Impact Assessment Report - Integrated Watershed Management Program of Khandow Mega Watershed Project Batch-I (2009-16)

CPF

IWMP

Telangana State

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Impact Assessment of IWMP Khandow Mega Watershed
Batch I (2009-16)

Project Implementation Agency- Centre for People's Forestry

State Level Nodal Agency (SLNA) – Govt. of Telangana

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Section 1 – Executive Summary

This impact assessment has been conducted to assess the impacts of the Integrated Watershed management Program (IWMP) in the mega watershed area – Khandow in Narnoor mandal of Adilabad district, Telangana, India. The IWMP as per its design strives towards the development of NRM principles and rural development through a decentralized people led participatory approach.

The assessment was conducted by Center for People's Forestry, where CPF was the Project Implementing Agency. The project cycle for the Program was 2009-16 and was implemented in three Gram Panchayats and in eighteen habitations. The Project assessment was carried out from August – Oct 2015.

The IWMP project has created a positive impact and also can be considered as an enabler that bought about a change in the community perspective towards the natural resources, technology and livelihoods, which shall be unstoppable.

Ecological impacts- The Increased availability of water has helped in improvement of quality and quantity of crops cultivated in project area. Soil and moisture conservation measures has reduced the excessive surface runoff and soil erosion and improved soil fertility. Land under irrigation increased by 130% and Wastelands reduced by 22.9%. ***The project USP was that CPF could complete the treatment on the Ridge to valley basis where 808 Ha of Forest land was treated in collaboration with the Forest Department for improved water availability and soil quality.***

Economic Impact –The increased water availability has reduced drudgery of the community and has helped the farm and non-farm households in enhancing the levels of income. There has been an increase in the extent of land under cultivation by 11%.The average annual income per HH rose from Rs 40,662/- in 2008 to Rs 76,352 in 2015.

Social Impacts- The Livelihood interventions under the IWMP has also ensured decreased migration rates. Special emphasis on women empowerment and upliftment of the landless have also led to improved participation and decision making in planning and equitable gains from the watershed program. The seasonal and distress migration was arrested by a significant 78.9%

Section 2 - Introduction

2.1 A brief of the Integrated Watershed Development Program

India is basically an agrarian society where Agriculture provides employment to almost 51% of the total population. However, the sector's contribution to the country's GDP is just 12-13%.The net cultivated area is 142 million hectares (Mha), out of this, 85 Mha is rainfed that suffers from soil degradation, low agricultural productivity, lack of water holding capacities, low availability of fodder and poor quality of livestock. All these factors have together resulted in abject poverty and malnutrition for those living in these areas. The Integrated Watershed Management Programme (IWMP) aims at prevention of soil erosion, regeneration of vegetative cover, introduction of rain water harvesting and recharging of ground water table. The IWMP seeks to bring together all government agencies under one common programme to address all these problems and improve the quality of life and health of these people through enhanced livelihood opportunities.

Objectives - The main objectives of the IWMP are to restore the ecological balance by harnessing, conserving and developing degraded natural resources such as soil, vegetative cover and water. The outcomes are prevention of soil run-off, regeneration of natural vegetation, rainwater harvesting and re-charging of ground water table. This enables multi-cropping and the introduction of diverse agro-based activities, which help to provide sustainable livelihoods to the people residing in the watershed area.

Criteria for selecting a Watershed Project under IWMP

The areas that comprise maximum degraded/eroded soil and where there is a scarcity of water and over exploitation of ground water, being dependent on rain, remain mostly dry in other months due to lack of water catchments and mini-reservoirs of any kind. The land must hold potential for regeneration of water resources, along with development of soil for basic vegetative growth. In addition, contiguity to another watershed that has already been developed or revived, would be an added advantage.

Role of SLNA

State Level Nodal Agency (SLNA): The SLNA is mandated to sanction watershed projects for the state, as per guidelines laid down. SLNA has an independent bank account and coordinates all fund flow from central and state agencies to all stakeholders at the grassroots level. The SLNA monitors process and progress of the project and maintains a state level data cell and connects it online to the National level data centre. It is tasked to conduct social audit and sustainability monitoring and also coordinate with external monitoring agencies on project work and outcomes.

Role of Project Implementing Agency

A PIA may include members of any arm of a government sponsored organization, voluntary organization, intermediate panchayat etc. It works under guidance from SLNA. The PIA is to provide technical assistance to Gram Panchayat on all aspects of watershed project identification, evaluation, implementation and monitoring of outcomes. The PIA is also responsible for raising additional funding through convergence with MGNREGS, National Horticulture Mission, and Tribal Welfare Schemes etc

2.2 Description of the Watershed

Name of the Project	**Khandow Mega Watershed Project**
Name of the state	Telangana
District & Mandal	Adilabad, Narnoor
Total number of Gram Panchayats	3 (Dongargaon, Gadiguda, Khandow)
Total Number of habitations	18
Total population	3902
Project period	2009-2016 (March)

The Khandow Mega watershed is located in Narnoor Mandal of Adilabad District. The area is located between longitude 78”56’05”’ – 78’56’05”’ and 19’35’30” – 19’40’10” latitudes. It is at distance of 18 km. from its mandal headquarters and 35 kms from the district head quarters. This watershed is located at an elevation of 566 mts above the mean sea level and is largely covered with hills, undulating topography and rough landscape comprising structural hills, mountains, valleys and plains. The area is bounded three sides by Manikgarh RF (N, E and S) with very undulating terrain and associated streams flowing in different directions and contribution to the major Nala that flows NW to SE direction with lot of meandering due to associated structural hills, named as Jeikhas Nala, as an outlet of this watershed. The elevation at the mouth of this watershed is 420 mts.

The average annual rainfall (10 years) in this area is denoted as 1158 mm. The highest elevation is observed in these SW hill ranges with a height measured to 566 m above MSL. The temperature in the area is in the range between 46 degree centigrade during summers and drops down to 7 degree centigrade during winter. There are 18 habitations covered in three GPs of this Mega Watershed named Jeikhas Nala.

The lands of the watershed area are found to be less fertile due to high slopes and thus prone to erosion. The lands in this micro watershed had no measure of any kind that could conserve the natural resources. There is high requirement of soil moisture conservation measure, in-situ water harvesting measures to be taken up with low cost structures like stone, earthen, farm ponds, dug out ponds, etc., The community has very less knowledge on such measures that could help them and have poor awareness on the governmental schemes and programs. There is poor vegetation coverage in the watershed area, as most of the communities do not have access to alternate source of fuel wood and are therefore dependent on it. High level of deforestation was observed towards north of the Watershed.

Most of the people in the micro watershed village belong to the tribal community, except 1 very few families belong to other castes like Other castes / Backward class, Agriculture is the major source of livelihood followed by animal husbandry, wage labor and poultry farming in these watershed villages. The agriculture yield had been poor due to poor soil quality and water availability despite the fact that they work very hard in the fields, with an increased input cost. The landless poor are work as farm laborers or in the government MGNREGS program for sustenance.

Community's response and interest towards the watershed program in these villages and habitations is extremely good. The farmer's participation in the net planning, PRA and other socio economic surveys is very encourage and thus revealed about the facts and figures in the villages.

2 .3 Constraints of working in the project location

A. Geographic constraints- The tribal areas are located near the forest areas, with very steep hill ranges in abundance. The steep slopes and deforestation led to a large degree of soil erosion thus degrading the soil quality over a period of time.

B. Low agriculture productivity –

- Full dependence on monsoon- The project area was fully dependent on the monsoons for agriculture farming. Due to poor irrigation facilities, the total cultivated area depended on the erratic monsoons. Therefore the success or failure of monsoon had a direct impact on agriculture productivity. This is one reason that Kharif is the main crop and Rabi cropping is only undertaken if there are winter rains.
- Land degradation- the natural steep sloppy terrains, increased deforestation for dependence on fuel wood etc and free grazing has intensified and added to the problems of soil erosion.
- Lack of soil and water conservation structures– Soil and water conservation techniques have not been the key consideration to improve soil quality and water availability. The runoff water is not being cached to increase soil moisture for increased water availability for farming.

- Lack of adequate farm machinery- Even today a large number of farmers in the areas of study use wooden ploughs and bullocks. They don't have adequate machinery like seed drill, tractor, thresher etc. Old machineries take more time in land development and harvesting practices.
- Lack of good quality seeds and fertilizers - Good quality seed and bio fertilizer and pesticide are important factor in agriculture productivity. The use of good quality leads to higher land productivity. In the project areas approximately the entire agriculture land depends on rainfall and farmers mostly use nitrogenous fertilizers especially urea which has resulted in disproportionate use of fertilizer depleting the quality of land and increased water usage. First these fertilizers are most useful in irrigated condition.

C. Infrastructural challenges

Lack of road network and transport facility

The project area is located in Narnoor Mandal of Adilabad district. The area has very poor road network with villages connected to non – metallic or very poorly maintained metallic roads. Lack of all weather roads in such areas also aggravates this problem.

2.4 Project Profile – Table 1

S. No	No of Habitation Village	Name of the GP	Total Population				Total Population		Total BPL HHs	Total Landless HHs	No. of Watershed Committee	No. of Watershed Groups
			Gen	SC	ST	OBC	Male	Female				
1	5	Dongargaon	0	0	934	0	498	436	283	87	1	13
2	5	Gadiguda	0	28	1091	54	580	593	486	77	1	17
3	6	Khandow	0	4	1585	206	897	898	577	132	1	17
											3	47

Population:

The IWMP covers 16 habitations in 3 Gram panchayats with a total population of 3902. Out of this 49.38% are women. The Schedule tribe population comprising of Gonds, Kolams, Andh, Pradan, Lambada, Mathura Tanda comprises of 92.5% of the total population. 34.5% of the population falls under the BPL category and 7.6% of the population is landless.

Institutions- At each of the three gram Panchayats **Watershed Committees** have been formed and 94 **User Groups** are formed at the community level at the grassroots.

Project model and Targets – (table 2)

The project model is based on the following components

1. DPR preparation
2. Entry Point Activity-
3. Natural Resource management
4. Productivity Systems intervention
5. Livelihoods

Sl. No.	Category	Project Target		Achieved		% achieved	
		Budget in lakhs	Quantity	Budget in lakhs	Quantity	Budget in lakhs	Quantity
1	EPA	21.61	68	17.23	68	78%	100%
2	NRM	270.12		251.55		93%	
3	PSI	70.24		59.25		77.7	
4	Livelihood	48.62		30.62		63%	

NRM which is the most important component has seen that the project has delivered 93% of the target in terms of number of structures and budget.

Extent of land treated-

- Cluster of total land treated- 4120 Ha inclusive of 898 Ha of forest land

Objectives of the program –

1. Conserve the natural resources along with the co-existent capitals for optimizing their utility benefiting the livelihoods of the community
2. Improve income levels of different communities involved in farm, non-farm and off-farm and service sectors in the project area thus sustain the production systems through holistic approach of development in the area/s.
3. Increase per capita productivity and thus improve the well – being of the local people.
4. Communities adopt self –sustainable practices in conserving and managing the resources with their continued efforts.

Key Benefits of IWMP:-

- Climate change mitigation
- Developing degraded lands
- Overall socio-economic development of poor/disadvantage sections
- Drought Mitigation
- Employment generation and poverty alleviation
- Livestock development

- Increased Productivity enhancement increased
- Increased Afforestation

Activities undertaken:-

- Development of water harvesting structures such as low cost farm ponds, nalla bunds, Check dams, Percolation tanks and groundwater recharge measures to conserve and allow percolation of water.
- De-silting of village tanks for drinking/Irrigation/Fisheries development
- Afforestation including block plantations, Agro-forestry and Horticulture development, Pasture development.
- Land development including in-situ soil and moisture conservation measures like contour and graded bunds, nursery raising for fodder, timber, fuel wood, horticulture and non-timber forest product species
- Drainage line treatment with a combination of vegetative and engineering structures
- Crop demonstrations for popularizing new crops/varieties
- Repair, restoration and up-gradation of existing common property assets and structures in the watershed to obtain optimum and sustained benefits from previous public investments.
- Promotion and propagation of non-conventional energy saving devices, energy conservation measures, Bio-fuel plantations.

Table 3: watershed development works in IWMP Khandow, Adilabad

S.No	NRM works category	Structures	No of structure /extent of land	Benefits
1	Land leveling & farm bunding	Water Absorption Trench ,Rock Fill Dam, Loose Boulder Structure , Check Dam Percolation Tank	WAT-139, LBS-1042, RFD-860, PT-5, FP-6, CD-15	Increased crop production, checks soil erosion, moisture conservation
2	Afforestation Works	Avenue plantation , backyard plantation , bund, trough ,cattle proof trench etc	6 Kms	checks soil erosion, moisture conservation
3	live stock related works-	Raising of Perennial Fodder development	3 acres	Fodder production & wasteland development
4	Watershed development in Forest fringe area	Rock Fill Dam, Loose Boulder Structure ,	122	checks soil erosion, moisture conservation
5	Dry land horticulture	Dry Land Horticulture	155	moisture conservation Increased productivity

Section 3- Impact Assessment

3.1 Assessment Methodology- The Impact assessment was undertaken by collecting Primary and Secondary data- Case studies, DPR data, Baseline data from the DPR, SLNA reports on various assessment indicators to obtain a holistic picture of the ecological, social and economic impacts of the watershed program. At the ground level door-to-door surveys, village level meetings and data collection sheets were used for collection of samples. To evaluate the impacts of interventions, a before-after study was conducted through data collection by recall techniques, field records and reports and the difference in pre and post IWMP has been attributed as the impact of the intervention.

The project information, were culled out from the DPR report and the SLNA e-reports.

Indicator	Baseline (2008-9)	2015 data
NRM /PSI/EPA /Livelihoods works	Sourced from DPR	Sourced from DPR & project reports – SLNA
number of beneficiaries	Sourced from DPR	Sourced from project reports –SLNA
water and soil improvement	Sourced from DPR	Sourced from project reports –SLNA
Crop status	DPR (baseline)	Project reports & farmer meetings
Income and expenditure assessment	NA	Sample size of 149 beneficiaries (9%) out of a total of 1781 (recall techniques & perception) collected in 2015
Income status	NA	Sample size of 149 beneficiaries (9%) out of a total of 1781 (recall techniques & perception) collected in 2015
Convergence benefit	Sourced from DPR	Sourced from Reports- SLNA
Migration status	NA	Data collected of 209 people who migrated in 2008
Migration works & wages	NA	Sample size 20% of the total no of 209 people migrated in 2008 through data collection
Sustainability of Community Institutions	NA	Field records & field reports

The IWMP has an inbuilt mechanism to collect data for viewing the outcomes and impacts but mostly on Quantifiable indicators. CPF has attempted to capture the impact on some qualitative indicators viz a viz migration, institutional sustainability, income and expenditure through collecting disaggregated data. The assessment methodology has some secondary and primary source data collection, but some of the secondary data that has been collected was through recall techniques and perception. The above matrix explicitly explains the sources of data collection for the indicator considered for undertaking the Impact assessment.

3.2 Ecological Impact

There have been key positive impacts of the IWMP project – Khandow, through soil and moisture conservation measures for improving and maintaining the fertility of soil. These actions have favorably impacted the water level in wells, improved area for irrigation, increased water availability from well recharge and surface water harvesting that has intensely helped in water conservation and augmentation of water resources. Treatments like Water Absorption Trench, Rock Fill Dam, Loose Boulder Structure, Check Dam, Percolation Tank has greatly impacted the ground water level in the project area and due to these treatments ground water table also has increased. The Increased availability of water has helped in improvement of quality and quantity of crops cultivated in project area. The afforestation, developing perennial fodders has increased the green cover in the forest fringe areas, CPR and wastelands. ***The project USP was the Integrated Watershed model developed by CPF on the Ridge to valley concept where 808 Ha of Forest land was developed for improved water availability and soil quality.*** Overall it has helped in conservation of natural resources and increased the green cover.

3.2.1 Net Geographical area **Table 4**

		Net Area in Ha	**Forest Area in Ha**	**Rainfed**	**Irrigated**	**Wasteland**
Sl. No	Before 2009	3705	898	3360	645	908
	Status on 2015	4120	898	2631	1489	700

- 9.3% decrease in extent of rainfed agriculture land
- Land under irrigation increased by 130%
- Wastelands reduced by 22.9%

3.2.2 Total NRM works completed

- A total of 2067 NRM works completed as per the plan.

3.1.3 Soil moisture and water level status – **Table 5**

	Before project intervention – (before 2009)	**After Project intervention (as on 2015)**	**%**
Ground water status in m	36	10-12	66% increase
Afforestation in Ha	0	185	100% increase
Forest fringe treated in Ha	150	450	200% increase
Individual land treated- in Ha	2800 ha	4120 ha	47% increase
Community land treated in Ha	0	600 ha	100% increase
Moisture index in days	3 days	6 days	100% increase
Area under rainfed agriculture in Ha	3360	2341	30.3% decrease
Productivity potential of land in Ha	645	1489	130% increase

- Increase in Ground water availability by 66% post project intervention
- Forest Fringe treatment of extent of land increased by 200%
- 47% increase on individual extent of land treated
- 166% increase in the moisture index
- 130.8% increase in the productivity potential of land
- 30.3% decrease in the extent of land under rainfed agriculture as extent of land under irrigation increased.

3.3 Economic Impact

The economic indicators like number of people benefited, increase in incomes of the people, increased productivity, amount leveraged have been considered for the economic impact assessment. The increased water availability has reduced drudgery of the community and has helped the farm and non-farm households in enhancing the levels of income. Increase in the ground water and soil and water conservation benefits have helped the farmers to grow more crops and also are cultivating the second crop i.e the Rabi crop.

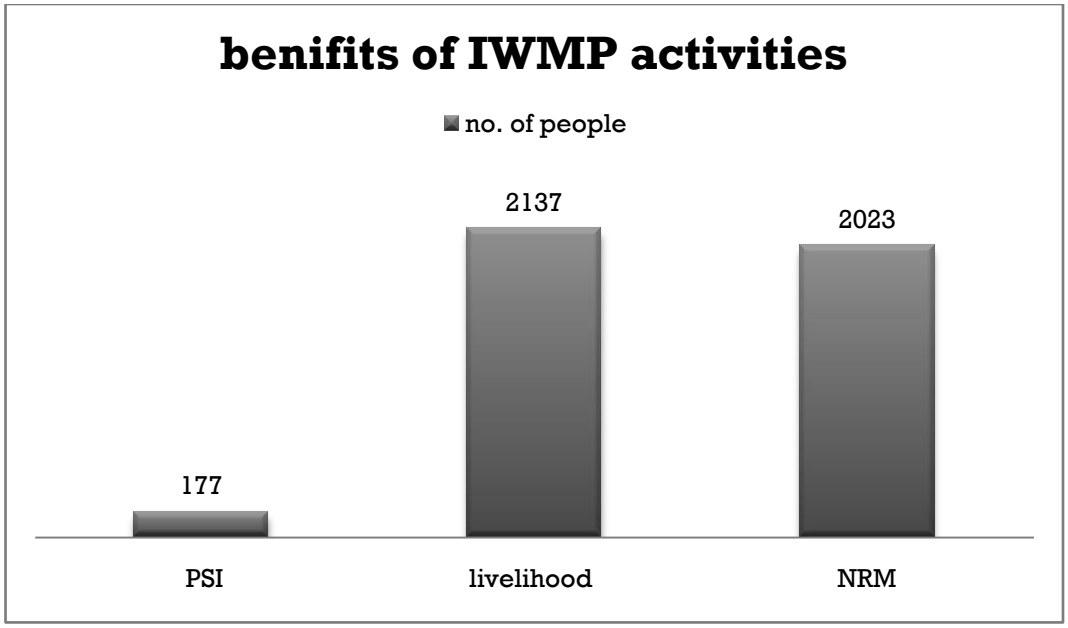
Owing to the intervention there is an increase in the extent of land for cultivation. Due to soil and water conservation, pasture and green fodder are being cultivated which is advantageous

to the community for their livestock. The crop pattern also changed where before project intervention cotton, red gram, Bengal gram, sorgum , soya were the prevalent crops sown whereas in 2015 with project intervention the crop variety has increased to cotton, red gram, soya, wheat, sorgum, maize, green gram and vegetables. Data has been collected to do the economic benefits, wherein 2008 and before has been considered the data for pre project intervention and 2015 as post project intervention.

3.3.1 Economic benefit out of project intervention Individual **Table 6**

S.No.	Name of the Village	Name of the GP	Total No. of People Benefited PSI	Total No. of Benefited LH	Total No. of Benefited NRM	Total No. of SC/ST Benefited	Total No. of Women Benefited	Total No. of Migration for Village	
								Before	After
1	Banjara Tanda	Dongargaon	8	0	77	77	15	2	0
2	Boddiguda		9	3	62	62	7	1	0
3	Chittaguda		18	5	88	88	22	3	0
4	Dongargaon		21	4	71	71	18	0	0
5	Sedwai		11	2	50	50	3	2	1
6	Ademeyon	Gadiguda	21	17	186	186	45	2	1
7	Gadiguda		43	0	148	148	31	3	1
8	Muthyambatti		4	4	57	57	10	2	0
9	Shivannara		3	4	94	94	10	2	0
10	Warkawai		1	18	74	74	12	1	0
11	Anduguda	Khandow	7	4	79	79	11	2	0
12	Banjara Tanda		41	0	113	113	15	2	1
13	Kattaguda		10	10	63	63	19	2	1
14	Khandow		21	17	95	95	12	3	1
15	Mathura Tanda		2	0	59	2	1	2	0
16	Ramupur		17	18	122	122	34	2	0

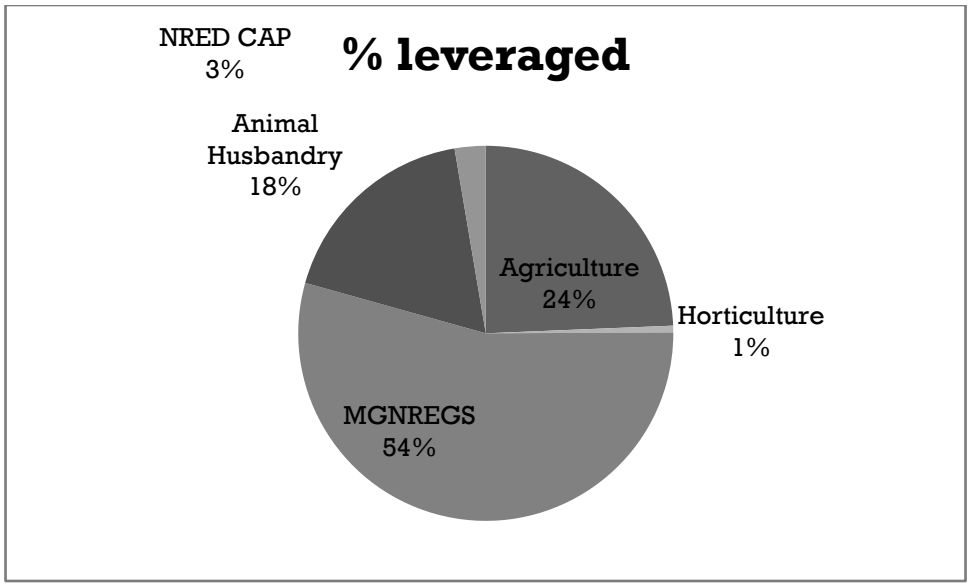
The above table states the number of individuals benefitted out of the project intervention. A total no of 1438 individuals benefited from NRM works, Livelihood activities were promoted wherein 106 people benefited, production System Improvement (PSI) which is an important component for promoting technology in agriculture for increased crop productivity and irrigation wherein 237 people benefited .1381 people from ST communities benefited and 265 were women beneficiaries.



3.3.2 Convergence benefit – total of the project **Table 6**

Year	Agriculture in lacs	Horticulture in lacs	MGNREGS in lacs	Animal Husbandry in lacs	NRED CAP in lacs
2009-10	0	0	0	0	0
2010-11	0	0	0	0	0
2011-12	0	0	0.91	4.2	0.57
2012-13	0.45	0	2.35	2.00	0.35
2013-14	6.06	0	11.92	0	0
2014-15	1.88	0.2	3.57	0	0
Total	**8.39**	**.2**	**18.75**	**6.2**	**0.92**

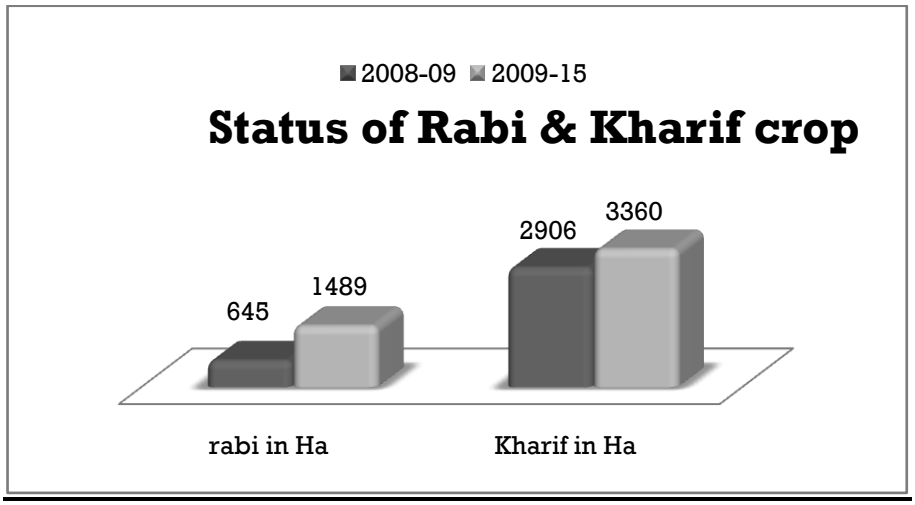
The above table depicts that from 2012-15 the IWMP converged with different departments for value addition to the project. A total of 34.46 lacs were leveraged through subsidies etc. MGNREGS was the highest contributor to this factor.



Depicted above is the graphical representation of the convergence status in percentage.

3.3.3 **Crop status**

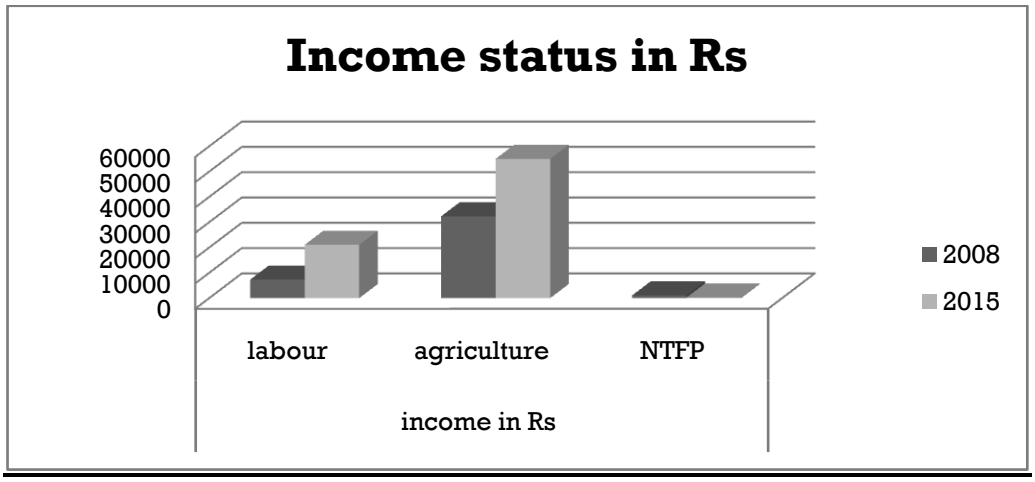
The increased water availability and soil fertility, irrigation facilities and improved farming technologies through PSI has increased the extent of land under cultivation by 11%. In the year 2008 before the project intervention the area under cultivation amongst the 3 gram panchayats was 3705 ha in comparison to the extent of land under cultivation as on 2015 is 4120 ha. This increase in the extent of land has increased productivity, increased crop variety and thereby increased the level of incomes of the farmers.



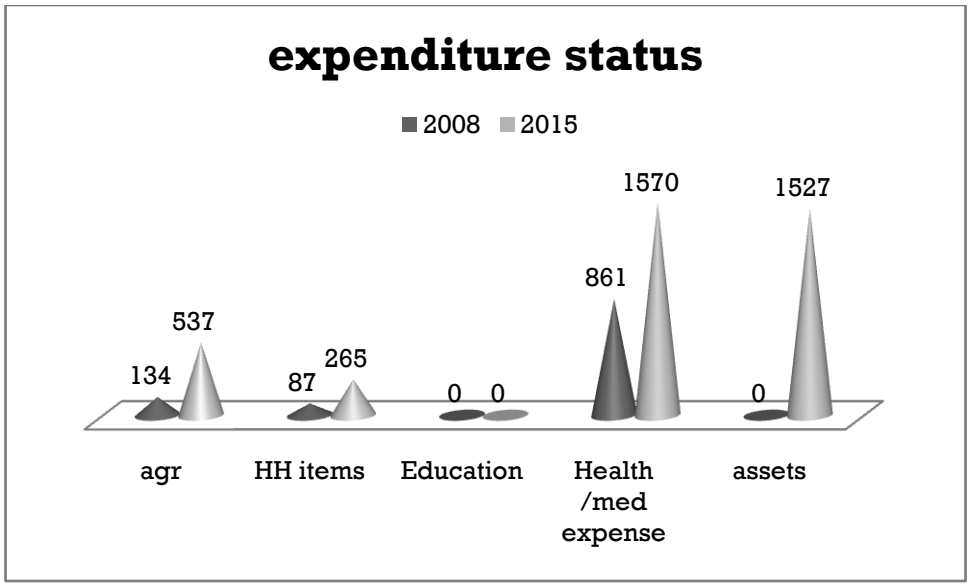
Graphical representation 3- depicts the increase in the extent of land for Rabi and Kharif crops. The extent of land undertaken for Rabi cropping has witnessed whooping increase by 130% in the year 2015 in comparison to the year 2008. Whereas Kharif had always been the main crop where it witnessed an increase of 15.6 % in 2015 in comparison to 2008. But with

the increase in the level of ground water, water reservoirs etc the farmers have increased the extent of land for Rabi cropping season.

3.3.4 **Income and expenditure status –** To estimate the impact of the project on the incomes, a sample size of 146 HHs (out of a total of 1781 of individual beneficiaries which is almost 9%) were surveyed for collection of income from agriculture farming, wage labour & NTFP which are the main source of income. There has been an increase in the income on agriculture and wage labour. In the year 2008 the average annual income of each household, from wage /farm labour was INR 7301/- , agriculture INR 32315/- and from NTFP 1046/- Rs in comparison 2015 the annual average income from wage /farm labour was INR 21065 /- , agriculture INR 55034 and from NTFP 253 /- Rs. In the year 2008, the average annual income per HH was Rs 40,662/- only whereas in 2015 the average annual income rose to Rs 76,352 which is 87.7% increase from the year 2008. Livelihood activities were promoted within 106 HHs thus increase the income opportunity through self employment for the BPL/ landless or small land holding people.



With the increase in the income it has also been observed that there is an increase in the expenditures by the community. The graphical representation below depicts a considerable increase in the expenditure agriculture, household and asset building. There is a 300% increase in agriculture expenditure, but there is also an increase in the health expenditure also by 45%. The agriculture expenditure has increased due to the increase in the extent of land under farming due to improved water availability. The farmers are undertaking farming in Rabi cropping season also. The expenditure for buying seeds, labour cost, farm equipments like sprayer, thresher, and pump sets, sprinklers etc (where 20% is the contribution of the individual) have been instrumental in increased agriculture expenditure.



3. 4 Social Impact

The social impact indicators like changes in the people's participation level, sustainability of the Community institutions formed and the migration status of the poor and the landless were considered for the impact assessment. The watershed interventions through IWMP that were planned were on a participatory and democratic approach and brought positive impacts in the region, with the inclusion of women and the poor with increased decision making . It also built the capacities of the communities and developed their knowledge on farming, watershed development, use of technology and community based planning. The emphasis is laid on the participation of women in the watershed institutions to improve their decision making power and to benefit the women and the poor through the project.

3.4.1 Sustainability of Community Institutions- Table7

The table below has assessed the two themes namely; Governance & Management Practices and Watershed performance of the IWMP – Khandow project. Under each theme the indicators have been ranked as per the instructions.

S. No	Theme	Indicator	Rating 1	Rating 2	Rating 3	Rating 4	Rating 5	Project Rating
1	**Governance and management practices**	Habitation coverage	100% coverage	80%	60%	40%	20%	1
2		Composition of women representatives	50% women	40%	30%	20%	10%	2
3		Composition of SC/ST representatives	50% represented by SC and ST together	40%	30%	20%	10%	1
4		UG representation	100%	80%	60%	40%	20%	2
5		Representation of landless people	Landless people representing WC	NA	NA	NA	Landless people not representing WC	1
6		SHG epresentation	SHG women part of WSC	NA	NA	NA	SHG women not part of WSC	2
7		Representation from GP body	GP body part of WSC	NA	NA	NA	GP body not part of WSC	1
8		Members residing within/outside of watershed area	All members residing with in	80% residing with in	60% residing with in	40% residing with in	20% residing with in	1
9		Percentage of watershed area covered by user group	100% coverage	80%	60%	40%	20%	1
10		Total No. of watershed committee meetings	12 out of 12	8 out of 12	7 out of 12	6 out of 12	Not regular	2

		conducted						
11		total no. of WSC meetings conducted on scheduled date	6 out of 12					2
12		Average attendance during WSC meetings	80%	60%	40%	20%	<20%	1
13		Total no. of WSC meetings led to key decisions	12 out of 12	10 out of 12	8 out of 12	6 out of 12	Less than 6 out of 12	2
14		No of UGs have fixed scheduled meeting dates	80%	60%	40%	20%	<20%	2
15		No of UGs are organizing group meetings regularly	80%	60%	40%	20%	<20%	2
16		No of UGs are linked to Bank (account opening)	80%	60%	40%	20%	<20%	2
17		No of UGs are initiated savings	80%	60%	40%	20%	<20%	3
18		No of UGs are initiated internal lending	50%	40%	30%	20%	<20%	3 3
19		No of UGs are linked to Bank (Loans)	50%	40%	30%	20%	<20%	5
20		No of WSC members received Trainings/	100% coverage	99% - 80%	79% - 60%	59% - 40%	<40%	2

		Exposure Programmes						
		No of UGs / SHGs participated in Trainings/ Exposure Programmes						2
	Watershed program performance	Entry point activities - Planning	Independently planned	NA	NA	Planned with assistance from watershed team	Watershed committee not involved at all	4
		Entry point activities - Monitoring	Independently monitoring	NA	NA	Monitoring with the support from watershed team	Watershed committee not been involved in monitoring	4
		Natural resource management - Planning	Independently planned	NA	NA	Planned with assistance from watershed team	Watershed committee not involved at all	4
		Natural resource management - Monitoring	Independently monitoring	NA	NA	Monitoring with the support from watershed team	Watershed committee not been involved in monitoring	1
		Productivity System Improvement - Planning	Independently planned	NA	NA	Planned with assistance from watershed	Watershed committee not involved at all	4

						team		
		Productivity System Improvement - Monitoring	Independently monitoring	NA	NA	Monitoring with the support from watershed team	Watershed committee not been involved in monitoring	1
		Livelihoods - Planning	Independently planned	NA	NA	Planned with assistance from watershed team/ IKP team	Watershed committee not involved at all	4
		Livelihoods - Monitoring	Independently monitoring	NA	NA	Monitoring with the support from watershed team/ IKP team	Watershed committee not been involved in monitoring	4

Governance and management practices -The above data indicates that project covered 100% of the project habitation, the SC/ST, landless people and SHG members were well represented in Watershed Committees and User Groups. The Gram panchayats also had a sizeable representation in the committees formed. 60% of the Use Groups had financial linkages and had bank accounts and 30% of the User Groups were into internal lending, less than 20% of the User Groups took loans from the banks.

Women were well represented in the Watershed Committees and User Groups, 40% of women had representation in the groups. A total of 265 women were the direct beneficiaries from NRM, PSI and livelihood activities.

Watershed program performance- In the above mentioned table rating 1 (independently planned) denotes that the project was not implemented on a participatory approach, rating 4 (Planned with assistance from watershed team) denotes participation by the WCC and User Group and rating 5 (Watershed committee not involved at all) denotes the WCC formed at the Gram Panchayat level . It is significantly being seen that the WCC and User Groups have been involved in planning for all project components.

3.4.2 Migration status

The status of migration was one indicator to do the impact assessment. The migration status amongst the communities also demonstrates the level of drudgery has reduced or increased due to seasonal or distress migration with the intervention of the project.

The year 2008-09 has been taken as the baseline and 2014-15 as the end line. **Table 8** represents the status of migration.

S. No	No of migrants	Total males	Total females
2008-09	209	146	55
2009-14	44	29	15

The data thus signifies that with the implementation of the project the seasonal and distress migration was arrested by a significant 78.9% .The convergence of the program with MNREGS program , increase in the extent of land under cultivation with improved soil fertility and water availability , livelihood opportunities especially for the landless and the technology intervention through PSI for improving agriculture farming are all the factors that has contributed in reducing the migration from the project area.

Before the project intervention, on an average almost 50% of the people migrated for 1-3 months on an average, the rest migrated for 4 months and above. The average wage rate was only 79.54 INR and the migratory laborers were working as farm laborers for chilly and cotton plucking.

With the project intervention the level of migration decreased, the people who migrated before were now engaged in the NRM works within the project, with an increased wage rate, on an average of INR 142.60.

3.5 Systems / Processes unique to the CPF implemented Project

- The approach "*Ridge to Valley Treatment"* of the watershed and development of treatment maps was a unique factor to the project. . It could be achieved through working in collaboration with the Forest Department for treating the forest land that formed the ridge to the watershed.
- To sustain the project initiative post project cycle – capacities of the community were built to strengthen and manage their community institutions as they were capacitated from the project initiation stage in participatory planning, monitoring of the project.
- Convergence by all the relevant departments strengthened the project and also brought value addition to the project and the community
- The holistic approach of the project that went beyond project activities brought in an increased participation especially of women ,children and the marginalized through health rallies, health camps, sanitation, plantation activities.etc and brought health and sanitation at the forefront . Creation of awareness among children by giving sessions in the schools and taking the students on exposure to project intervention areas,
- Activities like establishing bio gas plants and RO plant, distribution of solar lights gave an insight to the community on renewable energy, clean drinking water and enterprise development.
- The participatory approach, increased community participation, made them the prime stakeholder of the project, thus bringing a sense of ownership in them .The community undertakes monitoring of the project and also develops management systems for operation and maintenance of the NRM works undertaken in the project.
- SLNA conducted a social audit

Social Audit of the IWMP Khandow Project instituted by SLNA

A social audit of the project was undertaken in the year 2013. The team comprised of 18 members and conducted the social audit for 21 days.

The social audit team and the Gram sabha appreciated the IWMP – Khandow project that was ranked as one of the best project being implemented for the following unique features–

- The Participatory approach undertaken to implement the project especially the NRM works.
- Ridge to valley treatment which was found to be unique.
- The social audit team found no financial discrepancy in the project, where vouchers to the tune of INR 1, 7500000 were verified which was the expenditure undertaken till that date.

3.6 Challenges to the project

- The Community had never experienced a participatory model of project implementation, hence initially were skeptical and also indifferent to the project.
- There was a serious deficit of skilled laborers to undertake the technical construction of the works.
- The community lacked knowledge on watershed projects.
- Due to the remoteness and lack of all weather roads, not many government officials visited the area prior to the project intervention. visit the area because of it's a very remote area,
- Initially there was a huge problem in terms of community participation which affected the project deliverables. The project team undertook works which were of immediate concerns to the communities- like establishing an RO plant, solar streetlights, building cattle troughs, providing tent houses. This brought the community in the ambit of discussion on watershed development and through awareness meetings, technical trainings, exposure visits, convergence with government schemes etc the project went beyond then delivering its objectives.

Annexure 1 - Case Studies

Case Study-1

THE DONGARGAON MICRO-WATERSHED PROJECT ----BRINING BACK SMILES TO LIVES

Madavi Lachu is a farmer from Chittaguda village of Dongargoan Gram Panchayat of Narnoor Mandal of Adilabad district. He owns 3 acres of land on which he and his family sustained through agriculture farming. The land was rainfed and so, Madavi was only using his land for Kharif cropping. His parents and brothers have approximately 16 acres of agriculture land which is contiguous but most of the land was left fallow since it was less fertile due to high slopes that led to extensive soil erosion. His parents and brothers thus migrated to another area as the land could not sustain his family. A small seasonal stream passes through across his farm land, but whenever it would rain, the rain water flowed with great speed due to which mud bunds on the both sides and top fertile soil eroded and soil had pebbles and stones, thus making the soil infertile and less productive.

Snap- shot

In Chittaguda village (Khandow IWMP-Dongargoan micro-watershed) a Check dam was constructed across the stream, with 1 meter height 13.6 meters length with a total cost of Rs.1.80 lakhs, due to which soil moisture improved in 12 acres of land improved due to water percolation (2nd and 3rd year onwards).

The catchment area of the check dam is 15Ha. Backwater 150 meters length, back side 500 meters, front side 500 meters 250 meters on both sides of structure (Right side and left side).

The average rain fall of the Narnoor mandal is 1295 mm (50 years average) 1050.1 mm (10 years average).

In the year 2014-15, during the Rabi season 45 ***ha of agriculture land was irrigated through the Check dam***

The issue was raised by Madavi in the Gramsabha meeting of Watershed Committee .The project facilitated for construction of a check-dam across the stream for primarily addressing the issue of soil erosion that would also increase water availability for irrigation and in turn enhance land productivity. The project was completed in March 2012. During the monsoon season and until November, 2012, the water got stored in the check –dam and later slowly percolated into the soil. It was observed that due to increase of moisture in soil, cotton crop remained green (5 acres) for one more month till the end of January and he could harvest 4 quintals of cotton during that one month;

gave him an additional income of Rs.6,000/- . As the speed of the runoff water slowed down the soil erosion was checked and fertile soil deposited at the check –dam. In November-2012, the farmer sowed 3 kgs of bengal gram seeds on the back side of the check-dam with the moisture in the soil the crop grew well. In January he harvested 30 Kgs of Bengal gram .The farmer is enthusiastic to grow crops in Kharif as well as in Rabi (Soya bean, Tomato, Pulses and Fodder) season.

Case Study-2

WATERSHED COMMITTEES – PAVE WAY FOR VILLAGE DEVELOPMENT THROUGH STRENGTHENED LOCAL SELF GOVERNANCE

Gram Panchayat- Dongargaon Panchayat, Narnoor Mandal, Adilabad district

Ms. Madavi Maru Bhai
Chittaguda Village,
Dongargaon Panchayat

On April 2013, CPF Organised an exposure visit for members of the Watershed Committee formed under the IWMP. The exposure visit was organised to Shivarebazaar and Ralegaonsiddi to see how the village communities, elected representatives of panchayats and the Community institutions worked together to transform the face of the area.An area which had poor agriculture yield due to lack of water had transformed into green agriculture fields, bringing prosperity in the region and demonstrating a model of good governance. They also observed that there was unity and consensus amongst the people and since the last 20 years this area and has been unanimously electing it's Sarpanch for the gram panchayat without contest.

- With this practice they saved a lot of campaign money and election expenditure and created an environment of unity and collective action for village development in their gram panchayat.
- The Watershed Committee, Watershed Assistant and the IWMP project team (especially TO I &CB) were catalyst in this success.
- The prize money of Rs. 8 lakhs, was awarded by the Government to the gram Panchayat for having elected their sarpanch and ward members through an uncontested election.

Kanaku Lachu, the Watershed Committee Chairman; Madavi Jangu, Secretary; Ramchander and Veeru, members were motivated and felt that they should replicate the practise of uncontested elections for the post of the Sarpanch in their Panchayat. After going back to their villages they took the following steps to achieve the same.

- Conducted meetings in all villages including Gramsabhas
- Formed a 20 member team and created awareness amongst all villagers.
- With the consent of Gramasabhas, decided to elect a GP Sarpanch unanimously and formed a 7 member committees in all 7 villages to elect a strong person. A resolution was also made for the same in all villages.

They unanimously selected **'Madavi Maru Bhai'** (Kolam tribe lady) as their Sarpanch from Chittaguda village for Dongargaon Panchayat. Even all seven ward members were also elected unanimously.

The Impact - This is first time the practice was adopted in Dongargaon Grampanchayat in last elections. Now the other villagers are also interested take forward this practice in their Grampanchayats from next elections onwards.

Village development works undertaken …

- Village approach BT Road has been constructed
- Open wells dug for an amount of Rs 2 lakhs worth
- Community Hall built for an amount of Rs. 10 lakhs
- Provided 30 pairs of bullocks to the community
- Laid CC Road worth Rs 1 lakh
- Established 2 Kirana shops for the poor landless people
- 3 Oil Engines provided worth Rs 75,000
- Provided 45 goats to 15 members
- And a 600 mtrs CC road has been sanctioned by the government which is yet to be layed.

Case Study-3

RO WATER PLANT- A COMMUNITY ENTERPRISE ……

A STEP TOWARDS FOSTERING GOOD HEALTH AND SELF RELIANCE

The Villages in Narnoor mandals faced an acute shortage of water availability - both for drinking and irrigation purposes. The drinking water was not only scarcely available but was of very poor quality with high levels of floride and salinity, thus posing a serious health issue to the the people.

Gadiguda , one such village which is located -29 km from mandal headquarters Narnoor with 120 households and a population of 500 people. Being a Grampachayat headquarter it is visited by many people from the nearby villages to access government services like PHC, High School , Post Office etc.

Around ten years ago, three bore wells were dug in village to meet the water needs of the villagers. However the bore well which was in the heart of the village had fluoride, and due to high salinity in the water it was unfit to drink. The villagers were using the other two bore wells to meet their daily needs of drinking water.

In the village meetings the community raised the issue of safe drinking water during discussions in Entry point Activity of the Watershed program. In 2012 the CPF project staff proposed and supported Watershed Committee of Gadiguda for establishment of 1000 litres capacity RO plant in the village, proving part-time employment to a villager and a source of income to Watershed Committee.

The total cost of the RO plant was Rs 210,000, wherein the village contribution was 40%, of Rs.50, 000/-. In the village they had available space adjacent to the bore well location belonging to the temple; villagers discussed in Gramsabha (village meeting) and unanimously accepted the proposal constructed the room for RO plant and constructed the room with village fund and Sramdan, which enhanced the *social cohesion.*

Social benefits:

The purified water from RO plant is managed by the Watershed Committee of Gadiguda, and is the most accessible safe drinking water source not only for the village but also for other nearby villagers and those who visit the village for other works.

Atram Lashmi bai says with a smile “I used to walk for one kilometer to fetch drinking water which was unclean, but today with this plant; I am getting safe drinking water just near my house”.

The Watershed Committee President Mesram Jaivanthrao can’t hide his joy and excitement while narrating RO establishment process and proudly claims “We were aware of the advantages of drinking purified water, CPF proposed RO plant as entry point activity we were overwhelmed and extremely happy that IWMP/CPF has made it possible”.

Economic Benefits:

The Committee decided to collect minimum cost to encourage people towards safe drinking water habit, hence initially it was one rupee for 10 liters; later from December onwards it has been increased to Rs.2/- per 10 liters. During first months 6 families regularly took the water, slowly the demand has increased and now around 28 families are regularly taking water. Watershed Committee is successfully managing the plant with the help of an operator. The expenditure incurred for maintaining the plant is met from the income from the plant.

The good quality of purified water will arrest the incidence of diseases and lead to a healthy life.

SOLAR STREET LAMPS: CASE STUDY

There are 24 hamlets in Narnoor mandal, Adilabad of which Gadiguda, Khandow and Dongargaon village panchayats are forest areas. There are in total 17 hamlets where mostly SC/ST communities live. The infrastructure like drinking water, electricity, proper roads etc. were in very poor condition.

Under Entry Point Activity of IWMP, the committee raised the issue of poor infrastructure facility in Gadiguda, Khandow and Dongargaon villages especially electricity. The committee decided to provide solar street lamps to these three villages based on the following considerations:

- These villages faced very poor power supply on a regular basis
- 95% of the families residing in these villages are tribals whose traditional dances (especially Dandari and Gussadi dances), meetings, and other cultural activities take place at night.
- The irregular supply was seriously affecting the studies of grown up children. In critical times the students could study under the street lights.
- Any damage to electric poles and wires during storms and rough weather meant to remain with no power for minimum fifteen days.
- These villages were devoid of very poor infrastructure, and hence it was felt that solar lights should be installed in these villages.
- The solar lamps were provided to the three villages which were a major leap forward in their lives. The benefits of these lamps to tribal community in their words are presented below.
- *Gopichand, of Madhara Thanda (Khandow Rampur) said that. "We offer prayers at Gurubaba Temple early morning at 4'o clock prior to the solar lamps it was difficult to follow this daily ritual as it used to be dark that early morning. With the solar lamp lights now, it is easy for us to reach the temple and offer our prayers."*
- *Nagorao, of Gadiguda village comments"We need lights during deepavali because we perform Gussadi and Dandari dances for fifteen days. Prior to the solar lamps we used kerosene lamps but now with solar lamps it is comfortable and trouble-free to carry out our programmes."*
- *Sitaram from Aadmiyaan said that "The village meetings or panchayat meetings are conducted in the late evenings, when all the villagers are back from work. But constant power cuts were problematic. Now with solar lamps we are able to conduct meetings without any interruptions. The village children play under the solar lamps which is heartening to see. It would be nice if one more lamp is provided here."*

Case Study-5

WATER FOR EVERYONE- THE WELL OF HOPE IN VILLAGE KHANDOW

In Khandow, a well which is one kilometer away from the habitation is situated close to the pipes in agricultural fields towards the south of the well. The well serves as primary water source for the residents. More than 102 families of Gond tribe are dependent on this well for clean water resources.

But in the summer of 2012, the well dried the CPF field staff noted down the measurements of the well on 2nd May 2012 and found that it was difficult to fish out even one glass of water from the well. It was important to revive this well a multi pronged approach was undertaken under as part of the NRM activities. Water Absorption Trenches across the foot hill, ten Loose Boulder Structures and 15 Rock Fill Dams were constructed in drainage line. The NRM works initiated was worth Rs 1.5 lakhs and it was a challenge that the team undertook to complete the works fifteen days before the onset of rains.

Particulars	Date: 02-05-2012	Date: 15-05-2013
Depth of the well	5.10 meters	5.10 meteres
Ground Water Level	0	3.90 meters
Static Water Level	0	1.20 Meters (increased water levels in well)

In the year 2013, CPF team visited the location to supervise the works at Khandow where the residents caught up with the CPF team and expressed surprise about the well saying, “Our well has lot of water, thanks to you all”. The staff along with the residents went to the well on 15th May 2013 and witnessed tremendous change in the water level in comparison to last year.

This well is just an illustration of the results of work carried out; there five more wells are in

same status in the Khandow IMWP watershed area.

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