

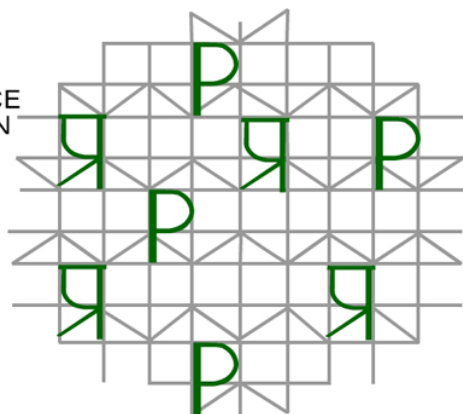
Capturing the Journey and Change for a Particular Water Users' Association

Area: A Study Purulia District of West Bengal

A Report submitted in partial fulfilment of the requirements for the Research Internship at
PRADAN



PROFESSIONAL ASSISTANCE
FOR DEVELOPMENT ACTION



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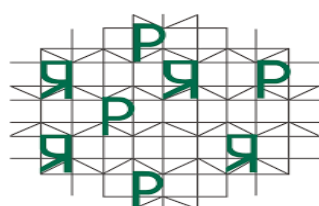
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WBADMIP

West Bengal Accelerated Development
of Minor Irrigation Project

INTRODUCTION

These Mango orchards have come up as a most viable livelihood for the people in the village of Baghmundi Block in Purulia. The practice creates new opportunities in bringing uncultivated/fallow lands under cultivation thus assuring income for the years till the Mango trees begin fruiting. For the successful establishment of a mango orchard, it is necessary to protect the newly planted sapling from excessive heat, moisture and cold. PRADAN reached out to the community and provided support to plan for Horticulture patches in the fallow uplands that is when they decided to turn those fallow lands into horticulture patches. The planning was done through a community group which is a Water Users' Association. The work was implemented by West Bengal Accelerated Development of Minor Irrigation Project (WBADMIP) and the river lift irrigation was constructed by the ADMI Project for creation of irrigation facilities.

This research study conducted under PRADAN concentrated on the journey of a Water User Association and change in their lives because of this project implementation. WUAs are formal organizations registered under West Bengal Accelerated Development of Minor Irrigation Project (WBADMIP) supported by the World Bank. These are created to bring together farmers for the purpose of managing a shared irrigation system. WUAs were intended to meet two conditions considered important for improved irrigation performance. The first is collection of fees to cover the costs of operation and maintenance, giving rise to a stronger sense of ownership as well as greater efficiency and accountability. The second is increased farmer participation in decisions, leading to more sustainable water use and more equitable sharing of the benefits.

An international study shows that WUAs can cater limitations according to unsuitable situation that varies from region to region. Presently, COVID 19 lockdowns have hit the functioning of every community-based models of the nation, thus it's expected that the functioning of the WUA has fallen short of its nature to self-sustain finance creation of the farmers. This study concentrates on the change that improved the livelihood of WUA members since its creation and recognizes shortcomings with various improvements at present note. This paper concludes by reflecting on how the general expectations of WUA from water providers, decision makers and donors to deliver on cost recovery, user participation and ultimately irrigation performance are met. The review of case studies highlights that the socioeconomic context and agricultural conditions shape the ability of WUAs to deliver results, conditions supported and created by external institutions and actors. In West Bengal WUAs are primarily promoted in a setting of smallholder agriculture by the state government supported by the World Bank and notable externalities like PRADAN. To complete my case study under PRADAN, I was assigned the work of conducting a study wherein I looked into the WUA members engagement with the fishing and horticulture activities, through an examination of their involvement as members of the Water User Association under WBADMIP.

My case study concentrates on the WUA members from Bandudi village located in Banghmundi Block of Purulia District in West Bengal. It is situated 57.7km away from the Purulia District Headquarters. As per 2009 data, Matha is the gram panchayat of Bandudi village and the total geographical area of the village is 184.54 hecters. Balarampur is the nearest town to Bandudi which is 14kms away.



The SC population of the village is 68 and ST is 580 from a total population of 909 with 485 males and 424 females as per the 2011 census. The livelihood occupation of the villagers is mostly mango orchards and fishery. At present the formation of WUA with support from PRADAN has encouraged the villagers to start farming vegetables which is a newly created livelihood. The WUA also inculcates knowledge of sustained use of water and responsibility for water management and maintenance.

Source:
official data

Particulars	Total	Male	Female
Total No. of Houses	154	-	-
Population	909	485	424
Child (0-6)	121	72	49
Schedule Caste	68	34	34
Schedule Tribe	580	309	271
Literacy	27.92 %	35.59 %	19.47 %
Total Workers	444	252	192
Main Worker	243	-	-
Marginal Worker	201	72	129

Census2011

Water User Association: Journey to a Multi-tier Agriculture (Case Studies from Purulia, West Bengal)

Changing WUA members lives of Bandudi village from Baghmundi block in Purulia

Panra-Kanrda Jalbybaharkari Samity is a relatively new Water Users' Association with 18 members and six member management board. The WUA has 7 female members and among them one is Vice-president and the other member is the secretary. The aim of this WUA is changing the lives of the farmers by assuring water and therefore better diversifying crop production. For financial support all the members of WUA contribute equally keeping in mind the affordable amount suitable to all as per their collective decision. WUA has encouraged mango orchards for productivity and better surplus for the farmers. The members of WUA are small and marginal farmers, dividing them into social groups the data shows two members are from other backward classes, one from schedule caste and the rest of the members are from schedule tribes with seven female members.

SL. No	Member's Name	Sex	Caste	Position	
1	Dharamdas Baskey	Male	ST	President	Board Member
2	Sunita Paramanik	Female	ST	Vice-President	
3	Anjali Sing Sardar	Female	ST	Secretary	
4	Adhir Tudu	Male	ST	Asst. Secretary	
5	Sukhen Paramanik	Male	SC	Treasurer	
6	Ahalya Mahji	Female	ST	Member	
7	Shibani Mandi	Female	ST	Member	
8	Dinesh bundhu Majhi	Male	ST	General Member	
9	Sambhunath Mahato	Male	OBC	General Member	
10	Arati Soren	Female	ST	General Member	General Members
11	Rasraj Sing Sardar	Male	ST	General Member	
12	Malati Murmu	Female	ST	General Member	
13	Mangali Tudu	Female	ST	General Member	
14	Bholanath Hansda	Male	ST	General Member	
15	Prabhuram Hembram	Male	ST	General Member	
16	Brindaban Sing Sardar	Male	ST	General Member	
17	Tusar Kanti Gorai	Male	OBC	General Member	
18	Krishna Sing Sardar	Male	ST	General Member	

The WUA was started with an objective to encourage multi-tier agriculture among the villagers, their work depends on the rainfall as no other source of water supply is there for them except rain water which is stored in the well. The members are trying to influence membership and construction of new models but water availability depends on the rainfall received in that area. The President of WUA Mr. Dharamdas stated that at present they are utilizing the stored water from previous rainfall, which they are trying to utilise for the members. In fact, after the registration of this Jal samity they made several other models but due to the lack of rainfall those models are not working. With a positive note he added that despite all the hurdles the WUA succeeded in making a stable livelihood for its beneficiaries by mango orchards. The adaption of multi-tier agriculture did improve the income level of the Bandudi villagers. Beneficiaries are cultivating other crops of different vegetables along with groundnuts, and this journey to a better livelihood was possible with the support of PRADAN. They tried their best to utilize suggestions and knowledge provided by the PRADAN officials. Throughout their journey of forming WUA, support from PRADAN was by their side.

The financial help is provided from ADMIP and the routine contribution from the members help for fund sources. This amount is used for various initiatives planned by the WUA. The fund is used is for inputs required as well as for organising meetings which is the main communication medium to reach other farmers and to encourage the involvement with WUA to better their livelihood. The direction for proper utilization of finance, inputs, resources is granted from PRADAN. Talking about the present condition, he stated with a grief that the water storage is not up to mark due to the lack of rainfall. Rainwater is the only way to fill those wells but lack of rainfall has lowered the water storage. When asked about any river source he mentioned the distance is way too long for them. But he mentioned that the water from that river can be lifted but at present the condition is not suitable enough.

Journey of Panra-Kanrda Jalbybaharkari Samity as a newly formed WUA:

This path towards a better livelihood was provided by PRADAN and the President is glad enough to share this journey with appreciation for the determined members of PRADAN.

The WUA members of my study are villagers from Bandudi and have been in this journey for one year and six months, it can be noted that this WUA is newly formed and the development is in progress but still has done enough to encourage Bandudi members of WUA for a multi-tier agriculture to better their livelihood.

Emergence of the WUA Journey for farmers of Bandudi village.

Earlier the members of Panra-Kanrda Jalbybaharkari Samity from Bandudi village were regular workers and a few of them used to grow only mangoes. From 2000 to 2010 the villagers of Bandudi were engaged in paddy cultivation and fishery but the lack of rainfall left them with less change for a better livelihood. Later PRADAN introduced to them the knowledge of multi-tier agriculture. They were encouraged to grow vegetables along with their mangoes and this led to the formation of WUA (*Panra-Kanrda Jalbybaharkari Samity*) to satisfy their water needs with collective help. With the passing days the members of WUA are themselves educating the villagers about different kinds of crops that can be grown with less use of water and with better market price for sale. Meetings encourage villagers to know about WUA, new members are welcomed, new modes and trainings in agriculture area are granted and after acquiring knowledge about WUA initiatives and work Bandudi farmers becomes part of the Panra-Kanrda Jalbybaharkari Samity. Being a member of WUA their journey is leads to a better income source from mango orchards that was proposed by PRADAN.

Challenges in accomplishing initiatives by WUA

They have constructed well in uplands but it is effective only when the water is supplied. This WUA has even decided to make unused land fertile but steps were not taken due to unsuitable conditions. And this year there has been no work regarding construction of new models, all the initiatives are on hold due to COVID-19 but the lockdown has little effect on the supply of water from WUA. Regarding the water supply problem, the PRADAN members along with WUA are contributing their time but the present condition as well as dependence on rainwater is not permitting for creation of any infrastructure or model like pumps. Further their condition was understood from the President's statement that the present stored water is a small amount of rainwater that was saved and this amount is not sufficient to reach the faraway lands.

WUA finance borrowing, support, decision making ability and involvement with SHGs:

When asked about loan from banks, the President of WUA mentioned that the villagers of Bandudi are not acquainted with the process of applying loans from banks. They just borrow small amounts of Rs. 2000- Rs. 7000 approx. from each other as well as women borrow cash in hand through Self Help Groups (SHGs). The maintenance fees for WUA proceedings are collected on a monthly basis, and to avoid any extra cost most of the work is taken care by the members or the villagers themselves, thus externalities are not required as people from the village and the members take charge of the maintenance to save their finance. Talking about the WUA corporation with other bodies, the President mentioned substantial financial help regarding infrastructural development from PRADAN and through collaboration with SHGs. As this WUA is newly formed, the savings are not fully sufficient in certain conditions, so it's through SHGs that they get finance in terms of loan with low interest rate, even the president of WUA mentioned that they play a role in the decision-making of any conflict that takes place between the members of SHG.

Even in cases when a member of WUA irrespective of gender is in need of financial help, then support is provided with due respect from WUA and cooperation from SHG. Through its functioning WUA has access to the United Bank of India and till date no specific loan has been borrowed. About the support for water, a case was mentioned that, if any WUA member has a store of water but at the same time the farmer next to his land is in shortage of water then WUA communicates to the other member to share the stored water. With the same collective decision-making the water conflicts are solved keeping in mind the needs of both the parties.

Status of WUA women members from Bandudi in Panra-Kanrda Jalbybaharkari Samity

Another challenge for the functioning of WUA is the lack of knowledge among the women members as women from this village are not aware of many things, this makes the functioning of the development plan in Bandudi difficult. For the WUA members it's not only a journey to a better livelihood but it's also a journey to a better understanding of agriculture and a better status for the female members. With a positive note the President mentioned that the status for the female members has changed since its formation. He mentioned that the women members play a part in the WUA decision-making process along with all the other villagers. The women were even accompanied by their husbands. If there were any disputes or problems among the women, the WUA solved and discussed independently by themselves. This shows that the women of the Bandudi village who are part of WUA have a pragmatic development, they have their say, word and right to participate.

Importance of PRADAN in the journey of Panra-Kanrda Jalbybaharkari Samity (WUA)

Years ago, the villagers of Bandudi were not aware of any livelihood measures as it was backward. The formation of WUA is the successful step for a better livelihood journey for farmers of Bandudi and this was possible with the support from PRADAN but yet more development is needed. It was PRADAN who helped the villagers for a journey to stable agriculture income source and the formation of a WUA for a better change. It provides training for subsistence agriculture, new innovative measures, knowledge about organic medicines, introduction to mango orchards were the best development acts followed by PRADAN in the Bandudi village and the formation of WUA was to encourage this new multi-tier agriculture among the villagers. Not many innovative techniques are used till date but the use of solar panels to generate electricity is present in the village which is an initiative from PRADAN in Bandudi and WUA contributes for the requirements that are convenient for them as the installation work is carried out by PRADAN itself.

As the President of WUA, Mr. Dharamdas Baskey mentioned being aware about the challenges at present like the difficulty in communication for various work. He is putting his efforts for a better functioning of the WUA work. Taking into account the COVID-19 condition, the amount collected from the members are decided after a collective response from each one. The livelihood source is seen in a better condition with PRADAN involvement as knowledge was circulated for subsistence agriculture. Agriculture measures are introduced among the members by the WUA, use of efficient utilization of resources and inputs were advised, this in turn made them advance enough with a multi-tier agriculture practice. For market accessibility, the market nearest to them is Balarampur and the border areas of Jharkhand state like the railway stations. PRADAN helped them to grow vegetables under multi-tier agriculture that have a good market price and the selling price knowledge is provided for better profit.

Initiatives of the WUA in Bandudi: Statements mentioned by the President

This Panra-Kanrda Jalbybaharkari Samity consists of three villages where much of the schedule caste marginal farmers are from the Bandudi village. The members of WUA are engaged in multi-tier agriculture and after formation of WUA and SHG, the status of females has seen positive change as the women of Bandudi acquire their source of finance from work in their village itself and when required they borrow money from SHG. With countable areas providing markets for their produce, the WUA are trying to help the produce of the members reach far away markets at this time during COVID-19 lockdown where a substantial fall in market has been noticed. Another initiative by WUA is the unity of the cultivators from Bandudi for better market reach, inputs, price and understanding of sustainable agriculture measures. With a grief he mentioned that no matter how many initiatives we put for water supply, without rainfall the function and proceedings will have no meaning and small ponds are not sufficient for a proper access to storage water for cultivators. Their WUA already initiated an idea to encourage mango orchards with planned land area cover and now it has proposed a plan structure to ADMIP with support from PRADAN for a “Bandh” Project in the area to meet their water requirement. Further plans by their WUA involve around 20-50 wells

of different sizes in the land of the villagers for the upcoming years to improve the reach of multi-tier agriculture in a broader way. The WUA is thankful to PRADAN and its involvement. From the year 2000, the village has seen a brighter future ahead.

Relation between WUA with its members and role of ADMI in WUA functioning:

The WUA is supportive to their members, trying not to put overdue pressure on them. If the water charges are overdue then the member is helped with the return of due payment in a convenient way. Financial support with small amounts are also encouraged among them to help each other if the members are not able to meet their input needs. The WUA is hopeful to build a “bandh” (dam) from finance provided by ADMIP at their registered areas. Machines provided to them from ADMIP are power fillers, boost cutter and small machines for efficient multi agriculture activities and these machines are provided to the WUA in subsidised prices. With its journey the WUA members have seen change in the livelihood sources as earlier they used to work as migrant labourers with land not suitable for production. Now the scenario has totally changed, they are cultivating and earning from their produce with improving income. This results in better health and education facilities for their families. These developments were possible only with the help from the ADMIP and immense support from PRADAN with its involvement with the Bandudi village for all these years.

Other Initiatives mentioned by the President of Bandudi WUA.

The Bandudi village has a natural stream which is river Shakha and has been mentioned by one of the WUA members that if any initiative is carried out to supply water from this river then many farmers will benefit from it. But the President of Panra-Kanrda Jalbybaharkari Samity mentioned that no decision has been taken by its support partners as well as the gram panchayat. He mentioned the possibility of supplying the river water to the fields of WUA members using pipes and machines which will reduce their dependence on rainwater for multi-tier agriculture. The idea is that using machines and pipes the water will be pulled out and stored in one place, and that stored water will be distributed to all other farmers with the construction of a canal network. Ultimately there will be a water supply to the land of the farmers in a uniform manner. The river Shakha reaches to 10-11 feet during rainfall, estimates say the river if utilized to supply water will be able to cover half kilometre of the area that will benefit 40-50 farmers of the village. The WUA has already provided the planning but a proper formal decision has not been taken as yet. As mentioned by the President this idea of connecting the river Shakha with Bandudi has already taken place on the other side of the river but this side of Bandudi connecting Balarampur has not benefited from it. Thus, they are hoping if PRADAN finds it suitable to carry out the initiative then they will start coordinating with ADMIP.

Case study of Adhir Tudu Assistant secretary of Water User Association

He has been part of this WUA from past one year when it was newly formed. He was one of the active members behind the formation and legal registration of the WUA. It was PRADAN from where the work was powered and all documentation was carried out. The WUA has made the cultivation easy and efficient, earlier the lack of water facility created obstacles for production activities even paddy cultivation. Later this new form of multi agriculture activity reached the farmers and with proper selection of crops for cultivation and efficient use-supply of water it became easier. PRADAN encouraged him to go for mango orchards by growing varieties of vegetables along with mangoes, he started producing green leafy vegetables, radish, mustard seeds, gourd including groundnuts, all the knowledge for proper production was provided as well as seeds were too given by PRADAN and the supply of water was satisfied from WUA. Earlier it was only through fishery that his livelihood depended; later lack of rainfall made him shift for a different source of income and step by step a better living source was produced. Thus, yearlong relation with PRADAN brough benefits of ADMIP in the Bandudi village and he joined as a member for formation of WUA with the name Panra-Kanrda Jalbybaharkari Samity as a legal registered member body by ADMIP.

Adhir Tudu introduction to Mango orchards and membership in WUA:

Before mango orchards he used to work as a migrant labour but was not able to access support of MGNREGA work as his name was not listed. He first got the knowledge of mango orchards from other village where this practice was already functioning then with help from PRADAN officials they too started a journey of new stable form of livelihood source after that proposal was forwarded to ADMIP and registration of Panra-Kanrda Jalbybaharkari Samity was legalised as a water user association under WBADMIP. Regarding supply of water into his own land he mentioned that from the WUA storage well has been constructed with finance support from PRADAN and using machines the rainwater stored is distributed for cultivation. The purchase of the machines was from his own income, water from the storage well is distributed efficiently to his crops as it is inside the cultivated land so distance is not a problem for him. For the future he is thinking if new irrigation is planned then they will get water and if proper distribution is granted then he might build a new well. The duration for supply of water from the well using machines is one hour, with one hour of water distribution he manages his cultivation because at present he is engaged in growing groundnuts and according to his statements the use of water is not much. He tries to grow those crops which require less amount of water for cultivation, this reduces his input cost and use of water. He is also able to save a lot of rainwater stored.

His preparation to Mango Orchards:

There were days when he tried to earn from fishery but production was way too less even the net profit is unclear to be mentioned by him, then through support from PRADAN he along with other villagers went to prepare barren lands for cultivation and this was mango orchards introduction to him. At first cultivation of mango was started but mango alone won't improve his living nor the living of others so he decided to diversify his crops but the challenge was water supply. From WUA the supply of water was provided and a conscious knowledge was imparted of how much amount of water is required to a particulate crop and based on that structure sustainable use of water is adapted. Recently, he mentioned the distribution of water is not in a regular way due to less rainfall but he is facing less problems compared to earlier years when there was no proper cultivation structure. Thus, now the stored water is sufficient enough for the crops that he is cultivating. He owns another land but it's not that fertile enough for cultivation, thus for the next year he is planning for mango cultivation in the other land as well.

He has a total 3 acres of land where he practices mango orchards and in 2 bigha land areas he cultivates paddy but the land under him is a leased one. And for the water requirement a well is constructed by WUA with funds from PRADAN as well as he constructed five to six "hapa" (a small enclosed area made in the land itself to store water) in his 3 acres of land. He pulls out the water from a 300ft deep well using machines that he purchased for Rs. 13,000 and supplies water into his land using pipes. For mango orchards the seeds are provided by PRADAN and to cultivate paddy the seeds are purchased by him from market with Rs. 130 per kilo grams.

His statements on the working of Panra-Kanrda Jalbybaharkari Samity

When asked about the pressure for WUA contribution on a monthly basis he responded that the required amount is decided after a meeting and with each meeting at present Rs. 10 is paid. This Panra-Kanrda Jalbybaharkari Samity is a collaboration of three villages where Bandudi is also a part, but when meetings are conducted the presence of other village members is not witnessed, thus he as an assistant secretary along with other WUA members try to take the objectives forward. He mentioned that if any member irrespective of gender faces difficulty in paying the water charge then a convenient amount is decided and at present per hour water charge, he mentioned is Rs.5-Rs.10. The normal procedure of water distribution from WUA depends on the requirement of water for cultivation of that particular land which depends on the water requirement of a particular crop grown. PRADAN provided machines to them with a convenient amount and that charged amount was satisfied by the contribution from the WUA members, on this he said that the repayment of that sum of money gets completed within a few days. Regular meetings are also conducted in Baghmundi where measures to use water in a sustainable manner is provided.

His planning for multi-tier agriculture with support from PRADAN and WUA:

For the upcoming production year, he is planning for capsicum and broccoli cultivation, and the seeds will be provided by the WUA. The seed will be given to the members and then the price of the input will be collected from the members profit of their output. New crops will be required to water and to avoid shortage a new irrigation proposal has been mentioned by him which has already been decided by the WUA and through this with 50liters of water the members will be able to process cultivation for the whole year. With the journey as a WUA member he tries to go for cultivation of those vegetables that have high price in the market taking in conduct the sustainable use of inputs and this encouragement is provided from PRADAN. Earlier he used to work as a marginal worker or was in search of any labour work. Now the introduction of multi-tier agriculture has encouraged him for a better source of livelihood, he can invest efficiently for the education of his children and can get access to better health care facilities for his family when required.

A new project of irrigation initiated by WUA under guidance from PRADAN:

Application has been forwarded by the Water User Association but till now no decision has been finalised. From the village the river Shakha is half kilometres away so WUA are proposing for any possible way to bring the river water into their fields using pipes and canals. If it becomes possible then about 50 litres of water will be accessible by the farmers every year for a suitable production. The water if supplied will also not face storage issues as every farmer they have “hapa” as well as other small preparations to store water is available with the villagers. The need of this irrigation system is justified because water is the only difficulty that the WUA members face for their multi-tier agriculture as it is only during the rainy days all the storage wells and manmade “hapa” are filled but later gets dry. The area of the river Shakha is more than 30 acres and during rainfall its water level reaches to 12ft. For the installation finance WUA members are ready to pay Rs 6000-7000 which will be required to buy the machines, pipes as well as for construction of canals with support from PRADAN.

Under this how much water is required by the plant only that much of water will be supplied and the rest will be stored in order to avoid excess use of resources. To process this irrigation into his land the water will be pulled from his structured well which will collect river water through canals network, the pulled amount of water from well using his own machines will be distributed into the land, the total installation cost of this process is of Rs. 7000 which will be paid by the members itself. They are ready to pay this amount as they are determined enough to improve measures for multi-tier agriculture, as this was the way that provided a better income and a stable source of livelihood. With the further infrastructural development in WUA they will increase the mango orchards in Bandudi village and for that covered area as well as structured plan had already been proposed as per Mr. Adhir statement. Formation of WUA had developed their journey to a new form of agriculture with support from ADMIP and PRADAN. Talking about his challenges for expenses at COVID pandemic, he mentioned that from before itself he saved an amount for emergencies where market reachability won't be easy leading to low output profit.

Case study of Arati Soren a general member of WUA:

Her membership with WUA has been for 2 years, she got to learn about multi-tier agriculture and started mango orchards, last year she witnessed a good production. This year's lack of rainfall has posed a problem of sufficient water supply. Before joining WUA she was a member of SHG of Bandudi and worked as domestic worker, and after joining WUA she has started going for multi-tier agriculture, for that the training was provided by PRADAN. To grow gourd and pumpkin including leafy vegetables the seeds and fertilizers are provided from PRADAN, and those inputs are taken in loan as she pays Rs. 10 per month for the payment. The amount of water used for the cultivation depends on the rainfall. Every month PRADAN officially visits her and gives her knowledge about medicine and maintenance of agriculture.

Though she has a better source of activity but at present reaching the market is not easy so sell of the products are not satisfactory. WUA will also be providing her market accessibility for better profit of her produce. Still she mentioned no loan from the bank but has an account with savings of Rs.5000-7000. Total area of land under her is 2 acres and including vegetables she also cultivates paddy, regarding the inputs for paddy she herself purchased it from the market itself but could not manage to get much profit. Thus, she managed to earn Rs. 9000-10000 per month, her additional income comes from domestic help of cooking at four to five houses from where she earns Rs. 200-400 monthly and has MGNREGA work card as well.

Her practice of multi-tier agriculture:

She has 2 to 3 acres of land, she planted pumpkin and gourd in 1/2 bigha land she cultivated 106 mango plants and for pumpkin seeds she was provided with a cost of Rs. 10 for one packet. These benefits were provided from PRADAN but the cultivation didn't go well due to lack of proper water supply and two packets of Rs.10 each of gourd seeds that she cultivated mostly used for self-consumption. In the market the price of the seed packet starts from Rs. 100 each but from PRADAN amount of Rs. 10 as fixed subsidised price is provided to them. The plants of mangoes are too provided from PRADAN itself but with no purchasing price. This is a great help for her and this support encourages her to continue with mango orchards. Along with all these plants she even cultivated six to seven plants of brinjal and lemons, even groundnuts of 6-7kilo grams similarly provided from PRADAN. Even she was provided with paddy seeds but she purchased it from market with per kg for Rs. 300 and cultivated in 4 bigha of her land, along with this she purchased fertilizer for Rs. 300. The money she invested for the paddy inputs were her savings, this indicates her cash in hand has improved through the journey of mango orchards.

Her supply of water for agriculture: WUA member Arati's only hope

In her land there is no well so for water supply the rainwater is her prime source. But in one WUA meeting she was mentioned that the members will be provided with well at their land and they were asked to submit verified legal documents like Aadhar card, voter ID etc. Thus, she submitted her requirements for a well to WUA. This year funds were raised to build a well at her land by WUA but due to COVID the work is closed. PRADAN provided the money for building well and the construction was to be done by WUA but the pandemic situation has brought the work at standstill. During the conversation she mentioned the source of water will not be rain but a separate arrangement by the WUA itself. This led the conversation in more depth and she stated the source of water more or else will be river Shakha near to the village Bandudi.

With the building of a well water supply will be accessible for her cultivation. The construction investment will be done by PRADAN itself so she is fully concerned about the quality production from the mango orchards rather than stressing the investing cost. Near to her land there is no pond in fact no any other villager from whom she might get sufficient water so now her only hope is the well. As the WUA is a newly formed one so it planned and structured initiatives for this year but due to COVID the work has been stopped. Arati is hopeful that after the work starts WUA will build her a well and will also be providing her market accessibility for better profit of her produce. WUA will start their work for the new irrigation system as well with support from PRADAN and other concerned authorities.

WUA initiative for an irrigation project and its finance requirement:

For future she is planning to enlarge her mango orchards plantation area, new plants will be planted provided by PRADAN. At present with the last rainfall she cultivated the mango plants as they are fully grown now there is no much need. PRADAN savings and credit support encouraged her to save her cash amount which has increased with less investment for input and with the practice of multi-tier agriculture in support of WUA. She deposits there Rs.10-Rs.20 per month and the amount of money being saved at present is Rs.500-600. She borrowed money of around Rs.5000 for her mango orchards and the interest is Rs.7 for per Rs.1000. Talking about the new irrigation facility she attended the WUA meeting where everyone was informed about the idea of installing a new pipeline for supply of water, she was asked to put up Rs. 6000-Rs. 7000 for the overall construction. Till now she didn't deposit the money and WUA informed whoever wants to avail the service from the new irrigation project can deposit the sum of money to add their contribution for the project.

Opportunities and new initiatives supporting Arati for a stable and better living source:

Before starting the mango orchards, she didn't need to invest much on land preparation as her land was from earlier fertile enough with plants and trees. Later, she cleared the land and started growing mangoes along with other vegetables. Before getting support from PRADAN whatever input requirement she maintained for paddy cultivation, cost near about Rs.10,000. Now all the inputs are provided in much less subsidised price she just concentrates and invests her labour for the production activity.

Another interesting fact about WUA of Bandudi village found that this year the members in a group started practicing fishery together as a separate source of livelihood. For that there is a separate fixed enclosed area of water "*hapa*" where they harvest the fish with other members of WUA. The required fingerlings, rui were provided from PRADAN and the members are not needed to contribute or invest for this source of earning. The profit after selling the produce is divided among them. During rainfall those enclosed areas "*hapa*" of more than 10 in the village get filled with water and become useful to practice fishery. This fishery practice has lack of maintenance as without shedding the man-made small ponds called "*hapa*" the fishes are eaten by the birds. Even other villagers in Bandudi too practice fishery with formation of these "*hapa*" in their own land.

Case Study Dinesh Bundhu Majhi a General member:

He has been the member of Panra-Kanrda Jalbybaharkari Samity since its foundation. Through practising multi-tier agriculture in 2 acres of land he supports his family, where along with mangoes he grows tomatoes, brinjals and other leafy vegetables. This year he cultivated groundnuts and sown the seeds for tomatoes and in half acre of land he cultivated paddy with proper care. For paddy cultivation he applies knowledge from PRADAN to cultivate the proper amount of paddy which is required for the land to avoid overproduction. Required amount of water is provided with great caution as overproduction in uncertain conditions can cause low profit.

Before and After multi-tier agriculture: Introduction of WUA and role of PRADAN:

Before mango orchards his source of earning was from MGNREGA work at his village. Before intervention from PRADAN he had a loss from paddy cultivation due to lack of water and climate conditions. PRADAN brought multi-tier cultivation in Bandudi and the Panra-Kanrda Jalbybaharkari Samity started its journey of building small well in the land of its members to encourage mango orchards under ADMI Project. The seeds and the fertilizers for the production was provided by PRADAN and WUA also agree to support with market accessibility if required to Balarampur, Baghmundi and Purulia for their produce. Much of Majhi's investment in inputs have been reduced with this new mode of production compared to past couple of years after being member with WUA and support from PRADAN has seen sufficient savings to invest in his children's education and health. Even sustained agriculture production is allowing him to invest the right amount for quality production.

The way Majhi prepares his land every year: PRADAN does play an important role here.

From PRADAN he is provided with mango seeds to grow in 1 acre of land without any sum of money. This year in his total 2 acres of land he cultivated 200 mango plants and 4 kilo of groundnuts seeds. Due to climate conditions compared to last year the produce has not been that much profitable, this shows that support and access of benefits will definitely help to improve the production but it's not compulsory that every region will equally develop. Majhi did see a great increase of income and production after being supported by WUA and PRADAN but climatic conditions did not provide him an increase in profit compared to last year which was around Rs.65,000.

The total amount invested every year for his production is Rs.10,000 to Rs. 11,000 with few inputs provided by PRADAN and other essentials purchased by himself. For the next showing if at the end he managed to save enough savings then he would increase the yield and try to grow more varieties that would require less water like tomatoes etc for good market profit, if money is being saved from his routine production investment. He mentioned if any WUA member would have been near to his place then he would have got support of water, the only member near to his place lives half kilometres away and getting water from that land in sufficient amounts won't be possible. So, he sticks to the natural source of water which is river Shakha one and half kilometres from his land.

His practice of multi-tier agriculture and support from WUA:

Regarding the water requirement for his land, WUA supported him to build a well but that holds a different story. As after the introduction of mango orchards the supply of water was a prime concern and important input for this new journey, so he started the formation of the well at his land. His journey took a better turn with WUA as Panra-Kanrda Jalbybaharkari Samity provided help for the complete construction of his well.

The well which was constructed by WUA took a different way: Majhi stated with grief.

After the construction of the 43 ft well was done, he was not able to use the well as lack of water posed a challenge. The idea of building well was initiated by him and he before becoming the member itself started building the foundation base. The total construction cost was Rs. 35,000 which was provided by PRADAN excluding the sum of the amount that he invested for the formation earlier. Majhi as a WUA member appealed to PRADAN for financial aid to build the well that he already started constructing. WUA was sole supporter for the construction ranging from purchasing the materials and building the well. The need for the well was essential because each of his plants at its budding stage required 1 lit. of water so he provided water after five or six days. But the natural source is half kilometre away and bringing water from faraway places is time consuming. After the construction he was not able to use the well and within a few days it got dried and till today there has been no water, this was mentioned by him with a grief during the interview. His production was not affected with this loss, as by that time all his trees were fully grown with no further water requirement. For the rest of his vegetables and groundnuts the required amount was transported from the river Shakha using cycle or he himself covers the distance by walking. Constructing 43 ft well at his land was laboured by WUA but it went in vain. For future he does have a plan for constructing small well as he is hopeful enough that with WUA cooperation it will be possible for better practise of multi-tier agriculture. WUA encourages mango orchards by providing support for building small “hapa” to meet water requirements.

With grief he mentioned as a WUA member he got help but that labour of the well construction went in vain, if that would have worked, he could have extended his mango orchards and would have grown cauliflower and cabbage. Above all without sufficient supply of water to prepare his land will take a lot of time and labour. He might be having mango trees but it's not compulsory that all the trees will give him quality and sufficient quantity produce for a better market price and profit.

Majhi mentions his hope for the future, his new opportunities for better production.

The well that was built by WUA with the provided money from PRADAN till today has no water but every year maintenance is done by him as he removes the extra layers of soil, here no amount of money is spent just labour work by Majhi himself. There is one “*AamMela*” (yearly mango market fest) in Purulia and last year WUA members from Kanrda they went to sell their produce and got good profit, Majhi mentioned Purulia “*Aam Mela*” as good market source but he never got the chance to go, as other WUA members were informed but he was not made aware by the WUA. Thus, next time if proper information is forwarded then with other members, he is hopeful to join for a good sale of his produce. He has no expectation of high income from the next production as it solely depends on the climate and availability of water because despite being helped by PRADAN and WUA combine he was not successful in getting water supply.

Around 2.5 bigha land is left with him where he is not able to cultivate due to lack of water so for bringing that land under production, he appealed for the well construction but the help didn't provide him any benefit. In future if the well gets rectified then he is hopeful to practice cultivation in that area. He stated an idea which was mentioned in the WUA meetings that if they try to bring the river water which is 3 kilometres away then other villagers will also be benefited with sufficient water supply and would solve much of their problems. The positive thing noticed here is the members are ready to help each other which is also a big strength for the WUA. Even Majhi is hopeful enough that if someday he managed to get a good supply of water then he would be capable enough to extend help to other members of WUA or villagers for sufficient water supply in order to make a way for multi-tier agriculture a better source of livelihood for village Bandudi.

Success of Panra-Kanrda Jalbybaharkari Samity (WUA) with support from PRADAN

A Case of PRADAN Official

(Experience of Wanborlang Khymdeit about working with WUA)

When he started working with WUA for the first time there was a doubt of how this group can be different from the other groups (*SHG's, Upasangha, Sangha*) that he has been working for many years. He was wondering why do they even need to form another group for the planning of INRM activities? Over years he realised how these WUAs act as a core that facilitates the developmental activities within the village.

The Study of the nature of Water User Association and its initiatives for development:

At Baghmundi block currently there are 15 WUAs in 8 Gram Panchayats. He has been involved with these WUAs directly from their formation until date. Since, these WUAs comprise all the families in a particular village or two, it is bigger than an SHGs in its structure. These WUAs are also registered under Society Registration act that makes it more legal in doing work from any government departments. Through his work with WUA he experienced that “there are endless possible options to gather a pool of resources and make them a convergence for the development of the community”. They are working with WBADMIP, Panchayat, Blocks, Agriculture departments and another related department. WUAs is like a multi-activity centre where everything is store at one place, from treatment of upland through plantations, to harvest rain water through Water Detention structure, agriculture, mechanisation of agriculture, leadership building and strengthening, local institutions and so on. He found out that these WUAs are working from a perspective of “building a human development for creating a development”. The activities that they carried are all in a participatory manner from planning of activities to monitoring process.

PRADAN official impression about the Water User Association:

People can just go and pickup stuff that they like but with a full responsibility of sharing with others. However, to reach that position it takes time and energy and commitment. Some of the WUAs are yet to come under the benefits that can bring to their life and to the development of their society.

The reason behind the above-mentioned impression of that WUA:

There are WUAs where they really did a wonderful change in their village. Their activities are holistic. It starts from land treatment, water harvesting, agriculture, mechanisation, fishery, leadership development, institutions building, fund mobilisation, convergence of schemes, liaising with different departments and so on. These WUAs give their time for a regular meeting, discussion, corpus development to reach to a place where they are now. However, some of the WUAs are stuck with only one or two activities that benefited few rather than many. Hence, they are yet to understand that it does need to be serious enough by giving more time, energy, conviction and commitment to bring a remarkable change.

His recognition of change in WUA while working with them:

People are more aware and cautious of giving their planned activities for a positive outcome for e.g. usually when someone wanted a Water Detention/Harvesting structure (WHS/WDS) they would plan to the least usable land without thinking whether water will retain or not. However, throughout my involvement now people are clearer that they need water rather than WDS/WHS, hence they make sure that the WDS that they have planned need to retain water for their needs. The knowledge on Integrated Natural Resources Management (INRM) makes them more aware of the planning process of which activities to fit where. More women have come out and joined the WUAs. The confidence of WUA women in liaising with different stakeholders is really appreciable. They do not limit themselves only to the ADMIP but also seek help from another department. They planned the activities and submitted it to ADMIP, Block and Panchayat as well so that the planned activities will not go in waste. They also recognised that fishery is not just a fun activity but it can be a huge income generating activity if scientific methods are followed. Many have adopted the methods and considered this as their main livelihood activities. It has in fact helped many families to get income even during this COVID crisis. A contribution or a donation is a voluntary act and these WUAs members are doing a monthly contribution (Usually SHGs are doing Savings that also comes in return) despite knowing the fact that the money will not return back. This is one of the significant changes that people are committed and convicted towards.

These WUAs are also doing their own investment to enhance their corpus. The change of mentality from a receiver to a giver is another remarkable change. There are WUAs who have given their plans to the WBADMIP for Spawn to fingerlings activities, however due to COVID the ADMIP could not provide them. These WUAs after knowing that uncertain conditions may pose a challenge, they did take out the money from their corpus and invest for the activity. Hence, this kind of mentality of always being a receiver from a government or project has changed. "These WUAs have shown that development is not the whole responsibility of the government but the citizens are also equally responsible for".

Change in WUA functioning due to COVID lockdown:

The COVID pandemic added a huge change in people's lives. During the initial days of the lockdown PRADAN officials could not figure out what they could do but as time passed, they started adapting to the situation. There are not many changes except the physical distancing and using of mask or face cover while conducting meetings.

Involvement of ADMI with Water User Association: Experience of PRADAN officials.

WUAs at Baghmundi block were formed after the inception of ADMI. WUAs are mainly the medium where all the activities in a particular village or area is to be carried on. They help in planning, community mobilising, documentations of the plans, approving of the plans at village level and submission of these plans. Hence, “*ADMI empower these grassroots institutions by allowing them to do a holistic plan and approve them at the village level*”.

WUAs and ADMI go hand in hand and the flexibility in the nature of work and opening of other possibilities to other departments for convergence is one of the significant contents. The involvement of ADMI towards WUA makes things to reach and implement easier. they can submit their plans for Plantation, WDS/WHs, Check-dam, Agriculture, Mechanisation and Fishery at the same place (ADMIP). And since all these are at one place it is easy to monitor the progress and to follow up. But the positive note is that ADMI does not restrict these WUAs to involve only with them but rather looking for other options as well.

ADMI gives space for liaising with other departments to these WUAs. WUA can function even if ADMI is not involved however it takes little more time than it does. As ADMIP in its own wings comprises horticulture, agriculture, irrigation, fishery etc that makes these WUAs to reach each of these departments more easily. So, if ADMI is not involved WUA will need to have stronger support from local governmental institutions such as Panchayat and Block as these two are the main developmental institutions at the grass-root level. Hence, WUA need to get involved more and also do more liaising with different departments for their activities.

Content of Independent Evaluation

The process: Mango orchards was initiated by ADMI with support from PRADAN and the village Bandudi is one of the benefited villages under Baghmundi block of Purulia district. Before the villagers used to grow only mangoes and were occupied with paddy cultivation and fishery but lack of water was the issue, so PRADAN introduced to them mango orchards where more crops of good market value were grown along with the mangoes using less water. With this starting under ADMI Project Water User Association were registered where PRADAN facilities and structures their ideas and planning which is forwarded to ADMI to approve the work, even this coordination includes funding the appeals for better water supply like building of wells and irrigation system. Panra-Kanrda Jalbybaharkari Samity is a relatively new Water User's Association with 18 members and six-member management board. The WUA has 7 female members among them one is Vice-president and the other member she is the secretary of the WUA (Jal Samity).

Challenge for them is that the well gets dry without rainfall thus the stored water from the last rain is used cautiously. Members involved with WUA dispense support to use water efficiently, get help collectively by the members to make possible measures for water supply into their land which is financed by United Bank of India and PRADAN. The normal procedure of water distribution from WUA depends on the requirement of water for cultivation of that particular land. For financial support all the members of WUA contribute equally keeping in mind the affordable amount suitable to all as per their collective decision.

Roles played by different actors: Before Panra-Kanrda Jalbybaharkari Samity was formed in Bandudi, PRADAN was able to reach around 10-11 hectares of land with its introduction of mango orchards. After the registration of this WUA under ADMI Project together with PRADAN they were successful enough to cover 25 hectares of land for multi-tier agriculture in the village. The direction for proper utilization of finance, inputs, resources is granted from PRADAN also the officials help them to grow vegetables under multi-tier agriculture that have good market price by granting knowledge of selling price for better profit. Acting as a coordinator between WUA and ADMI its PRADAN who frames the plan proposed by WUA and coordinates to finance and construct the plan.

As a president of WUA Mr. Dharamdas he mentioned being aware about the difficulties and challenges in COVID situations like difficulty in communication for various work, he is putting his efforts for a better functioning of the WUA work. For the beneficiaries of the WUA the President along with other board members will give access to the market to their members growing vegetables, this will provide options for them regarding the sale of their produce at different prices. When a member of WUA irrespective of gender is in need of financial help and support can be provided from SHG with due respect of WUA entreaty and cooperation between them.

Collaboration: New initiatives are forwarded by WUA in form of a draft plan to ADMI through PRADAN and at present the project idea of using river Shakha for new irrigation systems will be redirected to ADMI after proper framework by PRADAN. The coordination will take place between WUA and ADMI through PRADAN itself. The members of the WUA construct wells and structured irrigation projects for a better multi-tier agriculture practise whose construction is carried out by PRADAN in collaboration with ADMI.

The livelihood source is seen in a better condition as PRADAN circulates knowledge for subsistence agriculture and implies efficient utilization of resources including inputs among the WUA members which was again formed with support from PRADAN under the ADMI Project. This in turn made them advance enough with multi-tier agriculture. Thus, yearlong relation of Bandudi villagers with PRADAN brought benefits of ADMIP into the village

The impact: The formation of WUA is to uplift multi-tier agriculture among the villagers. The reach of Bandudi village and their work as a Water User Association has made them unique from the rest of the villages. They are successful in covering more areas of land with their initiatives of multi-tier agriculture and have brought much land area under mango orchards compared to other villages. For a PRADAN official working with WUA does not limit the theory of Water user's but goes beyond the resource and impact in people's life.

Women are encouraged to come out of their shells and open their thoughts. WUA are uniting the farmers and women together to make them stronger enough to be recognised, appreciated and respected by their work. The involvement of Bandudi villagers with WUA has improved their income, savings, production even education and health investment with social security irrespective of gender. Various initiatives are proposed by the WUA which is collective fishing, raining of funds collectively, unity of the farmers etc. With the passing days the members of WUA are themselves educating the villagers of different kinds of crops that can be grown with less use of water and with better market price for sale.

Conclusion: These WUA was formed to carry out the mango orchards plan in the village and to contribute collectively for efficient water supply facilities with direction from PRADAN. With the passing days the members of WUA are themselves educating the villagers of different kinds of crops that can be grown with less use of water and with better market price for sale. It provides training for subsistence agriculture, new innovative measures, knowledge about organic medicines and introduction to mango orchards which was the best development act followed by PRADAN in Bandudi village. After becoming members of *Jal Samity* (WUA) they can better structure the multi-tier agriculture as a source of better living. Women are encouraged to be an agent of change in their societies making WUA a multi-activity centre where everything is stored at one place. Thus, WUA has encouraged mango orchards for productivity and better surplus of the farmers following this at present aspiring initiative is connecting river Shakha with the WUA member's land.

The President of this WUA Mr. Dharamdas stated that at present they are utilizing the stored water from previous rainfall; with that amount they are trying to work for the members. The members are trying construction of new models but water availability depends on the rainfall received in that area. With a positive note he added that despite all the hurdles the WUA succeeded in making a stable livelihood for its beneficiary by mango orchards.

Adhir Tudu says that earlier he used to work as marginal worker or was in search of any labour work now introduction of multi-tier agriculture had encouraged him for a better source of livelihood, he can invest efficiently for the education of his children and can get access to better health care facilities for his family when required.

Arati Soren gets seeds of vegetables at subsidised price from PRADAN and free mango saplings grown in her two acres of land. Like Adhir she too purchases paddy seeds from the market but she is not satisfied with the produce. She has proposed WUA to build well at her land in fact she also accesses the benefit of PRADAN savings and credit support as well as she is involved in WUA collective fishing.

Similar to Adhir she is too hoping for the irrigation system to start but Adhir he already had a well at his land and on other hand proposal of Arati to construct the well is at standstill due to COVID lockdown. For now, Adhir already constructed well will store water from rainfall and later the irrigation project will direct the Shakha river water into his well through canals network but Arati has no storage of rainwater for now and she would be able to avail the river water after the well is built by WUA.

Another study of a member Dinesh Majhi mentions proper measures to practice agriculture by cultivating required amounts of produce and supplying required amounts of water into the land to avoid excess use of resources. He was in need of water supply so WUA constructed a well-financed PRADAN but could not use it for once as lack of rainwater led the 40ft well dry. Thus, he travels half kilometres to river Shakha in order to supply water into his land. But he is hopeful enough that in future with the help from WUA he would be able to access water at his land without travelling half kilometres.

The seeds and the fertilizers for the production is provided by PRADAN and WUA also agree to support its members with market accessibility if required to Balarampur, Baghmundi and Purulia. Much of the investment by the members for inputs have been reduced with this new mode of production compared to past couple of years. After becoming members with WUA and getting support from PRADAN villagers of Bandudi have witnessed sufficient savings to invest in their children's education and health. Even sustained agriculture production is allowing them to invest at the right amount for quality production.

