watershed activities	0.84

Total: 1.67 lacs

Name of Micro watershed: Sundh

Table 4. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.40
2	Preparation of Project completion report	0.10
3	Documentation of success stories	0.09
4	Management of proper utilization of WDF	0.30
5	Mechanism for quality and sustainability issues under the Project	0.10
6	Watershed activities	0.99

Total: 1.98 lacs

Name of Micro watershed: Gangani

Table 5. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.33
2	Preparation of Project completion report	0.09
3	Documentation of success stories	0.08
4	Management of proper utilization of WDF	0.25

5	Mechanism for quality and sustainability issues under the Project	0.08
6	Watershed activities	0.84

Total: 1.67 lacs

Name of Micro watershed: Kota Khandewla

Table 6. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.30
2	Preparation of Project completion report	0.08
3	Documentation of success stories	0.07
4	Management of proper utilization of WDF	0.22
5	Mechanism for quality and sustainability issues under the Project	0.07
6	Watershed activities	0.75

Total: 1.49 lacs

Name of Micro watershed: Bissar Akbarpur

Table 7. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.31
2	Preparation of Project completion report	0.08
3	Documentation of success stories	0.07
4	Management of proper utilization of WDF	0.23
5	Mechanism for quality and sustainability issues under the Project	0.08
6	Watershed activities	0.76

Total: 1.53 lacs

Name of Micro watershed: Baghanki

Table 8. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.30
2	Preparation of Project completion report	0.08
3	Documentation of success stories	0.07
4	Management of proper utilization of WDF	0.23
5	Mechanism for quality and sustainability issues under the Project	0.07
6	Watershed activities	0.75

Total: 1.50 lacs

Name of Micro watershed: Mohmadpur Ahir

Table 9. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.31
2	Preparation of Project completion report	0.08
3	Documentation of success stories	0.07
4	Management of proper utilization of WDF	0.23
5	Mechanism for quality and sustainability issues under the Project	0.08
6	Watershed activities	0.76

Total: 1.53 lacs

Name of Micro watershed: Dadu

Table 10. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.30
2	Preparation of Project completion report	0.08
3	Documentation of success stories	0.07
4	Management of proper utilization of WDF	0.22
5	Mechanism for quality and sustainability issues under the Project	0.07
6	Watershed activities	0.75

Total: 1.49 lacs

Name of Micro watershed: Hassanpur Toaru

Table 11. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.29
2	Preparation of Project completion report	0.08
3	Documentation of success stories	0.07
4	Management of proper utilization of WDF	0.22
5	Mechanism for quality and sustainability issues under the Project	0.07
6	Watershed activities	0.73

Total: 1.46 lacs

Name of Micro watershed: Para

Table 12. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.30
2	Preparation of Project completion report	0.08
3	Documentation of success stories	0.07

4	Management of proper utilization of WDF	0.23
5	Mechanism for quality and sustainability issues under the Project	0.07
6	Watershed activities	0.75

Total: 1.50 lacs

Name of Micro watershed: Jafrabad

Table 13. Consolidated Phase

S. No	Type of activity	Amount earmarked (Rs. In lacs)
1	Managing/ upgrading of all activities taken up under the project	0.30
2	Preparation of Project completion report	0.07
3	Documentation of success stories	0.08
4	Management of proper utilization of WDF	0.22
5	Mechanism for quality and sustainability issues under the Project	0.07
6	Watershed activities	0.74

Total: 1.48 lacs

As per the common guideline the management of developed natural resources would involve the following features:

- Improving the sustainability of various structures and equitable distribution. The watershed committee will fix the charges of water and the funds generated would be utilized O& M Structures. These users charges account will be maintained separately.
- Involvement of Gram Panchayat for repair, maintenance and protection of created structures.

CHAPTER – 9

EXPECTED OUTCOME

EXPECTED OUTCOMES

The effective area is 4806 ha and the Project Cost is 576.72 lacs covering 11 no. micro watersheds and in all 19 villages. Benefits will be much more than the project cost as detailed below:

With the several interventions under IWMP II project such as Livelihood support, Farm production system, various types of activities relating to soil conservation measures for diversification of crops, Protection to field by constructing the structures etc, it is expected that these Watershed villages will gain a lot. This intervention will have multiple benefits available to communities in terms of employment, check in migration, improvement in water table, more area under agriculture and horticulture, check in soil loss and decrease in Flood and drought incidences, improvement in crop yield, milk yield, check in degradation of land etc. The benefits thus accrued would be short term and long term. With the judicious use of funds available under IWMP and with convergence from MGNREGA and other schemes of Departments, this project of Gangani Watershed II will prove to be very beneficial in improving socio – economic status of people residing in Project villages.

Expected outcomes as mentioned above are given in the following tables:

9.1 EMPLOYMENT

Employment has always been a problem in the village. The principal occupations of the people are rain fed agriculture, animal husbandry and casual labour work. However, rainfall being limited and erratic, agriculture suffers, i.e. best they can take only single crop, which keeps them partially engage 4 to 5 months. Similarly due to lack of fodder animal husbandry does not keep them engage full time. Thus the people mainly depend upon casual labour either in the villages is in Narnaul, Rewari, Delhi, Gurgaon, Bhiwadi, Dharuhera Industrial Complex**.**

Table 1. Expected Employment Generation in the Project area

S. No.	Name of micro watersheds	Wage employment						Self employment			
		No of man days			No. of Beneficiaries			No. of Beneficiaries			
		SC	others	Total	SC	others	Total	SC	others	Women	Total
1	Bhango	385	4615	5000	48	577	625	-	11	11	22
2	Sondh	2643	3270	5914	330	409	739	11	-	-	11
3	Gangani	390	4610	5000	49	576	625	-	11	-	11
4	Kota Khandewla	736	3726	4462	92	466	558	11	-	-	11
5	Bissar Akbarpur	557	4012	4570	70	502	571	-	-	11	11
6	Baghanki	0	4473	4473	0	559	559	11	11	-	22
7	Mohmmadpur Ahir	1147	3423	4570	143	428	571	-	-	11	11
8	Dadu	850	3612	4462	106	452	558	11	11	-	22
9	Hassanpur Taoru	401	3954	4355	50	494	544	11	-	11	22
10	Para	1892	2570	4462	237	321	558	-	11	11	22
11	Jafrabad	781	3627	4408	98	453	551	11	11	22	44

	Total	9783	41891	51674	1223	5236	6459	**66**	**66**	**77**	**209**

51674 man days would be generated with the implementation of the project in Gangani Watershed (IWMP II), which means 100 person for 100 days per year would be employed for the period of five years. In addition to this cropped area/ productivity would be increased and will also generate employment.

9.2 MIGRATION PATTERN

Table 2. Pre and Post Migration in Gangani Watershed (IWMP II)

S. No	Name of micro watersheds	No. of persons migrating		No. of days per year of migration		Comments
		Pre Project	Expected post project	Pre Project	Expected post project	
1	Bhango	817	409	75	37.5	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
2	Sondh	322	161	75	37.5	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
3	Gangani	18	9	120	60	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
4	Kota Khandewla	238	119	90	45	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
5	Bissar Akbarpur	361	181	90	45	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
6	Baghanki	-	-	-	-	-
7	Mohmmadpur Ahir	764	382	75	37.5	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
8	Dadu	247	124	90	45	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
9	Hassanpur Taoru	527	264	75	37.5	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%
10	Para	494	247	75	37.5	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%

11	Jafrabad	413	207	105	52.5	No. of persons migrating will be reduced and also no. of days would be reduced by over 50%

A comparison of above table with expected migration of table 19 of the Chapter 3 reveals that there will be about 50% reduction in the migration.

9.3 GROUND WATER TABLE (Drinking Water)

Through the ground water table is depleting over the years and presently stands 12 to 31 m. The project provision for recharging the desaturated aquifers has been provided in the proposals. It is expected that this will help checking the further fall in water table during post project.

Table 3. Detail of average ground water table depth in the project area (in meters)

Sr. No.	Name of Micro Watersheds	Name of Villages	Pre- Project level (m)
1	Bhango	Bhango	28.10
2		Chehalka	13.65
3	Sondh	Sondh	13.65
4	Gangani	Gangani	26.95
5	Kota Khandewla	Kota Khandewla	26.95
6	Bissar Akbarpur	Bissar Akbarpur	30.90
7	Baghanki	Baghanki	12.30
8		Kherki	14.10
9	Mohmmadpur Ahir	Mohammadpur Ahir	21.40
10	Dadu	Dadu	21.40
11		Sarai	26.95
12	Hassanpur Taoru	Hassanpur Taoru	21.40
13		Beri Nisfi Sohna	21.35

Sr. No.	Name of Micro Watersheds	Name of Villages	Pre- Project level (m)
14	Pada	Pada	21.35
15		Kalwari	21.35
16	Jafrabad	Jafrabad	13.65
17		Sheikhpur	21.35
18		Sabras	21.35
19		Sunthaka	21.35

Source: Ground Water Cell, Haryana

9.4 CROPS

Agriculture primary depends upon water, but this is availability of this is lacking without existence of canal network and deeper ground water conditions. All this can change with the integrated land and water management during the watershed project. The planned Dug out Pond, Cement Stone Masonry structures (Inlet & Outlet), Earthen Embankment with pucca outlet, Small Earthen Embankments, Gully Plugs, Check Dams, Percolation embankments, Marginal Bandhs and Percolation ponds etc. can preserve sub moisture in the soil. This will help in additional area coming under cultivation and increasing productivity too. The crop yield pre project and expected and post project is presented in table 4**.**

Table 4. Increase in Expected Yield in Gangani Watershed (IWMP II)

Name of Village	Name of Crops	Pre project		Total Production (in Kg)	Total Value Rs (in lacs)	Expected post project		Total Production (in Kg)	Total Value Rs (in lacs)
		Area ha	Average yield kg. Per ha			Area ha	Average yield kg. Per ha		
Bhango	Wheat	146	2880	420480	58.87	161	3168	508781	71.23
	Oilseed	129	1203	155187	54.32	142	1323	187776	65.72
	Bajra	198	1512	299376	37.42	218	1663	362245	45.28
Chehalka	Wheat	106	2892	306552	42.92	117	3181	370928	51.93
	Oilseed	39	1187	46293	16.20	43	1306	56015	19.61

Name of Village	Name of Crops	Pre project		Total Production (in Kg)	Total Value Rs (in lacs)	Expected post project		Total Production (in Kg)	Total Value Rs (in lacs)
		Area ha	Average yield kg. Per ha			Area ha	Average yield kg. Per ha		
	Bajra	113	1503	169839	21.23	124	1653	205505	25.69
Sondh	Wheat	358	2873	1028534	143.99	394	3160	1244526	174.23
	Oilseed	233	1193	277969	97.29	256	1312	336342	117.72
	Bajra	475	1526	724850	90.61	523	1679	877069	109.63
Gangani	Wheat	29	2868	83172	11.64	32	3155	100638	14.09
	Oilseed	3	1176	3528	1.23	3	1294	4269	1.49
	Bajra	29	1517	43993	5.50	32	1669	53232	6.65
Kota Khandewla	Wheat	114	2886	329004	46.06	125	3175	398095	55.73
	Oilseed	19	1216	23104	8.09	21	1338	27956	9.78
	Bajra	105	1497	157185	19.65	116	1647	190194	23.77
Bissar Akbarpur	Wheat	339	2863	970557	135.88	373	3149	1174374	164.41
	Oilseed	149	1221	181929	63.68	164	1343	220134	77.05
	Bajra	320	1516	485120	60.64	352	1668	586995	73.37
Mohammadpur Ahir	Wheat	170	2894	491980	68.88	187	3183	595296	83.34
	Oilseed	75	1177	88275	30.90	83	1295	106813	37.38
	Bajra	167	1521	254007	31.75	184	1673	307348	38.42
Dadu	Wheat	133	2903	386099	54.05	146	3193	467180	65.41
	Oilseed	18	1186	21348	7.47	20	1305	25831	9.04
	Bajra	129	1534	197886	24.74	142	1687	239442	29.93
Sarai	Wheat	71	2889	205119	28.72	78	3178	248194	34.75
	Oilseed	19	1217	23123	8.09	21	1339	27979	9.79
	Bajra	76	1501	114076	14.26	84	1651	138032	17.25
Hassanpur Taoru	Wheat	290	2867	831430	116.40	319	3154	1006030	140.84
	Oilseed	56	1196	66976	23.44	62	1316	81041	28.36
	Bajra	224	1514	339136	42.39	246	1665	410355	51.29
Beri Nisfi Sohna	Wheat	101	2893	292193	40.91	111	3182	353554	49.50
	Oilseed	32	1228	39296	13.75	35	1351	47548	16.64

Name of Village	Name of Crops	Pre project		Total Production (in Kg)	Total Value Rs (in lacs)	Expected post project		Total Production (in Kg)	Total Value Rs (in lacs)
		Area ha	Average yield kg. Per ha			Area ha	Average yield kg. Per ha		
	Bajra	112	1496	167552	20.94	123	1646	202738	25.34
Pada	Wheat	168	2915	489720	68.56	185	3207	592561	82.96
	Oilseed	37	1184	43808	15.33	41	1302	53008	18.55
	Bajra	154	1536	236544	29.57	169	1690	286218	35.78
Kalwari	Wheat	104	2884	299936	41.99	114	3172	362923	50.81
	Oilseed	48	1176	56448	19.76	53	1294	68302	23.91
	Bajra	120	1508	180960	22.62	132	1659	218962	27.37
Jafrabad	Wheat	74	2873	212602	29.76	81	3160	257248	36.01
	Oilseed	42	1201	50442	17.65	46	1321	61035	21.36
	Bajra	95	1519	144305	18.04	105	1671	174609	21.83
Sheikhpur	Wheat	70	2911	203770	28.53	77	3202	246562	34.52
	Oilseed	29	1187	34423	12.05	32	1306	41652	14.58
	Bajra	53	1507	79871	9.98	58	1658	96644	12.08
Sabras	Wheat	80	2874	229920	32.19	88	3161	278203	38.95
	Oilseed	30	1193	35790	12.53	33	1312	43306	15.16
	Bajra	100	1493	149300	18.66	110	1642	180653	22.58
Sunthaka	Wheat	51	2893	147543	20.66	56	3182	178527	24.99
	Oilseed	13	1214	15782	5.52	14	1335	19096	6.68
	Bajra	62	1524	94488	11.81	68	1676	114330	14.29
Total				**11930820**	**1857.12**			**14436292**	**2247.11**

Source: Revenue Department and Department of Agriculture, Mewat (Haryana)

9.5 HORTICULTURE

Table 5. Pre and post project area under Horticulture

S.No.	Name of Micro Watersheds	Existing area under horticulture (ha)	Additional Area under horticulture proposed to be covered through IWMP	Total area in ha – Post Project

1	Bhango	2	5.5	7.5
2	Sondh	15	3.5	18.5
3	Gangani	10	4	14
4	Kota Khandewla	1	3	4
5	Bissar Akbarpur	24	5	29
6	Baghanki	5.5	7	12.5
7	Mohmmadpur Ahir	6	3	9
8	Dadu	13	4	17
9	Hassanpur Taoru	7	4.5	11.5
10	Para	10.5	6	16.5
11	Jafrabad	15	12.5	27.5
	Total	**109**	**58**	**167**

9.6 AFFORESTATION/ VEGETATIVE COVER

Table 6. Pre and post project forest and vegetative cover

S. No.	Name of micro watersheds	Existing area under tree covered, ha	Area under tree cover proposed ha	Total
1	Bhango	18	7	25
2	Sondh	2	1	3

3	Gangani	12	4	16
4	Kota Khandewla	12	5	17
5	Bissar Akbarpur	16	6	22
6	Baghanki	6.5	2.5	9
7	Mohmmadpur Ahir	11	5	16
8	Dadu	7	5.5	12.5
9	Hassanpur Taoru	13.5	6	19.5
10	Para	4.25	3.5	7.75
11	Jafrabad	6	3.5	9.5
	Total	**108.25**	**49**	**157.25**

9.7 LIVESTOCK

Table 7. Details of livestock in the project area

S. No.	Name of micro watershed	Type of Animals	Pre project			Post project			Remarks
			No.	Yield Kg/ day	Income In Rs per day	No.	Yield Kg/ day	Income In Rs per day	
1	Bhango	Buffalo	625	8-10	320-400	719	10-12	420-504	Increase in milk yield and number of animals by approx. 15%
		Cow	710	5-6	75-90	817	7-8	140-160	Increase in milk yield and number of animals by approx. 15%
2	Sondh	Buffalo	325	10-11	400-440	374	12-13	504-546	Increase in milk yield and number of animals by approx. 15%
		Cow	53	6-7	90-105	61	8-9	160-180	Increase in milk yield and number of animals by approx. 15%

S. No.	Name of micro watershed	Type of Animals	Pre project			Post project			Remarks
			No.	Yield Kg/ day	Income In Rs per day	No.	Yield Kg/ day	Income In Rs per day	
3	Gangani	Buffalo	53	9-10	360-400	61	11-12	462-504	Increase in milk yield and number of animals by approx. 15%
		Cow	13	5-6	75-90	15	7-8	140-160	Increase in milk yield and number of animals by approx. 15%
4	Kota Khandewla	Buffalo	325	10-12	400-480	374	12-14	504-588	Increase in milk yield and number of animals by approx. 15%
		Cow	125	6-7	90-105	144	8-9	160-180	Increase in milk yield and number of animals by approx. 15%
5	Bissar Akbarpur	Buffalo	455	11-12	440-480	523	13-14	546-588	Increase in milk yield and number of animals by approx. 15%
		Cow	140	5-6	75-90	161	7-8	140-160	Increase in milk yield and number of animals by approx. 15%
6	Baghanki	Buffalo	515	10-11	400-440	592	12-13	504-546	Increase in milk yield and number of animals by approx. 15%
		Cow	195	6-7	90-105	224	8-9	160-180	Increase in milk yield and number of animals by approx. 15%
7	Mohmmadpur Ahir	Buffalo	267	11-12	440-480	307	13-14	546-588	Increase in milk yield and number of animals by approx. 15%
		Cow	82	5-6	75-90	94	7-8	140-160	Increase in milk yield and number of animals by approx. 15%
8	Dadu	Buffalo	608	8-10	320-400	699	10-12	420-504	Increase in milk yield and number of animals by approx. 15%
		Cow	115	6-7	90-105	132	8-9	160-180	Increase in milk yield and number of animals by approx. 15%
9	Hassanpur Taoru	Buffalo	490	9-11	360-440	564	11-13	462-546	Increase in milk yield and number of animals by approx. 15%
		Cow	93	5-6	75-90	107	7-8	140-160	Increase in milk yield and number of animals by approx. 15%
10	Pada	Buffalo	362	10-11	400-440	416	12-13	504-546	Increase in milk yield and number of animals by approx. 15%
		Cow	69	5-6	75-90	79	7-8	140-160	Increase in milk yield and number of animals by approx. 15%

S. No.	Name of micro watershed	Type of Animals	Pre project			Post project			Remarks
			No.	Yield Kg/ day	Income In Rs per day	No.	Yield Kg/ day	Income In Rs per day	
11	Jafrabad	Buffalo	492	11-12	440-480	566	13-14	546-588	Increase in milk yield and number of animals by approx. 15%
		Cow	90	5-6	75-90	104	7-8	140-160	Increase in milk yield and number of animals by approx. 15%

9.8 LINKAGES

The direct livelihood activities need good forward and backward support system. The activities may fail to deliver the desired results. These linkages would involve credit, machinery, input supply, marketing etc.

The backward forward linkages will involved the extension services which are brought available in the project proposal as capacity building and the provision have been kept. 20 kits of agriculture implement have been provided. Milk and other collection centre would be constituted with increased milk production under the project.

Table. 8: Backward-Forward Linkages

Sr. No.	Project	Type of Marketing Facility	Pre-Project (no.)	During the Project (no.)	Post-project (no.)
1	Gangani Watershed (IWMP II)	Backward linkages	-	-	-
		Seed certification	Moderate	Extension and Training	Improved
		Seed supply system	Moderate	Extension and Training	Improved
		Fertilizer supply system	Moderate	Extension and Training	Improved
		Pesticide supply system	Moderate	Extension and Training	Improved
		Credit institutions	Banks	Coordinate to lead banks	Bank intensity increased
		Water supply for irrigation	Scarcity	Promote rain water harvesting	Would be promoted
		Extension services	KGK& Agriculture deptt.	Extension & Training in village level	Improved
		Nurseries	Horticulture and forest	To be promoted	Improved
		Tools/ machinery suppliers	Subsides	Educate by Extension & Training	Supplies would be improved

		Price support system	Major crops	-	Needs for all crops
		Labour	-	Employment generate through works activities	Migration reduce
		Any other (please specify)	-	-	-
		Road network	Available	Coordinate with lined department	Would be strengthen
		Transport facilities	Moderate	Coordinate with lined department	Would be promoted
		Markets / Mandies	Exists	Coordinate with lined department	Intensity would be increased
		Agro and other industries	-	Coordinate with lined department to establish Cottage industries (Kutir Udyog) for landless and unemployed youth	Would be strengthen
		Milk and other collection centres	Milk collection centre in long distance	Coordinate with lined department	For installation on nearest door steps
		Any other (please specify)	-	-	-
			Vermi-compost unit	Convergence with NHM (Horticulture) department	To be increased
			Mushroom Cultivation	Convergence with NHM (Horticulture) department	To be increased
			Animal vitamins/ Minerals Deficit	Coordinate with lined department, to organize camps in watershed area	Animal vitamins feeds Would be promoted

9.8.1 LOGICAL FRAMEWORK ANALYSIS

Table 9. Logical Framework Analysis

Components	Activities	Outputs	Effect	Impact
Village Institution Formation	Formation of Watershed Community, User Groups	• Watershed Committee each village • Number of user groups depending on the coverage of particular intervention	Project can be implemented and managed in a democratic and Participatory way ensuring equity and transparency.	• Unity and prosperity in the village management. • People's Participation and positive perception towards the programme.
Strengthening Village operations	• Organizing training and awareness programme for village institutions	• Awareness camps to be organized • Trainings and exposure visits UGs and WCs to be	• Quality of management of common resources improved. • Quality of distribution of	

Components	Activities	Outputs	Effect	Impact
	(I.E.C. Activities). • Capacity Building workshops and exposure visits for User Group and Watershed Community • Facilitating and monitoring the functioning of UGs and WCs Strengthen linkages between UGs and WCs and Panchayat Institutions • Gender sensitization of UGs and WCs to increase inclusiveness of Samuh (Joint) decision making. • Sensitize Village communities to involve children and youth in development	held Capacity building workshops to be organized one. • Federations of UGs and WC to be formed.	benefits between people improved. • Increased awareness amongst women about village resources • Women participation enhanced in decision-making of GVCs. • Involvement of youth and children in village development.	
Fund Management	• Improve management and utilization of UGs and WCs	UGs and WCs operating bank account and managing resources on their own.	• Purpose, frequency and volume of use of the fund enhanced • Volume of funds	

Components	Activities	Outputs	Effect	Impact
	• Prepare communities to explore other sources of income for UGs and WCs.		generated for UGs and WCs from other sources of income increased	
Ecological restoration	• Protection, Treatment and regeneration of common and private lands. • Protection, treatment and regeneration of forest lands. • Plantation of fruits and forest species. • Input trainings, conduct meetings and organize exposure visits for communities, village volunteers and staff to effectively plan, execute and monitor activities. • Identification and promotion of non-timber forest produce based income generation activities.	• Common and private lands to be brought under new plantations and agro-horti- forestry like Neem, Adussa, prosopis, Banyan and Peepul. • Forest lands to be brought under new plantations and protection. • Trainings, exposure visits and meetings to be organized for communities, village volunteers and staff. • Income generation intervention promoted	• Fodder availability from common and private land increased. • Accessibility to common and forest lands increased with removal of encroachments and resolution of conflicts	• Better Ecological order in the area. • Increase in the proportion of households having more security of fodder. • Reduction in drudgery of fodder and fuel collection, especially women

Components	Activities	Outputs	Effect	Impact
Rainfed Area Development	• Treatment of land through improved soil and moisture conservation practices on watershed basis. • Promotion of good agricultural practices- horticulture, improved crop and vegetable. • Promotion of organic farming practices. • Formation of Fodder banks to increase fodder security and promote dairy development among communities. • Identification and promotion of agri-produce based income generation activities like grading, processing and packaging. • Promotion of better	• Land to be brought under improved soil moisture conservation practices. • Good agricultural practices to be promoted. • Organic farming to be promoted. Fodder banks to be established. • Agriculture based livelihood income generation activities to be promoted • Water harvesting structures to be constructed. • Drip irrigation facilities to be distributed among farmers. • Approx 15000 person days of employment to be generated. • Trainings, exposure visits and meetings to be organized for communities, village volunteers.	• Improved productivity of treated land. • Increased availability of water in cells. • Increase in annual agricultural production. • Farmers adopt organic farming practices. • Fodder security of farmers enhanced. • Increased availability of water for 9 to12 months. • Increased availability of water for livestock • Increase in agricultural productivity of land. • Augmentation of drinking water supply.	Increase in proportion of households having more security of food Increase in contribution of agricultural income to the household income

Components	Activities	Outputs	Effect	Impact
	irrigation practices like drip irrigation • Impart trainings, conduct meetings and organize exposure visits of communities.			
Women's socio-political and economic empowerment	• Formation and strengthening of women' SHG groups • Capacity building of women folk. • Capacity building of SHG leaders and accountants Linking SHGs with external financial institutions	• Women's SHG groups to be formed. • Federation of Women's SHGs to be formed. • Trainings to be conducted for preparation of woolen products from sheep and goats	• Enhanced capacities of leaders of women's group in taking initiatives to solve problems at different levels. • Improved access to credit for livelihood purposes Increased household income.	• Position of women in household, community, society (politically, socially and economically) as perceived by women and community at large. • Performance enhancement of SHGs in terms of participation, decision-making, leadership and fund management. • Equality and equity in gender relations at home (decision making, expenditure, children's education, health)

The adoption of soil and water management practices, renovation of village ponds and plantations not only improve productivity but also improve village environment. The investments made in water resources development would ease shortage of water both for domestic use and livestock and also make available water for supplemental irrigation.

The introduction of improved production technologies would stabilize crop production, save crops from adverse impacts of droughts and raise income level of farmers. The increased fodder availability and animal health care, the milk production would increase. There would be increased cash flows from subsidiary occupations. The increased awareness, operations through SHGs and easy availability of finance would make the communities more vibrant and enterprising.