

Gender- and social- inclusion approach in watershed project: Insights on gender norms and gender relations in Parasai-Sindh watershed, India



A mixed-methods Gender study on the ICRISAT-CAFRI Project

“Enhancing Groundwater Recharge and Water Use Efficiency in SAT Region through Watershed Interventions – Parasai-Sindh Watershed, Jhansi”

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Project: Gender Norms and Relations in Agricultural Watershed Projects in Jhansi, India

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Executive summary

A number of studies have demonstrated that the success of agricultural projects depends on the degree of participation by all stakeholders, gender-sensitivity and inclusion (Quisumbing et al. 2014). Alongside this, there is now an increased focus on understanding cultural and social norms in a given context for adoption of innovations. Such evidence is limited or lacking especially for watershed projects. Against this background, this report examines gender norms and gender relations in an agricultural watershed project led by ICRISAT and CAFRI in the Parasai-Sindh watershed, Bundelkhand Region, Central India. The insights highlight the challenges and the opportunities in empowering communities through increased awareness and sensitivity of gender and social norms in a watershed project.

The main objective of the ICRISAT-CAFRI community watershed project was to increase drought resilience of farming through groundwater recharge and agroforestry interventions. Three villages - Parasai, Chataarpurn and Bachauni - covering 1250 ha of land, having 210 households with a population of 1068 male and 850 female members, were selected as pilot sites for implementing watershed, agroforestry and social interventions. 63% of the geographical area of the watershed is agricultural land whereas the remaining 32% land is barren and scrub land used from grazing animals. Groundnut, black gram, sesame are dominant rainy season (Kharif) crops. Wheat and chickpea are mainly grown in post rainy (Rabi) season. Thus, cultivation of food crops, livestock rearing and sale of milk are the dominant livelihood options for the men and women in these villages.

Post intervention, data was generated through quantitative and qualitative social analysis tools to understand the benefits of the interventions to women, men and the community as a whole. Further, the aim was to highlight entry points for more inclusive watershed interventions leading to improved productivity as well as women's empowerment. The surveys identify diverse socio-economic groups according to gender, caste, age, class (landownership), family relations among others and cover 700 individuals in the three villages plus a control village. 33 semi-structured interviews including Focus Group discussions (FGDs) were implemented to understand the gender norms and roles in the project sites. A survey tools developed under the CGIAR research program "Water, Land and Ecosystems" (WLE) and IWMI was also piloted for broader take-up to assess gender equality in irrigation scheme management.

The analysis of the data revealed that the *labor division of agricultural practices* in the villages are guided by the gender norms, hence, women's labor is associated with the domestic and time-intensive tasks such as sowing, weeding, harvesting, while men engage in technology- and market related tasks which require them to leave the domestic space and engage with wider social networks.

Compared to women from upper caste, the women from the scheduled castes (socially marginalized groups) have *greater mobility and have less strict norms* and can move freely to purchase inputs, or apply fertilizer. The social norms prevailing in the study region are sometimes oppressive and also rigid for women belonging to the upper caste. It operates through the social structure itself and works in ways to keep these hierarchies in place. The women from the upper castes thus can engage or interact with women belonging to their caste groups only, cannot move out of the house/village without the presence of the other members of their family or kinship as doing so will be considered a bad practice.

Annual household incomes of the sample households have more than doubled (from 850 US \$ to 2080 US \$) as a result of the project interventions. The FGDs with both men and women have clearly stated that male respondents decide with their son how to spend income earned from irrigated agriculture and that women are excluded from this.

Land for boys, bund for girls: Based on a felt need by the women during quantitative and qualitative engagements with them, teak wood saplings were provided to be grown on the bunds of the fields. Our data suggests that these teak wood trees would be sold of later to pay for dowry for the girls. Two important insights emerged from the data: a. even if interventions are targeted to support women according to their stated needs of economic support, those can lead to reproducing gender relations of dependence despite being well intended. Focusing solely on economic empowerment excludes the need for social change through which women can become more self-reliant; b. a focus on learnings beyond the initially designed interventions can help develop gender-sensitive project designs in future.

In conclusion, there is a need for intertwining social and technical interventions which increase women's awareness, their access to and decision-making over resources. To avoid the reproduction of strict gender norms and relations and the exclusion of diverse local knowledge at the community level, mechanisms are to be developed and adjusted continuously such that communities – men and women – are empowered to participate in the decision making process at various levels and for different purposes. The gender and social analysis further reveals that when implementing watershed projects in a highly patriarchal context as in the Bundelkhand region where sex-ratios are extreme and women are hiding behind the strong presence of men, behavioural change must be recognized as an important outcome of the project and project staff be sensitized to strengthen systematic and gender-sensitive institution building, social engagement and capacity development.

1. Introduction and background

“Equity recognizes the uneven power relations between different groups in a society. Pursuing equity does not mean everyone should become the same, but that opportunities and access to vital resources become and remain equal.... SEI, 2017”

More than 400 million people in the developing world depend on dryland agriculture for their livelihoods (Ginkel et.al. 2013). Agriculture (together with allied activities) is the major source of livelihood in many developing and low-, middle-income countries. Rural women and men depend on agriculture not just for food but also as a source of income, as an asset (land and labor), as a social capital and as social status. Having said that, poorly implemented policies and practices can lead to environmental degradation and social inequity. A corpus of literature states that more than 70% of the global fresh water is used for food production, 25% of the world's land is already, or is on the way to being highly degraded and population is growing to be 9 billion and more. Such environmental losses undermine agricultural productivity as well as resilience to climate change. These negative impacts most often hit the poorest and most vulnerable smallholder farmers, especially women.

Water is most important driver for four of the sustainable development goals (SDGs) namely i) No Poverty, ii) Zero Hunger iii) Gender Equality for development and iv) Clean Water and Sanitation. Gender equity and women empowerment are human rights that lie at the heart of development and achievement of the sustainable development goals.

Watershed development faces a number of critical challenges. On one side is the growing appreciation that when it is done well, with attention to equity and local participation, multiple benefits can be expected (Brooks and Loevinsohn, 2011). Though still inadequately assessed, there is limited evidence that where production and employment have increased and extended through the year, nutrition and access to drinking water have improved and distress-linked migration curtailed (Kakade, 2001; WOTR, 2005). These effects may be contributing to enhanced child development, women's empowerment and a broad range of health benefits (D'Souza and Lobo, 2004; BAIF, 2006; Loevinsohn, 2006). These plausible benefits raise the incentive to get watershed development "right" and to further ratchet up practice. From an Indian perspective, the wider relevance of watershed development bears consideration. Without losing sight of the extreme poverty and food insecurity that persist in many dryland areas, it is evident that the understanding of what constitutes good watershed development has changed markedly over the past three decades.

In response to these intractable challenges, The CGIAR Research Program on Water, Land and Ecosystems (WLE) identifies and pilots agricultural and natural resource management solutions that enhance equity and sustainability. WLE works to transform agricultural food systems, delivering solutions that do not cause degradation, but drive the cure. Research to understand the factors that affect farmer's investment choices and decisions can support the design of context-appropriate investments that strengthen smallholder farming's contribution to poverty alleviation, food security, and equity. For example, WLE is boosting agricultural production by helping framers access ground water through irrigation technology in an optimal way without harming the environment and the resource base. Thus, parallelly WLE is developing tools and policies to protect those ground water resources from depletion, and designing programs so that women and marginalized groups share in the benefits.

Empowering people with regards to the optimal use and conservation of natural resources is the need of the hour. New policies are being implemented that permit and encourage people's management of their natural resources; e.g. land tenure, user rights, water rights, crop tenure, formal recognition of community groups and committees, privatization of communal lands, rights to the income generated from these conservation activities, etc.

As SEI (2017) opine, gender equity recognizes that men and women may have different needs in the context of environmental and development planning. However, in many cases, policies and processes fail to acknowledge gender differences – or the fact that the interests of men and women might not be aligned. This problem, known as gender-blindness, leads to policies that inadvertently skew towards the preferences and priorities of men. Gender equity signifies an aspiration to work towards a society in which women and men are able to live equally fulfilling lives, have equal opportunities to realize their potential, and can contribute equally to designing the society they want and to managing resources from which they benefit equally.

Review of past projects revealed that gender issues have been a part of watershed management projects. However, the extent to which these issues were addressed has varied and the recommended changes have not always been made. The degree of success of women's involvement has varied for many reasons, including inadequate project design with a focus on women and addressing key gender issues, cultural and social constraints which limit rural women's involvement in project activities, thus project activities have to be designed to fit the norms for a particular rural setting; and lastly policy and legal constraints as a result of which involvement of women in watershed management projects will continue to be limited.

The importance of participation and attention to equity are now widely accepted. Having said that, the role of gender and social norms and relations in uptake of technology, in this case watershed interventions, has not been studied much globally. Do technological interventions empower the communities – women, men, boys and girls – to challenge the existing gender norms and relations and bring about a desired change? Or do norms and relations influence technology uptake? This kind of understanding, insight and lessons will guide researchers and development practitioners in enhancing watershed technology uptake more widely with equity and social considerations deeply integrated in the design, development, dissemination and deployment of technologies. That's what this paper attempts to address, using a case study from a highly patriarchal community in India.

This project examines gender norms and relations in an agricultural watershed project in the Bundelkhand region in Central India. The Bundelkhand region of central India is the hotspot of water scarcity, land degradation and poor socio-economic status. The Parasai-Sindh Watershed, comprising three villages namely Parasai, Chhattpur and Bachauni villages of Jhansi district were selected for the study. In addition, two villages namely Emiliya and Kiera were also selected as control villages. The study takes a gender and social inclusion perspective with the aim to identify the status quo of water-related agricultural challenges due to gender norms and gender roles in three villages, and to examine in how far the watershed project interventions could address these towards both improved agricultural productivity and women's empowerment. The project adopted a mixed methods approach to understand the gender and social norms existing in the study regions and how the watershed intervention has either enhanced the agency of the rural poor to challenge the existing norms or reinforced the norms. A socio-economic survey in understanding perceptions

and perceived efforts of various stakeholders in addressing gender aspects at various levels of watershed implementation programs was implemented. A situational analysis of gender aspects particularly women's role in watershed development programs is illustrated and lastly identify action points at various levels in addressing gender balance in the watershed development Program.

Structure of the Report

The report is structured is divided in to seven Section - 1: Introduction; Section - 2: Methodology; Section - 3: Results and Discussion 4: Conclusions and 5: way forward and recommendations 6: Annexures . Annexures include data tables, survey instruments used, team composition, list of the farmers in selected villages. The quantitative study is done at household level while qualitative survey is at community level. The qualitative survey includes focus group discussions (FGDs) on initiation, implementation and success of watershed program as well as comparison with other locations wherein watershed project was not initiated.

2. Methodology

Study locations and sample

As reiterated earlier, the aim of this study was to understand the gender norms and the gender dynamics in watershed areas. In Bundelkhand region, three watersheds covering three villages and two control villages were selected for the study (Figure 1). While selecting the watersheds care was taken to ensure, wherever possible, that they represent the watersheds implemented under ICRISAT and also by different agencies both government and civil societies. In this case study, the Central Research Institute for Agro-Forestry (CAFRI) was the main collaborating partner. The watershed interventions were implemented by CAFRI in consultations with biophysical scientists of ICRISAT and CAFRI and to some extent the local communities. During this process, in most of the consultations men from the communities actively participated in these discussions. Women, could not participate in these consultations for several reasons which are elucidated in this report at different point. The sample of the survey was drawn from Jhansi of Bundelkhand region wherein watershed implementation was completed. Sample includes three treatment villages namely Parasai, Chhatpur and Bachauni and two control villages namely Emiliya and Khaira wherein no watershed projects were implemented. A brief profile of the selected villages is given in table 1. As can be seen from the table, data was generated from 35% of the sample households in the three treatment villages put together and from 11 % of the sample from the control villages . Stratified random sampling method was adopted in drawing the sample from the study locations. Data was generated from 572 respondent individuals for the quantitative interviews. Qualitative surveys were implemented in all the locations with more than 80 individuals. In addition to this key informant interviews were also undertaken to elicit information about some historical aspects of the village. Thus, a total of about 700 respondents were contacted to gather information for this study.

Data collection

A team comprising of ten investigators was engaged for field investigation. This team has members who have experience of conducting research; implementing watersheds and fresh agricultural graduates. The research team was given thorough training on the objectives and methodology of the study. Special care was taken during the training to avoid errors in filling the schedules, to this end mock exercise was facilitated by providing conceptual clarity of each parameter. This helped the team to understand about the schedules; how each schedule should be administered and process of

recording responses. The data collection in five villages was completed in a period of three months between September- December 2018.

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Table 1. characteristics of study locations and sample selected						
Village/characteristics	Parasai	Chhatpur	Bachauni	Imiliya	Khaira	Total
Total number of households in the village	213	150	275	272	304	1214
Total number of households selected	85 (40% of total)	59 (39 % of total)	78 (29% of total)	35 (13% of total)	29 (10% of total)	286 (24% of total)
-*Large farm size (%)	35.29	30.51	29.49	22.86	17.24	
-*Medium farm size (%)	15.29	35.59	23.08	22.86	6.90	
-*Small holder farmers(%)	31.76	27.14	17.95	17.14	41.38	
-*Landless and labor (%)	17.65	6.78	29.49	37.14	34.48	
No of women interviewed	85	59	78	35	29	286
No of men interviewed	85	59	78	35	29	286
Average family size	4.22	4.59	3.51	3.39	3.86	3.91
Watershed intervention village	Yes	Yes	Yes	No	No	
*Note: Farm size calculations based on gross Sown Area. The classification is as follows: Labour and landless – 0-2Acres; Smallholders->2-4Acres; Medium holders->4-7Acres; Large holders->7Acres						

Survey instruments

Three survey instruments were administered in the field Viz.,

Schedule-1: Quantitative Household Survey, administered to an adult man and an adult women in the selected households. These adults are responsible for decision making in the household

Schedule-2: GILIT tool Geography of the Watershed Area. This information was collected from key informants in each of the treatment villages ie., Parasai, Chhatpur and Bachauni

Schedule-3: Detailed Qualitative Study on “Gender in Watershed” context through Focus Group Discussions for men and women. In each village 2 FGDS were conducted thus total of 10 FGDS in the five locations.

The data collection was undertaken using digital tools and separate software programs were prepared in English <https://manage.mysurvey.solutions> for Household Survey and Focus Group Discussion on gender equality context schedules to make the data collection easy. According to these programs, data was collected for pre and post watersheds scenarios using tablets (Lenovo make). In addition to this, geography of the Watershed Area was collected from key informants in each of the treatment villages ie., Parasai, Chhatpur and Bachauni

Schedule 1 was intended to assess the status of respondents due to the watershed intervention/no-intervention in terms of physical, biological, economic and social factors. This schedule was administered by trained field investigators for the selected farmers in each sample watershed. Information for this schedule was collected by conducting personal interviews.

Schedule 2 deals with the changes occurred with watershed program as an impact as perceived by the beneficiaries especially in terms of gender equality context in terms of water shed scheme equal access to resources such as land, water, labour and technology using the Gender in Irrigation Learning and Improvement Tool (GILIT) tool developed by International Water Management Institute (IWMI). Also looks in detail at men’s and women’s opportunities to participate meaningfully in watershed scheme governance including membership, leadership opportunities and decision

making and finally delves deeper on the benefits of the watershed scheme to men and women. This Schedule was administered with about 30-40 men and women farmers in each selected watershed on random sampling method through Focus Group Discussions. Later on these sample farmers were categorized as per their caste and class category.

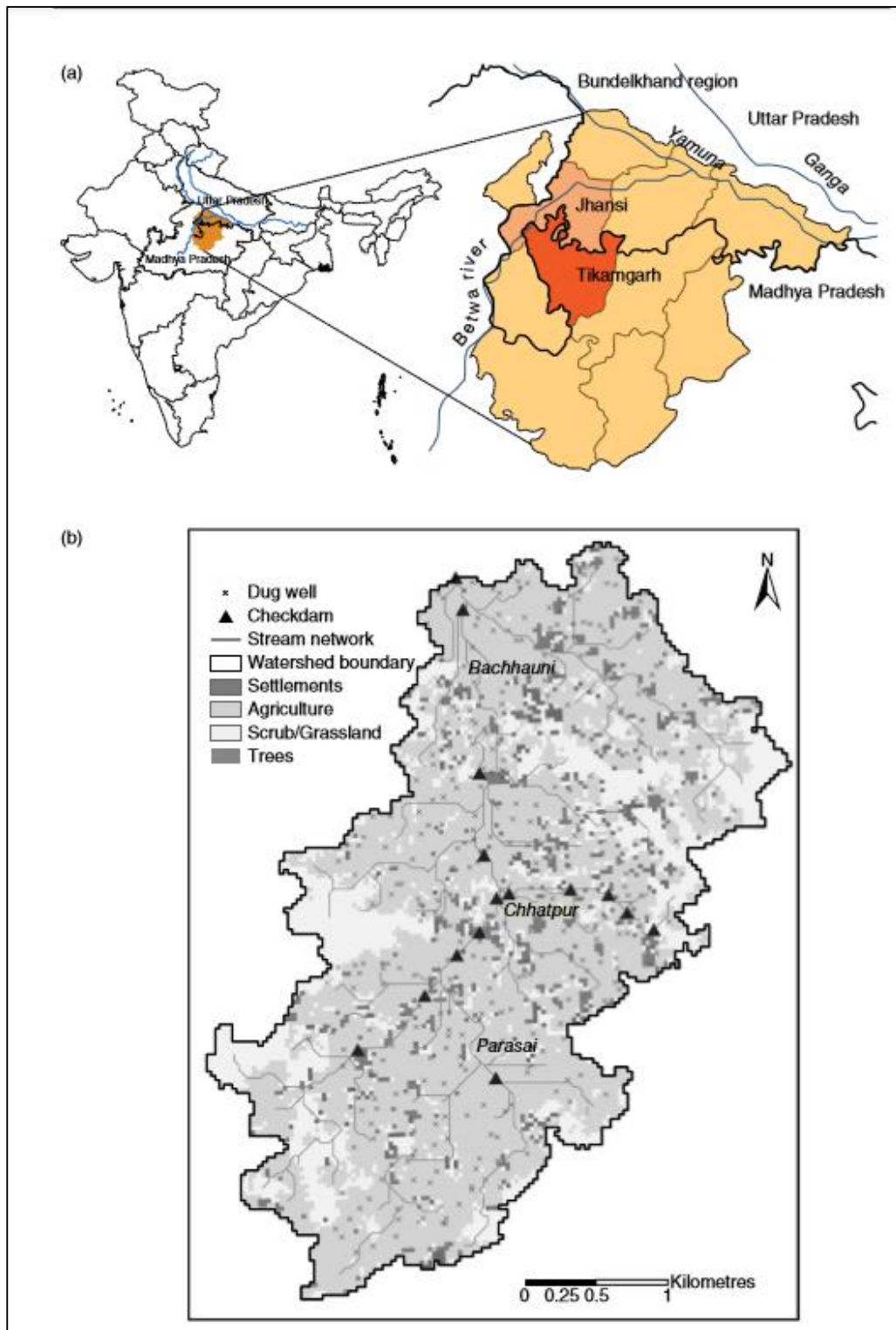


Figure 1: a) Location of Bundelkhand region b) Location of the three villages-Parasai, Chhatpur and Bachauni villages

Source: Wani, S. P., & Raju, K. V. (Eds.). (2018). *Corporate Social Responsibility: Win-win Propositions for Communities, Corporates and Agriculture*. CABI.

3. Results from quantitative survey

This section presents the a snapshot of the results from the household survey conducted in five villages of Bundelkhand region of Jhansi. About 222 households in three selected treatment villages while 64 households in control villages were interviewed by the trained male and female investigators.

Demographics

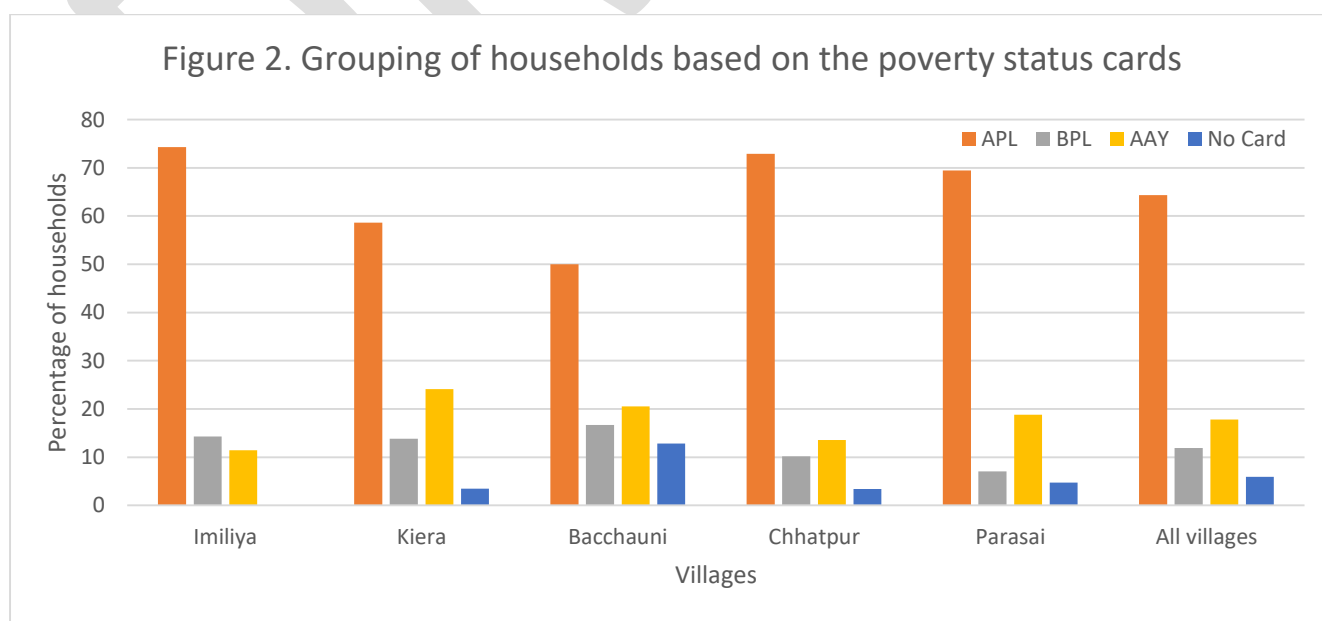
Household headship and decision making: To understand the type of the households, the headship in the households were listed out. In all the locations, majority of the households had both male and female adults who are involved in the everyday running of the farm and household and were involved in some way or the other as decision makers. By decision making, it was made clear that any adult member of the household who participated in the decision making process of who took the decisions for the household – on all or any aspect of farm and household dynamics. As can be seen it table 2, overall in 21% of the households, the male members were solely responsible for all the decisions made for their households. In the control villages this percentage was higher compared to the treatment villages though this may not be a significant difference (27% and 19% respectively). The jointness in decision making that was reported in 78% of the households does not mean that both women and men participated in the decision making process equally but the minimum was that they were informed about the decisions. Understanding the jointness in decision making is a research issue that can be studied further and it is beyond the scope of this study.

Village type	Villages	Male and female adult	Female adult only	Male adult only	Total
Control	Imiliya	63	0	37	100
	Kiera	86	0	14	100
Control Total		73	0	27	100
Treatment	Bacchauni	82	0	18	100
	Chhatpur	80	2	19	100
	Parasai	78	1	21	100
Treatment Total		80	1	19	100
Both control and treatment combined		78	1	21	100

Literacy: About a little more than 1/3 of the members were illiterate, with an equal percentage of members in the household who had education upto secondary level and above (table 3). The control villages had higher literate members compared to the treatment villages. (similar table by gender to be inserted)

Village_type	Villages	Illiterate	Primary Level	Secondary Level	Others - technical, intermediate, graduates and above
Control	Imiliya	32	22	37	9
	Kiera	34	15	39	12
Control Total		33	19	38	10
Treatment	Bacchauni	46	26	24	4
	Chhatpur	44	24	27	5
	Parasai	35	19	35	10
Treatment Total		41	23	29	7
Both control and treatment combined		39	22	31	7

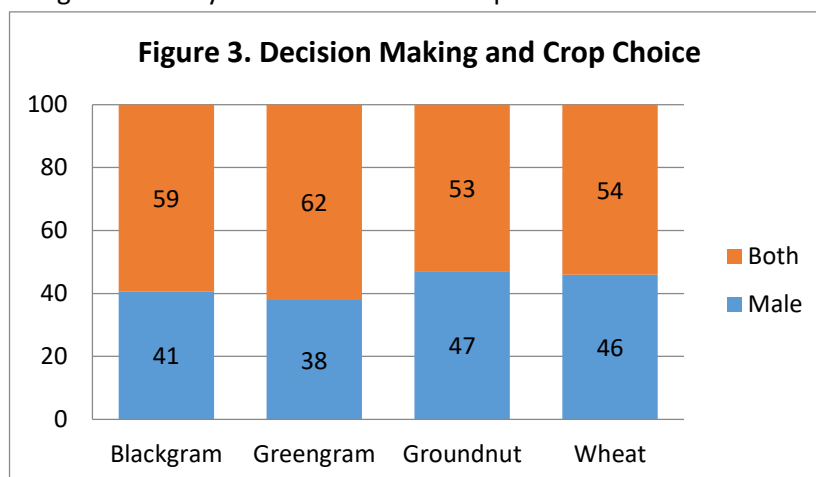
Caste/social grouping: In terms of caste categories, the majority of the selected sample belonged to backward class (61 percent) and scheduled class (27 percent) followed by forward caste (11 percent). Hinduism was the dominant religion in all the locations. A grouping based on their poverty status (as determined by the state governments) revealed that majority of them were above the poverty line and were in possession of Above Poverty Line cards (APL), followed by Below Poverty Line (BPL) cards and Antyodaya cards (AAY) which are meant of the elderly person, for procuring benefits from the Public Distribution System (PDS). (Figure 2). From this data it can be inferred that majority of the households do not benefit from the PDS scheme as the grains are given on subsidy only to the BPL and AAY card holders.



Agriculture

Cropping pattern and decision making: In terms of cropping pattern, most commonly grown crops in rainy (Kharif) season are groundnut, black gram, green gram and wheat, fodder crops, mustard, sesame and maize in post rainy season. Farmers continue to grow water intensive crop like wheat while blackgram, greengram are grown mostly for household consumption.

Upon the analysis of the data on crop choice and decision making at the household level, it revealed that in majority of households, the decision about the crop choice was taken by jointly by both women and men (Figure 3).

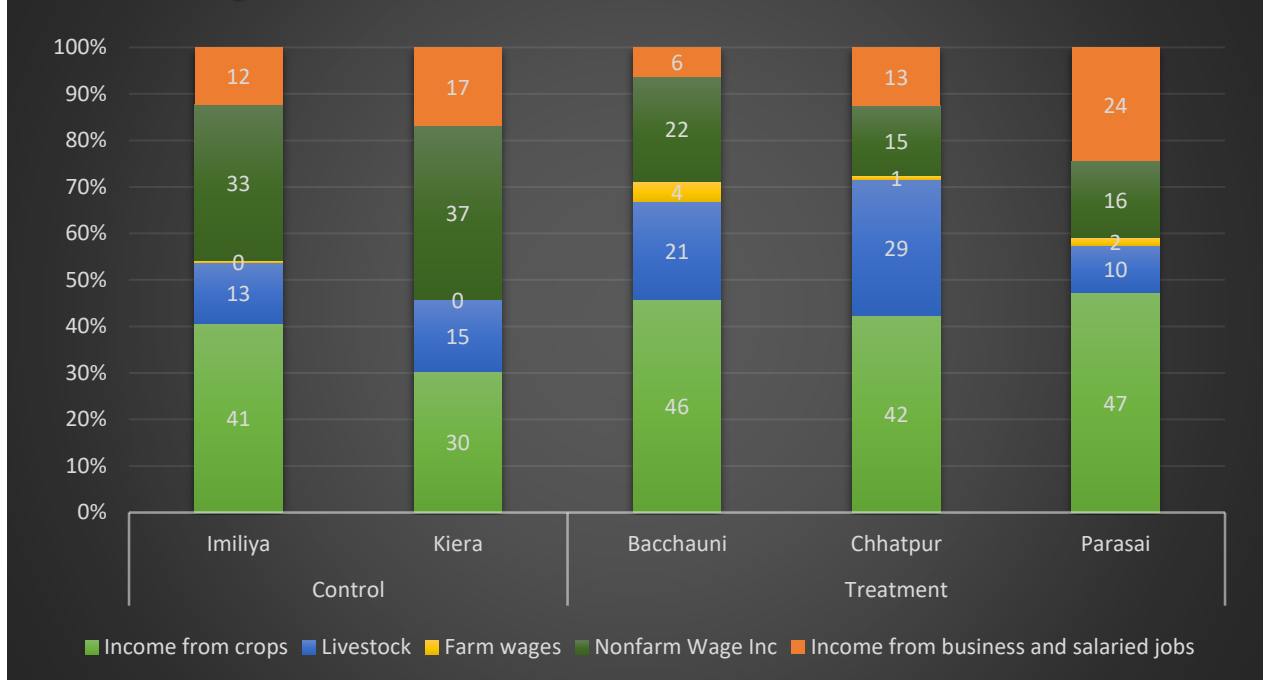


Sources of income: The survey revealed that there was diversification on livelihoods and thus a diversification of income from different sources. As can be seen from table 4, in the control villages income from farm activities and from non-farm activities was equal, whereas in the treatment or the watershed intervention villages, farm income was about 67% and income from non-farm source was about 33%. This shows that agriculture and allied activities are practised in the treatment villages and these are a result of the watershed interventions which has resulted in ground water recharge and availability of water for longer periods during the year.

Village type	Villages	Farm income (% to total income)	Non-farm (% to total income)
Control	Emilie	54	46
	Kiera	46	54
Control Total		50	50
Treatment	Bacchauni	71	29
	Chhatpur	72	28
	Parasai	59	41
Treatment Total		67	33
Control and treatment group combined		63	37

An activity wise income share reveals that the treatment villages have a good percentage of income from livestock and also business and salaried jobs. Income from livestock rearing and sale of milk is more in the two villages which are in the middle and tail end of the watershed compared to the village on the upper portion of the watershed (figure 4).

Figure 4. Share of income from different sources, 2018



4. Results from qualitative surveys: focus on gender norms and relations

Access and Awareness - the biggest binding constraint for women: The focus group discussions revealed that none of the women in all three villages namely Parasai, Chhatpur and Bachauni were aware of the implementation of watershed program in their region. Discussions with the though two women whose names were listed on the watershed committee revealed that they were informed that watershed interventions were planned in the three villages. They were not consulted neither were part of the discussions about the watershed activities planned in their villages. The strong patriarchal norms that exist in these villages may have assumed that women need not be involved in the details of the discussions because they do not know or understand anything. Women may have also expressed inhibitions to join the discussions because of the gender and the social norms. A good wife as discerned from the discussions with the men is one who does not sit at par with men in public meetings and participates in the discussion.

Having said this, women on the other hand felt that if they had been invited separately and a meeting organized in a location in the village where women can freely go, they would have definitely participated in the discussions. The women were aware that check dams were being constructed but did not know the reason for the interventions, the benefits that will accrue to them and also their own perspectives about water. If women were consulted on this issue, they would have first

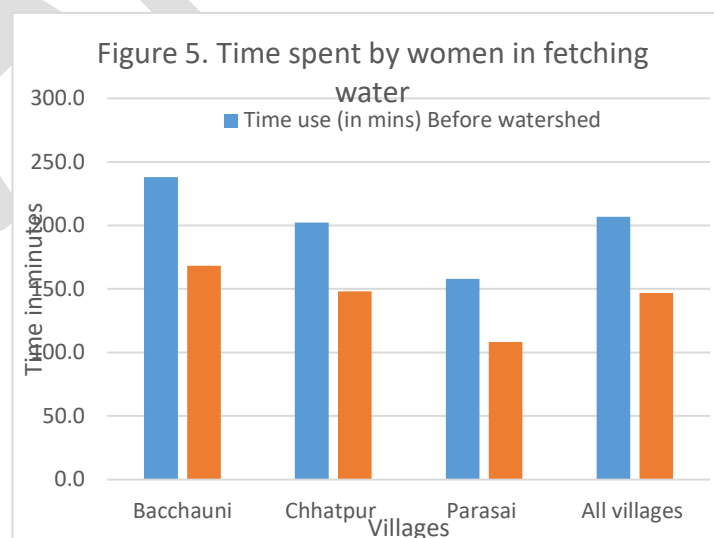
understood the benefits from the watershed technology and then they would have expressed the binding constraints they face in the village because of the gender and social norms. The biggest and the most binding constraint according to the women was access – access to information, access to new technologies, and resources.

Women are not a homogenous group. This was reiterated by the women time and again during our consultations with them. Women who belonged to households where the men had participated in the discussions with the scientists from ICRISAT and CAFRI had some knowledge of the planned interventions and also some of the benefits that would accrue from these interventions to the households of the three villages. They had gathered this information either from their household members directly or when their family members were having discussions with other men and discussion the issue. However, they also expressed that they did not fully understand how it will benefit the women in particular and that what kind of changes will be realized in the communities. Similarly, older women were able to talk to men in informal conversations about the interventions planned and their role in improving the water availability in the areas. Sometimes this information would trickle down to the young women ie daughters, daughters-in-law and other young women.

Drudgery and time use in fetching water for domestic consumption and use: The focus group discussions revealed that the constructions of the checkdams have resulted in reducing drudgery for women especially in fetching water. Women had to walk long distances to fetch water for domestic use and consumption. Now with the ground water recharged due to the dams, both the time as well as the effort in fetching water is reduced for women (Table 5, figure 5). Compared to the period before the watershed intervention, women were spending about 30 % less time of the total time

Village	Time use (in mins)		% time saved post watershed interventions
	Before watershed	After watershed	
Bacchauni	238.2	168.3	29
Chhatpur	202.2	148.1	27
Parasai	158.0	108.3	31
All villages	206.9	146.8	29

spent for fetching water.



Having said that, in terms of changes in the gender norms and relations, there has been no observed difference in this case. The strong patriarchal norms continue to be in force and continue to be accepted by both men and women in the study region. Literature cites a study in Nepal on forests and forest uses. Women were responsible for fetching firewood from the forests. This was both time consuming and painful for the women. As part of an intervention, one of the conditions the study introduced was price for the firewood and it was decided in a participatory manner that for each headload of firewood, a minimum amount of Rs 5 have to deposited in the group account created for forest users. This changed the gender dynamics and the norms in the study region. The men started gathering and carrying the firewood as they are able to carry bigger loads as compared to the women. Thus women, who have been for generations carrying firewood, were freed of this task and could contribute in other activities. Similar to the Nepal study, if innovative solutions are sought in consultations with the communities especially the women – both young and old - the watershed interventions will prove to be more beneficial for women and the communities as a whole.

Livestock rearing – benefits and challenges for women: With water availability all year round in the treatment villages, the numbers of livestock has increased by about 40-50%. This is more so for the milch animals. Traditionally the Yadav communities kept livestock in their homesteads or as an enterprise in large numbers. What was interesting to observe was that the availability of water has now allowed other community households and other social groups including SC and ST communities to keep a few milch animals at home and in some cases more numbers as well. In terms of gender dynamics, the workload for women increased as women are primarily responsible for taking care of the animals as well as getting fodder from the fields on a daily basis. The incomes have increased from the sale of milk and it was also reported that milk consumption has gone up – especially for those who could not afford milk earlier. This is a positive outcome. Depositing milk at Jhansi and collecting the monetary benefits was the task of the male members of the household. Though women are putting in more work in tending to the animals, it is not clear whether the income goes into their hands. Do women control the sale of milk? Can they make decisions on the use of the additional income? With more income, has the agency of women improved/enhanced? Are they able to challenge the existing gender norms? Intersecting this with other diversity indicators like age, social groups etc will be an interesting discussion. These are some of the questions that need some additional deliberations.

Insert table here

Agro-Forestry interventions – prospective or restrictive: It was revealed that CAFRI introduced agro-forestry interventions in the study locations especially planting saplings on the bunds of the field. These saplings were meant for the girl children. This is a very good intervention. What needs to be understood is how the sale proceeds from the sale of the full grown trees will be used. Will the gains be used as dowry for girl children? If so, we are kind of reinforcing the restrictive social norms that girls are commodities that are to be married off with money. Behaviour change is the key here and women along with men have to be empowered so that decisions are made such that the rigid gender and social norms can be challenged for bringing about social change at scale.

Qualitative results from the Focus Group Discussions using GILIT tool

The Gender in Irrigation Learning and Improvement Tool (GILIT) (Lefore et al. 2017) seeks to blend the best practices of previous research, and existing tools and indicators, with the principles promoted through the various regional and global strategies for addressing gender equity in irrigation. GILIT provides the basis for indicators useful to assess and improve performance at scheme level consistent with national and regional goals on gender equity, even where existing social relations in communities may not be gender equitable. At the same time, the tool targets issues that would be within the control of project or scheme management, thereby aligning field- or scheme-level practices with national and regional policy. In this case, scheme management refers to the multiple levels of organization that are responsible for structuring access to irrigation scheme resources. This includes land, water, technologies, inputs such as labor, fertilizer, pesticides, and market information or marketing services, as well as membership in those organizations. It includes Water Users' Associations (WUAs) and the higher level councils or boards in which WUAs are represented. It may also include the sections or departments within government ministries that are responsible for interfacing with irrigation schemes.

In brief, the tool focuses on three areas for learning and improvement that research highlighted as key issues influencing levels of equity in irrigation investments. These relate to men's and women's:

- i. *access to irrigation scheme resources (including information, land, water and other inputs);*
- ii. *participation in scheme management; and*
- iii. *access to scheme benefits (including market information, packaging and payments from product sales or processing).*

Results from Women and Men FGD

The present study interviewed men and women of the three selected villages namely Parasai, Chhatpur and Bachauni of Jhansi district of Uttar Pradesh, India. wherein watershed program has been implemented. The participants included Water User Association Members, Secretaries for the check dams and men and women farmers. In total, the study tried to engage female and male farmers, water managers and water users as respondents, who are often not equally represented across water user groups, farmer organizations and water management institutions. Women face greater constraints to production through lack of access to assets, resources and services. Women do not have access to benefits such as credit and extension services, as well as technologies and other agricultural inputs.

Men and women are not aware of and knowledgeable about national policies, acts, regulations and goals that prioritize equitable access to resources, participation and benefits between men and women in all the three villages namely Parasai, Chhatpur and Bachauni village wherein the watershed project was implemented. Low knowledge of gender equality concept is attributed to their low literacy levels. The programs sustained at national and local level were not disclosed to women by the local governing body i.e., gram panchayat. None of the women participated in the elections of gram panchayat. The watershed scheme/project aimed to ensure equal benefits for both men and women from access to water. However, strong inherent gender norms did not allow the women to either participate or share the benefits. The women came to know about equal rights for men and women through the bank officials when they approached the bank for the loans (this is limited to very few women in Bachauni who visited the bank). The detailed results are further discussed under the subheads given below:

Access to Scheme resources

Men and women often have different initial levels of attributes, resources, and capacity and are not always equally able to meet association or scheme membership criteria, but the process of establishing the water users association and the irrigation scheme should be inclusive and not discriminate on the basis of sex. The inherent gender norms that women should not be seen by outside men, should not speak in front of men and elders has left behind the women in the watershed scheme even though the two women have been listed as the members of the project nominally on the paper that too in only one village i.e., Parasai. The scheme planners never ever met with women stake holders. It is evident with the women across three villages echoing the same statement given below

“बड़ी बड़ी गाडी से लोग आते है, सब आदमी से मिलकर बात करके चले जाते है, हमसे कुछ नहीं पूछते है”

“Badee badee gaadee se log aate hai , sab aadamee se milakar baat karake chale jaate hai, hamase kuchh nahin poochhate hai”

“People come by a big car, and discuss with men and go away, do not consult us(here women) on anything”

Mahila ko yeh sab kaam se kya lena dena, yeh kehkar chup kara diya jaata hai

Women do not need all this information, saying this their participation is curtailed

Even though the men during the Focus Group Discussion claim that they inform women about the meeting. At the same time they even disclosed that usually women cannot come to the meeting place and all the more can't speak in front of the men. They also opine that women do not know much as they are not educated much and they do not know much about the irrigation and watershed or check dam apart from the household chores.

Only leaders were involved in discussions along with planners of the water shed project; unfortunately all or nearly all were men to discuss site location, design and proposed technologies. There are no women groups either self-help groups or informal groups in all the three villages, thereby no women's groups were contacted and no suggestions poured in from women during the site location and designing stages of the watershed program.

Once again the women were never included in discussions about land or plot allocation and only men or no community members were included in discussions of land availability or land allocation. Even among men, only those individuals whose land is being used for the construction of the check dams, the farmers near or along the check dam from the starting point till the tail end were informed and involved in the discussions. Majority of the villagers were unaware of the water shed program. However, women felt sad that they are not informed about nay happening or development in their own villages. We are kept aloof from this kind of information.

During the scheme or system design process, or during later interaction with members, no information was collected from women regarding the men's and women's different water needs for domestic/household use

Usually hand pumps are the source of domestic water and for those who do not have access to them, open wells continue to be the source of drinking water. Women confirm during the FGDs that they came to randomly about the check dams (popular name of watershed program) and opine that they are meant for irrigation purpose only. Both men and women suffer during water shortage.

Women have a bigger responsibility of securing water for domestic use and drinking purposes for humans and livestock as well while men have the responsibility of securing irrigation to the crops. However, information was gathered only from men or from no community members regarding domestic water needs.

During the scheme or system design process, or in the current scheme operations, men's choices on crops and the different water needs for agricultural production were considered. Information was gathered only from men regarding water needs for agricultural production. Women were not consulted and women revealed that there was no change in the choice of the crops before and after the checkdam construction. The framers especially men decide on water intensive wheat crop based on the irrigation available especially those who are in proximity to the check dam while the tail enders or those farmers whose farms are away from checkdam go in for gram cultivation. Whatever men decides to grow women support them during the production process.

Women community members were not involved in discussions regarding site operation and maintenance plans of the watershed program across all the three villages. Scheme management provided no supplementary support to men and women to overcome agricultural production and marketing constraints in these villages. Informal need based suggestions were given to men upon their enquiry.

Access to Scheme Membership, Leadership Opportunities and Decision-Making

This section addresses men's and women's opportunities to participate meaningfully in scheme governance, e.g., to join a scheme, to become members of a scheme's user association, and to hold positions of leadership within those associations.

All the watershed scheme members are men even though in Parasai village two women were nominally included as members on the paper only. Literacy rates are low, particularly for women and men never wanted women to know about the watershed program due to inherent gender norms as stated by men during the FGDs:

"महिलाओंको कम पूछा है और वो पढ़ी लिखी भी नहीं है।"

"हमारे समाज में रीति रिवाज़ के अनुसार महिलाओंको बहार आने से मना है।"

"महिलाये घूँघट ओढ़ेके है और किसी मर्द या बड़े बुजुर्ग के सामने नहीं बात करते है।"

"Women are usually not consulted and they are illiterate."

"According to tradition and customs of our society women are not allowed to come out."

"Women always wear veil and do not talk in front of the outside men or village elders."

Scheme or association by-laws have specific requirements (for example, membership is open only to heads of households, plot owners, or positions held primarily by men) that result in no women members. No Women contributed to writing the scheme by-laws. By-laws are written and posted and only the watershed committee members knew about them. Only men re entitled to land rights and women are oblivious of the land entitlements. Even if some women are plot owners, they are

not even aware of it. Mostly men are involved in elections and voting in the watershed committee. Women were never informed nor involved in this process.

Unfortunately men stood for leadership positions in the most recent elections and only men held the leadership positions: President; Vice President; Treasurer; Secretary and women were not involved in any decision-making roles. Women were always excluded from the whole process of election. From the FGDs it was revealed that neither women nor men received gender-awareness training to better understand and represent their constituents' needs with regard to watershed program. And the watershed scheme did not provide any training or information to women scheme members. At the outset, women were never called in for meetings and in case women participated (as indicated in Parasai village only) women never state their opinions in group meetings due to strong gender norms.

Access to Scheme Benefits

This section addresses how well (or poorly) irrigation scheme management and/or an associated farmer/producer association offers to both men and women equally: payments, marketing support, extension services, and other forms of assistance.

No regular discussions or decisions about water allocations made based on women's uses of water are made. Throughout the year (or during some months of the year), women are most affected by the decrease in water as they are responsible for securing the water for domestic use and for livestock rearing. It adds drudgery to them as they need to spend more time in collecting water. And water restrictions negatively affect the women more than the men. Men are only responsible for securing water for irrigation. Whoever is nearer to the checkdam has access to irrigation while others manage through their open wells. Irrespective of the watershed program, women either have to reach out to open wells or hand pumps that are about 1-2 kms away for fetching water. Mostly women and children above 10 years are involved in fetching the water. During water scarcity, anyone take the livestock near the checkdams for cleaning and drinking purpose. However, checkdams are usually constructed a little far away from the village and it takes time to make it happen.

To some extent women know that checkdams increase ground water level thereby the open wells have enough water that is sufficient to meet their domestic needs.

From the analysis of the FGDs, it was revealed that women had very low access to information. Some of them do have access to television but mostly for entertainment purpose. However, women lamented that they do not have enough leisure time to watch television or listen to radio. Women don't have ownership of the mobiles but they use mobile devices of other household members usually men. Even in farming, men take most of the decisions in terms of crop to be grown, and different agricultural operations. Very rarely women are heard in these decisions. Even with the advent of watershed program, there is neither change in the cropping pattern and it continues to be the same nor any new technologies have been adopted.

Women were usually not provided with information on trainings and/or trainings are not held at convenient times and/or not held at convenient locations for women to participate. During the FGDs, it was observed that few women (4-5 numbers) from Chhatpur and Bachauni village were taken to ICRISAT, Patancheru Women Farmers Day as a part of the Exposure visit. But they were not the watershed committee members and the other women in the village were never consulted for the visit. The women who participated also never attended any other meetings in the village. No

support services were provided through the watershed scheme related to product collection, sorting or marketing, however informal advisory role was played by the scientists and the scientific officers involved in the watershed project. In these three study villages, watershed program does not contract out any services such as input suppliers, processors, packagers, transporters, and exporters.

Particulars	Parasai		Chhatpur		Bachauni	
	Men	Women	Men	Women	Men	Women
Access to scheme resources	Low	Low	Low	Low	Low	Low
Access to scheme membership, leadership opportunities and decision-making	Low	Low	Low	Low	Low	Low
Access to scheme benefit	Low	Low	Low	Low	Low	Low
Notes:						
Low: Scheme approach to gender equity show little or no sensitivity; requires attention and redress.						
Medium: Scheme approach to gender equity shows some sensitivity. Statements with low scores require attention and adjustment to related activities.						
Excellent: Scheme approach ensures that men and women participate in scheme management and leadership and can access scheme benefits. Monitoring is suggested to ensure continued gender equity.						

Key Issues and Lessons for Statements with Low Scores

Based on the inferences from the qualitative discussion using the GILIT tool it was observed that Women are underrepresented as scheme participants and are formally disadvantaged in participation. Women face gender-based constraints to participation, scheme management, and/or access to scheme services that result in lack of equal access to benefits.

Feedback for Suggested Actions to Improve Low Scores

The selected locations in Jhansi Bundelkhand region area is a typical male dominated patriarchal society. Strong inherent gender norms that limit or restrict visibility, mobility and communication of the women within the household and village. Low literacy rate among the women is also one of the contributing factor for low gender equity. The women participants expressed their interest in participating in development initiatives in their village. They urged for proper access to information, involvement and regular meetings in order to increase their awareness. They were also enthusiastic to form groups even though the caste and class system plays a major role in the formation of groups. The results revealed that women were excluded from the whole watershed scheme from the commencement till the establishment as well as its maintenance.

Qualitative results from the Focus Group Discussions- Control Versus Treatment Villages

Focus group discussions were conducted for a mixed group of women (caste and class) and men (caste and class) in all the five villages by the trained investigators using a checklist of questions.

Control villages: Emiliya and Khaira

Treatment villages: Parasai, Chhatpur, Bachauni

Even though watershed program was not implemented in the Emiliya village, there were few check dams that were built as a part of the government initiative. Majority of them were involved in agriculture, livestock rearing and allied activities. Women continue to be involved in household activities along with farming and livestock rearing. During the scarcity of water, village Pradhan arranges for water tanker and it is equally distributed among the villagers. Every day, women travel a distance of about 1-2 kms for procuring water. No self-help groups have been formed in this village. In this village not many hand pumps exist thereby open wells continue to be the source of drinking water by many households in the village. Also there is no government high school in the village thereby limiting the education of children especially girls only till primary education.

In case of Khaira village, tap connections are available and the water is available at household level only. Very rarely, during summer time, women have to fetch water from distance. There is lot of drudgery reduction for women. Its been about 6-8 years that they have had tap connection. The village women or men do not have an idea about checkdam or watershed program. Compared to other villages, literacy rates are better in Khaira. Lack of irrigation is not an issue but loss incurred due to stray cattle grazing the field crops is high.

Parasai village is known as “Paaniwala Gaav” meaning “Village with water”. Watershed program is known as checkdams in vernacular language and traditionally known as Haveli. Majority of the population in Parasai village depend on farming and livestock and its allied activities. Even today, women wear veils in front of outsiders, not allowed to speak in front of men or elders and their mobility is restricted. Literacy rates continue to be below however both boys and girls of the present generation are being sent to school. Hand pump is the main source of drinking water and domestic use. There are no SHG groups in the village nor any women were involved during the implementation of watershed project. Eventhough some women know about the check dams, and explained that they were built by contractors from outside the village. Men in Parasai village knew about the significance of watershed program and indicated that it enhances the ground water levels and thereby helps in agriculture.

In Chhatpur village, watershed is widely known as Checkdams. The women were not aware of the watershed committee nor the project. Literacy rates especially among the women continue to be low. Women feel that they did not benefit from the watershed project as the checkdams are built faraway from village and they have to invest a lot of time if they have to take their cattle or livestock for cleaning and drinking purpose during water scarcity. Men who were involved in the watershed committee responded that it benefitted them a lot especially during the drought.

Bacchauni village is the tail end of the watershed project and here also checkdam is widely used term for watershed program. Mostly less water intensive crops such as black gram, green gram and groundnut are grown except for some farmers who have irrigation who prefer wheat. None of the women were aware of the watershed program. Water for domestic use is drawn from handpumps only. Securing water from hand pumps involves lot of time and energy of women and gives them less time for leisure. In case of lower income groups, women may lose their daily wages because of delay in fetching the water.

5. Conclusions

Although Parasai, Chhatpur and Bachauni, were involved in the watershed project or scheme, Parasai is much better-off in terms of benefits incurred as well as the infrastructural facilities. All the three villages have experienced water scarcity due to persistent droughts but development of watershed benefitted them from facing acute scarcity of water. In all the villages, several water

harvesting structures have been constructed in the past to ease the water situation. These water harvesting structures include the check dams, Bundela tanks, step wells, village ponds, haweli bundhies etc. Many of these structures, however, are currently in a state of neglect and are no longer able to harvest water for use during dry periods. This is because of lack of maintenance. Gender equality concept does not exist in the male dominated patriarchal system that is still going strong in these villages. Low literacy among women, exclusion through non communication with outsiders and with men, restricted mobility of women has led to zero participation of women in the watershed project. Women however have a random idea of checkdam but the significance and the utility of them is not known to them. Based on the qualitative studies in these three villages on gender and watersheds, to analyze the achievement of gender equity for women through integrated watershed management approach, the following issues need to be addressed. Most important need is to make available the technical know-how and do how for the women groups. As functional literacy is able to enable the members and leaders to act collectively and harness the benefits, efforts must be undertaken to achieve higher functional literacy for women through quality trainings. Enhanced awareness of women's rights through deliberate efforts is critical for sustainable development of watersheds by harnessing the women power equitably. There is a need to involve younger generation of women in building up the social capital. There is need to harness the gender power through harmony in the watersheds at all the levels starting from the household or family to watershed. The new common watershed guidelines provide resources and policy support to address issues of gender and vulnerable groups' equity. However, without concrete actions by the implementing and co-ordinating agencies these provisions would not mean much.

Efforts for gender mainstreaming are required to bring social, cultural and attitudinal changes which not only strive for ending the invisibility of women's contribution to agriculture and its allied activities, but of eliminating the drudgery that impairs the lives of millions of working women in India. It is important to recognize that women's empowerment through technologies can raise their status only through a meaningful stimulation. There is therefore, needed to have the participation of women at every level in decision making, program formulation and implementation. There is a need to tailor technologies to meet the needs of women agricultural workers- and to make them cheap enough for women to access. The technologies that are reducing drudgery of women must be publicized through the media and as an extension activity. These need to introduce them into the capacity building programs for reducing drudgery and increasing output of women workers.

6. Way forward

Community participation is an important aspect of watershed development programs, and it is necessary to include equity and gender parity into the program design itself. Inclusion of women and resource poor is of paramount importance for the watershed development to become truly participatory in both implementation and impacts. Equity gaps remain mostly in the areas of a more inclusive communications strategy to reach poor households, and in the timing of the integrative process between public awareness, community participation, training, and technical sub-projects from the planning stage and in consideration given to the quantum of time needed to engage community buy-in before implementation. The recommendations by the present study bring out the key actions that need to be taken urgently by the various stakeholders to promote gender equity:

- Promote integrated water resources management approach by including men and women
- Foster local institutional development and capacity building without any gender bias
- Focus extensively on awareness raising activities across gender

7. References

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