Assessment of Participatory Ground Water& Crop Planning

By

Ruchika Singh

Dissertation submitted for the partial fulfillment of the

MBA Rural Management

Academic year, 2018-2020

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I am deeply indebted to my colleagues.

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1.Introduction

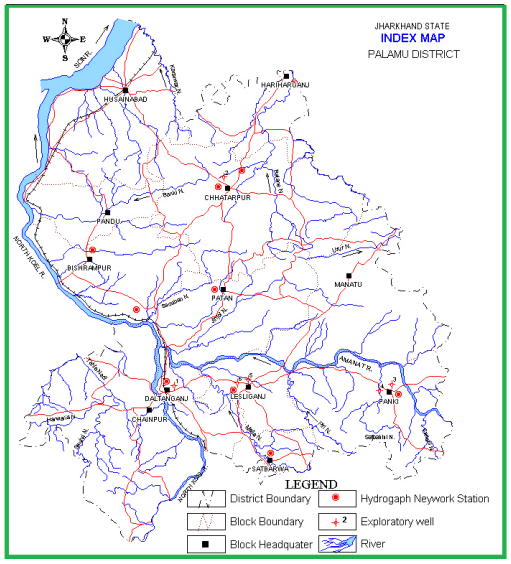
1.1 Macro Reason (Jharkhand, District, Block)

The state of Jharkhand often called “the land of forest” is located in the northeastern part of the country. Jharkhand is bordered by the states of Bihar to the north, West_Bengal to the east, Odisha to the south, Chhattisgarh to the west, and Uttar_Pradesh to the northwest.

The state is endowed with surface water and groundwater, fertile land, and a moderate climate. The state’s agricultural-development programs have especially emphasized the raising of livestock for meat More than one-fourth of Jharkhand’s land area is forested. Most forests occur on the Chota Nagpur plateau; those on the plain largely have been cleared to allow cultivation of the land Accourding to the census 2011,the total population of Jharkhand was around 32,988,134and 16.51%population lives in urban areas .

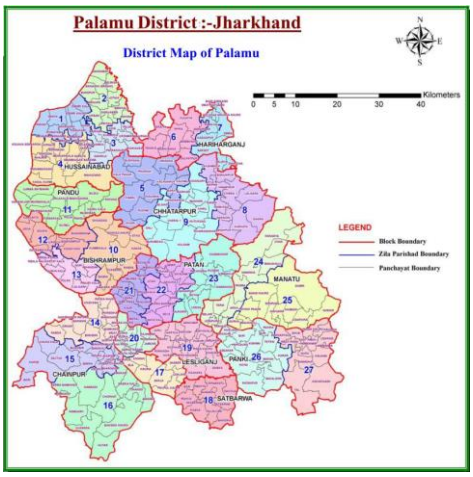
Agriculture and allied activity are the main sources of livelihoods for the majority. The major crops grown are Paddy Wheat Maize, pulses, oilseeds and Horticulture crops. According to Central Ground water management Palamau district receives 90% of its the rainfall only in monsoon season. This show that there is huge water scarcity in district when there is no rain. The other horticulture crops in Rabi season like vegetable are grown in large quantity in Jharkhand.

Palamu district



The district of Palamu is spread over an area of 5246.8 sq.km lies between North latitudes 23° 20′ 00′′ : 24° 40′ 00′′ and East longitudes 83° 20′ 00′′ : 85° 00′ 00′′ with it's headquarter at Dalton Ganj. There are twelve blocks s namely i) Hussain Abad ii) Hariharganj iii) Chhatarpur iv) Bishrampur v) Patan vi) Manatu vii) Panki viii) Lesliganj ix) Satbarwa x) Daltonganj xi) Chainpur xii)Pandu.(Plate – I) The district is bounded in the west by Surguja district of Chattisgarh and Garhwa district, in the north by Rohtas and Aurangabad district of Bihar, in the south by Lohardaga and Gumla districts and and in the east by Gaya(Bihar), and part of Ranchi district, . The total population of Palamu district as per the 2011 census is 19,39,869 persons with urban population of 2,26,003 persons and the rural population of 17,13,866 persons.

The district falls under unassured rainfall zone and hence receives monsoon rains during June to September. The average annual rainfall of the district is less than1200 mm as it comes under the rain shadow part. More than 80% of the precipitation is received during the monsoon months. Annual normal rainfall of the district is 1163.4 mm of which about 85 % is received between June and October.



(Source: **Ground Water Information Booklet, Palamu District, Jharkhand State,** September 2013

http://cgwb.gov.in/District_Profile/Jharkhand/Palamu.pdf)

Soil in District

The soils of the district are mostly of the residual type.

Soil Type	Major Attribute
1.Stony and gravelly soils:	low grade soils generally found at the base of the hills
2.Red and yellow soils:	Soils with light red color
3. Lateritic soils**:**	dark red or brown color, high iron content
4. Alluvial soils	River channels in the district are covered with alluvial soils consisting mainly of coarse sand and gravel mixed with silt and clay.

1.2 Organization Profile

Vikas Sahyog Kendra evolved from a larger campaign on water resources and a Drought Proofing Campaign (Sukha Mukti Abhiyan) in Palamu District, in the early nineties. The Campaign was anchored by Pani Chetna Manch, a forum of NGOs, social activists, researchers, engineers and scientists. Most founder members of VSK were associated with Sukha Mukti Abhiyaan. This program was implemented in the entire Palamau district between 1992 to 1996 by tripartite partnership of district administration, village community (Pani Panchayat) and Pani Chetna Manch. Over this period the Manch constructed 140 water-harvesting structures in 125 villages, as a large-scale demonstration of local water management as an effective alternative to the building of large dams. The Manch also provided technical and social support to the forest department in the construction of water harvesting structures. Pani Chetna Manch transformed into Vikas Sahyog Kendra as a registered organization in 1997. Since its formal registration as a non-profit Society in 1997, VSK has been working in three districts – Palamau, Latehar and Garhwa that constituted the erstwhile Palamau district.

VSK works with a mix of rights-based approach with development initiatives to secure access to natural resources, public investments and welfare benefits that contribute to livelihoods of Adivasis and Dalits. The approach comprises organizing and capacitating the primary stakeholders into common interest groups, establishing their specific advocacy forums at multiple levels to collectively access resources and provide technical support.

It also works in realizing the wage entitlements provisioned under the MGNREGA, getting food entitlements under public distribution system, securing entitlements under various welfare programs and supporting in development of natural resources-based livelihoods.

VSK has networks with various civil society networks like Revitalizing Rainfed Agriculture Network, Right to Food, Right to Life with Dignity, Jharkhand Van Adhikari Manch, NREGA consortium, NREGA Watch.

Mission & Vision:

Mission: Enabling the vulnerable and voiceless communities to assert rights and develop their capacity.

Vision: Creation of a society based on justice and free from poverty and exploitation

Present Activities / Initiatives:

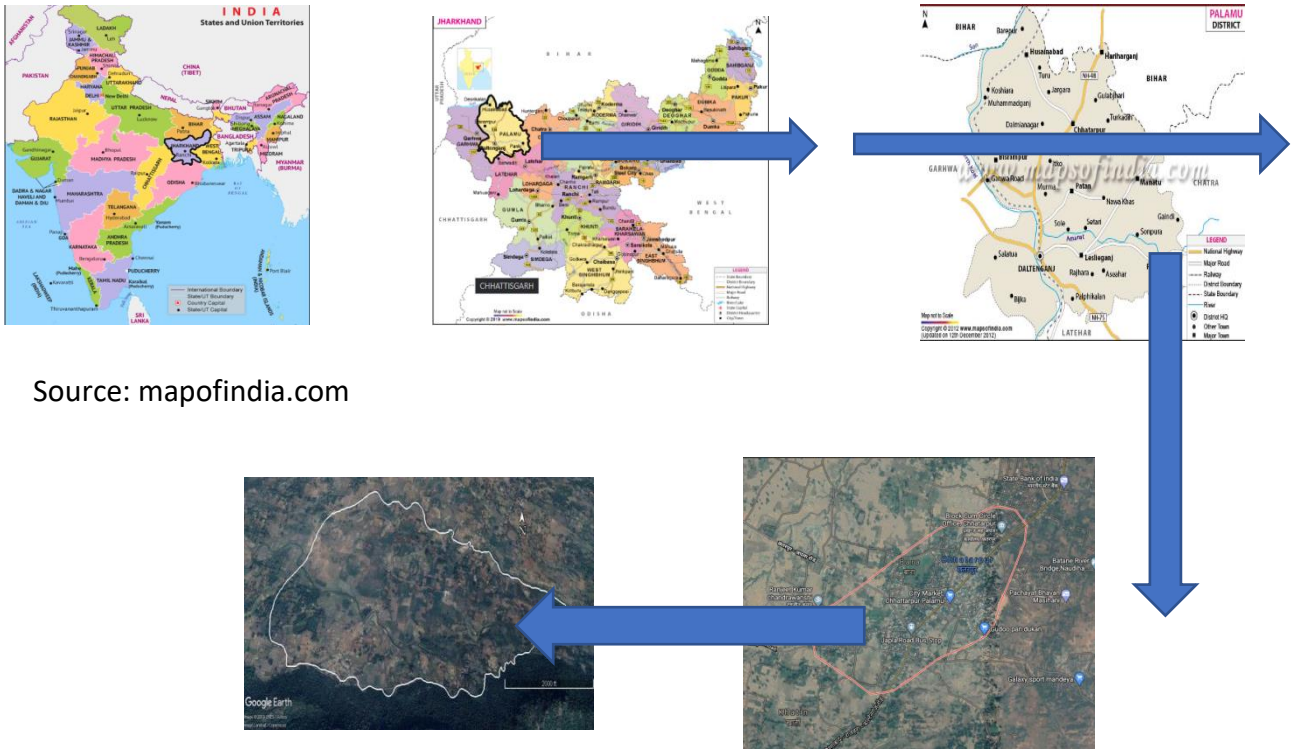
VSK works for the livelihood enhancement of marginal communities through natural resource management especially from land, forest and water. They also work for entitlement guarantee, especially from government schemes and services. Our prime activities include 1) Water resource management. Through this activity we develop

participatory village development plans with special focus on water. We also work on monitoring and advocacy for construction of water harvesting structures through MGNREGA and other line departments. They work on data collection and research analysis with respect to rainfall, ground water level, soil moisture etc. This analysis is shared with community members which is used for crop water budgeting.

Thrust areas of VSK work include:

- Land resource development and augmentation-promote non-pest and non-chemical management-based practices. We also work for Promotion of sustainable agriculture practices. Through this various agronomic and improved agriculture and nutrition-based practices like millets and vegetable kitchen garden is promoted.
- Income generating allied activities including livestock health specially of goat and backyard poultry and fisheries in inland water bodies. We work towards
- Forming and Nurturing Farmers' institutions- promote the Farmer Producer Organization (FPO) and the farmer's club.
- Ensuring rights, entitlement and improvement of the local governance system-strengthening the Gram Sabha and better implementation of government social security schemes and services including Forest Rights Act & MGNREGA;

1.3Reason of study area (Chuchrumad)



Source: mapofindia.com

Chuchrumanr village is located 15 km from the Chhatarpur block. This village, which comes under Palamu district of Jharkhand (24.291703°, 84.231834°) , is a tribal dominant. A total of 110 households reside in this village and the population is around 609 individuals, with almost equal ratio of Male and Female. This village is locally famous for the resourceful and pictorial Matkhani check dam. The major livelihood options of the households and its average annual remuneration are given below:

SN	Name of Occupation	No. of HH involved	Average Annual Income
1	Agriculture	110	12264
2	Farm based labour	15	20000
3	Seasonal migration	60	31850

4	**Daily based labour**	**35**	**70000**
5	**Goat rearing**	**69**	**2609**
6	**Non-timber Forest Produce**	**40**	**24000**

Source: Censes 2011

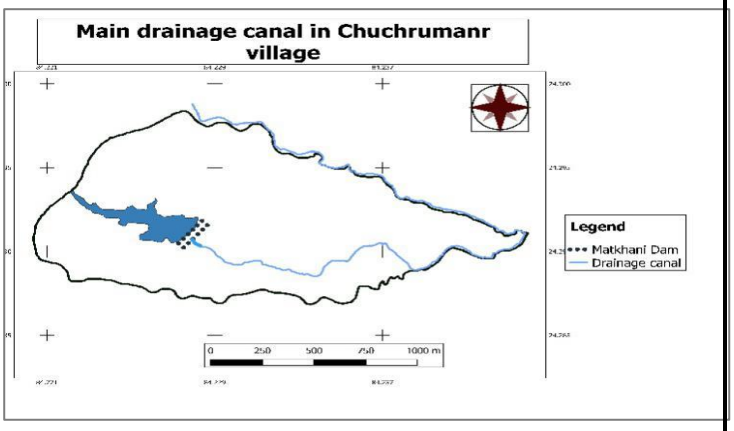
Socio-economic information: The village has a total population of 609 people of which male and female population are 295 and 314 respectively, which reside in 102 households. Around 97.04% of the total population Scheduled Tribe communities. Male literacy in the village is 66.81% whereas the literacy rate among women stands at 43.25%. Majority of the people reside in the northern part, particularly the Charkutba tand, Purab Tola, Karjivabel tand, Hartangi peepar and Pathal gadhi. The major economy of the villagers is generated from agricultural activity, however, many households practice goat rearing, dairy rearing. Although the migration in the village is less but few villagers migrate out of the village as labors; either agriculture laborers or non-agricultural laborers.

DEMOGRAPHIC SNAPSHOT OF CHUCHRUMAR

- **TOTAL NUMBER OF HOUSES- 102**
- **TOTAL POPULATION- 609**
- **TOTAL MALE- 295**
- **TOTAL FEMALE- 314**
- **MALE LITERACY- 66.81%**
- **FEMALE LITERACY- 43.25%**
- TOTAL MALE WORKERS- 152
- TOTAL FEMALE WORKERS- 156

About Mathkhani Dam

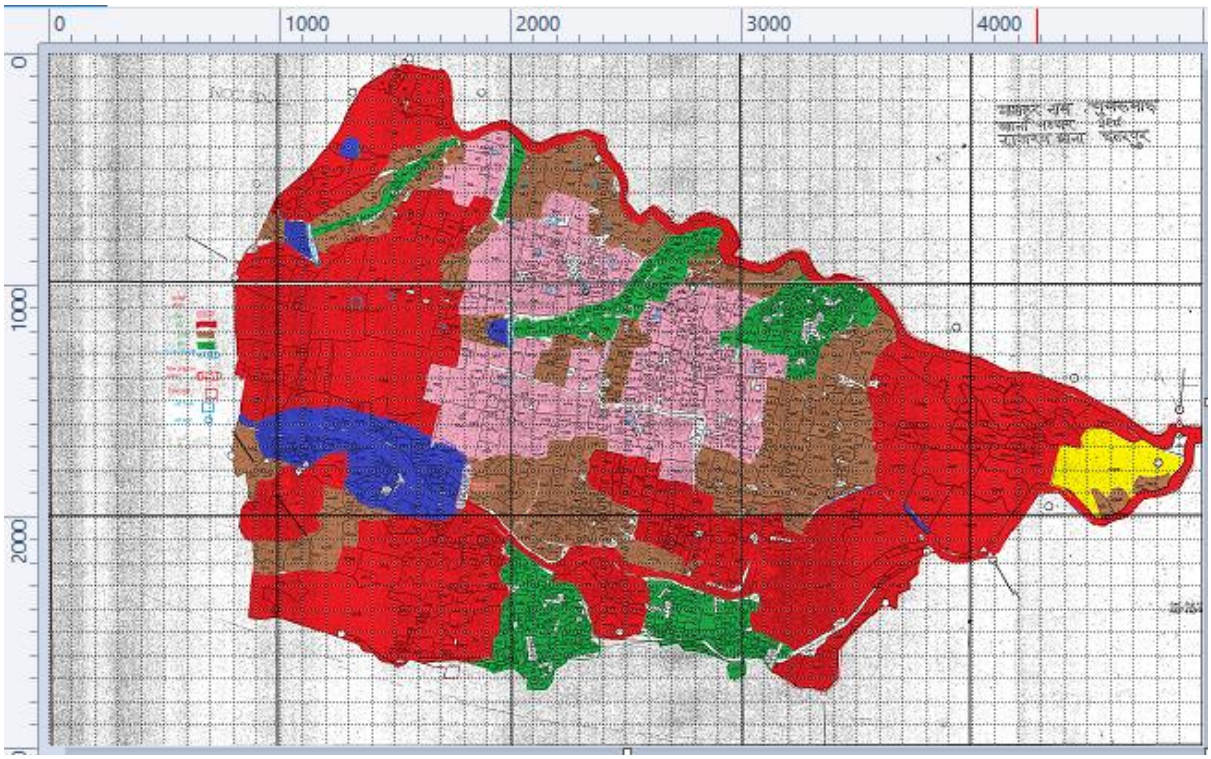
Mahtani Dam is the Main source of Surface water at the time of visit and the rest of the water bodies were dry. It is South west side of Chuchrumanr Village. The total Submergence area of the Mathkhani Dam is almost 9.5 hectares and the maximum depth was at the time of visit was about 3 meters near at the Dam. The Mathkhani Nala Drains from South west to East in the Chuchrumar



Land and pattern

Land Use, Land Cover	Area in Hectares	Percentage out of Total	Remarks
Forest	11	4.82	Includes all land classes as forest.
Agriculture	106	46.49	Includes the net sown area.
Irrigated land	50	21.93	Include in Jaah & Chaur land
Un irrigated Land	55	24.12	Include in Taad & Bari land
Non-Agriculture	6	2.63	Includes all land occupied by Stones. Rocks

Source: Focus Group Discussion



SN	Type of Land	Area in Hectare
1	Bari (Pink)	30.53
2	Tanr (Red colour)	83.25
3	Chaur (Soil)	32.04
4	Jah (Green)	18.42

Source: Document on NRM Planning, Chuchrumanr

Agriculture

Agriculture covers about 89.8% area of the village. Out of 149.9 Ha of the net sown area, not even 1% of the agriculture land is irrigated; More than 99.9% of the land is un-irrigated. Majority of the people are engaged kin agriculture as the main livelihood. Principal Crops of the area is Paddy, Maize pea Green gram, Wheat, Chickpea and Arhar.

Rabi crops requires warm climate for the seed germination and cold climate to growth of crop. sowing months October to November Harvest months March to April.
Kharif crop require lot of water and hot weather to grow. Sowing months are from April and May and Harvest months October to November

Rainfall Data of Chuchrumanr Village of 3 years

Rainfall of 2017

Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
0	0	0	0	0	49.6	436.8	176.3	66.6	14.7	4	0

Rainfall of 2018

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	5.7	0	0.6	20.5	59	161.5	157.9	77.3	0	0	0

Rainfall of 2019

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0.5	0	60.5	166	168.6	81.3	44.4	0	7

Rainfall of 2020

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
14	25	50									

Souse: Metrological department

2Literature Review

Ground water is the main component of human life in case of drinking and other lifelines activities like irrigation, domestic and industries. Due to rapidly expansion of urban, industrial and agricultural water demands the groundwater keeps its own fundamental importance along with that due to the global warming and unbounded water use the groundwater has also become the matter of great concern. Various studies have estimated the impact of groundwater depletion on global sea levels. According to a 2010 Nature report 80% of the world's population live in areas with threats to water security and 50% of the world's population relies on groundwater for drinking water. 40% of global food production now relies on irrigation with groundwater. It has been observed by various experts that since 1960 extraction of groundwater has increased by over 300%.

The PGWM approach focuses on a scientific understanding of the resource, building capacities of local communities and define usage priorities. It demonstrates that groundwater management is based on effective partnerships with institutions and local communities. It aims for a sustainable and equitable management of groundwater resources by promoting a shift from state control to management by user groups. Moving from attending to crises after they occur to averting them. Such an approach leads to redefining the scope of public investments, technologies, access to resources, production systems and markets. PGWM program design "..is built on three pillars: Action Research, Capacity Building and Advocacy. These pillars play a vital role in making PGWM a holistic mode."

Participatory Groundwater Management: Lessons from Programmes Across India

Amrtha kasturi rangan, January 27, 2016:

Amrtha kasturi Rangan in his research found out that there is annual extraction of water is 230 cubic kilometers from the groundwater in India. Also, there is unregulated water extraction so, there is water scarcity and distress.

The major finding of study is:

Annual Extraction230 cubic kilometers, largest ground water user (India), Unregulated water extraction led 60% districts affected by Scarcity or quality issues, PGWM programme has been tested which increase the Ground water level, improved productivity

Economic Impact of Participatory Groundwater Management: A Case Study on Andhra Pradesh Farmer Managed Groundwater Systems Project, Kolla Sravanthi, Stijn Speelman* and K B Umesh, December 2015

Community-level institutions have become more assertive in the management of local resources, has significantly increased on farm employment, but there is no significant impact on the net farm income, on crop diversification and water use.

Institutionalising Groundwater Management: A Tale of Three Participatory Models in Andhra Pradesh, M. Srinivasa Reddy, V. Ratna Reddy, R.V. Rama Mohan, May 2012

the social regulation approach works better for sustainable groundwater management when compared to the knowledge intensive approach encouraging water sharing between well owners and others would result in achieving the twin objectives of conservation and improved access with equity.

Based on the above literature review we find that there is unregulated water extraction due to which there is water scarcity and water stress. In India ground water is the main source of water so it necessary to utilize the ground water in more rational way. Also, it was found that the Participation of Community to manage the the water resources the community level institution has become more assertive and significant in case of water use and change in the crop pattern.

3 Objective and research questions

Objectives

- To estimate the water availability from different water resources in the Chuchrumar Village
- To identify which have less water requirement the of crops
- Based on the water availability to do the crop planning
- To understand cropping pattern of farmers
- To understand irrigation system of farmers

Research questions

- What is the seasonal cropping pattern in village?
- What are the major components in the present Ground water?
- Water are the major crops they are growing
- Time of an irrigation crop
- Source of irrigation in village
- Type of irrigation in village

.

4 Methodology and Process

My study is to estimate the water in the Mathkhani Dam and the wells in Chuchrumanr Village and in accordance with the water availability do the social advocacy in water use and change in crop pattern so that even after the rainy season the water scarcity could not rise. And the maximum sown area could be irrigated

Study type This is a qualitative and qualitative study. In this study, there is descriptive research is designed for data collection of the information

Study design: Is a mixed method using both Qualitative and quantitative data

Area of study: One village of chhatterpur block of palamu district name of village is chuchrumad

Source of data: The study is done on primary research well secondary research

Primary Data

The primary data has been taken by conducting informal meeting, Households survey, focus group discussion, community meeting and, observation. The farmers groups where the main targets whom this study was taken.

Secondary Data

The secondary data was collected from books, journals, and government statistics report. The questionnaires are designed to collect the data to keep in view the objective of the study.

Design of the questionnaire: The questionnaire designed to collect the data to keep in view the main objective of the study. It is mostly closed ended and open-ended short question

5 Analysis and Findings

Now we have information of the water availability in surface and ground both. Now the next steps would be calculation the water requirement in every households in irrigation, Though water budgeting

5.1Crop cycle

Name of Crop	Jan	Feb	March	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Wheat	Irrigation	Irrigation	Harvesting	Harvesting		_____	_____	_____	___	Ploughing, Seed Snowing /Pesticide	Irrigation After 21 Days, 90mm water required, Weed out	Irrigation Pesticide
Gram	Weed Out	Harvesting	Harvesting	___	___	_____	-_____	_____	_____	Ploughing Snowing Period	Snowing Period	Weed Out
Masur	Weed Out, Irrigation	Harvesting	Harvesting	_____	___	_____	_____	_____	_____	Ploughing, Snowing Period	Snowing Period	Weed Out, Irrigation
Mustard	_____	Harvesting	Harvesting	_____	___	_____	_____	_____	___	Snowing Period	_____	_____
Arhar	_____	Harvesting	Harvesting	_____	___	Ploughing, Snowing Period, Compost	Ploughing, Snowing Period, Compost	Weed out	_____	Weed out	_____	_____

Maize	_____	_____	_____	_____	___	Ploughing	Snowing period, Compost	Snowing Period, Compost	Weed Out	_____	Harvesting	Harvesting
Kulthi	_____	_____	_____	_____	___	_____	_____	Ploughing, Snowing	Weed out	_____	Weed out	Harvesting
Paddy	_____	_____	_____	_____	___	Ploughing,	Snowing	_____	Weed out	Harvesting	Harvesting	_____
Till	_____	_____	_____	_____	___		Snowing	_____	_____	Harvesting	_____	_____

Souse: Farmers interview

Water requirement of crops

Rabi crops	**Total Water requirement in mm**	**Growing period (N0 of days)**	**Land type required**	**Fulfil with RF in MM**	**Deficit in mm**
Wheat	500mm	90	Middle land	51.43	448.57
Gram-	400mm	130-135	Middle land	51.43	348.57
Mustard	400mm	90	Middle land	51.43	348.57
Lentil (Masur)	425mm	125-130	Upper land	51.43	373.57

Souse: Farmers interview

Water Budget for Kharif Crop

Kharif crops	**Total Water requirement in mm**	**Growing period (N0 of days)**	**Land type required**	**51.43**	**Deficit in mm**
Rice	1250mm	110	Middle land	51.43	1198.57
Maize	525 mm	120	Upper land	51.43	473.57
Arhar	_____	150-200	Upper land		
Kulthi	_____	120	Upper land		

Souse: Farmers interview

Water Budgeting for Horticulture

Name of crops	Total water requirement in mm	Daily water requirement in mm	Growing period (N0 of days)	Land type required	Fulfil with RF in MM	Deficit in mm
Brinjal (Sept-Jan)	486mm	3.24	150	Middle land	51.43	434.57
Pea (Oct-Feb)	440mm	2.93	150	Middle land	51.43	388.57
Chilli (July -Nov)	600 mm	3.33	180	Middle land	51.43	548.57
Potato (Oct -Dec)	400 mm	4.44	90	Middle land	51.43	348.57
Tomato (Oct -Dec)	425 mm	4.72	90	Middle land	51.43	373.57
Cauliflower (Oct-Jan)	400 mm	3.33	120	Middle land	51.43	348.57
Cabbage (Oct-Jan)	400 mm	3.33	120	Middle land	51.43	348.57
Pumpkin (June-Oct)	350 mm	2.25	155	Middle land	51.43	298.57
Onion Dec- Mar)	400mm	4.44	90	Middle land	51.43	348.57
Bitter gourd (July -Nov)	400mm	3.33	120	Middle land	51.43	348.57
Bindhi (Aug-Oct)	550mm	9.16	60	Lower land	51.43	498.57

Souse: Farmers interview

Month wise water fulfilment through Rain of Rabi Crop

Rabi crops	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Total Irrigation
Wheat	82mm	82mm	82mm							90mm	82mm	82mm	6
Rainfall	4.7mm	10.23m	16.7m							19.8m	4mm	7mm	

		m	m							m			
Gram										250mm		150mm	2
Rainfall										19.8mm		7mm	
Mustard	100mm									150mm	50mm	100mm	4
Rainfall	4.7mm									19.8mm	4mm	7mm	
Lentil (Masur)										250mm		150mm	2
Rainfall										19.8mm		7mm	

Souse: Focus group Discussion

Month wise water requirement

Kharif crops	**Jan**	**Feb**	**Mar**	**April**	**May**	**June**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Total Irrigation**
Paddy	__	__		___	___	____	_____	____	____	_____	___	___	
Rainfall													
Maize	__	__		___	225mm	100mm	__	200mm	___	____	___	___	3
Rainfall					6.83	56.36		169.2					
Arhar	__	__		___	___	___	___	___	____	___	___	___	
Kulthi	__	__		___	____	___	___	___	____	____	___	___	
Til	__	__		___	____	___	200mm	___	200mm	____	___	___	2
Rainfall							256		73.73				

5.2Water budgeting in different ware sources

Water structure	**No of Structure**	**Purpose**	**Coverage in area**
Dam	1	Irrigation/ Fishing	1-2
Pond	6	Irrigation	1-2
Urban nala Bund	6	Soil erosion Irrigation	

Canal			
Nala	2	Pull back to overflow	25-30
Dova	4	Water discharge/ Irrigation	25-30
Hand pump	10 (Community based)	Portable water for Human being and animals/Showering	10-15
Well	20	Portable water for Human being animals/Irrigation	1-2

Souse: Focus Group Discussion

Findings

- Only the Mathkhani Dam is the source of surface water for irrigation in the off rainy season
- In case of Horticulture the wells' water is used for irrigation
- Mainly the Rainfed crops are sown as farmers have less facilities to lift the water from the Mathkhani Dam and their well (like solar pump and diesel Pumps)

6 Conclusions

In my research of Participatory ground water Management at the Chuchrumanr Village I spent about three months in field and office too. I went through different methodology to find out the real situation of the Chuchrumanr Village. During these periods I found that most of the families are indulged with the agriculture activities. Although there is surface water in the Mahtani Dam and the Ground water in the wells but there is less use of water as they are less facilitated to lift the water from the wells as well as from Mahtani Dam. The canal only comes up to the middle of the village.

The water available in the Mahtani dam is about 14 hectare metre which in Ideal case the water is required about 45 hectare meters is all the empty land is shown, even then if half of the agriculture land is sown even then there would be water deficits So there should be some water body intervention patch wise so that the water can be availed at that very patch. The context throws up the immense possibility of water recharge that an adoption of community based participatory ground water management initiative. This would to a great extent provide initial conditions for adoption of sustainable agriculture practices.

In case of Households water needs and for livestock's the water in the wells is enough but it cannot be denied drying or to deplete the water table, so time to time the wells should be cleaned to avoid siltation. It is also found that the recharge rate is good at the Chuchrumanr so maximum amount of water can be extracted in use other than drinking and livestocks.

Given all these good natural conditions it is important to engage water user group meetings for the purpose of mobilization of the community with regards to adaptation of the protocols set for use and management of water resource. This has to go alongside efforts for block and district level advocacy with the govt. depts. for convergence for construction of water harvesting structure resulting in ground water aquifer recharge; village water governance through user associations working for improving sufficiency, sustainability and equitability.

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Annextures

Checklist to collect data of water in Mathkhani Dam

Catchment area

SN	Activity	Comment
1	Marking of watershed area on Revenue map	
2	Counting the square	
3	Counting the incomplete square	

Total Calculated area_____

Storage Calculation

SN	Activity		Comment	
1	Marking of submergence area on revenue map			
2	Identification of Top point through GPS	Height	Longitude	Latitude
3	Identification of base point through GPS	Height	Longitude	Latitude
4	Identification of the Point of water level through GPS	Height	Longitude	Latitude
5	Identification of point of UP Stream through GPS	Height	Longitude	Latitude

Finding Slop

1. Up stream_____

2. Down stream_____

3. Total Volume of the Dam _____

Base flow Calculation

SN	Activity			comment
1	Point of identification	Longitude	Latitude	
2	Depth			
3	Width			
4	Speed			

Base flow of

1. Location-1 _____

2. Location-2_____

3. Location-3 _____

	Plot no	Area (Acre)	Land Type				Ownership			
			Agriculture	Barren	Forest	Pasture	GM	Mortgage	Raiyat	Share
Crop										Risk Zone

Kharif (Jun-Oct)			Rabi (Nov-Apr)			Zaid (Mar-Jul)			Low	Moderate	High
Crop	Irr. Source	Freq.	Crop	Irr. Source	Freq.	Crop	Irr. Source	Freq.			

Provide a service during covid 19 Pandemic

The COVID-19 Pandemic is turning out to be one of the biggest disasters of our time, threatening to have a long-term impact in the social –economic conditions of the rural community. In Jharkhand the health-related implications of those corona virus were realized at a much later phase. But the resulting effect of lockdown had an unimaginable impact in the lives and livelihood of the rural masses, especially to the wages earn and small and marginal farmers.

Vikash Sahyog Kendra It is an NGO which works with the Poor family in Manika, Paaki block in Palamu district Jharkhand. And on employment, rights and promotion of organic farms. Manika block works with 42 Village of 8 Panchayats promotion of organic farms with the under-privilege family. Right now, many poor families are not getting employment due to COVID-19 epidemic in the country, due to which the poor families of the village are facing hunger. Vikash Sahyog Kendra Take step and distribute dry ration support by BRLF. We are select 500HH in 8 villages ST, SC helpless families in their area and provide free dry rationed by their workers, the helpless family was selected according to the following criteria which are as follows –

Disabled, Widow, Single woman / man, for a long time, suffering from disease, marginal workers, workers trapped in migration. During the ration distribution, all the beneficiaries were sanitized, keeping the nose and mouth covered and social distance was distributed by making 1 meter. During delivery, 3 photographs were taken to the beneficiaries (1) while getting sanitized (2) taking material (3) Half photo for documentation. During the distribution, the beneficiaries were informed orally for awareness of avoiding COVID-19, along with the ICE material, for vigilance in the village. Due to the COVID-19 epidemic, the helpless family has been distributed in collaboration with the India Institute of Rural Livelihoods.

Serial no	materials	Quantity in Kg
1	Rice	8
2	Lentil	1.5
3	Potato	3
4	Mustard Oil	500 gm

5	Specie	400gm
6	Soap	4 paces
7	Gaggery	1
8	Sanitary Pad	2
9	Wheat Flour	3
10	Gram	1

Case study

Forest Produce and PDS Ration has provided great help in these difficult times Jugdish Pariyah, Pagar village, Manika block, Jharkhand

Pagar village is located 25 km. from Manika block, which is one of the backward blocks of Latehar district of Jharkhand. Jugdish Pariyah, 36-year-old, is a resident of this village. He belongs to Pariyah tribe, which is one of enlisted Particularly Vulnerable Tribal Groups (PVTG). There are 69 households in this village and apart from Pariyah tribe, another residing tribal group is Kherwar. There are few households from Bhuiyan communities, which are enlisted under Schedule Caste category. Jugdish Pariyah has been traditionally involved in basket making from bamboo twigs and its sale to local merchants. But this traditional occupation was disrupted by the restrictions imposed by the forest department over the use of bamboo tree. According to him the forest resources have depleted over the years. Thus, over the past three years, Jugdish Pariyah has identified a new livelihood option. He now migrates to Ranchi for six months to be involved in menial labour work. There he earns Rs. 190 for strenuous day's labour at a small restaurant. He revealed that before the lockdown was imposed, he was lucky to get some hint of information about it and he chose to return to his village. After returning to his village he was forced to recount his resources and reconsider his livelihood options. There are seven members in his family. Apart from the 20 decimal land he owns, he cultivates in around 1.5-acre land in the forest area. Maize and Pigeon Pea are the primary crops in these lands, and he earns around Rs. 5000 annually from these agricultural occupations. The Non-timber Forest produce is another source of income and, presently, he is able to access various forest produce including Lesha, Kheran, Mohlan, Aithaini, Mahua etc. Tendu Patta and Bantulki are other products which will be available in the coming season. He earns an annual income of around

Rs. 15000 to 20000 through forest produce. When inquired about any difficulty in selling the forest produce, he told that the local merchants have access to his village, and they will be able to sell their produce. During these difficult times, Jugdish Pariyah says that the forest produces along with ration distribution through Public Distribution System have provided them much respite. If provided some work in the village, he is absolute willing to pursue it for lag days.