Research Article

DOI: 10.59490/ijwg.11.2024.6693
ISSN: 2211-4505

TU Delft OPEN Publishing

Inclusive Participation in Integrated Watershed Development Programmes: Insights from Bundelkhand, Central India

Padmaja Ravula[1], Ananya Chakraborty[2], Kavitha Kasala[1]*, Anthony Whitbread[3]

[1] Global Research Program on Enabling Systems Transformation (EST), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Patancheru, Telangana, India [2] Climate Resilience Practice, World Resources Institute (WRI), Hauz Khas, New Delhi, India [3] Global Research Program on Sustainable Livestock Systems, International Livestock Research Institute (ILRI), Box 34441, Dar es Salaam, Tanzania
* Corresponding author: kavitha.kasala@gmail.com

Submitted: 05 August 2022; **Revised**: 5 April 2023, 23 January 2024; **Accepted**: 10 April 2024; **Published**: 19 June 2024

How to cite (APA): Ravula, P., Chakraborty, A., Kasala, K., & Whitbread, A. (2024). Inclusive Participation in Integrated Watershed Development Programmes: Insights from Bundelkhand, Central India: Lessons from Integrated Watershed Development Programs in Central India. *International Journal of Water Governance*, *11*. https://doi.org/10.59490/ijwg.11.2024.6693

Abstract

Watershed Development Programmes (WDP) in India primarily focus on improving ecological landscapes in semiarid regions, despite policy guidelines that call attention towards improving community-level participation. Local-level hierarchies based on caste and gender inhibit equal participation for all in decision-making, access to resources (including knowledge), and distribution of programme benefits. This article presents evidence from drought-affected rural Bundelkhand, Central India, to critically examine the politics of participation at the ground level. We find that systemic efforts are required to make participation meaningful for all to achieve the twin goals of social and environmental development through WDP.

Keywords: Gender, Governance, Inclusive participation, Social inclusion, Watershed development

1. Introduction

Watershed Development Programmes (WDP) have been implemented across the semiarid regions of India and is critical for the development of the rural poor who depend on natural resources and agriculture for their livelihood. National-level estimates reveal that between 2009 and 2020, 40.59 million hectares of land were brought under watershed development contributing to improved agricultural productivity, restoration of groundwater levels by capturing and storing rainwater, and improved soil quality across the rainfed regions of India (Gray & Srinidhi, 2013; Ministry of Rural Development, 2018, 2021).

In India, WDPs were initiated primarily for drought proofing and natural resource management in the 1970s. They are crucial for ensuring livelihood and food security for the majority of the small and marginal farmers who depend on rainfed agriculture. Successful implementation of WDPs can reduce boundaries of conflicts around management of natural resources, including water, apart from tackling ecological and environmental concerns by supporting local livelihoods (Chaudhari & Mishra, 2016; Gujja et al., 2006; Joshi et al., 2004; Marshall & Randhir, 2008).

While the expansion and escalation of WDPs are justifiably seen as a positive step towards addressing emerging environmental and sustainability issues across the drylands and semiarid regions of rural India, repeated concerns have been raised about the inability of such programmes to tackle the politics of participation at the ground level amidst the existence of a fragmented and unequal rural Indian society along the lines of caste,[1] landownership and gender (Chhotray, 2004; Kale, 2011). One of the key strategies under the watershed policy to ensure the inclusion of grassroots-level voices in WDPs is through promoting the participation of rural communities under local group- based collectives such as water users' committees, self-help groups and *gram panchayats* (village councils) alongside nongovernmental organizations to foster decentralized management and governance. Watershed guidelines in India recommend that at least five of the ten members of Watershed Development Committees should belong to user groups, self-help groups, landless households, scheduled castes/tribes (SCs/STs) and women.[2]

WDPs in India have expanded the objectives beyond the standard goals of addressing environmental sustainability in the drylands. Concerns have been raised about the politics of participation amidst the fragmented and unequal nature of rural Indian society (Chhotray, 2005; Kale, 2011; Kolavalli & Kerr, 2002; Azam, 2012; Singh, 2020). Participatory watershed management is enshrined in the new guidelines by the Government of India which emphasizes people's participation in the planning, implementation and equitable sharing of benefits and responsibilities. The success of this approach has been demonstrated through the development of several watersheds across varied agro-ecological regions of the country with diverse physiographic, climatic and socioeconomic conditions (Joshi et al., 2004; Joshi et al., 2008; Sharda et al., 2012; Sharma, 2005; Wani et al., 2003; Yoganand & Gebremedhin, 2006).

The article is structured as follows: following this introduction, the second section describes the context and methodology of the study, followed by results presented along with discussion in Section 3, with the conclusion of the study in the last section. We close with a conclusion on the policy implications of our findings to critically explore why the inclusion of marginalized groups at the grassroots level is crucial for determining the success of such development programmes.

[1] Caste is defined as the segmentation of the Hindu society from the South Asian subcontinent into groups whose membership was determined by birth based on a hierarchical system. Across various linguistic regions of India across the states, caste system follows a hierarchical gradation based on the four caste groups – Brahmins, Kshatriya, Vaishya and the Sudhra – along with outcasts who have been termed as Dalits or Harijans. To address historical marginalization, the Indian government has reclassified caste categories as General or Forward Castes (usually comprising of castes such as Brahmins, Kshatriya and Vaishya), Scheduled Castes (SCs) comprising of historically marginalized groups, such as Dalits and other groups such as Backward Class (BC) and Other Backward Class (OBC), are recognized for affirmative action and reservation in education and government jobs especially for the disadvantaged groups. See Goghari and Kusi (2023) for more.

[2] National Rainfed Area Authority (2011), https://nraa.gov.in/

2. Research setting and methodology

Bundelkhand is one of the most severely drought-afflicted parts of the country and facing recurrent droughts that have led to an intense scarcity of water in the region (Gupta et al., 2014). Additionally, the region faces poor agrarian conditions due to land degradation, deforestation and declining soil fertility impacting the sustenance and livelihoods of the agriculture-dependent population, accentuating food insecurity and distress migration (Anuja et al., 2018). Poverty levels in the region have continued to remain over 30% of the total population, and it is still classified among the most income-poor and economically backward regions of Central India (NITI Aayog, 2015).

The research site for the study is located at the Parasai Sindh watershed covering three villages of Parasai (in the upper reach), Chhatpur (in the middle reach) and Bacchauni (in the lower reach)[3] in the drought-prone Bundelkhand region of Southern Uttar Pradesh, India. The watershed covers about 1,250 hectares across the three villages comprising about 638 households (Padmaja et al., 2020). The main objectives of the Parasai Sindh watershed were to improve drought resilience by restoration of a traditional water storage structure (haveli) to hold water during monsoons and facilitate groundwater recharge. The Parasai Sindh watershed also led to socioeconomic co-benefits such as increased cropping intensity, reducing seasonal migration and freeing time for the youth to pursue education (Singh et al., 2017). This project has been lauded by the National Institution for Transforming India (NITI Aayog) in 2019 as among the best water conservation practices in India (ICRISAT Development Centre, 2019). The programme was undertaken from 2012 to 2016 through a multi-stakeholder partnership framework between the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the Central Agroforestry Research Institute (CAFRI), the Government of Uttar Pradesh and the local Panchayati Raj Institutions (PRI). The programme was funded by the Coca Cola India Foundation for Rural Water Infrastructure. Against such a context of deprivation, this study examines how inclusive participation and local governance can bring transformative changes to a technical model of WDP.

This study combined qualitative and quantitative methods for data collection. Data were collected from three villages covered by the Parasai Sindh watershed programme over two rounds in the years 2018 to 2019 and in 2021. In the first round of quantitative data collection in September 2018, a random sample survey was conducted among 222 households (about 35% of the households covered by the watershed intervention across the three villages) where one male and one female participant were interviewed from each household in three watershed villages. We also conducted qualitative focus group discussions (FGDs) disaggregated by sex and social grouping following the Gender in Irrigation Learning and Improvement Tool (GILIT) (Lefore et al., 2017) to assess the conditions for enabling men's and women's participation in WDPs and identify patterns of change in managing and implementing the IWDP scheme.

The second round of data collection in 2021 focused on collecting qualitative insights to expand the gendered understanding of WDPs in the same sites. This round of data collection mainly used participatory tools like social and resource mapping in each of the survey villages. Our previous round of data collection indicated that there are two main social groups in the village: (1) the dominant group comprising mainly the landowning community[4] and members of SC communities and (2) the non-dominant social groups comprising marginal and smallholder farmers. In order to ensure representation from both groups, we conducted 12 gender-disaggregated FGDs among members of the dominant and non-dominant social groups to understand the differential inclusion, impact and outcomes from the IWDP (see Table 1). The FGDs and surveys samples were purposively selected to include diversity in terms of geographic distribution, gender (male and female) and social groups (dominant and non-dominant). The sample size was carefully

[3] The terms upper, middle and lower reach indicate the direction of the flow of the watershed.

[4] The concept of dominant caste was first given by the Indian sociologist M.N. Srinivasan who found that in village societies, a select community wields economic and political power emerging from numerical strength (due to adult suffrage) and control over land resources in the village. Such castes generally rank higher in the caste hierarchy but need not always be confined to castes such as Brahmins and Kshatriyas.

chosen, and geographic coverage considered the diversity of the region as well as those involved in the WDP. One participant was randomly selected from each FGD for an in- depth semi-structured interview to probe more about the impact of the WDP on their lives and livelihoods.

Table 1
Gender- and Category-specific Composition of FGD Participants

Category	Male	Female	Total
Dominant category	31	32	63
Non-sominant category	35	40	75
Total	66	72	138

Source: Field Survey in the selected villages (same sample as in Padmaja et al., 2019) of Bundelkhand region, India, 2020.

We conducted interviews with both male and female local leaders, key government officials, and members of the watershed committees (WCs) in each village to gather further insights regarding the transformative effects and alterations in local governance systems resulting from the WDP. Researchers and enumerators ensured voluntary participation through informed consent, which was made available in Hindi, the local language. The personal identification data of the participants have been stored securely.

Descriptive statistics and demographic data were extracted from the quantitative sample survey. This was triangulated with the qualitative data from FGDs, personal key informant interviews and social and resource mapping to understand the process and outcomes of development interventions as well as participatory processes to capture inter-subjective meanings by social actors which can provide locally meaningful metrics of development (Shaffer, 2013).

3. Results and discussion

Most of the selected households in the study villages live in nuclear households with a mean household size of 4.1 individuals (see Table 2). Adult males have a higher literacy rate in comparison to all other social groups. Adult females above the age of 18 years are the most deprived in terms of educational outcomes. Young girls perform better than young boys in the age range of 10 to 18 years in terms of educational

Table 2
Demographic Characteristics of the Study Villages

	Study Villages			
Particulars	Parasai	Chhatpur	Bacchauni	Total
Sample household	85	59	78	222
Average household size	4.22	4.59	3.51	4.1
*Gender-based literacy rate (percentage)**				
Young males (10–18 years)	28	31	31	-
Young females (10–18 years)	48	40	47	-
Adult males (18+ population)	59	54	53	-
Adult females (18+ population)	35	33	29	-
*Social groups (percentage)***				
SCs	35	0	41	25.1
OBCs	56	81	50	58.4
General category	8	19	9	14.7

* For the present purposes, adult literacy rate is calculated as the share of population above the age of 18 who can read and write. Youth literacy rate is calculated as the share of population between the ages of 10 and 18 who can read and write.
** Totals may not add up to 100% because of missing data.
Source: Compiled from Padmaja et al. (2020).

attainment in most of the villages. There is evidence of intergenerational gap in literacy levels, which is an indication of lack of educational facilities and persistent poverty and may be linked to successive droughts faced by the region for the past one-and-a-half decades (Leder et al., 2019). Another view is that the increased participation of young boys and girls in schools is due to government programmes providing free education for children under 14 years of age, mid-day meal programmes and the Beti Bachao Beti Padhao Scheme implemented by the Government of India.[5]

There is a population and economic dominance of Other Backward Classes (OBCs) in each of the study villages.[6] Among the OBCs, the Yadav community is the dominant social group in all the study villages. In Parasai village, the Yadav community is further subdivided into the communities living near the historical fort area (gadhiwale Yadav) and others. The Yadav community living around the fort exhibits significant social and economic control over village resources in terms of both landholdings size and political control as was observed during participatory exercises. There were also two groups of SCs[7] in Parasai; one of these groups has closer ties to the gadhiwale Yadav community and has greater access to resources. The observed processes of local political negotiations, social inclusion and social exclusion in the integrated watershed management projects reflect similar findings elsewhere in India (Adolph & Turton, 1998; Dash et al., 2011; Kale, 2011; Kumar & Kumar, 2022).

In contrast, Chhatpur has more mixed social groups, along with a higher proportion of the general category population.[8] However, despite the presence of 'high caste' social groups, the Yadav community is the dominant social group in Chhatpur as well. In Bacchauni village, the Saharaya community, which is considered to belong to Scheduled Tribe (ST) in neighbouring Madhya Pradesh, was rehabilitated by the government authorities about two decades ago after an army firing range took over their land. However, they are deemed to be a part of the SCs in the Jhansi district of Uttar Pradesh (Department of Social Justice and Empowerment, 2017).

Agriculture-based activities are the primary economic source for people living in the watershed villages, with about 67% of the households depending on it for their livelihood. Livestock rearing and the sale of milk and milk products such as clarified butter (ghee) are other major sources of livelihood for the watershed villages. Higher dependence on agriculture and livestock combined with relatively limited diversification to nonfarm activities is indicative of a certain amount of guarantee of income and livelihood from agricultural sources. Some people used to migrate to urban areas like Delhi and Mumbai in search of nonfarm jobs.

Political affiliations in the village are tied to the caste identities of the population with government policies that reserve seats for women and SC candidates in the local government bodies. However, the patronage of the dominant category members seemed to be an essential factor in getting elected to local government positions for members of all communities. In Parasai village, the Sarpanch (village head) belonged to the SC community, but he had to secure support and maintain cordial relations with members of the Yadav community who would often use his agricultural land for grazing their cattle after the harvest season without seeking his permission.

The watershed programme garnered different levels of attention among the three study villages. Watershed interventions were not equally distributed in all the villages. Most of the watershed-related work was concentrated in Parasai and Chhatpur villages, while limited interventions were seen in Bacchauni.

[5] The objectives of this initiative are the following: prevention of gender-biased sex-selective elimination, ensuring the survival and protection of the girl child, and ensuring education and participation of the girl child (*Beti Bachao Beti Padhao*, n.d.)

[6] According to the field data, the OBC category includes Yadav (Ahir), Teli, Gadariya (Pal), Kumhar, Prajapati, Vishwakarma, Gurjar/Gujjar, Parihar, Namdev, Nai, Lohaar, Khushwaha, Khangaar (Parihar), Kewat, Kacchi (Khushwaha), Jha, Badhai communities.

[7] The SC category includes Chamar, Harijan, Ahirwar, Saharaya, Banskar (Barar), Rajak (Dhobi), Valmiki, and Dhobi (Rajak) communities across all the sample villages.

[8] General category includes Brahmin and Kshatriya categories and has Brahmin, Patels, and Gupta communities in the study villages.

Consequently, over 98% of the sample households in Parasai and Chhatpur were aware of the existence of the watershed programme as compared to 69% in Bacchauni. The disparities in awareness levels among the three villages arise due to the different levels of engagement. The primary focus of the watershed intervention was Parasai, where the traditional haveli structure was reconstructed and nine check dams were constructed along the local river, Dharmoo. In Chhatpur, the mid-reach village, the intensity of works carried out under the project significantly decreased as about three check dams were constructed. The awareness levels are least among the Bacchauni households where budget and time constraints in the watershed programme led to no check dams being constructed. It was assumed that since Bacchauni was at the tail end of the watershed, minimal interventions would be required as the village would automatically benefit from the natural flow of water on the landscape. Consequently, this led to low stakeholder engagement in terms of both the construction of watershed structures and generating awareness among the community members in the Bacchauni village.

In accordance with government guidelines, WCs were constituted to aid the planning and implementation of the watershed programme. The guidelines for creating a WC were explained to the local community, but the choice and selection of members were left to the local population. One of the key informants describes the guidelines and key characteristics of the members for constituting the village-level WC:

> All the villagers met near the primary school in the evening. Sir (the representative from the implementation agency) explained that we need to make a committee with representatives from each community. One woman was also included. Among these, we had to select the Chairperson, Secretary, and other members of the watershed committee. It was suggested that the Secretary should be a person who is educated, owns a motorbike to facilitate commute to Jhansi to meet the construction company, suppliers of raw material or the implementation agency, and is able to speak confidently with outsiders.
>
> (Male Key Informant,[9] Chhatpur)

Following these guidelines, two WCs were constituted, one each in Parasai and Chhatpur. There was no WC in Bacchauni village. In Parasai, a total of ten male members were selected – seven belonged to the OBCs and three were from SC communities. In Chhatpur, about 12 members were selected with the representation of all the caste groups present in the village. This included one woman from the Yadav community. After her sudden demise, she was replaced by another woman from the same community. Both the Chairperson and Secretary were from the Yadav community. A male farmer from the OBC category in Chhatpur who owned a motorbike and was willing to engage with the project without any remuneration was selected as the Secretary to represent both WCs. The main tasks of the Chairperson and the Secretary were to source raw materials from suppliers, monitor the progress of construction works and oversee the project implementation. Other members of the committee were mainly engaged in a nominal role and

Table 3
Awareness about the Implementing Agencies in the Study Villages

	Only Government	NGO+ Government	Panchayat	Others	No Response
Village-specific					
Bacchauni	79.6	9.3	5.7	0	5.6
Chhatpur	62.1	31	5.2	0	1.7
Parasai	66.7	25	7.1	1.2	0
Social category-specific					
General Category	65.2	12	17.4	0	4.3
OBC	71	24.2	3.2	0.8	0.8
SC	65.3	22.4	8.2	0	4.1

All figures are percentages.
There were no responses for the following options of implementing agencies: multilateral organizations and only NGOs.
Source: Authors' calculations from Field Survey in selected villages (as published in Padmaja et al., 2019) of Bundelkhand region, India, 2018 data.

[9] Names of the participants have been withheld to maintain anonymity.

were called periodically for meetings to sign documents for the release of funds to the contractors or labourers (Leder et al., 2019; Mondal et al., 2015).

There was limited knowledge about the various stakeholders engaged in the construction of the watershed at the local level. As shown in Table 3, the majority of the households across the three villages believed the Parasai Sindh WDP was implemented by the government. Only about 31% of households in Chhatpur and 25% in Parasai were aware of the multi-stakeholder nature of the partnership between the implementing agencies. Among the social categories across the sample villages, over 71% of the OBC households believed that the watershed programme was implemented by the government alone.

One of the primary ways through which villagers engaged with the project during the implementation phase was as onsite workers for the construction of the haveli and check dams. The principal contractor of the project was selected by the representatives of the implementation agency, but labourers, both males and females, were engaged locally from the village on a daily-payment basis. On average, workers were paid about INR 200 (US$3.6) per day as wages for engaging in the watershed activities.[10]

Table 4
Methods of Engagement with Watershed Programmes in the Study Villages

Village/Social Category		PRA Exercises	Entry-Point Activities	Transect Walk	Members of New Committees	Others	Did Not Engage
Bacchauni	Total	2.6	1.3	0	0	2.6	93.6
	General Category	0	0	0	0	0	0
	OBC	4.3	0	0	0	2.1	93.6
	SC	0	3.2	0	0	3.2	93.5
Chhatpur	Total	8.5	10.2	3.4	1.7	1.7	74.6
	General Category	0	0	0	0	0	100
	OBC	9.1	10.9	3.6	1.8	1.8	72.7
	SC	0	0	0	0	0	0
Parasai	Total	7.1	14.1	5.9	1.2	2.4	69.4
	General Category	0	0	0	0	0	0
	OBC	7.5	13.2	3.8	0	1.9	73.6
	SC	6.3	15.6	9.4	3.1	3.1	62.5

All figures are percentages.
There were no responses for the following option: clean-up campaigns.
Source: Authors' calculations from Field Survey in selected villages (as published in Padmaja et al., 2019) of Bundelkhand region, India, 2018 data.

About 25% and 30% of the households, in Chhatpur and Parasai, respectively, were engaged in the watershed programme through various participatory methods as indicated in Table 4. Barely 6.4% of the households in Bacchauni were involved in the initial planning phase, which included pre-construction activities such as Participatory Rural Appraisal (PRA), identification of appropriate locations for construction of watershed structures and transect walks, and constituting watershed-related committees in the village and such for the watershed programme.

[10] The exchange rate is calculated as per the conversion rate in December 2012 of INR 0.018 to US$ 1, to reflect the period

when the watershed project work was implemented in the village (The Central Bank of Russian Federation, n.d.).

Participation of women was found to be low, both in the watershed project and in the FGDs. When the female participants were asked during the FGDs about their involvement in the construction of the watershed, most of them responded about their exclusion from the planning and implementation of the watershed construction process:

> Who will talk to women about this (construction of watershed)? Even most of the men in the village were not consulted. But we knew that some construction work is being done in the village. The Pradhan (village headman) was the main person involved in construction of the check-dam, we were not consulted. This was all done by the government.
>
> (Female participant from non-dominant category in FGD, Bacchauni)
>
> No one asks women anything. Men are the only one who are consulted on these matters. Do you think they will ask women about these issues?
>
> (Female participant from dominant category in FGD, Parasai)

Invisibilization of women's needs and their exclusion during the initial phases of design and consultation of the watershed programme is done by both outsiders and insiders. Projects like watershed development are often perceived to be addressing issues of agricultural production which is undertaken by male members. Therefore, women are not seen to be equal stakeholders during such consultations by both the representatives of the implementing organizations and the male members in the communities and households who tend to silence women and limit women's participation both implicitly and explicitly as noted below:

> People come in a big car, discuss with men and go away. They do not consult women on anything. (Men from our community) routinely silence us by asking, why do women need information related to such work?
>
> (Female FGD participants in Chhatpur)

In terms of category-specific participation of households in watershed activities, it is observed that the majority of the participants in Chhatpur belonged to the OBC community, with no representation from the general- or SC-category households across all planning activities. In Parasai, the proportionally greater number of households from the SC community participated in entry-point activities (15.6%), such as identification of the site for construction of watershed structures, ascertaining the nature of ownership of the land where such structures are to be constructed, and more involvement in finding local labour to support construction activities than the other social communities in the village.

About 2.4% of the households in Parasai had a household member who participated in one of the institutions created during the watershed programme. This proportion was about 1.7% in Chhatpur and 1.3% in Bacchauni, as seen in Table 5. Although the WC meetings were held once every month, most of the households were not aware of the frequency of the meeting or were not informed about it.

In both Chhatpur and Parasai villages, the members of the watershed institutions belong to the OBC category. The main institutions created under the WDP were the WCs in Parasai and Chhatpur and a group for making leaf bowls in Bacchauni. As mentioned previously, there were minimal participatory processes by the project designers and implementers in Bacchauni village during the initial phase of the project. The leaf-bowl-making group was initiated at a later stage of the project to address the initial exclusion.

One of the main reasons people could not attend the watershed meetings was the influence of local-level caste dynamics in the meetings, which were dominated by upper-caste groups. This is particularly true for SC community members in Parasai. Data suggest that the timings for the meeting also played a significant role in Chhatpur and Parasai, mainly for the OBCs (see Table 6). For women,

reasons such as not being taken seriously in the meetings, inconvenient timings of the meetings and lack of information about the meeting are prominent across the villages. The patriarchal structure of the villages also became evident with the finding that about 11.4% of women in Chhatpur and 10.2% in Parasai could not attend the meetings due to lack of support from family members (Kumar & Kumar, 2022; Saxena & Singh, 2014).

Table 5
Membership of Watershed Committee and Frequency of Meetings in the Study Villages

Village/Social	Category	Households with a Member in Watershed Institution	Frequency of Watershed Committee Meetings				
			Fortnightly	Monthly	Annually	Others	No Response
Bacchauni	**Total**	1.3	0	1.3	1.3	24.4	73.1
	General Category	0	0	0	0	0	0
	OBC	0	0	0	2.1	29.8	68.1
	SC	1.3	0	3.2	0	16.1	80.6
Chhatpur	**Total**	1.7	0	23.7	0	10.2	66.1
	General Category	0	0	25	0	0	75
	OBC	1.7	0	23.6	0	10.9	65.5
	SC	0	0	0	0	0	0
Parasai	**Total**	2.4	1.2	20	0	11.8	
	General Category	0	0	0	0	0	0
	OBC	2.4	0	18.9	0	15.1	66
	SC	0	3.1	21.9	0	6.3	68.8

Source: Authors' calculations from Field Survey in selected villages (as published in Padmaja et al., 2019) of Bundelkhand region, India, 2018 data.

Women participants from non-dominant communities particularly believed that their concerns were not adequately addressed either in the WC or village association meetings. One of the key informants from Bacchauni village observed that a part of her family landholding is submerged under water after the construction of the watershed until the festival of Deepawali in November. They have to often wade through waist-deep water to access their landholding. Despite repeated requests to the village headman for construction of bridge, nothing has been done to resolve this issue.

Survey data suggest that the limited initial engagement at the field level has led to low awareness and appreciation of the programme benefits among the local population. Only one participant in the sample survey in Bacchauni felt that the watershed programme enabled them to get livelihood support in the form of the machine used to make the leaf bowl. Very few in the entire survey responded that they saw the watershed programme as an important way to improve or recharge the groundwater levels in their area and improve knowledge about the watershed programme. Although most of the FGD participants from Bacchauni observed that there has been an overall increase in the number of tubewells and handpumps in the village over the last four to five years since the construction of the watershed, they were not able to gain benefits in an equal measure. Most of the tubewells for drawing water have been constructed on the fields; as a result, women still had to walk over a kilometre to fetch water and spent about 2 to 3 hours each day in the process.

Table 6
Reasons for Not Attending Watershed Meeting in the Study Villages

	Bacchauni					Chhatpur					Parasai				
Reasons	Total	General	OBC	SC	Women	Total	General	OBC	SC	Women	Total	General	OBC	SC	Women
Upper-caste people dominated the discussion	5.1	0	4.3	6.5	-	3.4	0	3.6	0	-	11.8	0	9.4	15.6	-
Opinion of socially marginalized people were never taken into consideration	0	0	0	0	-	0	0	0	0	-	1.2	0	0	3.1	-
Suggestions not taken seriously	0	0	0	0	17	1.7	0	1.8	0	22.9	1.2	0	1.9	0	14.3
Meetings' timings were inconvenient	0	0	0	0	6.4	18.6	25	18.2	0	11.4	14.1	0	15.1	12.5	14.3
Family members were not supportive	0	0	0	0	0	1.7	0	1.8	0	11.4	3.5	0	5.7	0	10.2

All figures are percentages.
For women, the first two options were not considered in the survey. The other reasons that women cited for not attending meetings include the following: not having a watershed institution in the village, and lack of information or knowledge about the meetings.
Source: Authors' calculations based on Field Survey in selected villages (as published in Padmaja et al., 2019) of Bundelkhand region, India, 2018.

Women from the non-dominant category mentioned that only three handpumps were available to draw water for domestic usage, which led to longer queues and waiting time for their turn to use the handpump. It also created occasional clashes among the women about who gets to draw water first. Sometimes, men and boys would support them in carrying from public handpumps situated further away from the village on their motorcycles, but it meant that households incurred higher expenses.

> Some of the boys and men spend their hard-earned money on buying petrol to get water on motorcycles. We often do at least 10 trips daily for water on an average…. There is also a queue at the handpump for drawing water. We spend a lot of time in fetching water, but this has reduced. Previously we used to walk for over two to three kilometers for water. Water has been a big source of problem for people in this community.
>
> (Female participant from the dominant category in FGD, Bacchauni)

Overall, data indicate that women's participation in watershed-based activities was very low in all three sample villages. In Bacchauni, about 1.3% of women who were part of a self-help group were trained to make leaf bowls for livelihoods generation, and this group was created through the watershed programme. Besides this, one woman was included in the WC in Chhatpur, who was later replaced by another woman after her sudden demise. Among all the households surveyed, only 5.1% and 5.9% of the women, in Chhatpur and Parasai, respectively, attended WC meetings. Among the reasons for women not attending the meetings, the probability of not taking their suggestion seriously was highest in Chhatpur (22.9%), followed by Bacchauni (17%) and Parasai (14.3%) (refer to Table 5). As with the male participants, the timings of the meetings were a problem for women from Parasai (14.3%) and Chhatpur (11.4%). Women's ability to attend group meetings was also controlled by family members, who were not supportive of the idea of women attending these meetings in Chhatpur (11.4%) and Parasai (10.2%). Many women lacked information or did not know that the meetings were being held. This proportion was highest in Bacchauni (31.9%). A very limited number of participants perceived the watershed programme as beneficial to women. Overall, watershed activities seem to be mainly a male-driven activity in the study villages, corroborating findings from previous studies on WDPs in India (Pundarikanthan et al., 2000; Seeley et al., 2000; Wani et al., 2009). Moreover, the increased availability of groundwater resulted in declining women's role in agriculture, particularly among the dominant community who could afford to replace women's labour in drawing and fetching water for irrigation purposes with diesel pumps and pipelines.

Although the project accomplished noteworthy environmental goals, a technocratic interpretation of social goals needs to be revisited against emerging evidence to understand its socioeconomic contributions. As already elaborated, the villages under the Parasai Sindh watershed programme do experience political tensions driven by caste and gender. Failure to understand the local politics resulted in the negation of the political underpinnings and the disproportionate capture of benefits by the elite community. Local engagement with the elite community for the watershed programme saw short-term ease in site identification, demarcating the project beneficiaries and easing the process of programme implementation. However, it had long-term negative consequences on the sustainability of the watershed programme.

One of the starting points of interrogating inclusion, participation and governance in the watershed project is to understand if it has empowered local communities, and particularly women, to access the additional resources and project outcomes. Leder et al. (2019) observe that one of the primary constraints for marginalized social groups is to access the haveli structure which adjoins a temple and, thus, disbars entry from so-called lower-caste groups (mainly SC category) on the grounds of ritualistic purity and pollution. Similarly, women from non-dominant social groups (mainly those belonging to the SC category) in Parasai village indicated that although the watershed programme had increased groundwater levels and availability of water for irrigation for the village as a whole, there remained significant differences in the ways through which different sections of the community could access water for other uses. They believed that people belonging to SC communities had lesser rights to access water as compared to other social groups in the village. They based their conclusions on two main points about availability and access for the SC groups in the

village.

In the years since the watershed programme was implemented, there have been parallel provisions by local and state governments to bolster the supply of water for drought-affected parts of Bundelkhand. Under one such scheme, private taps were allotted for some of the OBC households, but none of the poorer SC households benefitted from this scheme. Most of the SC households consequently depend on a single hand pump, which is located at about 150 to 200 metres away from their homes, to draw water for domestic and drinking purposes (see Figure 1). One of the female participants from the SC community observed during the FGD:

> Their (people belonging to Yadav community) cattle have greater rights over water as compared to us. If one of them comes to the handpump to drink the residual water, we must wait for the buffalo or cow to finish drinking water first. We can draw water for our needs only after them.
>
> (Women from SC Community, FGD, Parasai)

The initial levels of low participation among the community also have implications for the long-term governance and management of the watershed structure and allied activities implemented under the watershed programme. It was observed in Chhatpur that there is lack of clarity among the local community about who is responsible for desilting, making bunds and carrying out additional repairs to the check dams that were constructed in the village as part of the watershed programme. There has been limited community participation in the additional agroforestry interventions, such as planting teak plants on bunds of farmlands, which were carried out as part of other activities undertaken in the watershed programme. Teak saplings that were distributed among the community to ensure long-term nature asset- based incomes were left untended across several of the fields where they were planted. Instead, the sapling was used as fodder for small livestock (such as goats) and as firewood for cooking by women in the Chhatpur and Parasai, as women found it difficult to water the teak plants during hot summer months. The lack of availability of fodder and firewood locally meant that the teak saplings were used for these purposes, rather than allowing the saplings to mature and grow into full trees, which could have fetched the community higher incomes at a future date (Falk et al., 2019; Leder et al., 2019; Mondal et al., 2015).

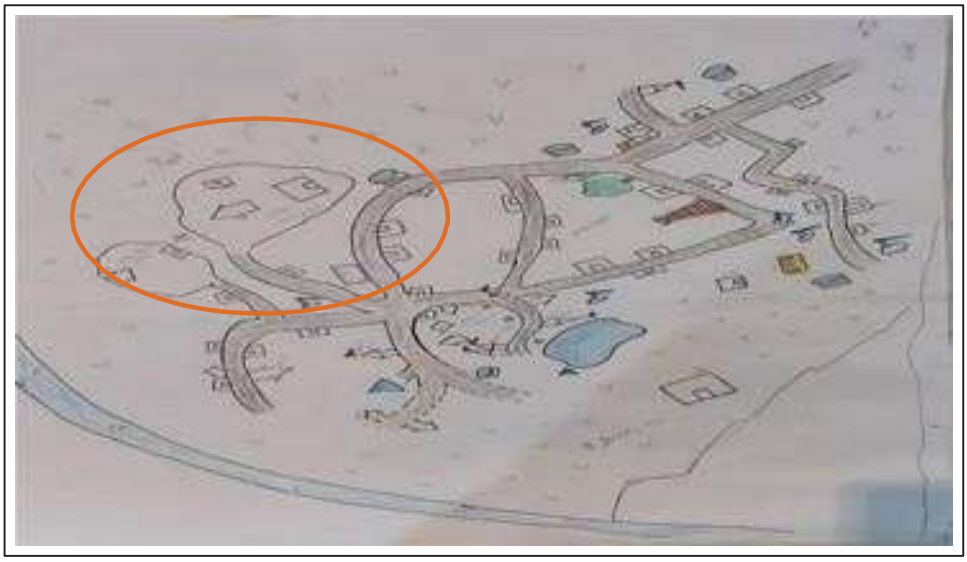

Figure 1. Social Map of Parasai Village in Bundelkhand
Note: The 卐 symbol on the map represents the poorest households and marks the position of the handpumps in the village. The SC community lives in the encircled area.
Source: Authors' representation from grassroots-level elicitations in Field Survey conducted in selected Villages (same as in Padmaja et al., 2019) in Jhansi, Bundelkhand, India in 2021.

These ground-level examples illustrate the reasons that make inclusion, participation and governance in integrated WDPs crucial across the various stages of planning, designing, implementation and monitoring.

The initial cooperative behaviour amidst factional politics at the ground level indicates the politics of coercion by dominant communities and politics of accommodation by others (Chhotray, 2004). This is corroborated by the sample data which show that there is a lack of knowledge and awareness about the watershed project among different sections of the population. While men from the OBC community may have a higher degree of information, awareness and knowledge about the watershed project, it was not demonstrated in equal measures in other social groups. Particularly, women and members of SC communities across all the villages were not represented in various WCs or did not speak about their needs from the watershed programme. As indicated by the qualitative interviews, women may have preferred interventions that reduced their waiting time for collecting water, ensured the availability of fodder for their livestock and eased their burdens of collection of firewood. Additionally, since the watershed project did not distribute the gains from the programme equitably among different social groups, there is clear evidence of elite communities such as OBC capturing benefits, at the risk of marginalizing others. The project implementation team was predominantly comprised of male members. Patriarchal social norms around engagement with men also led to the limited engagement of women from all communities in the project.

Studies by Agarwal (2010) demonstrate that increasing representation of women, particularly from marginalized communities, allows them to reach critical mass in community meetings and may influence more women to participate and speak up at community meetings thereby challenging and changing power dynamics at the local level. Additionally, specific training, capacity-building and a focus on women's inclusion is critical to address the unmet social and economic needs of the vulnerable communities and women; such steps could have been taken to co-create and sustain longer-term impacts from the watershed project.

4. Conclusion

The results of the survey and the participatory exercises have important lessons for watershed development activities in developing countries despite policy directives that call for participatory development, governance and management of watershed programmes. These findings reaffirm that despite a rich institutional legacy of promoting participatory development in natural resources management programmes such as WDP, the translation of such directives on the ground remains chequered. There continues to be a divide between expert-driven development agenda and local knowledge and traditions, which questions the extent of the efficacy and ability of administrative structures which devise and implement development policies such as integrated watershed management programmes to address the real needs of marginalized and vulnerable communities, especially women. It is particularly essential to locate the lessons from technically sound development programmes to understand how they can enable greater transformation at the societal level by ensuring inclusive participation and governance of diverse and sometimes competing needs of the heterogeneous local communities.

Using the illustrative example of the Parasai Sindh watershed programme, we examine inclusive participation in development programmes. Although IWDPs build local adaptive capacity to be resilient against climate change, there is a need to ensure that the technical success of such programmes ensures the long-term sustainability of programme goals. One of the ways to ensure sustainability is to invest in long-term monitoring and efficient local governance structures in order to understand the differential impacts that such programmes have on different sections of the local community.

Several critical lessons can be learned from the implementation of the watershed programme which hold valuable messages for other WDPs and similar initiatives:

- Watershed projects are mainly perceived to address productivity-related resource constraints, with goals such as increasing access to water, improving soil quality and improving agricultural productivity. As women lack direct control over productive assets such as land, they are not seen to be equal stakeholders in the decision-making or consultative processes by both the implementing organizations and the community members.

- Women and other marginalized social groups in the community may have different needs and requirements from community-level initiatives such as watersheds. Moreover, women living in patriarchal contexts tend to have high mobility barriers, limited decision-making power within the household and communities and low agency due to formal and informal membership rules in local management organizations. Project implementers need to be sensitive of women's requirements and needs from WDPs and ensure gender and social inclusion throughout the project lifecycle.

- Building sustainable watershed structures that ensure long-term prosperity hinges on the dual pillars of inclusive participation: equitable distribution and local governance of programme outcomes. Planning and designing stages of integrated watershed management programmes must include gender and diversity (social class, caste and political structure) as intrinsic attributes of the rural landscape where such programmes are implemented, rather than treating them as supplementary concerns. This requires political engagement with the local community, which is sometimes difficult given the limited timelines and resource constraints. Therefore, programme implementation requires to stimulate bottom-up engagement with the community instead of the present structure where development programmes are led primarily by the implementing agency.

- Watershed programmes need to recognize and build local capacities through engagement and initiate efficient local governance in managing and resolving issues allied to watersheds. Therefore, understanding community needs for grazing pastures, firewood for cooking, and livelihood constraints and taking steps to mediate these through dialogue and alternative institutional structures, aligning programme goals with other governmental and nongovernmental development programmes and reaping synergies could ensure fulfilling both ecological and social objectives of the development programmes.

- In terms of long-term sustainability of high-investment development programmes such as IWDPs, it is essential to foster local-level sustainable institutions by the implementing agency right from the start of the project. As such, addressing and remedying the lack of inclusion of local-level institutions or governance that can function well beyond the project lifecycle is important to ensure routine maintenance and monitoring of watershed structures. The lack of assigning collective responsibility and the failure to establish financial provisioning beyond the duration of the project might lead to shifting of decision-making and responsibilities amongst one another.

High-investment projects like WDPs provide an opportunity to reinvent traditional power dynamics and provide an opportunity to shift power at the local level to bring about multidimensional changes across landscapes. The experiences from the Parasai Sindh watershed programme provide valuable lessons for a global audience, especially those working on similar development challenges in other parts of the world. For example, we highlight the importance of building trust and partnerships between different stakeholders, ensuring that local communities have a meaningful voice in decision-making processes, and investing in capacity-building and skill development to enable communities to take ownership of the development process. In summary, inclusive participation in IWDPs is essential for achieving sustainable and equitable development outcomes, especially in marginalized communities. The experiences derived from implementing watershed programmes in Central India can provide valuable insights for international audiences seeking to promote inclusive development in similar contexts.

Policies should not only establish community engagement but also require the co-creation of project objectives with communities, ensuring their needs and aspirations are met. This approach could draw from successful models in Joint Forest Management (JFM) programmes, where communities actively participate

in forest management decisions, leading to improved conservation outcomes. Building upon the success of Water User Associations (WUAs), policies for IWDPs can mandate the formation of similar watershed user associations. These associations could oversee the management of natural resources, mirroring the role of WUAs in water resource management.

To match the effectiveness of JFM programmes, capacity-building policies could include long-term training and extension services, empowering communities with the skills required for sustainable land and water management. These programmes can be community-driven and tailored to local needs. Policies can incorporate gender-sensitive approaches, akin to those in JFM, which ensure women's participation and leadership roles in decision-making and resource management. Learning from WUAs, policymakers can also mandate gender-balanced representation in governing bodies. Building on the collaborative nature of JFM, policies can encourage multi-stakeholder platforms where government agencies, NGOs, private sectors and local communities collectively plan and implement projects. This approach aligns with the collaborative structure of WUAs for water resource management. Following the funding models of JFM and WUAs, policies should emphasize the importance of establishing long-term, sustainable funding mechanisms to ensure the continuity and effectiveness of IWDPs. In line with the knowledge-sharing practices of JFM and WUAs, policies can facilitate platforms for sharing best practices, lessons learned and successful strategies among regions and countries facing similar development challenges. By strengthening these policy suggestions and drawing upon the experiences of JFM and WUAs, IWDPs management can benefit from established best practices and lessons learned in community-based natural resource management. This cross-learning approach holds the potential to enhance the effectiveness of development initiatives and create positive outcomes for marginalized communities.

Acknowledgment

The authors are thankful to the two field teams who supported the data collection process and greatly appreciate the participation of the local community in the villages of Parasai, Chhatpur and Bacchauni, who spared their invaluable time and shared their insights. The authors would like to thank Sameen Ali for comments on a previous draft of this article. Thanks, are also due to Drs Ramesh Singh and Kaushal Garg from the ICRISAT Development Centre for their support and coordination.

Declaration of interest statement

Part of this article was presented at the Development Studies Association Annual Conference on Unsettling Development in the year 2021, as a full paper presentation entitled 'The High Costs of Low Inclusion: Lessons from Integrated Watershed Development Programs in Central India' with interim findings. The article's short and long abstracts were published at https://nomadit.co.uk/conference/dsa2021/paper/60928.

Funding

The authors acknowledge the CGIAR Research Program on Water, Land and Ecosystems (CRP-WLE) for their financial and research support in implementing the study in the Parasai Sindh watershed region.

References

Adolph, B., & Turton, C. (1998). *Promoting equity: Communities, self-help groups and watersheds in Andhra Pradesh*. Rural Policy and Environment Group, Overseas Development Institute.

Agarwal, B. (2001). Participatory exclusions, community forestry, and gender: An analysis for South Asia and a conceptual framework. *World Development*, *29*(10), 1623–1648. https://doi.org/10.1016/S0305- 750X(01)00066-3

Agarwal, B. (2010). Does Women's proportional strength affect their participation? Governing local forests in South Asia. *World Development*, *38*(1), 98–112. https://doi.org/10.1016/j.worlddev.2009.04.001

Anuja, A. R., Kar, A., Kumar, P., Jha, G. K., & Singh, B. K. (2018). Analysis of factors triggering distress migration in Bundelkhand region of Central India. *Economic Affairs*, *63*(4), 1055–1059. https://doi .org/10.30954/0424-2513.4.2018.31

Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of Planners*, *35*(4), 216–224. https://doi.org/10.1080/01944366908977225

Azam, M. (2012). A distributional analysis of social group inequality in rural India. *Journal of International Development*, *24*(4), 415–432. https://doi.org/10.1002/jid.1706

Beti Bachao Beti Padhao. (n.d.). *Background of BBBP scheme*. BBBP. Retrieved August 10, 2021, from https://wcd.nic.in/bbbp-schemes

Chakravarti, D., Byrne, S., & Carter, J. (2013). Solutions emerge when everyone works together: Experiences of Social Inclusion in Watershed Management Committees in Karnataka. In U. Skoda, K. B. Neilsen, & M. Q., Fibiger (Eds.), *Navigating social exclusion and inclusion in contemporary India and beyond: Struc- tures, agents and practices* (pp. 189–206). Anthem Press.

Chaudhari, V. R., & Mishra, A. (2016). Multilevel policy responses to mainstream climate adaptation through watershed development in rainfed farming systems of India. *Climate and Development*, *8*(4), 324–335. https://doi.org/10.1080/17565529.2015.1064808

Chhotray, V. (2004). The negation of politics in participatory development projects, Kurnool, Andhra Pradesh. *Development and Change*, *35*(2), 327–352. https://doi.org/10.1111/j.1467-7660.2004.00354.x

Chhotray, V. (2005). Who cares about participation? How a rhetorical state policy is practised incredulously. *Contemporary South Asia*, *14*(4), 429–446. https://doi.org/10.1080/09584930600839115

Cornwall, A. (2004). Spaces for transformation? Reflections on issues of power and difference in participa- tion in development. In S. Hickey, & G. Mohan (Eds.), *Participation: From tyranny to transformation* (pp. 75–91). Zed Books.

Dash, P. K., Dash, T., & Kara, P. K. (2011). The role of local institutions in sustainable watershed manage- ment: Lessons from India. *Development in practice*, *21*(2), 255–268. https://doi.org/10.1080/09614524.2 011.543271

Department of Social Justice and Empowerment. (2017). *State wise list of scheduled castes: Uttar Pradesh*. Ministry of Social Justice and Empowerment, Government of India.

Falk, T., Kumar, S., & Srigiri, S. (2019). Experimental games for developing institutional capacity to man- age common water infrastructure in India. *Agricultural Water Management*, *221*, 260–269. https://doi.org/10.1016/j.agwat.2019.05.005

Garg, K., Singh, R., Anantha, K. H., Singh, A. K., Akuraju, V.R., Barron, J., Dev, I., Tewari, R. K., Wani, S. P., Dhyani, S. K., & Dixit, S. (2020). Building climate resilience in degraded agricultural landscapes through water management: A case study of Bundelkhand region, Central India. *Journal of Hydrology*, *591*(125592), 1–12. https://doi.org/10.1016/j.jhydrol.2020.125592

Goghari, V., & Kusi, M. (2023). An introduction to the basic elements of the caste system of India. *Frontiers in Psychology*, *14*. https://doi.org/10.3389/fpsyg.2023.1210577

Gray, E., & Srinidhi, A. (2013). *Watershed development in India: Economic valuation and adaption consider- ations*. Working Paper. World Resources Institute.

Gujja, B., Joy, K. J., Paranjape, S., Goud, V., & Vispute, S. (2006). 'Million revolts' in the making. *Economic and Political Weekly*, *41*(7), 570–574.

Gupta, A. K., Nair, S. S., Ghosh, O., Singh, A., & Dey, S. (2014). *Bundelkhand drought: A retrospective analy- sis and way ahead.* National Institute of Disaster Management.

ICRISAT Development Centre. (2019). *NITI Aayog recognition for Parasai-Sindh watershed management.* ICRISAT. Retrieved May 31, 2021, from idc.icrisat.org/idc/index.php/niti-aayog-recognition-for-parasai-sindh-watershed-management/

Joshi, P. K., Jha, A. K., Wani, S., Sreedevi, T. K., & Shaheen, F. A. (2008). *Impact of watershed program and conditions for success: A meta-analysis approach.* ICRISAT.

Joshi, P. K., Pangare, V., Shiferaw, B., Wani, S. P., Bourma, J., & Scott, C. (2004). Watershed development in India: Synthesis of past experiences and needs for future research. *Indian Journal of Agricultural Econom- ics*, *59*(3), 303–320.

Kale, E. (2011). Social exclusion in watershed development: Evidence from the Indo-German watershed development project in Maharashtra. *Law, Environment and Development Journal*, *7*(2), 95–116.

Kolavalli, S., & Kerr, J. (2002). Scaling up participatory watershed development in India. *Development and Change*, *33*(2), 213–235. https://doi.org/10.1111/1467-7660.00248

Kumar, D., & Kumar, D. (2022). Gender matters: Reappraising the issues of equity, participation and ownership in Watershed Management. *Contemporary Voice of Dalit*, https://doi.org/10.1177/2455328X211063068

Kumari, R., Sharma, B., Singh, R., Singh, R. M., Tewari, R. K., & Dhyani, S. K. (2015). Morphometric and Land Use Analysis of

Parasai—Sindh Watershed in Semi-Arid Tropics of Central India. Environment & Ecology, 33(1), 28–32.
Leder, S., Ravula, P., & Garg, K. (2019). *Gender norms and relations in an agricultural watershed project in the Parasai-Sindh Watershed, Jhansi/India.* CGIAR Research Program Water, Land and Ecosystem theme of Gender, Youth and Social Inclusion. International Water Management institute.
Lefore, N., Weight, E., & Rubin, D. (2017). *Introduction to the gender in irrigation learning and improvement tool.* CGIAR Research Program on Water, Land and Ecosystems (WLE). International Water Management Institute (IWMI).
Marshall, E., & Randhir, T. (2008). Effect of climate change on watershed system: A regional analysis. *Climatic Change*, *89*(3), 263–280. https://doi.org/10.1007/s10584-007-9389-2
Ministry of Rural Development (Department of Land Resources). (2018). *Action taken on the recommenda- tions contained in the thirty ninth report (sixteenth lok sabha) on 'watershed development component of Pradhan Mantri Krishi Sinchayee Yojana (WDC-PMKSY) Erstwhile IWMP'*. Lok Sabha Secretariat. Retrieved May 28, 2021, from https://iwmpmis.nic.in/
Ministry of Rural Development. (2021). *Budget 2021-22: Status of the watershed development compo- nent of Pradhan Mantri Krishi Sinchayee Yojana*. Government of India. Retrieved May 28, 2021, from https://soildirectorate.assam.gov.in/schemes/watershed-development-component-pradhan-mantri-krishi- sinchayee-yojana-wdc-pmksy#:~:text=The%20continuation%20of%20WDC%2DPMKSY,8%2C134%20 crore.
Mondal, B., Singh, A., Sekar, I., Sinha, M. K., Kumar, S., & Ramajayam, D. (2015). Institutional arrange- ments for watershed development programmes in Bundelkhand region of Madhya Pradesh, India: an ex- plorative study. International Journal of Water Resources Development, 32(2), 219–231.
National Rainfed Area Authority. (2011). *Common guidelines for watershed development projects—2008 revised edition 2011*. Planning Commission.
NITI Aayog. (2015). *Bundelkhand human development report*. NITI Aayog.
Padmaja, R., Kavitha, K., Pramanik, S., Duche, V., Singh, Y., Whitbread, A. M., Singh, R., Garg, K., & Leder, S. (2020). Gender transformative impacts from watershed interventions: Insights from a mixed-methods study in Bundelkhand region of India. *American Society of Agricultural and Biological Engineers*, *63*(1), 153–163. https://doi.org/10.13031/trans.13568
Palsaniya, D. R., Singh, R., Tewari, R. K., Yadav, R. S., & Dhyani, S. K. (2012). Integrated watershed manage- ment for natural resource conservation and livelihood security in semi-arid tropics of India. *Indian Journal of Agricultural Sciences*, *82*(3), 241.
Paul, S. (1987). *Community participation in development projects: The World Bank experience*. The World Bank.
Pundarikanthan, N. V., Jayalakshmi D., & Karmegam M. (2000). Role of women in water resource management. In *Women & water—seminar* (Vol. 93–100). Central Ground Water Board.
Saxena, G., & Singh, A. M. (2014). Amorphous Family Nexus: an analytical tool in considering community/ m-MGO Haritika's ties in Bundelkhand, Central India. *Environment and Planning A*, *46*(10), 2419–2434.
Seeley, J., Batra, M., & Sarin, M. (2000). Women's participation in watershed development in India. *Sustainable Agriculture and Rural Livelihoods Programme*, International Institute for Environment and Development (IIED), Gatekeeper Series no. 92.20-pp. https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=f822b53cd4694d96835c3039888d4ec4df6c2792
Sen, S.(2016). Revisitingtheparticipatorymodelofdevelopment: Institutional survivalinwatershedprogrammes in four Indian states. *Social Change*, *46*(4), 526–543. https://doi.org/10.1177%2F0258042X16666597 Shaffer, P. (2013). *Q-squared: Combining qualitative and quantitative approaches in poverty analysis*. OUP Oxford.
Sharda, V. N., Dogra, P., & Dhyani, B. L. (2012). Indicators for assessing the impacts of watershed develop- ment programmes in different regions of India. *Indian Journal of Soil Conservation*, *40*(1), 1–12.
Sharma, S. (2005). *Rethinking watershed development in India: Strategy for the twenty-first century. Preparing for the next generation of watershed management programmes and projects*. South Asia Regional Office. Singh, C. (2017). Is participatory watershed development building local adaptive capacity? Findings from a case study in Rajasthan, India. *Environmental Development*, *25*, 43–58. https://doi.org/10.1016/j.envdev.2017.11.004
Singh, R., Garg, K. K., Wani, S. P., Tewari, R. K., & Dhyani, S. K. (2014). Impact of water management interventions on hydrology and ecosystem services in Garhkundar-Dabar watershed of Bundelkhand re- gion, Central India. *Journal of Hydrology*, *509*, 132–149. https://doi.org/10.1016/j.jhydrol.2013.11.030
Singh, R., van Noordwijk, M., Chaturvedi, O. P., Garg, K. K., Dev, I., Wani, S., & Rizvi, J. (2017). Public co- investment in groundwater recharge in Bundelkhand, Uttar Pradesh, India. In S. Namirembe, B. Leimona, M. van Noordwijk, & P. Minang (Eds.), *Co-Investment in ecosystem services: Global lessons from payment and incentive schemes* (pp. 173–178). World Agroforestry Centre (ICRAF).
Singh, J. (2020). Caste, state and society: Degrees of democracy in north India. Routledge India.
Wani, S. P., Singh, H. P., Sreedevi, T. K., Pathak, P., Rego, T. J., Shiferaw, B., & Iyer, S. R. (2003). *Farmer-participatory integrated watershed management: Adarsha watershed, Kothapally India. Case 7*. In: Research Towards Integrated Natural Resources Management: Examples of Research Problems, Approaches and Partnerships in Action in the CGIAR. Centre Directors Committee on Integrated Natural Resources Management, Rome, Italy, pp. 123–147.
Wani, S. P., Sreedevi, T. K., Rockström, J., & Ramakrishna, Y. S. (2009). Rainfed agriculture-past trends and future prospects. In David Molden, Series Editor, *Rainfed agriculture: Unlocking the potential* (pp. 1–35). CABI International.
Yoganand, B., & Gebremedhin, T. G. (2006). *Participatory watershed management for sustainable rural livelihoods in India* (No. 1366-2016-108254). Selected working paper prepared for presentation at the Southern Agricultural Economics Association Annual Meetings Orlando, Florida, February 5-8, 2006.