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CHAPTER- 1

METHODOLOGY

INTRODUCTION

The Government of India (GOI) adopted watershed management as a strategy to address the sustainable agricultural productivity in the rainfed areas since last three decades. Further, GOI has adopted watershed management as a national 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.

To implement watershed (IWMP-II) area programme a systematic survey has been conducted to know the potentiality of each village / Micro-Watershed. With this view, a baseline survey was conducted in five micro- watersheds Dubeta (6D1E2j7), Bado Brahmanan

(6D1E2j8), Harita (6D1E2j9), Daha (6D1E2w3), and Bado Rangran (6D1E2w2). 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 programs 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 5 micro watersheds namely Dubeta (6D1E2j7), Bado Brahmanan (6D1E2j8), Harita (6D1E2j9), Daha (6D1E2w3), and Bado Rangran (6D1E2w2) with their respective codes.

1.1.2 Base 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

Though the project was sanctioned in September, 2011 the preparatory phase started in 2012. Initially, a meeting was arranged with officials of concerned departments and technical experts located at Dubeta, Bado Brahmanan, Harita , Daha, and Bado Rangran micro- watersheds. During this meeting, preliminary details of the proposed project including location of villages and criteria of selection and PPR were discussed.

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

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

The primary data was also compiled from revenue records, Anganwari workers and statistical officers of the district. Rainfall data was collected from the Ground Water Cell to maintain the record of rainfall from rain gauge station located in the Sub division/district headquarter of the project area.

1.1.4 Collection of Secondary data

The data with regard to Demographic, 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 a designed Performa. 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 meetings were organized at common places and problems and possible solutions 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 technical possibilities were discussed and measurements were recorded for jointly agreed activities. Similarly, discussions were held about entry point activities and items of work were finalized keeping in view the availability of funds in the project. Through discussions were held on 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 stakeholders 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.

1.2.1 Participatory 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** Water course (lined) with culvert (RCC Pipe NP3) on field paths crossing, Roof top rainwater Harvesting and injection well, , Ramp, inlet & outlet, Earthen Embankments /Marginal bunds with pucca outlet, Small earthen embankment with vegetative support for dune stabilization, Community water storage Tank **etc.** were recommended to conserve and store water used for life saving irrigation potential in the rain fed area and to avoid 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.





Transect walk and site visit

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, Geo-hydrological, Micro Watershed, Drainage, Contours, Slope, Soil Classification, Land Capability Classification, Soil Fertility, Ground Water Depth and Quality, Proposed and existing activities of works. All Watershed maps (micro- watershed) have been prepared based on the watershed maps made available by Soil and Land use Survey of India (SLUSI) with coding.

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, Soil fertility and Land Capability classes. All these parameters were given weightage 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 need and experience of the experts working in the area and catchment area, structures like Water course (lined) with culvert (RCC Pipe NP2) on field paths crossing, Roof top rainwater harvesting and injection well, Ramp, inlet and outlet, Earthen Embankments /Marginal bunds with pucca outlet, Small earthen embankment with vegetative support for dune stabilization, Community water storage Tank 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	
	Cluster approach	Yes
	Hydro-geological survey	Yes
	Contour Mapping	Yes

S.No.	Scientific Criteria/input used	Whether Scientific Criteria was used
	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

S.No.	Scientific Criteria/input used	Whether Scientific Criteria was used
B	Inputs	-
	Bio pesticides	Yes
	Organic manure	Yes
	Vermi- compost	Yes
	Bio Fertilizer	Yes
	Water saving devices	Yes
	Mechanical tools	Yes
	Bio fencing	No
	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, Hisar for approval of the Watershed Committees. After detailed deliberation and incorporation of relevant recommendation/ suggestions into the plan, 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 Hisar-I, Hansi-I block of Hisar district in Haryana state. The project is a cluster of five micro- watersheds namely Dubeta (6D1E2j7), Bado Brahmanan (6D1E2j8), Harita (6D1E2j9), Daha (6D1E2w3), and Bado Rangran (6D1E2w2). The total geographical area of the project is **4663 ha** out of which **3932 ha** has been undertaken to be treated under IWMP II starting from year 2011-12. The project is divided into five 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	Dubeta Watershed	Dubeta	6D1E2j7	Dubeta	Hisar-I	Hisar	1116	867	104.04	ASCO Hisar
2	Dubeta	Bado	6D1E2j8	Bado	Hisar-I	Hisar	753	677	81.24	ASCO

	Watershed	Brahmanan		Brahmanan						Hisar
3	Dubeta Watershed	Harita	6D1E2j9	Bharri	Hisar-I	Hisar	748	677	81.24	ASCO Hisar
				Harita						
4	Dubeta Watershed	Daha	6D1E2w3	Daha	Hisar-I	Hisar	1250	934	112.08	ASCO Hisar
5	Dubeta Watershed	Bado Rangran	6D1E2w2	Bado Rangran	Hisar-I	Hisar	796	777	93.24	ASCO Hisar
Grand Total							4663	3932	471.84	

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 Weight Age for Selection of Watershed

S. 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	

S. No.	Criteria	Maximum Score	Ranges and Scores			
						% of TGA (5)
x	Productivity potential of the land	15	Lands with low production & where productivity can be significantly enhanced with reasonable efforts (15)	Lands with moderate production & where productivity can be enhanced with reasonable efforts (10)	Lands with high production & where productivity can be marginally enhanced with reasonable efforts (5)	
xi	Contiguity to another watershed that has already been developed/treated	10	Contiguous to previously treated watershed & contiguity within the micro-watersheds in the project (10)	Contiguity within the micro-watersheds in the project but non contiguous to previously treated watershed (5)	Neither contiguous to previously treated watershed nor contiguity within the micro-watersheds in the project (0)	
xii	Cluster approach in the plains (More than one contiguous micro-watersheds in the 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)	

S. No.	Criteria	Maximum Score	Ranges and Scores			
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 70.5 concerning above thirteen parameters, a composite ranking was given to Dubeta Watershed (IWMP II) project as given in **Table- 3**.

The scoring is made as the project area falls under semi- arid to arid and sand dune topography of Haryana , area has no assured irrigation facilities, erratic rainfall and poor deep quality of ground water. The percentage of schedule caste in the watershed is less than 20% so the score is given as 3. The percentage of poor population is less 20 percent so 2.5 score was allotted. The moisture index is below -66.7 the score allotted is 15 whereas rainfed area is between 80 to 90 percent so the score allotted is 10. Considering all the parameter mentioned for criteria and weightage for selection of watershed in the project, the composite score is 70.5.

Table- 3: Weight-age of the Project

1	2	3	4	5	6	7	8	9													
Sr. No	District	Name of the project	No. of micro-watersheds proposed to be covered	Geographical area (ha)	Proposed Area for Development	Type of project (Hilly/ Desert/ Others)	Proposed cost (Rs. In Lakh)	Weightage under the criteria													
								i	ii	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	Total
1.	Hisar	Dubeta watershed (IWMP II)	5	4663	3932	Others	471.84	2.5	3	0	5	5	10	10	5	5	10	10	10	-	70.5

Table 4: Watershed Information

Name of the Project	No. of Watersheds to be Treated	Watershed codes	Watershed regime/type/order
Dubeta Watershed (IWMP II)	5	6D1E2j7, 6D1E2j8, 6D1E2j9, 6D1E2w3, and 6D1E2w2	Others

2.3 OTHER ONGOING DEVELOPMENT PROJECTS / SCHEMES IN THE PROJECT VILLAGES

These villages being backward have been on top priority in number of developmental projects. These programmes are Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), Total Sanitation Campaign (TSC), Swarnajaynti Gram Swarojgar Yogna (SGSY) and Indira Awas Yojana (IAY), NWDPRRA etc. All the active programmes are 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 2013-14 (Job card issued)
1	MGNREGA	Dubeta	DRDA, Hisar	To provide assured employment of 100 days in a year to unskilled labour and development of village.	63
2	MGNREGA	Bado Brahmanan	DRDA, Hisar	To provide assured employment of 100 days in a year to unskilled labour and development of village.	69
3	MGNREGA	Harita	DRDA, Hisar	To provide assured employment of 100 days in a year to unskilled labour and development of village.	89
4	MGNREGA	Daha	DRDA, Hisar	To provide assured employment of 100 days in a year to unskilled labour and development of village.	177
5	MGNREGA	Bado Rangran	DRDA, Hisar	To provide assured employment of 100 days in a year to unskilled labour and development of village.	115

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)

Watershed Area Development Treated/Sanctioned											
1	2	3		4				5			
S. No	Names of District	Total micro watersheds in the District		Deptt. of Land Resources		Other Ministries/ Deptt.		Total watersheds covered		Net watersheds to be covered	
				Pre- IWMP projects		Any other watershed include settlement etc. project					
		No.	Area (ha)	No.	Area (ha)	No.	Area (ha)	No.	Area (ha)	No.	Area (ha)
1	Hisar	395	335247	251	125500	30	15000	281	140500	114	194747

CHAPTER – 3

BASIC INFORMATION OF THE PROJECT AREA

GEOGRAPHY AND GEOHYDROLOGY

The Dubeta Watershed (IWMP II) falls in Hisar-I block of District Hisar. The area is occupied by Indo- Gangetic alluvium/ aeolian plains. The area is without any natural drainage system. Physiographically, the area falls under dune and inter dune plains. The area lying in between 28°54'15" to 28°59'45"N latitude and 75°44'15" to 75°51'15"E longitude. The general elevation varies between 212-231 m **(MSL) above mean sea level**. Area experiences the lowest rainfall in the state about 80 percent of its annual rainfall is received in the month of July to September. Despite total rainfall received in this area, water retention is very low, due to light texture and dune topography. The Contour and Drainage 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 Dubeta Watershed (IWMP II)

S.No	Name of Micro watersheds with Codes	Name of Villages	Geographic area of the village(ha)	Treatable area (ha)	Land under agriculture use (ha)	Rainfed area (ha)	Wasteland	
							Cultivable	Non-Cultivable
1	Dubeta (6D1E2j7)	Dubeta	1116	867	1031	782	1	84
2	Bado Brahmanan (6D1E2j8)	Bado Brahmanan	753	677	687	611	-	66
3	Harita (6D1E2j9)	Harita	537	500	466	429	24	47
		Bharri	211	177	173	139	6	32
4	Daha (6D1E2w3)	Daha (part)	1250	934	1119	803	59	72
5	Bado Rangran (6D1E2w2)	Bado Rangran (part)	796	777	69	50	21	706
		Total	4663	3932	3545	2814	111	1007

(Source – District Census Handbook, 2001 Hisar)

3.2 SOIL AND TOPOGRAPHY

The soils of Dubeta Watershed are very deep, sandy, sandy loam to sandy clay loam or clay loam, typic ustipssament, typic and Aric haplusteps, typic natrustalf and typic ustifluent. The topography of the area ranges from level to nearly level slopes. Soils are subject to susceptible to moderate to moderate water and wind erosion. The slope ranges from 0.5 to 3% and above most of the area

of micro watersheds falls under level to nearly level slopes on dune and most of the areas fall under lands.. Slope map is presented in Annexure IV.

Table 2. Soil type and Topography

S.No	Name of Micro Watersheds	Codes	Geographical area (ha)	Major Soil types	Topography
1.	Dubeta	6D1E2j7	1116	Sand, Loamy sand, sandy loam to sandy clay loam	Level to nearly level
2.	Bado Brahmanan	6D1E2j8	753	Sand, Loamy sand, sandy loam to sandy clay loam	Level to nearly level
3.	Harita	6D1E2j9	748	Sand, Loamy sand, sandy loam to sandy clay loam	Level to nearly level
4.	Daha (part)	6D1E2w3	1250	Sand, Loamy sand, sandy loam to sandy clay loam	Level to nearly level
5.	Bado Rangran (part)	6D1E2w2	796	Sand, Loamy sand, sandy loam to sandy clay loam	Level to nearly level
	Total		4663		

Source: - Department of Agriculture, Haryana

3.2.1 Flood and Drought Condition

There have been very few incidences of seasonally waterlogging occurs due to the water course/ canal due to seepage during rainy season. The data collected from the revenue department reveals that the instances of drought once in 5 years. The flood and drought resulted in low to very low yields of the crops.

Table 3. Flood and Drought condition

S.No.	Name of Micro- watersheds	Flood Incidence	Drought Incidence
1.	Dubeta	-	Once in a 4 Years
2.	Bado Brahmanan	-	Once in a 4 Years
3.	Harita	-	Once in a 4 Years
4.	Daha	-	Once in a 4 Years
5.	Bado Rangran	-	Once in a 4 Years

3.3 SOILS

3.3.1 Soil Erosion

In the identified five micro watersheds, it is observed that due to light texture & less vegetative cover to increase the loss of soil in the watershed area. This results in degradation of agricultural land, deforestation and low organic matter contents Average annual rainfall is 376 mm of the area. In the watershed area the upper soil crest gets washed away in the form of runoff during rainy season if heavy storm occur, which also carries valuable top soil (sheet). Soil erosion in respect of sheet is moderate. Majority of the watershed Community are dependent on agriculture. Agriculture suffers due to area being rain fed and due to deficit rains in the region, resulting in further deterioration of socio economic conditions of community.

3.3.2 Soil Salinity/Alkalinity (Salinity ingress)

There is moderate soil salinity in the Project and pH is normal and within the limits of 7.28 to 8.25.

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

S.No.	Name of Micro Watersheds	Soil pH	Type of salinity
1.	Dubeta	7.5- 8.10	Moderate salinity
2.	Bado Brahmanan	7.5- 8.25	Moderate salinity
3.	Harita	7.65- 8.01	Moderate salinity
4.	Daha	7.28- 8.15	Moderate salinity
5.	Bado Rangran	7.5- 8.25	Moderate salinity

3.3.3 SOIL CLASSIFICATION

Major soils associations' fall in the watershed are four soil associations unit. The detail description of all soil associations are given below. The Soil map is presented in **Annexure V. The fertility status of the project area, available nitrogen and phosphorus are low. However, the available potash is high. The fertility status map of the project area is exhibited in Annexure-VI.**

Soil Mapping Unit- 2 (Kharia Soil Association)

The Kharia soil series is only series in this soil association. The soil series is excessively drained, Sand to Loamy sand, Sandy Mixed hyperthermic Typic Ustipsamments. The soil series is strongly calcareous, very deep, pH 8.80-9.30, yellowish brown in colour (10YR 5/4-10YR 5/6) developed on Gently sloping stabilized dunes and interdunal plains over aeolian.

Soil Mapping Unit- 5 (Jaundli Khurd- Sarsod Soil Association)

The Jaundli Khurd soil series is dominated in this soil association and associated soil series is Sarsod soil series. The dominant soil is Well drained, Sand to Sandy loam, Coarse loamy Mixed hyperthermic Typic Ustifluvents, 1st associate soil series is well drained, Sandy loam to Sandy Clay loam, Fine loamy Mixed hyperthermic Typic Haplustalfs, Jaundli Khurd soil series is violent calcareous, very deep, pH 8.19-8.47, dark yellowish brown to light yellowish brown and olive brown to light olive brown in colour (10YR 4/4-10YR 6/4, 2.5Y 4/4-2.5Y 5/4) developed on Very gently sloping interdunal plain over aeolian and Sarsod soil series is non calcareous, very deep, pH 8.00-8.50, dark yellowish brown in colour (10YR 3/4-10YR 4/4) developed on Nearly level plains over Fluvo-aeolian.

Soil Mapping Unit- 13 (Ratia- Dabra- Dhiranwas Soil Association)

The Ratia soil series is dominated in this soil association and associated soil series are Dabra and Dhiranwas soil series. The dominant soil is Well drained, Loam to Sandy clay loam to Clay loam, Fine loamy Mixed hyperthermic Typic Haplustepts, 1st associate soil series is Imperfectly drained, Sandy clay loam to Clay loam to Sandy clay, Fine loamy Mixed hyperthermic Typic

Haplustalfs and 2nd associate soil series is Moderate to well drained, Sandy loam to loam, Fine loamy Mixed hyperthermic Typic Natrustalfs , Ratia soil series is strong to violent calcareous, very deep, pH 8.75-9.06, dark brown to dark yellowish brown in colour (10YR 4/3- 10YR 4/4) developed on Nearly level Alluvial plains over alluvium with Few fine lime concretions in B- horizon, Dabra soil series is Slightly strong calcareous, very deep, pH 7.28-8.74, dark brown to yellowish brown and brown in colour (10YR 4/3-10YR 5/4, 7.5YR 4/4) developed on Nearly level Alluvial plains over alluvium and Dhiranwas soil series is violent in calcareous, very deep, pH 8.00-8.90, dark yellowish brown to light brownish gray in colour (10YR 4/6, 2.5Y 6/2) developed on Nearly level Alluvial plains over alluvium.

Soil Mapping Unit- 17 (Dabra- Nyana- Ratia Soil Association)

The Dabra soil series is dominated in this soil association and associated soil series are Nyana and Ratia soil series. The dominant soil is Imperfectly drained, Sandy clay loam to Clay loam to Sandy clay, Fine loamy Mixed hyperthermic Typic Haplustalfs, 1st associate soil series is poorly drained, Clay loam to Clay, Fine Mixed Hyperthermic Aeric Halaquepts and 2nd associate soil series is Well drained, Loam to Sandy clay loam to Clay loam, Fine loamy Mixed hyperthermic Typic Haplustepts , Dabra soil series is Slightly strong calcareous, very deep, pH 7.28-8.74, dark brown to yellowish brown and brown in colour (10YR 4/3-10YR 5/4, 7.5YR 4/4) developed on Nearly level Alluvial plains over alluvium, Nyana soil series is Slightly calcareous, very deep, pH 8.90-9.30, dark brown to yellowish brown in colour (10YR 3/3-10YR 5/4) developed on Nearly level Alluvial plains over alluvium and Ratia soil series is strong to violent calcareous, very deep, pH 8.75-9.06, dark brown to dark yellowish brown in colour (10YR 4/3- 10YR 4/4) developed on Nearly level Alluvial plains over alluvium with Few fine lime concretions in B- horizon.

(Source: Received from HARSAC on 1: 50000 scale)

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 1 to class IV land is suited to agriculture. Classes V to VIII are not suitable for agriculture. These are used for pastures, forestry, and wildlife and recreation purposes and other industrial and township. Depending upon the degree of limitation and the kind of problems involved in management of soils, the land capability sub classes were indicated by adding the following limitation symbols to the capability classes:

1. Erosion and runoff (e) including risk of erosion and great erosion damage.
2. Excess of water (w) including wetness, high water table, and problem of drainage.
3. Root zone limitation (s) including shallow depth, low water holding capacity, salinity or alkalinity/rockiness.
4. Climate limitation (c).

The soils of the selected Watersheds have been grouped into two subclasses. 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 moderately very deep, light to coarse loamy texture located on level to nearly level land and intra dunal plains. These soils are well drained, moderately permeable, and have low water holding capacity with slight to moderate erosion hazard.

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

1. Land leveling should be done at 50% subsidy, because farmers are not economically capable to bear the cost of land leveling.
2. Engineering measures like earthen embankments if require with drop structure for safe disposal of excess rainwater should be under taken.
3. Agronomic measures; mainly dry land farming, leguminous crop growing as mix cropping should be recommended.
4. Provide proper drainage system in low lying depression in the area.
5. Increase biomass through adopting agro- forestry on field bunds.
6. Provide community water storage tanks for supplementary irrigation during lean period.
7. Strengthening of defunct water courses for water conservation which is waste during irrigation.

Land capability subclass IV e₃s₃

These soils are greatly light textured soils developed on nearly level. The water holding capacity is very poor and the water and wind erosion hazard is moderate to severe.

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

1. Suitable soil conservation measures should be adopted to check water and wind erosion. Soils should be provided permanent vegetation (Agro forestry) cover to check further deterioration of soils and check wind erosion.
2. Soils would be occasionally cultivated in suitable crop rotation with indigenous grasses.
3. Land leveling should be done at 50% subsidy, because formers are not economically capable to bear the rate of land leveling.

4. Earthen Embankment and field bunding with agro- forestry should be provided to check water erosion and dune stabilization.
5. Provide community water storage tanks for supplementary irrigation during lean period.
6. Strengthening of defunct water courses for water conservation which is waste during irrigation.

3.3.5 Climatic Conditions

The average annual rainfall of the district is 376 mm (during the past 13 year's data). The highest rainfall is 548 mm during the year 2003 and lowest 145 mm during the year 2000. The uneven rainfall distribution is leading to run off soil every year to the steams, rivulets and depressed area of the Dubeta Watershed (IWMP II). The year wise rainfall from 2000 to 2012 is presented in **Table.5**.

Table-5. Rainfall during the years 2000-11

S.No	Year	Rainfall(in mm)
1	2000	145
2	2001	322
3	2002	225
4	2003	548
5	2004	329
6	2005	474
7	2006	253
8	2007	496
9	2008	467
10	2009	415
11	2010	415

12	2011	337
13	2012	466
	Average	376

(Source: - Ground Water Cell, Hisar)

The mean maximum temperature is 41.6° C (May and June) and mean minimum is 5.5° C (January) of the district. The rainfall data reveals that the district has 23 rainy days in the year.

3.3.6 Physiography and Relief

Physiographically, the area is divided into two parts active and stabilized sand dunes. The general Elevation in the area belongs to stabilized sand dunes and Interdunal plains 212-231m above mean sea level. Area experiences lowest rainfall and water is drained through fields and create temporary water logging conditions in depressions and along the canal. Upper area is badly affected by wind erosion due to absence of vegetative cover and uneven slopes. The elevation range and percentage slope distribution has been presented in **Table 6**.

Table 6. Physiography and Relief

Project Name	Elevation (MSL)	Slope Range (%)
Dubeta Watershed (IWMP II)	212-231	0.5-3%

3.4 LAND AND AGRICULTURE

The land holding pattern of the villages under Dubeta Watershed shows that the majority of the land holding is below 10 ha. In the majority of Watershed area suffering from assured irrigation source has forced the majority of the farmers adopt side income source

to survive because the rainfed agriculture not fulfill of their daily needs. The nearest Industrial Area is Hisar. This affects directly the demographic profile of the village.

The major crops Bajra, Gwar, Aarahar, Green fodder and pulses in Kharif under rainfed conditions. The major crops during Rabi Wheat, Green fodder and seasonal vegetables, Gram, Mustard in rain fed and irrigated conditions. The soil and water conservation measures such as Engineering like Water course (lined) with culvert (RCC Pipe NP3) on field paths crossing, Roof top Rainwater Harvesting & injection well, Ramp, inlet & outlet, Earthen Embankments /Marginal bunds with pucca outlet, Small earthen embankment with vegetative support for dune stabilization, Community water storage Tank. 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	Grasses and Shrubs
1	Neem	Kinnow	Bhurut
2	Black Siris	Ber	Keir
3	Australian Babool	Lemon	Jharberi
4	Shisham	Grapes	Congress Grass
5	Safeda	Guava	Doob
6	Kikar		
7	Jaal		

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	ST	Total owners
2318	899	28	-	3245

3.4.2 AGRICULTURE/PATTERN

Table 9. Agriculture/ Pattern

Sr. No.	Name of Micro Watersheds	Village	Land under agriculture use (ha)	Net Sown area (ha)	
				One time	Two times
1.	Dubeta	Dubeta	1031	773	732
2.	Bado Brahmanan	Bado Brahmanan	687	522	481
3.	Harita	Harita	466	350	326
		Bharri	173	130	123
4	Daha	Daha	1119	873	795
5	Bado Rangran	Bado Rangran	69	52	48
		Grand Total	3545	2700	2505

(Source: Department of Agriculture, Haryana)

3.4.3 IRRIGATION

Lack of Assured Irrigation Facilities

The area being located in the tail end of the canal network where is surface water availability is uncertain, however the quality of ground water under shallow depth is marginal where the farmers are exploiting the ground water for irrigation. The present source of irrigation in the watershed has been tabulated in **Table 10**.

Table 10. Irrigation Pattern.

S. No	Name of Micro Watersheds	Name of Villages	Source 1: Canal		Source 2: Groundwater (Tube wells)	
			Availability months	Net area (ha)	Availability months	Net area (ha)
1.	Dubeta	Dubeta	July to June	269	July to June	2
2.	Bado Brahmanan	Bado Brahmanan	-	-	July to June	269
3.	Harita	Harita	July to June	330	July to June	12
		Bharri	-	-	July to June	163
4	Daha	Daha	-	-	July to June	735
5	Bado Rangran	Bado Rangran	-	-	July to June	212
		Total		599		1393

(Source – District Census Handbook Hisar)

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)

S. No.	Name of Micro Watersheds	Village	Rabi crops (Wheat)				(Mustard)				(Pulses)		
			Area (ha)	Prod. (000'kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (000'kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (000'kg)	Productivity (kg/ha) Avg.
1.	Dubeta	Dubeta	406	1838.368	4528	Yes	127	206.756	1628	Yes	84	65.016	774
2.	Bado Brahmanan	Bado Brahmanan	243	1099.575	4525	Yes	75	121.575	1621	Yes	87	67.164	772
3.	Harita	Harita	248	1123.192	4529	Yes	28	45.584	1628	Yes	-	0	-
		Bharri	75	339.225	4523	Yes	24	39.000	1625	Yes	0	0	-
4	Daha	Daha	449	2033.521	4529	Yes	75	121.725	1623	Yes	198	152.658	771
5	Bado Rangran	Bado Rangran	14	63.364	4526	Yes	15	24.360	1624	Yes	6	4.644	774
		Grand Total	1435				344				375		

Table 11 B. Crop Details (Kharif)

S. No.	Name of Micro Watersheds	Village	(Bajra)				(Gwar)				(Cotton)		
			Area (ha)	Prod. (000'kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (000'kg)	Productivity (kg/ha) Avg.	Use of fertilizer	Area (ha)	Prod. (000'kg)	Productivity (kg/ha) Avg.
1.	Dubeta	Dubeta	123	289.788	2356	Yes	403	703.235	1745	Nil	143	87.802	614
2.	Bado Brahmanan	Bado Brahmanan	84	198.072	2358	Yes	124	216.504	1746	Nil	236	145.140	615
3.	Harita	Harita	43	101.265	2355	Yes	7	12.236	1748	Nil	198	121.176	612
		Bharri	11	25.927	2357	Yes	2	3.484	1742	Nil	68	42.024	618
4	Daha	Daha	132	311.388	2359	Yes	229	400.292	1748	Nil	426	262.842	617
5	Bado Rangran	Bado Rangran	20	47.020	2351	Yes	15	26.100	1740	Nil	2	1.238	619
			413				780				1073		

3.4.5 Livestock

Farmers in these villages have managing 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 murrh buffalo with better milk production will popularize dairy farming in the area. Also, the farmyard manure procured from these animals would help improve the soil heat

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

S. No	Name of Micro Watersheds	Villages	Buffalo (Lit*/per day/annum) for 6 months	Cow (lit*/per day/annum) for 6 months	Sheep	Goat	Camel
1.	Dubeta	Dubeta	423/2961/532980 (Lit per annum)	0/0/0(Lit per annum)	37	189	13
2.	Bado Brahmanan	Bado Brahmanan	528/3960/712800(Lit per annum)	20/70/12600(Lit per annum)	571	59	0
3.	Harita	Harita	1239/9912/1784160(Lit per annum)	0/0/0(Lit per annum)	0	47	0
		Bharri	325/2356.25/424125(Lit per annum)	10/40/7200(Lit per annum)	202	76	0
4	Daha	Daha	947/6629/1193220(Lit per annum)	21/94.5/17010(Lit per annum)	854	0	0
5	Bado Rangran	Bado Rangran	492/3936/708480(Lit per annum)	30/105/18900(Lit per annum)	530	68	0

(Source: Animal Husbandry, Hisar)

*Average Yield of Buffalo is 7-8 Lit/day and cow yield is 3-4 Lit/day

3.4.6 Ground Water Concern

a. Depth to Water

Ground Water Cell of Haryana has fixed hydrograph station scattered over the district 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 level of watershed varies from 5-15 m depth. Most of the area in micro watersheds Bado Brahmanan, Harita, Daha, Bado Rangran falls below 10m depth. The part of the area of the Dubeta microwatershed

falls from 10-20m range. 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 Dubeta Watershed (IWMP II)

S.No.	Name of Micro-Watersheds	Name of Villages	Ground Water level (m)
1.	Dubeta	Dubeta	15.00
2.	Bado Brahmanan	Bado Brahmanan	5.25
3.	Harita	Harita	8.20
		Bharri	7.20
4	Daha	Daha	8.20
5	Bado Rangran	Bado Rangran	8.00

The watershed underlain by marginal and few pockets of Bado Brahmanan are underlain by blackish water in the shallow aquifers. A small pocket of Daha has fresh ground water. The deeper quality of ground water is saline, which is unfit for irrigation and drinking purpose. The water quality map of the area is presented in **Annexure-IX**. The source of drinking water supply is through canal network and tube well where the quality of ground water is acceptable for drinking purposes in the area.

b. Water table fluctuation

From the availability of the data from the period June 2002 to June 2012, it is observed that the water table is rising where the area is underlain by poor quality water and falling in the areas underlain by fresh to marginal quality of ground water. The seasonal fluctuation i.e. Pre and Post monsoon period is 1- 1.5 m.

c. Rain water harvesting and Recharging

It has been proposed to make rainwater-harvesting by construction of water harvesting structure for subsequent use and in case of the areas of deep water table conditions(>15m),recharging is recommended. The provision of this has been provided in the project proposal.

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

Table14. 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
Dubeta Watershed (IWMP II)	Waste land	-	-	1144.65	-	-	-	-	-
	Pasture	-	-	102	-	-	-	102	-
	Orchards	-	-	-	-	-	-	-	-
	Village wood lot	-	-	6	-	-	-	6	-
	Forest	-	-	9	-	-	-	9	-
	Village ponds, lake	-	-	17	-	-	-	17	-
	Community	-	-	29	-	--	-	29	-

	Buildings								
	Weekly Mkts	-	-	-	-	-	-	-	-
	Permanent Mkts	-	-	-	-	-	-	-	-
	Temples/place of worship	-	-	5.4	-	-	-	5.4	-
	Others	3324.31	-	439.29	-	3324.31	-	439.29	-

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 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

S. No.	Name of the Micro watershed	Name of villages	Total no. of houses	Total Population			SC Population			
				Male	Female	Total	Male	Female	Total	%age
1.	Dubeta	Dubeta	189	541	508	1049	78	85	163	16
2.	Bado Brahmanan	Bado Brahmanan	368	1122	1033	2155	243	210	453	21

S. No.	Name of the Micro watershed	Name of villages	Total no. of houses	Total Population			SC Population			
				Male	Female	Total	Male	Female	Total	%age
3.	Harita	Harita	453	1181	1120	2301	98	92	190	8
		Bharri	114	319	274	593	66	49	115	19
4	Daha	Daha	523	1516	1336	2852	353	298	651	23
5	Bado Rangran	Bado Rangran	276	787	752	1539	85	83	168	11
			1923	5466	5023	10489	923	817	1740	17

(Source- District Census 2011)

Table16. Village wise Literacy Rate in Dubeta Watershed (IWMP II)

S.No.	Name of the Micro watershed	Name of villages	Total population	Literacy					
				Total Literates	% age	Male	% age	Female	% age
1.	Dubeta	Dubeta	1049	593	56	361	61	232	39
2.	Bado Brahmanan	Bado Brahmanan	2155	1330	61	801	60	529	40
3.	Harita	Harita	2301	1467	63	882	60	585	40
		Bharri	593	324	54	207	64	117	36
4	Daha	Daha	2852	1622	56	1010	62	612	38
5	Bado Rangran	Bado Rangran	1539	948	61	552	58	396	42

			10489	6284	60	3813	61	2471	39
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(Source- District Census- 2011)

Table 17. EMPLOYMENT STATUS

S.No.	Name of Micro Watersheds	Name of villages	Schedule caste		Cultivators		Agricultural labourers		Household industry workers		Other workers	
			Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
1.	Dubeta	Dubeta	78	85	186	133	28	24	0	0	52	15
2.	Bado Brahmanan	Bado Brahmanan	243	210	195	117	184	109	8	9	140	15
3.	Harita	Harita	98	92	194	31	9	3	8	3	191	17
		Bharri	66	49	127	117	24	22	0	0	23	5
4	Daha	Daha	353	298	360	142	279	46	5	0	102	9
5	Bado Rangran	Bado Rangran	85	83	190	52	127	99	4	2	41	10
			923	817	1252	592	651	303	25	14	549	71

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 Dubeta Watershed (IWMP II)

S.No.	Name of Micro watershed	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.	Dubeta	Dubeta	1049	-	-	-	-
2.	Bado Brahmanan	Bado Brahmanan	2155	-	-	-	-
3.	Harita	Harita	2301	-	-	-	-
		Bharri	593	-	-	-	-
4	Daha	Daha	2852	-	-	-	-
5	Bado Rangran	Bado Rangran	1539	-	-	-	-
			10489	-	-	-	-

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

Table 19. BPL Pattern

S. No.	Name of Micro watersheds	Name of villages	Total houses	Total Household-BPL	% of BPL HH
1.	Dubeta	Dubeta	189	63	33
2.	Bado Brahmanan	Bado Brahmanan	368	67	18

S. No.	Name of Micro watersheds	Name of villages	Total houses	Total Household-BPL	% of BPL HH
3.	Harita	Harita	453	34	8
		Bharri	114	18	16
4	Daha	Daha	523	84	16
5	Bado Rangran	Bado Rangran	276	67	24
			1923	333	17

(Source: District Administration Hisar, Haryana)

INFRASTRUCTURE DETAILS

All the villages are well connected by pucca road and primary or middle school exists in all villages. Health facility is available in villages or nearby 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

S. 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.	Dubeta	Dubeta	N	N	Primary School	Y	Y	N	Y
2.	Bado Brahmanan	Bado Brahmanan	N	N	Primary School/ High School	Y	Y	N	N
3.	Harita	Harita	Y	Y	Primary School	Y	Y	Y	Y

S. 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
		Bharri	N	N	Primary School/ High School	Y	Y	N	N
4	Daha	Daha	N	Y	Primary School	Y	Y	Y	Y
5	Bado Rangran	Bado Rangran	N	N	Primary School/ Middle School	Y	Y	Y	Y

FACILITIES/ HOUSEHOLD ASSETS

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

S. 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 drinking water	HHs with fridge
					Landline	Mobile	2 wheelers	4 wheelers				
1.	Dubeta	Dubeta	189	66	7	104	66	23	28	19	189	15
2.	Bado Brahmanan	Bado Brahmanan	368	129	15	202	129	44	55	37	368	29
3.	Harita	Harita	453	1589	18	249	159	54	68	45	453	36
		Bharri	114	40	4	63	40	14	17	11	114	9
4	Daha	Daha	523	183	21	288	183	63	78	52	523	42

S. 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 drinking water	HHs with fridge
					Landline	Mobile	2 wheelers	4 wheelers				
5	Bado Rangran	Bado Rangran	276	97	11	152	97	33	41	28	276	22

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 Dubeta Watershed (IWMP II)

S. 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 in Rs.
1.	Dubeta	Dubeta	15000	6000	500	1000	22500
2.	Bado Brahmanan	Bado Brahmanan	15000	6000	500	1000	22500
3.	Harita	Harita	18000	6000	500	1000	25500
		Bharri	15000	6000	500	1000	22500
4	Daha	Daha	15000	6000	500	1000	22500

S. 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 in Rs.
5	Bado Rangran	Bado Rangran	15000	6000	500	1000	22500

3.5.4 Comparative Status of crop Productivity

Three major crops namely Wheat, Mustard and Bajra are sown in Watershed villages. Main crops grown in the area are 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

- Moderate to severe erosion hazard
- Poor physical and chemical properties of the soils are light in texture with boulders in pockets and poor fertility.
- Low water holding/ retention capacity.
- Medium to Moderate permeability.
- Low organic carbon content.
- Poor phosphorous and medium potash nutrients availability.
- Lack of assured irrigation facility.
- Acceptance of hybrid/ high yielding varieties is very low.
- Irregular and erratic rainfall: there is long span between two subsequent rainfalls in the area.
- Sudden change in climate of the area.
- Essential micro- nutrient deficiency in the soil.
- Full and partial dependence of monsoon.
- Low use of fertilizer 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.
- Poor ground water quality.

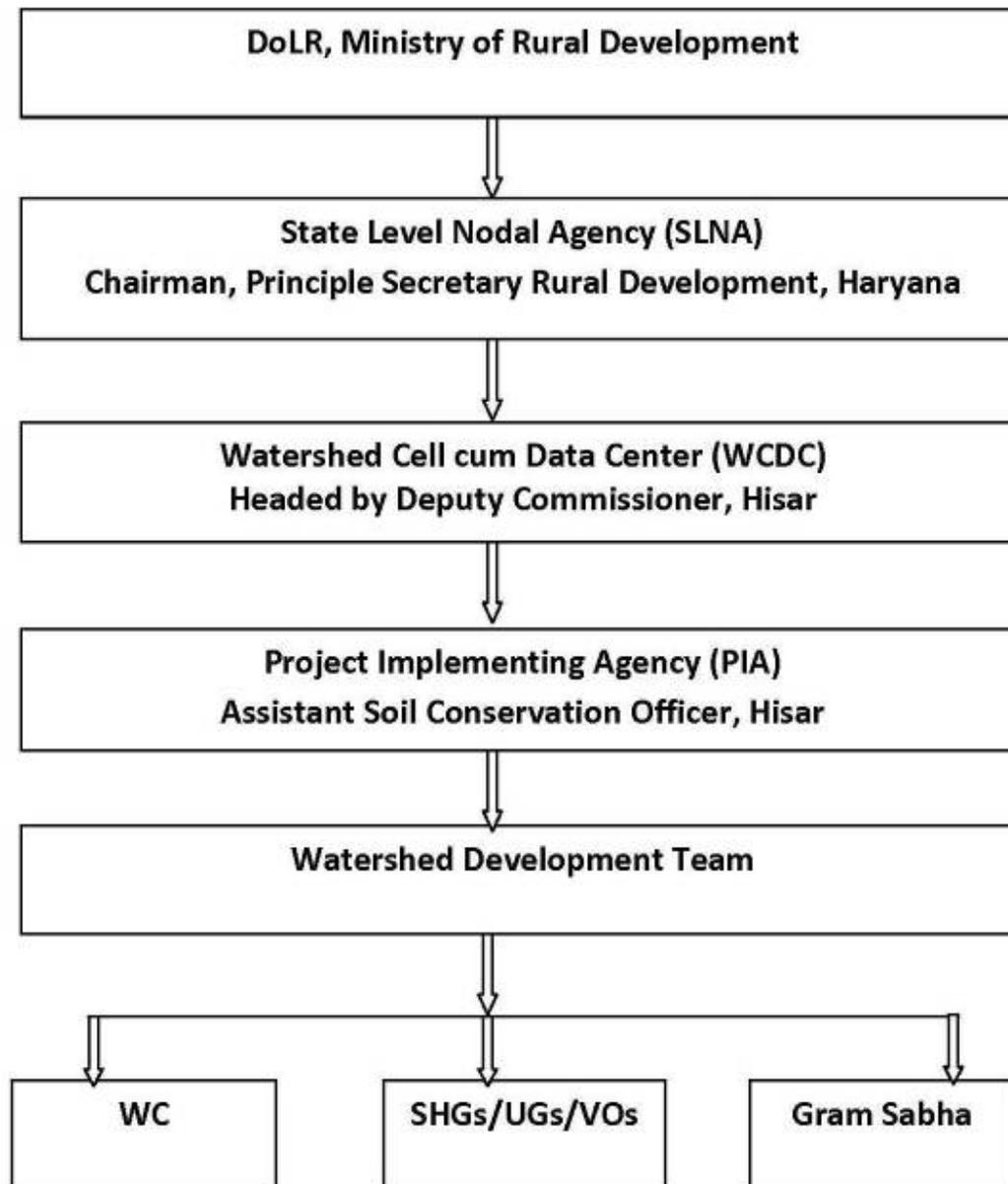
CHAPTER-4

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:



4.2 STATE LEVEL NODAL AGENCY, HARYANA

State Level Nodal Agency (SLNA) is headed by Chief Executive Officer and supported by Technical Experts is fully functional. The regular meetings with PIA and other stake holders are held to provide necessary guidance to them 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, HISAR

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 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 that 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 Hisar is selected by the State Level Nodal Agency (SLNA) for Integrated Watershed Management Programme (IWMP) in Haryana. In the district Hisar, where the area of development is 24944 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. Soils and Water Conservation Department, Hisar. With the vast experience in implementing various watershed development Projects. 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	Dubeta Watershed (IWMP-II)	i) Type of organization	Govt Organization
		ii) Name of organization	Assistant Soil Conservation Officer, Hisar
		iii) Designation & Address	ASCO, Red Cross Complex, Hisar
		iv) Telephone	01662- 224014
		v) Fax	-----
		vi) E-mail	ascohsr@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 for its 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 Hisar 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 below: **(Table 2)**

Table 2. Watershed Committees (WC) Details

Name of Micro Watersheds	Name of Villages	Name of President	Name of Secretary	Name of Members
Dubeta	Dubeta	Mawa Singh	Mukesh	Rattan Singh, Baljit Singh, Kamal Singh, Man Singh, Bhatari, Ram Singh, Thambu Ram, wazir Singh, Bhoop Singh, Mukesh Kumar
Dubeta	Bado Brahmanan	Sh. Vijay Kumar	Under Process	Rattan, Rattan Lal, Dalip, Yoganand, Mahaveer, Sunita, Dinesh, Santosh, Shanti, Vijay, Krishan, Manju, Mange Ram, Mahabir
Harita	Bharri	Badhan Singh	Pardeep Singh	Nirmla Devi, Ram Chand, Phool Singh, Chandro Devi, Bedho Devi, Guddi Devi, Sunita Devi, Sube Singh, Satbir Singh, Manju Devi
	Harita	Suraj Bhan	Under Process	Sandeep, Dharami, Jagbir Singh, Bijpal, Rajkumar, Surajbhan, Dharam Pal, Subhas, Satpal, Sarjit, Pummy Singh, Udey Pal, Jai Chand, Jagar, Anshbir, Sube Singh, Sunita Devi.
Daha	Daha	Under Process	Under Process	Smt. Ompati, Rajbir, Deep Singh, Omprakash, Shamsheer Singh, Ram Chand, Rajvir, Devi Ram, Rohtash, Tek Ram, Dalbir, Satbir, Nanak,

Name of Micro Watersheds	Name of Villages	Name of President	Name of Secretary	Name of Members
				Bharat Singh, Ram Avtar, Ram Kumar, Mange Ram
Bado Rangran	Bado Rangran	Meva Singh	Smt. Ram Kaur	Hari Singh, Ram Kishan, Umesh, Rajinder, Kitab Singh, Dharm Pal, Mage Ram, Bhale Ram, Hukam Chand, Ranbir Singh.

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 2 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 DUBETA 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
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Dubeta Watershed (IWMP II)	4663	3932	47184000	Administrative costs	471840	471840	1415520	1415520	943680	4718400
				Monitoring	0	0	0	471840	0	471840
				Evaluation	0	0	0	0	471840	471840
				Entry point activities	1887360	0	0	0	0	1887360
				Institution and capacity building	0	2359200	0	0	0	2359200
				Detailed project report	471840	0	0	0	0	471840
				Watershed development works	0	3774720	7549440	8021280	7077600	26423040
				Livelihood activities for the asset less persons	0	0	1415520	2359200	471840	4246560
				Production system and micro enterprises	0	0	1415520	1887360	1415520	4718400
				Consolidation phase	0	0	0	0	1415520	1415520
				Total	2831040	6605760	11796000	14155200	11796000	47184000
Percentage of total cost	6%	14%	25%	30%	25%	100%				

		capacity building						
		Detailed project report	104040	0	0	0	0	104040
		Watershed development works	0	832320	1664640	1768680	1560600	5826240
		Livelihood activities for the asset less persons	0	0	312120	520200	104040	936360
		Production system and micro enterprises	0	0	312120	416160	312120	1040400
		Consolidation phase	0	0	0	0	312120	312120
		Total	624240	1456560	2601000	3121200	2601000	10404000
		Percentage of total cost	6%	14%	25%	30%	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: Bado Brahmanan)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
677	8124000	Administrative costs	81240	81240	243720	243720	162480	812400
		Monitoring	0	0	0	81240	0	81240
		Evaluation	0	0	0	0	81240	81240
		Entry point activities	324960	0	0	0	0	324960
		Institution and capacity building	0	406200	0	0	0	406200

		Detailed project report	81240	0	0	0	0	81240
		Watershed development works	0	649920	1299840	1381080	1218600	4549440
		Livelihood activities for the asset less persons	0	0	243720	406200	81240	731160
		Production system and micro enterprises	0	0	243720	324960	243720	812400
		Consolidation phase	0	0	0	0	243720	243720
		Total	487440	1137360	2031000	2437200	2031000	8124000
		Percentage of total cost	6%	14%	25%	30%	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: Harita)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total		
677	8124000	Administrative costs	81240	81240	243720	243720	162480	812400		
		Monitoring	0	0	0	81240	0	81240		
		Evaluation	0	0	0	0	81240	81240		
		Entry point activities	324960	0	0	0	0	324960		
		Institution and capacity building	0	406200	0	0	0	406200		
		Detailed project report	81240	0	0	0	0	81240		
		Watershed development works	0	649920	1299840	1381080	1218600	4549440		
		Livelihood activities for the asset less persons	0	0	243720	406200	81240	731160		
		Production system and micro enterprises	0	0	243720	324960	243720	812400		
		Consolidation phase	0	0	0	0	243720	243720		
		Total			487440	1137360	2031000	2437200	2031000	8124000

		Percentage of total cost	6%	14%	25%	30%	25%	100%
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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: Daha)

(BUDGET AT A GLANCE)

Effective Area	Funds Available	Name of activity	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
934	11208000	Administrative costs	112080	112080	336240	336240	224160	1120800
		Monitoring	0	0	0	112080	0	112080
		Evaluation	0	0	0	0	112080	112080
		Entry point activities	448320	0	0	0	0	448320
		Institution and capacity building	0	560400	0	0	0	560400

	Detailed project report	112080	0	0	0	0	112080
	Watershed development works	0	896640	1793280	1905360	1681200	6276480
	Livelihood activities for the asset less persons	0	0	336240	560400	112080	1008720
	Production system and micro enterprises	0	0	336240	448320	336240	1120800
	Consolidation phase	0	0	0	0	336240	336240
	Total	672480	1569120	2802000	3362400	2802000	11208000
	Percentage of total cost	6%	14%	25%	30%	25%	100%

		report						
		Watershed development works	0	745920	1491840	1585080	1398600	5221440
		Livelihood activities for the asset less persons	0	0	279720	466200	93240	839160
		Production system and micro enterprises	0	0	279720	372960	279720	932400
		Consolidation phase	0	0	0	0	279720	279720
		Total	559440	1305360	2331000	2797200	2331000	9324000
		Percentage of total cost	6%	14%	25%	30%	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. Those groups will be revived and new ones were formed depending upon willingness of the interest groups. The type of activities these groups want pursue and their capacity building requirements were 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, micro-watershed wise and village wise with the lined 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, Soil fertility, 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 Hisar district.

Strengths

- ❖ **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
- ❖ Poor deep ground water quality for irrigation
- ❖ 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

- ❖ Available Rain Water harvesting for life saving irrigation.
- ❖ Promotion of organic farming.
- ❖ Dry land horticulture activities.
- ❖ Provide training on dairy farming and other income generating activities.
- ❖ Promotion of nursery raising and pasture development.
- ❖ **Consumptive use of ground water.**

Threats

There are few negative issues that may have adverse effect

- ❖ Unreliable rainfall.
- ❖ Absence of assured irrigation and poor ground water quality.
- ❖ 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.
- ❖ Frequent droughts.
- ❖ Poor avenues for employment.
- ❖ Wild life menace.

CAPACITY BUILDING- 5%

23, 59,200/-

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 rainfed horticulture and agroforestry 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 peoples, organizations and societies' 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, already 47 projects 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 first hand experience of the state in launching 47 projects under IWMP and current state of planning and implementation under preparatory phase the current action plan is primarily prepared to 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 47 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 Hisar District**

Sr. 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. <u>One Day</u>				
	Hisar District	Members of Watershed Committees @ 10 per committee would also include accompanying WDT Members.	320	300-350	1
02	Block Level Functional Programmes for Secretaries of Watershed Committees. <u>Two Days</u>				
	Hisar District	Secretaries of Village Watershed Committees	32	35-40	1
03	Project Level Sensitization Camps for WC <u>One Days</u>				
	Hisar District	Members of Watershed Committees @ 10 Persons (Tentative) per WC	320	50	6
04	Village Level Awareness Camps on IWMP at Micro Watershed Level for User Groups <u>One Day</u>				

Sr. No.	Title of Training Programme and Duration	Level of Participants	Total persons	Trainees Per Programme	Number of Programmes
	Hisar District	Approximately 50 <u>prospective</u> user groups per micro watershed.	1600	50	32
05	Block Level Functional Programmes for SHGs [Leader, Secretary and Treasurer] under IWMP <u>One Day</u>				
	Hisar District	Three persons (Leader, Secretary and Treasurer) per Self Help Group @ around one SHG per village.	86	50	2

Note: Training programmes under SI. 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	25647
2	Block Level Functional Programmes for Secretaries of Watershed Committees. <u>Two Days</u>	3405
3	Village Level Sensitization Camps for WC <u>One Days</u>	17639
4	Village Level Awareness Camps on IWMP at Micro Watershed Level for Prospective User Groups <u>One Day</u>	40858
5	Block Level Functional Programmes for SHGs [Leader, Secretary and Treasurer] under IWMP <u>One Day</u>	6431
	Total	93980

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

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
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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	21000	5	15	10500	700	2100	157500
2	User groups from each micro watershed	NRM, Post Project Management etc. –Exposure Visit	2	21000	5	15	10500	700	2100	157500
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	60000	5	10	15000	1500	4500	225000
4	Sub watershed Level- PIA Members	Exposure Visit- Within Fundamentals of Watershed,	2	21000	5	15	10500	700	4500	337500

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
		Finance Management, Final Report on WDP etc								
5	District Level-WDC	Exposure visit to successful watershed/ University.	2	21000	5	15	10500	700	1400	105000
6	District Level-Line Deptt., WDC	Exposure visit to successful watersheds within state.	2	21000	5	15	10500	700	1400	105000
7	SLNA and District Level Controlling Officers	Exposure visit to successful watersheds outside state	4	60000	5	10	15000	1500	6000	300000
Total			18		35	95				1387500

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

S. No.	District	No. Micro watershed	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	5	2	10	50	12,000	1,20,000	6,00,000
2.	Propaganda & Documentation (Puppet show, documentary movies show, videography, Photography, wall Painting, Display Board, pamphlets, leaf lets. Etc)	5	2	10	50	5000	50,000	2,50,000
3	Contingency charges							27720
	Total							877720

- i) **Training Programmes for SLNA, WDT, PIA , Field Functionary , WDC member's , SHG & UG organize by HIRD = 93,980/-**
- ii) **Micro Watershed Wise Exposure cum training Visit For SLNA, WDT, PIA , Field Functionary , WDC, SHG & UG Members = 13, 87,500/-**
- iii) **Farmer's / Beneficiaries training camps with Extension Program's = 8,77,720/-**

Grand Total = 23, 59,200/-

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. 18, 87,360/-** 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 Dubeta Watershed (IWMP II)

(Rs. In Lacs)

Sr. No.	Block	Name of Project	No. of EPAs Identified	No. of EPAs Completed	Name/Nature of EPA	Location	Expenditure
1.	Hisar I	Dubeta Watershed (IWMP II)	11	11	Rain Water Injected Well	Dubeta	1.82
					Retaining Wall of Pond		2.40
					Rain Water Injected Well (2 No.)	Bado Brahmanan	3.64
					Ramp at Pond	Bharri	0.98
					Rain Water Injected Well	Harita	1.82
					Retaining Wall of Pond	Daha	3.19
					Ramp at Pond (3 No.)		1.29
					Rain Water Injected Well	Bado Rangran	1.82
					Ramp of Pond		1.75
					Retaining Wall of Pond		0.16

CHAPTER- 7

WORK PHASE

7.1 WATERSHED DEVELOPMENT WORKS - 56%

The Works under the project have been identified after the detailed survey of the Project Area and discussions held with team of experts comprising of PIA, Hydrologist from Haryana supported by Livelihood expert, Agriculture and Horticulture expert and expert in Animal Husbandry. 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 Water course (lined) with culvert (RCC Pipe NP3) on field paths crossing, Roof top rainwater Harvesting and injection well, Ramp, inlet & outlet, Earthen Embankments /Marginal bunds with pucca outlet, Small earthen embankment with vegetative support for dune stabilization, Community water storage Tank 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 wise.

Natural Resource Management

Most of the area is nearly level, however at few places near stabilized sand dunes where slopes are level to nearly level, small rills with complex slope have been formed which need specific treatment like construction of earthen embankments with pacca outlet across the slope and afforestation to avoid further degradation of the area.

The project area having small or large old ponds which have been silted up and needs strengthening (Ramp). The land holding is small and any loss of land nearby area would be loss to the farmer. Under the IWDP/ Haryali some works like renovation of farm ponds, field bunding has been undertaken but still at few places inlet of the ponds and outlet needs to be constructed. So their repair and renovation is proposed during the discussion it was felt to be genuine demand for repair, renovation and capacity enhancement in the area. This will increase the rain water harvesting.

Run-off from upper area (sand dune) shall be reduced by afforestation and other soil conservation measures which would also recharge the aquifer. As per need, retaining walls are proposed at strategic locations to protect the farm lands and bank of ponds.

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 repair, renovation and capacity enhancement construction of new ponds in the area.

7.2 Proposed Activity

The provision for renovation of pond, inlet, outlet, ramp etc. is the main requirement by project stakeholders which has been provided. Ponds as such are the best source of rainwater harvesting.

Due to the paucity funds the repair works has been undertaken under different schemes in piece meal. The main requirement of retaining wall was ignored due to inadequate funds. During the discussions/interaction the stake holders gave high priority for construction of retaining wall as huge quantity of water is being wasted through cutting of banks.

7.2.1 Earthen Embankment

In order to conserve the rain water, the provisions of earthen embankment have been provided along the field boundaries across the slope for in-situ moisture conservation.

Suggested Interventions: In a number of villages, sites have been proposed for in-situ moisture conservation and construction of embankments where village paths have got converted in to nalas due to severe erosion.

The DPR proposals shall be implemented in participatory mode. In this watershed management program, it was planned to rehabilitate the degraded watersheds. The scope of integrated watershed regeneration/rehabilitation works which emerged from the PRA are as under:-

Sample estimates are as follows:

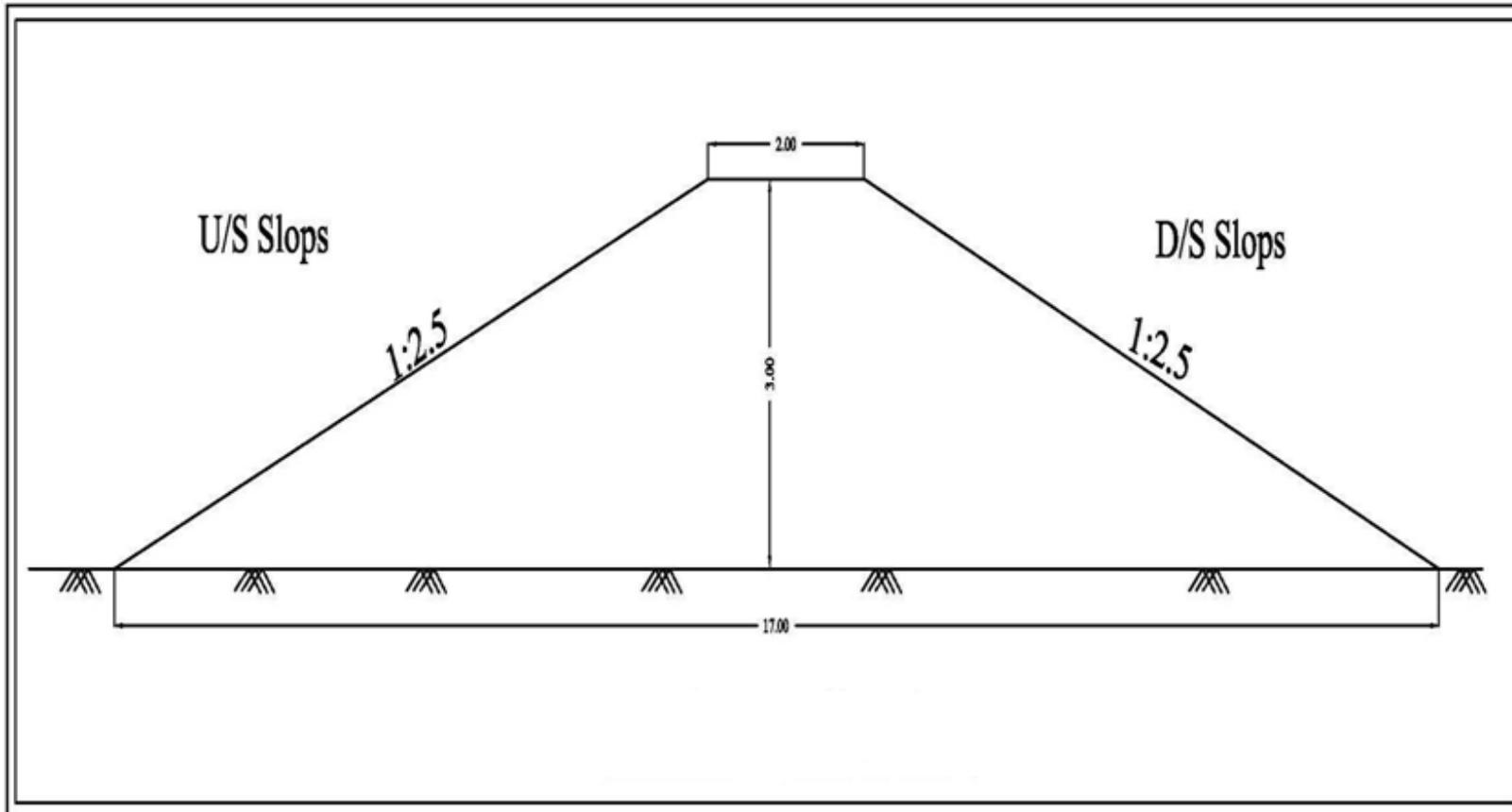
1	Water course (lined) with culvert (RCC Pipe NP3) on field paths crossing	Rmt	0.013	1050	13.65	675	8.775	875	11.375	870	11.31	850	11.05	4320	56.16
2	Water conveyance system from nearest minor to village pond	RMT	0.007	1000	7	770	5.39	480	3.36	825	5.775	750	5.25	3825	26.775
3	Roof top Rain Harvesting/ Recharge bore	Nos	2	3	6	2	4	3	6	3	6	2	4	13	26
4	Ramp, inlet & outlet at old ponds	Cum	0.0326	155	5.053	70	2.282	115	3.749	121	3.9446	88	2.8688	549	17.8974
5	Earthen Embankments /Marginal bunds with pucca outlet	Nos.	$0.77+0.20 = 0.97$	6	5.82	6	5.82	6	5.82	9	8.73	6	5.82	33	32.01
6	Small earthen embankment with vegetative support for dune stabilization	100 CUM	0.029	12225	3.55	9070	2.63	10250	2.97	8750	2.54	9860	2.86	50155	14.54495
7	Rain Fed	Ha	0.25	5	1.25	8	2	5	1.25	8	2	6	1.5	32	8

	Horticulture														
8	Agro Forestry/ Afforestation in fields/ field boundaries	Ha	0.15	15	2.25	25	3.75	18	2.7	20	3	20	3	98	14.7
9	Community water storage Tank with pipeline	Nos	3	5	15	5	15	4	12	7	21	6	18	27	81
	Total funds				59.57		49.65		49.23		64.30		54.35	59052	277.0874
	Available funds				58.26		45.49		45.49		62.76		52.21		
	Convergence				1.31		4.16		3.74		1.54		2.14	59052	277.09

Table 2. 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
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Earthen Embankment

Leads Statement :-

Cross Section Area = (Base + Top) ÷ 2 x Height i.e. $\{(17.00 + 2.00) \div 2\} \times 3.00 = 28.50$ Square meters					
Horizontal leads = (Base/2) + (Cross section area/ 2 x 0.6) i.e. $(17.00/2) + \{28.50\}/(2 \times 0.6) = 32.25$ meters					
Vertical leads = (Height + 0.60) x 0.4 x 10 i.e. $(3.00 + 0.60) \times 0.4 \times 10 = 14.40$ 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					
<u>Area of Jungle Clearance :-</u>					
Area to be covered by the body of Dam = Length x Average base i.e. $40.00 \times 17.00 = 680.00$ Sq. meters					
Area from where E/W is to be excavated = Av. Length x leads i.e. $40.00 \times 46.65 = 1866.00$ Sq. meters					
Total Area = $680.00 + 1866.00 =$		2546.00	Sq. meters.		
<u>Volume of Loose soil to be removed :-</u>					
Area to be covered by the body of Dam X Depth of loose soil i.e. $(680.00 \times 0.30) =$				204.00	cum
<u>Volume of Earthwork in bund filling :-</u>					
(Cross Section Area X Length) + Loose soil to be removed i.e. $(28.50 \times 40.00) + 204.00 =$				1344.00	cum
<u>ABSTRACT OF COST</u>					
<u>S.No.</u>	<u>Item of Work</u>	<u>Quantity</u>	<u>Rate</u>	<u>Unit</u>	<u>Amount</u>

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 embankment 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 Exceeding 30% but up to 40%. H.S.R. 6.2 (h) ii	1344.00 cum	Rs. 318.55 + 350% C. Prem.= 1433.48	100 cum	19265.97
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
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Table. 3. Detail Estimate of Cement Stone Masonry Structure

<u>S.No.</u>	<u>Description</u>	<u>No.</u>	<u>Length</u> <u>(mts)</u>	<u>Breadth</u> <u>(mts)</u>	<u>Height</u> <u>(mts)</u>	<u>Content</u> <u>(cums)</u>
1	Excavation of earthwork in foundation And plinth		H.S.R 6.6			
	Crest wall with extensions	1	8.00	2.00	1.20	19.20
	Side walls	2	1.50	1.00	1.20	3.60
	Wing walls	2	2.00	1.00	1.20	4.80
	Toe wall with extensions	1	6.00	1.00	1.20	7.20
	Apron	1	4.00	1.50	0.30	1.80
				Total =		
2	Cement concrete work 1 : 4 : 8 in the Foundation and plinth		H.S.R 10.39			
	Crest wall with extensions	1	8.00	1.70	0.20	2.72
	Side walls	2	1.50	0.70	0.20	0.42
	Wing walls	2	2.00	0.70	0.20	0.56
	Toe wall with extensions	1	6.00	0.70	0.20	0.84

<u>S.No.</u>	<u>Description</u>	<u>No.</u>	<u>Length</u> <u>(mts)</u>	<u>Breadth</u> <u>(mts)</u>	<u>Height</u> <u>(mts)</u>	<u>Content</u> <u>(cums)</u>
	Apron	1	4.00	1.50	0.20	1.20
				Total =		5.74
3	Square rubble stone masonry course1: 5 in foundation and plinth H.S.R 12.23					
	Crest wall with extensions	1	8.00	$(1.5+1.0)/2= 1.25$	1.00	10.00
	Side walls	2	1.50	0.50	1.00	1.50
	Wing walls	2	2.00	0.50	1.00	2.00
	Toe wall with extensions	1	6.00	0.50	1.00	3.00
				Total =		16.50
4	Square rubble stone masonry course1: 5 above G.L. H.S.R 12.23 and 12.31					
	Crest wall with extensions	1	8.00	$(1.0+0.5)/2= 0.75$	1.20	7.20
	Side walls	2	$(1.5+2.0)/2= 1.75$	0.50	$(1.7+0.5)/2= 1.1$	1.93
	Wing walls	2	2.00	0.50	1.70	3.40
	Toe wall with extensions	1	6.00	0.50	0.20	0.60
	Toe wall extensions	1	1.00	0.50	0.50	0.25
				Total =		13.38
5	Cement concrete work 1 : 2 : 4 in the Foundation and plinth H.S.R 10.41					

<u>S.No.</u>	<u>Description</u>	<u>No.</u>	<u>Length</u> <u>(mts)</u>	<u>Breadth</u> <u>(mts)</u>	<u>Height</u> <u>(mts)</u>	<u>Content</u> <u>(cums)</u>
	On the top of crest wall	1	4.00	$(1.0+0.5)/2= 0.75$	0.05	0.15
	On the top of crest wall extensions	2	2.00	0.50	0.05	0.10
	On the top of side walls	2	1.50	0.50	0.05	0.08
	On the top of wing walls	2	2.00	0.50	0.05	0.10
	Toe wall with extensions	1	6.00	0.50	0.05	0.15
	Apron	1	4.00	1.50	0.10	0.60
				Total =		1.18
6	Cement plastering work 1:4 on the					
	Crest wall both side	2	4.00	–	1.20	9.60
	Crest wall extensions	2 x 2	2.00	–	0.50	4.00
	Side walls	2	$(1.5+2.0)/2= 1.75$	–	$(1.7+0.5)/2= 1.1$	3.85
	Wing walls	2	2.00	–	1.70	6.80
	Toe wall with extensions	1	6.00	–	0.20	1.20
	Toe wall extensions	2 x 2	1.00	–	0.50	2.00
				Total =		27.45

Table 4. MATERIAL STATEMENT AND COST OF MATERIAL

<u>S.No.</u>	<u>Item of work</u> <u>Quantity</u>	<u>Cement</u>	<u>Sand</u>	<u>Stone blast</u>	<u>Bajri 20 mm</u>	<u>Stone boulders</u>
	(cum)	(bags)	(cum)	(cum)	(cum)	(cum)
1	C.C work 1 : 4 : 8 5.74	19.516	2.7552	5.5104	–	–
2	Sq. stone masonry work 16.50	28.38	4.95	–	–	18.15
	1: 5 in foundation.					
3	Sq. stone masonry work 13.38	23.005	4.0125	–	–	14.7125
	1: 4 above ground level.					
4	C.C work 1 : 2 : 4 1.18	7.4025	0.517	–	1.034	–
5	C. plastering work 1 : 4 27.45 sqm	3.02	0.41	–	–	–
	Total =	81.323	12.64645	5.5104	1.034	32.8625
	Rates of material	245.00 per bag	950.00 per cum	965.00 per cum	985.00 per cum	945.00 per cum
	Cost of Materials	19924	12014	5318	1018	31055
	Total Cost of Materials =	Rupees	69329	/-only		

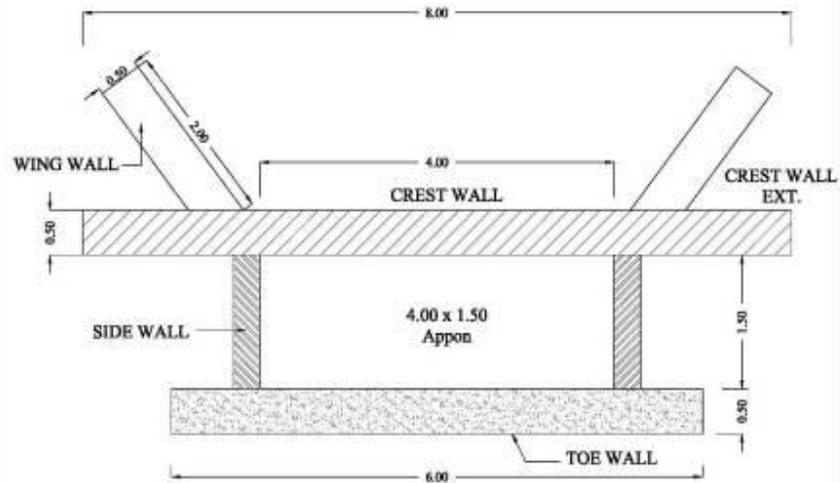
Table. 5. LABOUR COST

S. No.	Item of work Quantity	Rate	Unit	Amount
1	Excavation of earthwork in foundation and plinth H.S.R 6.6 36.60 cum	1108.10 +350% C. Prem. =4986.45	100 cum	1825.04
2	Cement concrete work 1 : 8 : 16 in the Foundation and plinth H.S.R 10.39 5.74 cum	64.95 +370% C. Prem. =305.27	cum	1752.25
3	Square rubble stone masonry course1: 5 in foundation and plinth H.S.R 12.23 16.50 cum	(160.35+26.00) +250% C. Prem. =652.22	cum	10761.63
4	Square rubble stone masonry course1: 5 above G.L. H.S.R 12.23 and 12.31 13.38 cum	(160.35+26.00+27.20) +200% Prem.= 747.42	cum	9996.74
5	Cement concrete work 1 : 2 : 4 in the Foundation and plinth H.S.R 10.41 1.18 cum	64.95 +370% C. Prem. =305.27	cum	358.69
6	Cement plastering work 1:4 on the stone walls H.S.R 15.5 27.45 sqm	5.50 +340 % C. Prem. =24.2	cum	664.29
	Total =	29.875 cum		25358.64525
				or say Rs.25359/- only

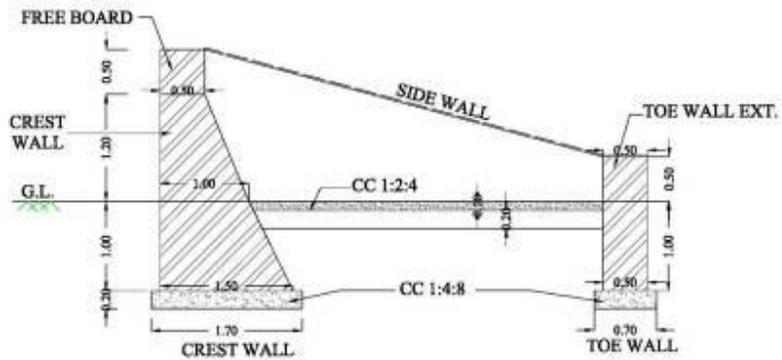
Table. 6. ABSTRACT OF COST

Labour cost	25359.00
Cost of Materials as per detail attached	69329.00
Total =	94688.00
Add contingency at the rate of 3%	2841.00
Grand Total =	97529.00
Per cum Rate = $97529 / 29.88 = 3264.02$ or say Rs.3260/- only	

WORK PLAN OF CEMENT STONE MASONRY STRUCTURE



PLAN



X-SECTION

* Not to Scale
* All Dimension in m.

X-section of Masonry Structure

Table. 7. Estimate of Orchard Development in the Watersheds Per Hectare (Lemon & Kinnoo)

A. Horticulture

Sr. No.	Particulars	Quantity	Unit	Rate	Amount
1	Soil working 1m x 1m x 1m size pits (390 Nos.) including cost of refilling(At the distance 15'x15')	390.00	cum	36.66	14297.40
2	Application of Farmacyard Manure, including cost			L.S.	750.00
3	Cost of fertiliser/ pesticide @250gm/plant			L.S.	750.00
4	Cost of plants (including 15% etc. for mortality) including transportation and planting	450.00	Nos.	15/Plant	6750.00
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					24044.40
Say `					24000.00
	Maintenance cost 2 nd year			L.S.	1000.00
	For next 5 years i.e. , ` 1000 x 5				5000.00
Total					30000.00
Say `					30000.00

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 Farmacyard 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 2 nd year			L.S.	1000.00

For next 5 years i.e. , ` 1000 x 5				5000.00	
				Total	24500.00
				Say `	24500.00

Table. 8. 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 (fertility map attached in annexure VI). 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 tree farming and 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 use of chemical fertilizer is limited to urea upto 50 Kg/acre in wheat. Only farm yard manure is added to maintain yield levels. Food grains are hardly sufficient for 6 to 8 months with small farmers.

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 elated 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 concept of precision farming and non-monetary inputs shall be introduced.
- Agro-forestry with integration of trees like Eucalyptus, 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 376 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 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.
- Proper planning for raising filler plants like Papaya, pomegranate and shade loving crop like turmeric.
- 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 self use. Some poly houses have come up in the area with financial support from National Horticulture Mission (NHM) and have started commercial cultivation of off season vegetables with the introduction of NHM scheme the farmers are interested for drip/sprinkler irrigation to enhance the net production value of the farm.

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 and parthenium, the most obnoxious weeds have invaded such area.

The following interventions are proposed to popularize agro-forestry as an alternate source of income.

- Planting of improved variety of Eucalyptus and Neem in the project both as single rows on field bunds and also as blocks.

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.
- Raising of protein rich fodder plants by promoting Napier Bajra Hybrid and Leucaena hedge rows on field bunds.

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, fruits and milk though these are source of income with many families.

The efforts through the project are directed 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 9 .Detail of Production System proposed to be promoted in the project village

S. No.	Particulars	Contents	No. of micro watershed	No. of beneficiaries per micro watershed	No. of total beneficiaries	Cost per beneficiaries	Total
1	Agriculture	To introduce Summer Moong or Mash, gwar and groundnut as a third crop in bajra-wheat rotation. Supply of mini- kits to 65 farmers of each micro watershed/year @ Rs.200/ kit as	5	325(farmers)	1625 (mini kits)	200 per mini kits	325000

S. No.	Particulars	Contents	No. of micro watershed	No. of beneficiaries per micro watershed	No. of total beneficiaries	Cost per beneficiaries	Total
		assistance is provided.					
	Agriculture	Application of farm inputs like Zinc Sulphate or Sulphur or weedicides or pesticides. 65 farmer of each micro watershed/ year @ Rs.200/ kits as assistance is provided.	5	325(farmers)	1625 (mini kits)	200 per mini kits	325000
	Agriculture	Supplying of Agriculture implements – 20 farmers (average) per micro watershed @ Rs. 1000/ units as assistance is provided.	5	100(farmers)	500	1000	500000
	Agriculture	Agro Forestry: Eucalyptus/ neem on 50% subsidy @ Rs. 10/ plant as assistance is provided.	5	5000(plants)	25000 plants	Rs. 10 per plant	250000
2	Horticulture	Potential for Grafted Horticulture plants. Supply of plants at 50 % cost share for cultivation of fruits like Citrus fruits, Guava, Amla, ber floriculture and vegetables (especially, turmeric, garlic, onion and tomato)	5	500 plants	2500 plants	Rs.40 per plant	100000
	Horticulture	Kitchen gardening Packets distributed to 100 farmers in each micro watershed/ year @ Rs.25/ packet.	5	500	2500	Rs. 25 Per packet	62500
	Horticulture	Four units of Bee keeping in each micro watershed @ 3000/ unit as assistance are provided.	5	20	100	3000	300000

S. No.	Particulars	Contents	No. of micro watershed	No. of beneficiaries per micro watershed	No. of total beneficiaries	Cost per beneficiaries	Total
	Horticulture	Four units of Vermi compost in each micro watershed per year @ Rs. 10000 per unit as assistance is provided.	5	20	100	10000	1000000
3	Animal Husbandry	Problems being faced due to some diseases in the animals and low yield of milk. Production of free life saving medicines/ minerals for animals – the provision for 65 farmers of each micro watershed/year @ Rs.225 has been provided.	5	325	1625	225	365625
	Animal Husbandry	Livestock Management supply of feed supplements to improve health of cattle's. The provision to benefit 65 farmers of each micro watershed/year @ Rs.225 has been kept in the project proposals.	5	325	1625	225	365625
	Animal Husbandry	Supply of mini- kits of high yielding variety green fodder seeds to 25 farmers in each micro watershed/year @ Rs.200/- mini kits.	5	75(farmers)	375	200 per mini kit of seeds	75000
4	Joint camps with Line Departments	Two training camps to beneficiaries on Proven technology in agriculture are provided (during pre kharif and rabi season).	5	10	50	20000	1000000
		Contingency					49650

Total: Rs. 4718400/-

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 are eucalyptus and 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 vermin 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 10: 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 80% 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 rain fed 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 identified Economic Activities and it is proposed to impart them trainings at Krishi Vigyan Kender (CCSHAU) Hisar and Haryana Institute of rural development, Nilokheri. Agriculture University, Hisar, Central Soil and Water research and training Institute, Chandigarh and HIRD, Nilokheri. 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 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.

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. Pickles, sauces, jam, jelly etc.
12. Backyard poultry
13. Floriculture

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

Table 11. Revolving Fund Assistance for SHGs

S.No.	Name of micro watersheds	No. of villages	Total SHGs	Amount of RFA per SHG	Total
1	Dubeta	1	2	25000	50000
2	Harita	2	4	25000	100000
3	Daha	1	2	25000	50000
4	Bado Brahmanan	1	2	25000	50000
5	Bado Rangran	1	2	25000	50000
	Total	6	12		300000

Table 12. 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	Dubeta	1	2	35000	70000
2	Harita	2	4	35000	140000
3	Daha	1	2	35000	70000
4	Bado Brahmanan	1	2	35000	70000
5	Bado Rangran	1	2	35000	70000
	Total	6	12		420000

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 unit, Domestic poultry, Mushroom cultivation unit, Plumbing, Carpentry, Food Processing, Animal Husbandry, Product Processing etc.

Table 13. 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	Dubeta	1	25	10000	250000
2	Harita	2	15	10000	150000
3	Daha	1	20	10000	200000
4	Bado Brahmanan	1	20	10000	200000
5	Bado Rangran	1	20	10000	200000
	Total	6	100		1000000

Note: The beneficiaries will contribute 10% as cost sharing of the livelihood support programme Rs. 1000000 @ 10% cost sharing.

= 1000000- 100000

= **900000/-**

Table 14. 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	Dubeta	1	25	20000	500000
2	Harita	2	15	20000	300000
3	Daha	1	20	20000	400000
4	Bado Brahmanan	1	20	20000	400000
5	Bado Rangran	1	20	20000	400000
	Total	6	100		2000000

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. 2000000 @ 10% cost sharing.

$$= 2000000 - 200000$$

$$= \mathbf{1800000/-}$$

Table 15. 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	Dubeta	1	1	2	2000	6	12000
2	Harita	2	2	4	2000	6	24000
3	Daha	1	1	2	2000	6	12000
4	Bado Brahmanan	1	1	2	2000	6	12000
5	Bado Rangran	1	1	2	2000	6	12000
	Total	6	6	12			72000

Total cost for 6 Centres

1. Payment to trainers 72000/-

2. Sewing Machine Cost 18000/- (lump sum)

Table 16. 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	Dubeta	1	1	2000	6	12000	1	12000
2	Harita	2	2	2000	6	12000	2	24000
3	Daha	1	1	2000	6	12000	1	12000
4	Bado Brahmanan	1	1	2000	6	12000	1	12000
5	Bado Rangran	1	1	2000	6	12000	1	12000
	Total	6	6					72000

Total Cost:

Payment to trainer: Rs.72000/-

Table 17. Livelihood Support

S.No.	Name of micro watersheds	No. of villages	Revolving fund assistance to individuals unemployed youth/ landless, women	
			Dairy Unit	Bee Keeping, Vermi Compost, Mushroom Cultivation etc.
1	Dubeta	1	3	3

2	Harita	2	5	5
3	Daha	1	3	3
4	Bado Brahmanan	1	3	3
5	Bado Rangran	1	3	3
	Total	6	17	17
	Rate (Rs)		25000	10000
	Cost (Lakh Rs)		4.25	1.70

Contingency, printing material and other unseen items: Rs. 69560/-

Total funds available under this component are Rs. 4246560/-

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), Hisar

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. 35)

Detail of Convergence of IWMP and other schemes

Table 18. GAPS IN FUNDS REQUIREMENT – MICRO WATERSHED WISE

S.No	Name of micro watershed	Total cost requirement for works	Total funds available under IWMP for works	Gap in funds requirement for works	Convergence with MGNREGA
1	Dubeta	59.57	58.26	1.31	1.31
2	Bado Brahmanan	49.65	45.49	4.16	4.16
3	Harita	49.23	45.49	3.74	3.74
4	Daha	64.30	62.76	1.54	1.54
5	Bado Rangran	54.35	52.21	2.14	2.14
	Total	277.1	264.21	12.89	12.89

- 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 five 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 32 ha horticulture development programme with the financial assistance of Rs. 8.00 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 Water course (lined) with culvert (RCC Pipe NP3) on field paths crossing, Roof top rainwater Harvesting and injection well, Ramp, inlet & outlet, Earthen Embankments /Marginal bunds with pucca outlet, Small earthen embankment with vegetative support for dune stabilization, Community water storage Tank 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 under progress and post project. 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 Watershed/ villages	Effective Area (ha)	Total Cost (Rs.)	Monitoring 1% (Rs.)
1	Dubeta	867	1,04,04,000	1,04,040
2	Harita	677	81,24,000	81,240
3	Daha	934	1,12,08,000	1,12,080

4	Bado Brahmanan	677	81,24,000	81,240
5	Bado Rangran	777	93,24,000	93,240

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 Watershed/ Villages	Effective Area (ha)	Total Cost (Rs.)	Evaluation 1% (Rs.)
1	Dubeta	867	1,04,04,000	1,04,040
2	Harita	677	81,24,000	81,240
3	Daha	934	1,12,08,000	1,12,080
4	Bado Brahmanan	677	81,24,000	81,240
5	Bado Rangran	777	93,24,000	93,240

CONSOLIDATION PHASE- 3 %

Consolidation Phase = Rs. 14, 15,520 /-

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: Dubeta

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	0.62
2	Preparation of Project completion report and	0.16
3	Documentation of success stories	0.16
4	Management of proper utilization of WDF	0.47
5	Mechanism for quality and sustainability issues under the Project	0.15
6	Watershed activities	1.56

Total: 3.12 lacs

Name of Micro watershed: Harita

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	0.49
2	Preparation of Project completion report and	0.12
3	Documentation of success stories	0.12

4	Management of proper utilization of WDF	0.37
5	Mechanism for quality and sustainability issues under the Project	0.12
6	Watershed activities	1.22

Total: 2.44 lacs

Name of Micro watershed: Daha

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	0.67
2	Preparation of Project completion report and	0.17
3	Documentation of success stories	0.17
4	Management of proper utilization of WDF	0.50
5	Mechanism for quality and sustainability issues under the Project	0.17
6	Watershed activities	1.68

Total: 3.36 lacs

Name of Micro watershed: Bado Brahmanan

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	0.49
2	Preparation of Project completion report and	0.12
3	Documentation of success stories	0.12
4	Management of proper utilization of WDF	0.37
5	Mechanism for quality and sustainability issues under the Project	0.12
6	Watershed activities	1.22

Total: 2.44 lacs

Name of Micro watershed: Bado Rangran

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	0.56
2	Preparation of Project completion report and	0.14
3	Documentation of success stories	0.14
4	Management of proper utilization of WDF	0.42
5	Mechanism for quality and sustainability issues under the Project	0.14
6	Watershed activities	1.40

Total: 2.80 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 3932 ha and the Project Cost is 471.84 lacs covering 5 no. micro watersheds and in 6 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, improvement in water table, more area under agriculture, 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 IWMP II will prove to be very beneficial in improving socio – economic status of people residing in Project villages.

									s		
1	Dubeta	3289	7550	10839	17	115	132	11	-	11	22
2	Bado Brahmanan	2578	5886	8464	30	227	257	22	11	11	44
3	Harita	2496	5968	8464	34	522	556	-	11	11	22
4	Daha	3365	8312	11677	63	344	407	11	11	-	22
5	Bado Rangran	2869	6845	9714	19	189	208	11	-	11	22
		14597	34561	49158	163	1397	1560	55	33	44	132

49158 man days would be generated with the implementation of the project (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 Dubeta 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	Dubeta	-	-	-	-	-
2	Bado Brahmanan	-	-	-	-	-
3	Harita	-	-	-	-	-
4	Daha	-	-	-	-	-
5	Bado Rangran	-	-	-	-	-

9.3 GROUND WATER TABLE (Drinking Water)

The Drinking Water supply is managed by Public Health Department by Installing Tube well in the area the project is expected to augment the ground water resources with the proposed water harvesting structure.

The present water table ranges 5 to 15 m below ground level. The watershed underlain by marginal and few pockets of Bado Brahmanan are underlain by blackish water, in the shallow aquifers A small pocket of Daha has fresh ground water. The deeper quality of ground water is saline, which is unfit for irrigation and drinking purpose. It has been proposed to make rainwater-harvesting by construction of water harvesting structures. The provision of this has been provided in the project proposal.

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

Name of Micro-Watersheds	Name of Villages	Sources	Pre project level	Remarks
Dubeta	Dubeta	Open Well	15.00	Most of the area of water shed is underlain by marginal to brackish quality under shallow depth where exploitation of this water is used for irrigation. The provision of rain water harvesting in the project proposals has been provided to augment the water resources.
Bado Brahmanan	Bado Brahmanan	Open Well	5.25	
Harita	Harita	Open Well	8.20	
	Bharri	Open Well	7.20	
Daha	Daha	Open Well	8.20	
Bado Rangran	Bado Rangran	Open Well	8.00	

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 Water course (lined) with culvert (RCC Pipe NP3) on field paths crossing, Roof top rainwater Harvesting and injection well, Ramp, inlet & outlet, Earthen Embankments /Marginal bunds with pucca outlet, Small earthen embankment with vegetative support for dune stabilization, Community water storage Tank 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 Dubeta Watershed

Name of Micro-Watersheds	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		
Dubeta	Wheat	407	4528	1842896	248.79	445	4664	2075480	280.18
	Mustard	127	1628	206756	62.03	136	1682	228752	68.62
	Bajra	123	2356	289788	36.22	128	2471	316288	39.53
Bado Brahmanan	Wheat	243	4525	1099575	148.44	265	4659	1234635	166.67
	Mustard	75	1621	121575	36.47	78	1677	130806	39.24
	Bajra	84	2358	198072	24.76	87	2475	215325	26.92
Harita	Wheat	323	4526	1461898	197.36	356	4661	1659316	224.01
	Mustard	52	1626	84552	25.37	56	1680	94080	28.22
	Bajra	54	2356	127224	15.90	55	2505	137775	17.22
Daha	Wheat	449	4529	2033521	274.52	492	4662	2293704	309.65
	Mustard	75	1623	121725	36.52	79	1678	132562	39.77
	Bajra	132	2359	311388	38.92	138	2474	341412	42.68

Bado Rangran	Wheat	14	4526	63364	8.55	15	4652	69780	9.42
	Mustard	15	1629	24435	7.33	16	1684	26944	8.08
	Bajra	20	2351	47020	5.88	21	2455	51555	6.44
Total		2193			1167.07	2367			1306.68

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

9.5 HORTICULTURE

Table 5. Pre and post project area under Horticulture

S.No.	Name of Micro Watershed	Existing area under horticulture (ha)	Additional Area under horticulture proposed to be covered through IWMP	Total area in ha – Post Project
1	Dubeta	2	5	7
2	Bado Brahmanan	3	8	11
3	Harita	2	5	7
4	Daha	4	8	12
5	Bado Rangran	2	6	8
	Total	13	32	45

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	Dubeta	9	15	24
2	Bado Brahmanan	15	25	40
3	Harita	8	18	26
4	Daha	12	20	32
5	Bado Rangran	11	20	31
	Total	55	98	153

9.7 LIVESTOCK

Table 7. Details of livestock in the project area

S.	Name of	Type of	Pre project	Post project	Remarks

No.	micro watershed	Animals	No.	Yield Kg/ day	Income In Rs per day	No.	Yield Kg/ day	Income In Rs per day	
1	Dubeta	Buffalo	423	7-8	238-272	486	8-9	320-360	Increase in milk yield and number of animals by approx. 15%
		Cow	-	-	-	-	-	-	-
2	Bado Brahmanan	Buffalo	528	7.5- 8.5	255-289	607	9.5- 10.5	380-420	Increase in milk yield and number of animals by approx. 15%
		Cow	20	3.5- 4.5	87-112	23	5.5- 6.5	165-195	Increase in milk yield and number of animals by approx. 15%
3	Harita	Buffalo	1239	8-9	272-306	1425	10-12	400-480	Increase in milk yield and number of animals by approx. 15%
		Cow	-	-	-	-	-	-	-
4	Daha	Buffalo	947	7-8	238-272	1089	9-11	360-440	Increase in milk yield and number of animals by approx. 15%
		Cow	21	4-5	100-125	24	6.5- 8.5	195-255	Increase in milk yield and number of animals by approx. 15%
5	Bado Rangran	Buffalo	492	7.5 – 8.5	255-289	566	10-12	400-480	Increase in milk yield and number of animals by approx. 15%
		Cow	30	4.5- 5.5	87-138	35	6-8	180-240	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 No. 8: Backward-Forward Linkages

Sr. No.	Project	Type of Marketing Facility	Pre-Project (no.)	During the Project (no.)	Post-project (no.)
1	Dubeta 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	Would be strengthen

				youth	
		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

9.8.1.1 LOGICAL FRAMEWORK ANALYSIS

Table 9. Logical Framework Analysis

Components	Activities	Outputs	Effect	Impact
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Components	Activities	Outputs	Effect	Impact
Village Institution Formation	Formation of Watershed Community, User Groups	<ul style="list-style-type: none"> • 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.	<ul style="list-style-type: none"> • Unity and prosperity in the village management. • People's Participation and positive perception towards the programme.
Strengthening Village operations	<ul style="list-style-type: none"> • Organizing training and awareness programme for village institutions (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 	<ul style="list-style-type: none"> • Awareness camps to be organized • Trainings and exposure visits UGs and WCs to be held Capacity building workshops to be organized one. • Federations of UGs and WC to be formed. 	<ul style="list-style-type: none"> • Quality of management of common resources improved. • Quality of distribution of 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. 	

Components	Activities	Outputs	Effect	Impact
	development			
Fund Management	<ul style="list-style-type: none"> • Improve management and utilization of UGs and WCs • Prepare communities to explore other sources of income for UGs and WCs. 	UGs and WCs operating bank account and managing resources on their own.	<ul style="list-style-type: none"> • Purpose, frequency and volume of use of the fund enhanced • Volume of funds generated for UGs and WCs from other sources of income increased 	
Ecological restoration	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Fodder availability from common and private land increased. • Accessibility to common and forest lands increased with removal of encroachments and resolution of conflicts 	<ul style="list-style-type: none"> • 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
	income generation activities.			
Rainfed Area Development	<ul style="list-style-type: none"> • 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 irrigation practices like drip irrigation • Impart trainings, conduct meetings and organize 	<ul style="list-style-type: none"> • 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 49000 man days of employment to be generated. • Trainings, exposure visits and meetings to be organized for communities, village volunteers. 	<ul style="list-style-type: none"> • 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. 	<p>Increase in proportion of households having more security of food Increase in contribution of agricultural income to the household income</p>

Components	Activities	Outputs	Effect	Impact
	exposure visits of communities.			
Women's socio-political and economic empowerment	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Enhanced capacities of leaders of women's group in taking initiatives to solve problems at differt levels. • Improved access to credit for livelihood purposes Increased household income. 	<ul style="list-style-type: none"> • 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.