

Article

Critical Aspects of People's Participation in Community-Based Forest Management from the Case of Van Panchayat in Indian Himalaya

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Abstract: The importance of community-based forest management (hereafter, CBFM) is drawing attention to forest policies in finding solutions for deforestation and importantly to also understand the basis of people's involvement. Focusing on the latter, the study presented here targets a regional CBFM (Van (forest) Panchayat; hereafter, VP) at the village level in Uttarakhand, India and looks into characteristics and critical aspect of people's participation. Participatory observations were conducted in four selected villages, followed by structured interviews with 113 of a total of 131 households and semi-structured interviews with additional 28 female villagers. Some specific findings were (a) the VP members were mostly involved in forest-related activities, e.g., plantation, forest patrols, (b) a greater use of firewood by the management committee (hereafter, MC) where most members were from the higher-caste, and (c) most of the VP forest users were women; however, few women members were involved in decision-making, as they were mostly fixed members and they had not voluntarily chosen their positions. In the above context, it implied a limited participation of women in the decision-making process, i.e., no or little involvement in the management plan by the main VP forest users. Results concluded three stages of local peoples' participation in forest management: "participation in activities", "participation in decision-making" and "participation in management plan creation". In summary, what our study shows is that participation by the VP members in CBFM activities was easy. The most difficult aspect related to the participation of female members was the decision-making process in each VPMC investigated.

Keywords: participatory forest management (PFM); community-based forest management (CBFM); Van (forest) Panchayat (VP) management committee (MC); participation level; category and form



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1. Background

1.1. Introduction

Participatory forest management (hereafter, PFM) is used to describe systems in which communities work together to define rights of forest resource use, and identify and develop forest management responsibilities. The authors started by asking a simple question about PFM—How do people depend on forest resources, participate in and are involved in managing the forest? The practices of people's PFM in communities differ from region to region around the world and are variously termed as community-based forest management (hereafter, CBFM), joint forest management (hereafter, JFM), etc. [1–3]. These are used to transfer forest management practices from government to people in developing regions of Asia, Africa and South America, with an aim to achieve sustainable forest management [3–8]. The differences in each practice are summarized in Table 1, and the scope of each practice is further indicated by position of the participating entity (Figure 1).

Table 1. Comparison of the practical contents of participatory forest management.

Technical Terms	Practical Content (Approach)	Countries	Age of Practice and Areas
1. Social Forestry	Local residents take the initiative in everything from planning to maintenance of tree planting and forest land development. In terms of maintenance of plantations, capacity building of residents, consideration for the vulnerable, etc., is based on the local community	India Thailand The Philippines Indonesia Latin American countries	Since 1970s, Social Forestry 1992~1998, North East Thailand Afforestation Promotion Plan Since 1982, Integrated Social Forestry Program (ISFP) Since 1972 Tumpang sari Program (Java Forestry Corporation) ICDP (Integrated Conservation and Development Projects)
2. Community-based Forest Management (CBFM)	Community, which is leading the management, is the only forest conservator and its beneficiary. The government is only in a position to assist aspects such as morals	Nepal The Philippines	Since 1978, Community Forest Program: Panchayat Forest and Panchayat Conservation Forest Since 1989, Community Forestry Program
3. Participatory Forest Management (PFM)	Government manages the forest and distributes its profits with the cooperation of the community, but most of the profits belong to the government	Tanzania Ethiopia	Since 1990 Since 1995
4. Joint Forest Management (JFM)	Government and the community will work together to manage the forest and share the costs and benefits of practice	India African countries	Since 1990, all over JFM India Since the 1990s
5. Collaborative Forest Management: (CFM)	Government (Forestry Corporation) and residents will work together equally. Residents can enjoy the benefits of mutual partnership	Mexico Indonesia	Since 1980, Forest Resources Conservation and Sustainable Management Project (PROCYMAF) Since 2001, Collaborative Forest Management (PHBM)
6. Decentralized Forest Management (DFM)	Delegation of forest management from government to the village community	Included technical terms of 1~5	

Note: based on [3–11].

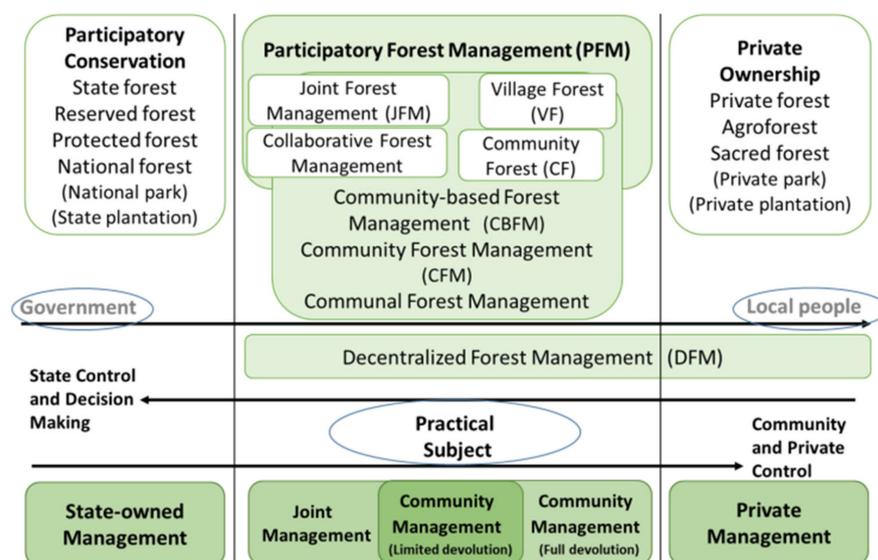


Figure 1. Positioning of participatory forest management (based on [1–3]).

Despite showing signs of slowing down, deforestation is still being reported in the developing regions of the world. Moreover, it is also a challenge that is increasingly being recognized by the international community. Forests are a source of wood, and it is estimated that firewood accounts for about 50% of the world’s wood consumption [12]. Forests are also a base for the logging industry, and with the demand for agricultural and residential use [13], exploitation pressure on forests has also intensified. As stated in Goal 13 and Goal 15 of the United Nations Sustainable Development Goals (hereafter, SDGs), policies on forest resource conservation are also needed as concrete measures to counteract the adverse effects of climate change, globally. In this study, we focus on “CBFM” because it is a concept that encompasses diverse forest management systems with the involvement of local people in government policies. CBFM is a valuable forest management modality that has the potential to contribute to sustainable forest management and improve local livelihoods [1], it provides countries with important benefits through not only the conservation of the forest resource, but also through an equitable distribution of wealth and social cohesion [4]. Furthermore, the definition of “CBFM” is forest management where government and local peoples are involved as participating entities, and considered to be the most important reason to prevent deforestation [14–16]. On the other hand, “decentralized forest management” includes a wider range of participating entities.

1.2. Context

Here, we would like to explain the context and define “participation”: As an indicator of citizen (local people) participation in policy, Arnstein [17] presented a ladder model of participation, which categorized participation into eight types ranging from manipulation of citizens by those in power to self-management. In addition, Harashina [18] modified Arnstein’s model to take a simpler and smaller approach to participation, as shown in Figure 2.

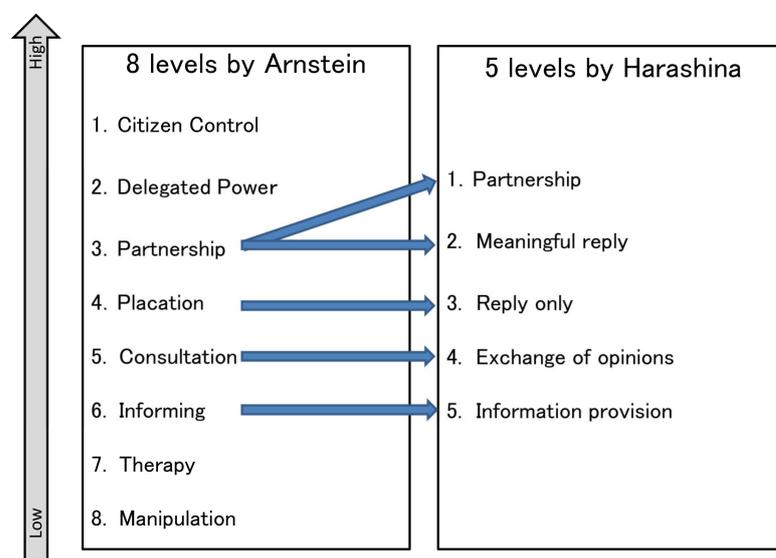


Figure 2. Eight and five levels of participation. Source: based on [17,18].

Even “provision of information” is regarded as a low level of participation, “partnership” as a high level, “delegation of authority” as decentralized, and “management by citizens” as the highest level of participation. When we look at the findings of citizen participation in forest management, there is a lack of description and analysis of “action by citizens (local people)” as a higher level of participation corresponding to these higher levels. In addition, Inoue [19,20] ranked the provision of information as “informing” as a low level of participation, and “mobilizing” as the highest level of participation, higher than partnership (Table 2). In types (1) to (3), local people participate only tangibly, and the government and others have a right to decide on forest use and management, thus

considered as a “participatory top-down approach”. Type (4) would be a “participatory approach led by experts”, in which local people participate through an external initiative. Types (5) and (6) are considered to be “endogenous bottom-up approaches” because the entire process of forest management is carried out by the local people. We believe that it is possible to make new proposals by further examining the participatory approach involved in this study. When PFM is considered as a framework of participatory resource management at the national level, the degree of participation by the state initiative can be classified into three categories, as shown in Table 2.

Table 2. Type and classification of participation and policy approach. Source: based on [19,20].

Types of Participation	People’s Participation	Classification of Participatory	Policy Approaches
(1) Informing	The results determined by outside experts are communicated to the residents. One-way communication from outside to residents.		
(2) Information gathering	Residents answer questions from outside experts. One-way communication from residents to the outside.	Participatory top-down approach	Blueprint approach that positions local residents as labor, volunteer staff, and funders.
(3) Consultation	External experts consult and discuss with residents through meetings and public hearings. Two-way communication. However, residents cannot participate in analysis and decision making.		
(4) Placation	Residents participate in the decision-making process. However, they cannot participate in major decisions.	Endogenous approach led by an expert	Government has decision-making power. Plans devised by professional planners will be revised through discussions and workshops by residents and citizens. A relatively flexible blue-print approach. Both local people and the government have decision-making power.
(5) Partnership	Residents participate in decision-making and collaborative activities in all processes such as preliminary surveys, planning, implementation and evaluation. Participation is a right, not compulsory.	Endogenous bottom-up approach	A kind of learning process approach. Experts are only involved as facilitators. Local residents have the right to make decisions.
(6) Self-mobilization	Residents take the initiative and outside experts support it.		

Considering the fact that PFM aims to bring a wide range of benefits to local peoples, most consistent with this philosophy is the “endogenous bottom-up approach” (types(5)-(6)), in which local peoples have decision-making authority over forest management and can implement projects that meet their needs. Although this approach is ideal, the implementation of the project is not considered to be easy.

1.2.1. Participatory Forest Management (PFM)

In the tropics, about 80% of deforestation is due to the conversion to agricultural land [21]. In the above context, forest management with the cooperation of local people is essential, and not just the state-alone involvement; i.e., CBFM involves close cooperation

between local people and local governments. According to [22], participatory resource management is one of the prerequisites for involving people in resource management, hence the benefits from permissive actions and investments in resources increase people's sense of responsibility for the resources. CBFM is based on the sustainable forest management [23]. However, the relationship between forest governance (how rules are set, applied, and enforced), community participation in forest management, and local empowerment (building agency in the community) has not been clarified. In addition, internationally recognized indicators for monitoring empowerment in local organizations, including governmental and non-governmental organizations as well as local community organizations, are still in the process of being developed. Yamauchi [23,24] argues that, although CBFM has evolved over time, gradually changing its role and scope in response to challenges of the international community in each era of development assistance trends, there is a universal significance of PFM that has not changed over time or across national differences.

1.2.2. CBFM in Developing Countries

In developing countries, post-control of sovereign nations, CBFM is said to have first emerged in the late 1970s in India, where social forestry was applied to improve the welfare of local people [25]. Later, policies centered on CBFM appeared in Nepal, and in the 1980s, CBFM was established as an institution in Philippines and Thailand, and in the 1990s in Myanmar, Indonesia, Cambodia, and other developing countries in the tropics. Since the 1980s, India has seen a deepening interest in the environment, human rights of indigenous people living in forest areas, and rights of local people to use forest resources, which was emphasized in the National Forest Policy enacted in 1988 [26]. Based on this policy, the Ministry of Environment and Forests issued the document titled "Involvement of Village Communities and Volunteer Organizations in the Regeneration of Degraded Forests" to all states in 1990. Grounded on this document, JFM, which involves village communities in the rehabilitation of degraded forests, was introduced throughout India [27]. Van Panchayat (hereafter, VP, self-governing forest organization) has existed since colonial times as an autonomous organization for forest management organized by local peoples, and is considered to be a pioneer in CBFM; and originally located in the northern foothills of the Central Himalayas in the current state of Uttarakhand in India [25,28]. When compared to CBFM in other countries, the VPs in Uttarakhand, which have existed since the British colonial period, were the forerunners of community-based organizations for CBFM in Asia (Figure 3).

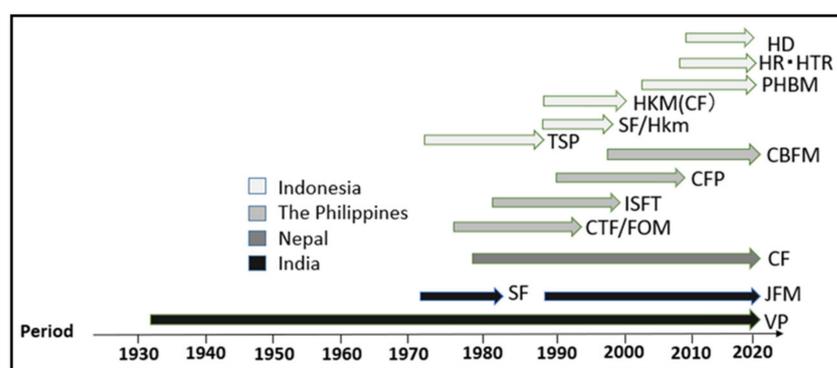


Figure 3. Organizing community-based forest management (CBFM) in Asia. Note: The timing and abbreviated names of the practices in each country are as follows. (Indonesia): 1972 Tumpansari Program (TSP); 1986 Social Forestry Program (SF), Community Forestry (Hkm); 2001 Collaborative Forest Management (PHBM); 2006 Private Land Community Forestry (HR); 2007 Hutong Reforestation (HTR), Hutong Reforestation (HR); 2008 Hutan Desa (HD); (Philippines): 1975 Forest Occupancy Management (FOM); 1976 Common Tract Forests (CTF); 1982 Integrated Social Forestry Program (ISFP); 1989 Community Forestry Program (CFP); 1995 CBFM Integrated Program; (Nepal): 1978 Panchayat Forests and Panchayat Protected Forests) → Community Forests (CF); (India): 1970s Social Forestry (SF); 1931 Forest Panchayat: VP; and, 1988 Joint Forest Management: JFM.

1.2.3. National Forest Policy and CBFM in India and Uttarakhand

Indian policy shifted from the previous policy of promoting production of forest products for state benefit (aimed at maximizing profits) to a policy aimed at ecological stability and social justice [29]. Since the 1990s, provincial forest department (hereafter, FD) has introduced JFM to regenerate degraded forests by involving village communities. JFM, which involves village communities in rehabilitation of degraded forests, was introduced by the state FD [27]. Prior to British colonization, forest areas were under control of local kings and leaders, but forest use by village local peoples was tolerated [30]. During the colonial period, autonomous management organizations for forest management were found in other states, but were not approved by the state government as a forest system [31]. In the early 1970s, the rehabilitation of degraded forests through community participation was implemented in West Bengal [28], and in 1976, the development of social forestry was established as a national policy along with the management of production forests [32].

In India (federal system), state governments have been implementing their own forest and forestry-related policies [33]. In some states, PFM, different from JFM, has been implemented [34], like the VPs in Uttarakhand [35]. In first half of the nineteenth century, forest land was enclosed, and demarcated forests were established on a large scale in Uttarakhand under the state government rules. In mid-1920s, state government designated Class I forests, which were broadleaf forests with little commercial value, and exempted a significant portion of these forests from jurisdiction of the FD, thereby loosening regulations and allowing local peoples to cut bushes and graze cattle. VP was authorized and “Van Panchayat Rules” were enacted in 1931 [36], which was a landmark that officially recognized forest management by VPs during the British colonial period. Accordingly, all villagers are members of the VP upon their approval by a Sub-Divisional Magistrate under the state Revenue Department. The members are collectively referred to as the general body, which selects the Management Committee (hereafter, MC) members through a democratic process. Nagahama [37,38] has been researching the VPs (in the field, in India) over the past 10 years and she summarized previous research on VPs, including their history and evolution, and presented some preliminary case studies on VPs, especially in regard to the MCs and oak forests.

With this background and context, the present study looks into VP characteristics in particular critical aspects of people’s participation; i.e., how the local people are involved in the VP and what precisely are the levels and/or conditions of participation. The study attempts to analyze and understand and show a new phase of forest participation from case of the VP.

2. Materials and Methods

2.1. Literature and Statistical Collection

In addition to collecting domestic and international papers off- and online, a visit was undertaken (by Nagahama) to the Forest Survey of India, under direct control of state government, and Uttarakhand FD (hereafter, UFD) in Dehradun (state capital) to collect data on the characteristics of VPs in each district. Since the Forest Survey of India publishes forest statistical materials every two years and the UFD’s forest statistics [39] are published annually, UFD was visited every year from 2011 to October 2019 to collect materials. The “VP Atlas” [40], which lists all VPs in Uttarakhand with their village elevation, size of VP forest, and the amount of funds (money) they have, was also obtained.

The present study utilizes the case study approach (which can effectively address how the program was actually implemented [41]) to focus on specific VPs in a specific region. A case study methodology was deemed appropriate because it clarified how local people are involved in the VP and what precisely are the levels and/or conditions of participation. Snowball sampling is also useful when it is not known how many survey targets are suitable for investigation. It is useful, for example, for understanding the group relationships and relationships of a network of organizations and relationships in a particular field, centered on an active organization or person and connected to it. There are precedents where the case studies method and snowball sampling has been used in specific sectors and regions [10].

According to the “VP Atlas”, each village has one VP, and there are about 12,089 VPs in Uttarakhand. In order to select VPs in different conditions, the following districts were identified. Districts of Almora with the biggest account size and Chamoli with the largest land holding area were selected from Kumaon region, while Tehri district with the lowest account size and smallest land holding area was selected from Garhwal region (Supplementary Table S1).

2.2. Preliminary Investigation and Case Selection

From among Almora, Chamoli and Tehri districts, interviews were conducted with each VP chief comprising a total of 24 villages using snowball sampling (Figure 4, Supplementary Table S2) from 2012–2015. This is because in some villages, VPs are not organized, and even if they were organized, many of them were not functional. Among these, four villages were selected, where permission was obtained from the local municipality (district) and the VP chief (referred to also as the ‘Sarpanch’ in local language) to conduct the household survey. Additionally, those VPs were considered to be active in regard to forest management, all of which had forest committee meetings, and were recommended by the community organizations to conduct this survey.

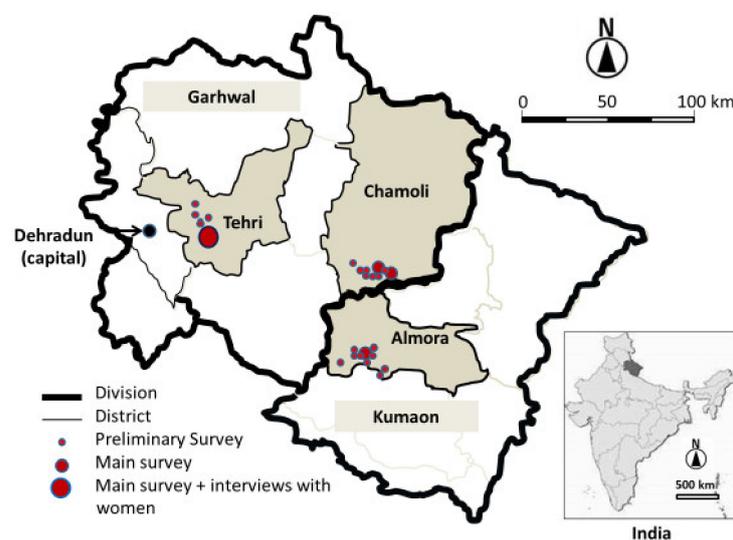


Figure 4. State of Uttarakhand, India (study area).

2.3. Survey Description, Data Collection and Analysis

The survey was comprised of field (site of VP) visits and interviews in all the mentioned villages in the state of Uttarakhand, India. Briefly, the lead author visited the village D in July and August 2012 and October 2013 and 2019, village G in October 2013, village K in June 2014 and 2015, and village M in June 2015 (Table 3). The first author (Nagahama) stayed in the villages for about 2 weeks per visit and conducted structured interviews with 113 households out of the 131 households that were identified for the survey. The respondent was primarily the head of the household, unless otherwise stated. If the household head was absent from the village (for any reason; e.g., migrated, moved outside the state for work, etc.), a representative (either the spouse or the child of the householder) of the household was asked to take part in the survey (interview). The head of the household or household representative was explained the survey and based on the understanding of the research, voluntarily, a consent form was read by the subject and signed before the interview was conducted. Prior to the interview the explanation of the research (along with a translator) was done to each interviewee. Household interviews (first initiated at village D in 2012) were conducted after obtaining guidance and permission from the Institutional Review Board (IRB) on-campus Ethics Review Committee of University of Tsukuba. For the first village survey in 2012 at the village D, the micro-plan [42], which includes the forest

management plan was obtained from the *Sarpanch* of the VP and analyzed. In addition, during the 2014 survey, K village micro-plan [43] was also obtained from *Sarpanch* of the VP, who had been in that position since 2013; to study the activities of the forest MC in village K. Since we could not obtain micro-plans from the other villages, further information was obtained by interviewing the *Sarpanch* of each village.

Table 3. Information of the field locations/sites in Uttarakhand.

Plot number	1	2	3	4	Average	Total
VP	D	G	K	M		
Division	Garhwal	Kumaon	Garhwal	Garhwal	-	-
District	Tehri	Almora	Chamoli	Chamoli	-	-
Altitude (m)	1850	1850	1450	1400	1638	-
HH Number	51	22	31	26	33	130
Sample HH Number	42	14	31	26	28	113
Recovery Rate	82%	64%	100%	100%	86%	-
Sample HH Number by Caste) *						
SC	22	3	0	2	6.8	27
OC	11	2	25: Rawat 6: Negi	1: Bisht 5: Rawat 18: Negi	6.5	13
Brahmin	9	9	0	0	4.5	18
Population	348	158	129	147.0	196	782
Female Population	181	46	62	NA	NA	NA
Male Population	167	72	67	NA	NA	NA
Average Family Number	6.8	7	6	6.4	6	25
Established Year	1993	1937	1972	1953	1964	-
MC (Gender)	M: 5, F: 4	M: 5, F: 4	M: 5, F: 4	M: 6, F: 3	M: 5.6, F: 3.8	M: 21, F: 15
MC (Caste)	OC: 6, SC: 3	OC: 6, SC: 3	OC: 9	OC: 9	OC: 7.5, SC: 1.5	OC: 30, SC: 6
VP Leader	Male	Female	Male	Male	-	-
Forest Watchman	NO	Male	Female	Male	-	-

NA: Not answered. * "Caste" is a system of status in Hinduism, divided into four main categories of *Brahmin*, *Kshatriya*, *Vaishya*, and *Shudra*, which were established as *Varnas*. Further outside of that system are SC (Scheduled Caste) and ST (Scheduled Tribe), which are considered synonymous with the lowest hierarchy. In this paper, classified as Brahmins, the highest hierarchy, SCs, the lowest hierarchy, and OC (Other Caste); no villages with STs were present in this study.

With around 100 questions in the structured interview, each household survey required a minimum of two to three hours. The main responses are summarized in Supplementary Table S3. Regarding participation of local people in forest management, the following questions were considered in the interview: 1. Do you know the name of the VP Chief (*Sarpanch*)? 2. Do you participate in the meetings? 3. How many days in a year do you participate in the meetings? 4. How is your attitude at the meeting? 5. Are you aware of the plan? 6. Have you participated in the preparation of the forest management plan? 7. Is there any benefit or advantage in participating in the activities organized by the MC? These responses are part of the structured interview surveys comprised of 'close-ended' questions. After the interview, some households offered tea ('*chai*') and further talks were carried out as free interviews ('open-ended' questions).

At village D in June 2013, a structured interview survey was conducted with adult women to determine their attitudes about participation and management of meetings organized by the MC, from the wife of the *Sarpanch* (hereafter, Mr. R., and who is also the head of the VP), in a snowball sampling fashion. Interviews were conducted and responses were obtained from 28 respondents for the 24 households that included one household head. The remaining four (4 out of 28) people were adults, but not the household heads.

During the first author's stay in village D (at the head of VP's home), which lasted for about 70 days from 2012–2019, individual visits and interviews were conducted with each

household. In addition, the first author (Nagahama) had daily conversations with women and helped them with their housework and farming. An interpreter was also used to clearly understand the situation and communicate with the local people to build relationships.

Village D was selected as participatory observation location/site because Mr. R who was the first *Sarpanch* (and VP chief) of Village D had been the general leader of VPs in 171 villages in the region and continued to influence forest management even after his retirement. The presence of multiple castes, including the fact that forest resources were the main source of livelihood for the VPs, strongly suggested that they (selected VPs) are highly representative as VPs in Uttarakhand. It should also be noted that the VP leader was able to obtain permission due to his ability to seek permission to conduct the survey at the state FD and have it approved each year.

3. Results

3.1. Investigation of the VPs in the 4 Villages

Of a total 131 households in the four villages, survey responses were received from 113 households. Supplementary Table S3 summarizes the data of the survey results for all households, analyzed for each village.

As for the use and rules of VP forests, cutting down of standing trees was strictly prohibited in all villages, while grazing and collection of fodder was allowed. In village D, there are no other rules and no other regulations, so local people are free to enter the VP forest throughout the year to collect non-timber forest products (e.g., firewood and fodder) and graze their livestock. Mr. R. (*Sarpanch*, village D), who had knowledge of the situation at time of establishment, told the first author (Nagahama) that since establishment of VP, only villagers from village D are allowed to use it, and there was an occasion that outsiders were fined.

In village K, there were detailed rules and regulations regarding the collection of firewood and leaves, restrictions on grazing, etc. Meetings organized by the MC were held on a fixed schedule every month to share these rules and regulations. In order to ensure compliance with rules and regulations, the MC hired a forest ranger (*Chowkidar*) for a monthly fee of Rs 20 per household. She (*Chowkidar*) was also aware of VP use and growth of the trees. In the case of village K, the local people of village K were liable to pay a fine of Rs 250 and non-local people of village K were liable to pay Rs 350 for illegal cutting of standing trees. In case of a violation by collecting oak leaves or grasses as fodder outside the set period, the local people of village K shall pay Rs 50, whereas the non-local people would have to pay Rs 100. In addition, the fine for cutting branches was even higher, amounting to Rs 100 and Rs 300, for local people of village K and non-local people, respectively. The mechanism of resolving and forming a consensus for adherence to the discipline could be observed in the monthly meetings organized by the MC. Similarly, *Chowkidar* were employed in villages M and G.

3.2. Local Peoples' Participation in Forest Management

Regarding participation of local people in forest management, the following questions were considered in the interview: 1. Do you know the name of the Panchayat Chief (*Sarpanch*)? 2. Do you participate in the meetings? 3. How many days in a year do you participate in the meetings? 4. How is your attitude at the meeting? 5. Are you aware of the plan? 6. Have you participated in the preparation of the forest management plan? 7. Is there any benefit or advantage in participating in the activities organized by the MC?

For item 2, all households in villages K and M indicated that they participated in the meetings, implementing that MC recognizes that maintaining the forest is an important activity for their livelihood. Item 3 details the percentage of participation per year. Regarding item 7, the majority of households in all villages indicated that there was no benefit or advantage in participating in the activities of the MCs, with several households indicating that the main reasons were that they were unpaid and that they had to do volunteer activities. Compared to other villages, the education level of the household head tended to be higher in Village K and the percentage of forest dependence was higher

in Village M. In addition to items 1, 2, 4, 5, and 6, for which the number of household members can be calculated, “participation in forest practice”, which was an item only interviewed in Village D, is listed in order from highest to lowest (Figure 5). The fact that the percentage of number of people who participated in the activities decreases with the number of items at the bottom indicates that activities are considered to be difficult for local people to participate in, and the level of participation is considered to increase as the arrows indicate (from lowest to the highest) (Figure 5).

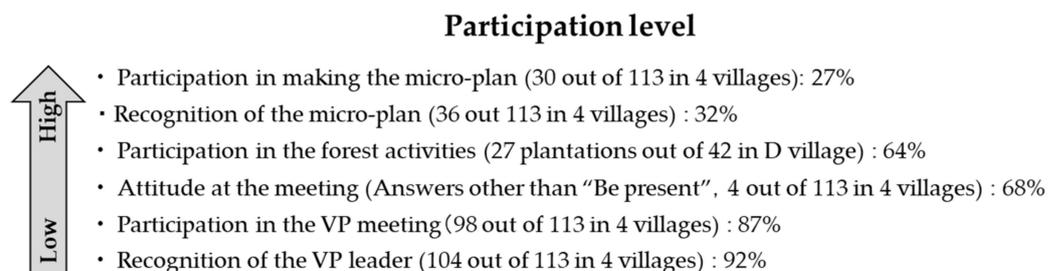


Figure 5. Level of participation. Source: based on the results of a structured interview of households.

3.3. Forms of Participation at the Meetings

How are meetings organized by the MCs held, and what do the local people say about them? In Table 4 (see next page, Section 3.4), point no. “4. Attitudes at Meetings” provides five questions ranging from low participation to high participation.

Table 4. Indicators of people’s participation (by ratio).

Factor	D Village	G Village	K Village	M Village
Recognition of VP Leader (Proportion by dummy variable)	0.92	0.71	1.00	0.96
Attendance of Meetings (Proportion by dummy variable)	0.76	0.71	1.00	0.96
Ability to Influence Decisions (Strength based on Likert scale by 5 levels, $r: 0 < r < 1$)	0.42	0.62	0.72	0.62
Frequency of Meeting (Participation ratio)	0.33	0.58	0.84	0.96–1.00
Merit/Benefit of MC Activity (Proportion by dummy variable)	0.77	0.43	0.06	0.19

In other words, “Form of participation” is a selective answer based on a five-point Likert scale, and questions are weighted according to the lower part of the scale. This allowed authors to obtain answers on what “form of participation” the representative of each household (often the head of the household or a MC member elected by the household) had. In village D, 36 percent (15 people) were just present, in village K, 32 percent (10 people) asked questions for their special roles, and 26 percent (8 people) had a voice and influenced decisions, suggesting that more than half of the local people were influencing decisions.

In case of village K, the meetings were held on Tuesday or Thursday afternoon of the second week of every month. At the beginning of the meeting, the forest warden would say, “We are about to start the meeting, so please gather around!” About half an hour later, she shouted the same thing again, almost all the households had gathered and started talking about the agenda prepared by the VP chief. In village D, which the first author (Nagahama) has visited every year since 2012, there was always an opportunity to participate in religious ceremonies and political meetings, but never had the opportunity to participate in a meeting organized by the MC since 2013.

3.4. Level or Stage of Participation in Forest Management

In Table 4, the percentage of households with a confirmed answer to the questionnaire was calculated based on a 5-point Likert scale, with the weighted values divided by the maximum value (number of meetings versus number of participations). In village K, all

households knew the head of the VP and all household members always participated in monthly meetings, so the ratio was 1. For multiple items such as influence on decision making, the percentage of local peoples' willing to speak out in an influential manner was found to be the highest in village M. In village D, by contrast, despite knowing the VP chief there were not many active discussions and few participants in meetings, leading to low transparency in the MC. In village G, although head of the VP was not well known, about 70% of the households were aware of him. Further, from an interview survey in village G in 2013, all households knew that there was a local NGO (Non-Governmental Organization) involved in this area, and households who did not participate in the committee said, "We have no support from NGOs. I wonder if the members of the committee are getting financial support from them". Taken together, it can be said that people in villages K and M show a high level of participation in forest management.

3.5. Forest Usage by Women and Their Participations in the Management Committee

The results of the interview survey on women's actual forest use and management are shown in Table 5. According to the interview on forest use, the main work of women in the forest was collecting twigs, branches, grass and leaves, and nuts and fruits depending on the season. Firewood was collected about three to four times a week and the women go into the VP forest area to collect twigs; to note, around 25 kg load can be carried on their (women's) back. It was found that it is mostly women who go to the forest every day, as they needed firewood/leaves (fodder) for cooking and tending to livestock. Of the 28 women interviewed, three were current MC members, and included two women who had been MC members in the past; in total about 20% of the total number of women had been MC members. All the female MC members were recommended by the head of the VP and did not become members voluntarily, but some of them said that they were willing to speak up at the meetings.

3.5.1. Interviews with the Women who Are MC Members

Table 5 summarizes the views of all the interviewed women, including the women who are MC members (No. 9, No. 20, and No. 21), as described earlier.

As interviews were conducted in a snowball sampling style, starting with the wife of the *Sarpanch* in 2013, a wide range of responses from the scheduled caste (hereafter, SC), *Brahmin*, which is considered the highest caste, and OC (hereafter, Other Caste) women could be obtained. Most of respondents were the OC (*Rajput*) caste women exceeded 10 who were not members of the MC and a few women who participated were MC members. In this survey, one SC and two OCs were identified, one of whom was a *Brahmin*. All the members stated that the VP-MC members were not elected, but decided through discussions in meetings.

An OC woman who was elected as a MC member (No. 9) said that the reason she was elected was due to a discussion among the male members, but she did not understand the process. Her husband manages a hotel in Delhi and is rarely in the village; her four children are enrolled in schools in Delhi and she stays in Delhi with her family except in June. However, she has to return to village D at occasional opportunities because her parents are residing in the village.

A woman (No. 20) from SC said, "I am very happy to become a member of the MC at the request of Mr. R., as I was interested in it. I do not have any money, but I do not receive any financial compensation as a member of the committee. I also do not know how I was elected. The process is decided by the men. At this time of the year [as of the June 2014 survey], there are no meetings and the MC members lack power".

Another woman (No. 21), a *Brahmin*, said that the selection process was unclear: "I am honored to be elected as a MC member again, because it will improve my education level by meeting many people in the village. I also have a lot to say in the committee".

From the interviews, it became clear that both of the above women had not been appointed to the committee (MC) voluntarily, but at the request of the community or organization.

Table 5. The main content of the interviews with the females in D village.

Question Number	1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	2.4	2.5	2.6	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8
Question Number	Caste	Age	Final Education	No. of Children	Occupation	Distance of VP Forest	Firewood Collection	LPG (Liquefied Petroleum Gas)	Collection	Fodder Collection	Animal Grazing	VP Member	VP-MC Previous Member	VP-MC Member	Attend VP Meeting	Name of Sarpanch	Power of VPMC	Wish to VPMC	Why? Others, if Specify.
Sample No.			(Year) 0: No Education 1–5: Elementary 6–13: High School 14–15: University, BA		1: Agriculture 2: Shop Keeper 3: Teacher 4: House Wife	(km)	1: Yes 2: No	1: Yes 2: No	(Hour/Week)	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	1: Yes 2: No	
1	Rajput	38	0	2	1	0.1	1	1	8	1	0	1	0	0	0	1	1	0	My husband is a sarpanch presently.
2	Rajput	50	0	5	1	0.1	1	1	10	1	0	1	0	0	0	0	0	0	No time; taking animal, collecting fodder, cooking, agriculture.
3	Rajput	45	0	5	1	0.2	1	0	10	1	0	1	0	0	0	0	0	0	Father has gone and mother has to maintain their life. She is not interested in VP.
4	Brahmin	32	15	0	2	0.3	0	1	0	0	1	0	0	0	0	1	1	0	No time; managing for her shop and father's shop. Husband had passed away only 2 years after the marriage.
5	SC	30	0	3	1	0.3	1	0	20	1	1	1	0	0	0	1	0	1	I am not chosen to be MC member, because I am a woman and SC.
6	SC	28	14	3	3	0.3	1	0	20	0	0	1	1	0	0	1	1	1	Previous VP member, I had never seen micro-plan, never received money.

Table 5. Cont.

Question Number	1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	2.4	2.5	2.6	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8
7	SC	55	0	6	1	0.3	1	0	20	1	1	1	0	0	0	1	1	0	No interest at all
8	SC	40	0	4	1	0.3	1	1	10	1	1	1	0	0	0	1	1	0	No time; taking animal, collecting fodder, cooking, agriculture.
9	Chauhan	38	0	4	4	0.3	1	1	4	0	0	1	0	1	0	1	1	1	I don't know why I was elected for MC. The process is among men's discussion. My husband manages hotel and I am staying Delhi with him except for July.
10	Rajput	48	0	3	1	0.2	0	1	0	1	1	1	1	0	0	1	1	1	Family member was a member of VP-MC.
11	Rajput	35	0	5	1	0.1	1	0	20	1	1	0	0	0	0	1	0	0	No time; taking animal, collecting fodder, cooking, agriculture.
12	Brahmin	40	0	3	1	0.6	1	1	2	0	1	1	0	0	0	1	1	0	No time; taking animal, collecting fodder, cooking, agriculture.
13	Brahmin	64	0		1	0.6	1	1	2	1	0	1	0	0	0	1	0	0	VP meeting is only for men.
14	Brahmin	47	0	8	1	0.6	1	1	3	1	1	1	0	0	0	1	0	0	No time; taking animal, collecting fodder, cooking, agriculture.
15	Brahmin	29	5	2	1	0.6	1	1	10	1	1	0	0	0	0	1	1	1	As forest is evergreen.
16	Brahmin	64	0		1	0.6	0	1	0	0	0	0	0	0	0	0	0	0	I retired house work. Now, I only take care of children and do cooking.

Table 5. Cont.

Question Number	1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	2.4	2.5	2.6	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	
17	SC	49	0	2	1	0.3	1	1	10	0	1	0	0	0	0	1	1	1	I do not know why I am a member of VP.	
18	Rajput	64	0	5	1	0.2	0	1	0	0	1	1	0	0	0	1	1	0	My husband was a <i>sarpanch</i> more than 20 years.	
19	Rajput	49	1	2	1	0.2	1	1	5	0	1	1	0	0	0	1	1	0	Forest is like my father. I can get many materials when I go to forest.	
20	SC	29	10	2	1	0.2	1	1	5	0	1	1	0	1	1	1	1	1	I am interested in becoming VPMC member, because of Mr. Rawat's request. I don't get any money from VP-MC.	
21	Brahmin	30	5	2	1	2	1	1	4	1	1	1	0	1	1	1	0	1	I don't know why I was elected for MC, the process is among men's discussion. There is no MC meeting in this period, MC has no power. I am happy to be elected for MC member again. I will be educated when I can meet many people in the meeting and improve my knowledge. I can comment a lot at the meeting.	
22	SC	32	0	3	4	0.3	1	0	20	0	0	0	0	0	0	0	0	1	1	I don't have LPG, but firewood user, My husband is in Panjab. No agriculture and animals. Everything comes from market.

Table 5. Cont.

Question Number	1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	2.4	2.5	2.6	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8
23	SC	70	0	2	1	0.3	0	1	1	0	1	0	0	0	0	1	0	0	I am getting old, no interest in VP at all.
24	SC	30	0	2	1	0.3	1	0	10	1	1	0	0	0	0	0	1	1	I am interested in becoming a VP-MC member.
25	Brahmin	80	0	4	1	0.3	0	1	0	0	0	1	0	0	0	1	0	0	I am too old to attend the VP meeting.
26	SC	38	0	5	1	0.3	1	0	20	1	1	0	0	0	0	1	1	1	I want to be a member, because I hope village activity will be better.
27	SC	36	0	2	1	0.3	1	0	10	1	1	0	0	0	0	1	0	0	Because my husband attends VP meeting, I am happy to use VP forest.
28	Brahmin	50	0	4	1	0.2	1	1	10	1	0	1	0	0	0	1	1	1	I am an assistant of Pradhan (Community leader).

VP: Van Panchayat, MC: Management Committee.

3.5.2. Interviewing with the Women who Are NOT MC Members

Table 6 summarizes the views of all women interviewed, including the women who were not the MC members. For the responses from No. 1 to No. 4, it was found that the interest in being a MC member or participating in the meetings was low due to personal reasons. Similar responses were found for No. 11, No. 12, and No. 14, who are not interested in being MC members at all because they have a lot of work to do, such as household chores, as shown in No. 7 and No. 8. Similar responses were “I did not know that I am a member of VP (No. 17)”, and “I do not have gas in my house and I survive on firewood. She has no livestock or farmland, and her husband goes to Punjab (a state in North West India) to work. She buys all her daily necessities at the market (No. 22)”, and “I am old and have no interest in VPs (No. 23)”. Furthermore, women of the highest caste, Brahmin, said, “I do not have time to spare due to the work of herding livestock, collecting firewood, preparing food, and cultivating crops (No. 12, No. 14)” and “VP meetings are held only for men (No. 13)”, “We need to go to the meetings to keep the forest green forever (No. 15)”, “I am 64 years old, so I have retired from most of the household chores and just take care of the children and do the cooking (No. 16)”, “I am too old to participate in the VP meetings (No. 25, a 80-year old woman)”, and “I am assisting the village leader (also called the ‘Pradhan’), so I cannot be a MC member (No. 28)”. Although women of all castes were reluctant to attend VP meetings due to work, age, and other reasons, we did hear from a few women in the SC who were interested in the VP and its meetings. “I am interested in becoming a MC member (No. 24)”, “I want to be a MC member for the betterment of my village (No. 26)”, and “My husband participates in the meetings of the VP (I do not have to participate in the meetings) and I am happy to use the forest managed by the VP (No. 27)”. They stated that they would like to be a member of the MC, but it would be difficult for them because they are women and belong to the SC.

Table 6. Women’s daily work. Source: based on [38] and participant observation.

Time	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	1	2	3	
Spring/ Summer/ Autumn (March–May/ October)	Wake-up			Collection from forest					Lunch/ Rest				Agricultural work				Cow-ranch		Dinner and the preparation					Sleep	
Mon-soon (June–September)	Wake-up			Collection from forest					Cow-ranch lunch			Rest		Agricultural work			Cow-ranch		Dinner and the preparation						Sleep
Winter (November–February)		Sleep		Wake-up			Collection from forest		Lunch/ Rest				Agri-cultural work				Cow-ranch		Dinner and the preparation						Sleep
				Cow-ranch Breakfast															Rest						
																			Entertainment						

Based on results of the interviews, it is suggested that they do not have time to participate in the MC and have no intention to become members because they need to take care of their livestock, collect fodder and firewood to cook, and grow crops to feed their families. More than half (57%) of the women have clearly stated this. Some women in their 70s and above indicated that they were not interested in the VP because they are getting older. Overall, less than half of the women were interested in being a member of the MC, and the reasons for their interest varied from personal reasons, such as family demands, to social reasons, such as improving forest utilization in the village.

3.6. Factors That Prevent People from Becoming MC Members

An overview of women’s daily routines is presented in Figure 5 based on participant observation and micro-plan descriptions.

The collection of non-timber forest products in the forest is done throughout the year, indicating that women are users of the forest. Other activities such as livestock care, food preparation and cleaning are done throughout the year, with agricultural work being most active before and after the monsoon (rainy season). During winter months, work is reduced and leisure time increased, but the women are still engaged in work except for during sleeping hours. Such a large number of tasks assigned to women may be the primary factor preventing them from participating actively in MCs. From the interview with Mr. R., he stated that: “In the year of election of MC members in the VP in 2013, the new head of VP was nominated by him” as shown in Table 7. He further stated that, “In the MC, I made sure that the ratio of men to women was 50/50. My own next head (2013–2018) did not understand the job well and for the new VP head (2018–) I nominated a man of the same caste who lives in my neighborhood”. “We ask households that have women who can serve as MC members to ensure that women make up half of the committee (four members)”. It is noted that the second son’s wife, who lives next door, is also on the MC. However, it is also understood that in households with male members, adult women could not serve as the MC members.

Table 7. Results of main interviews with the Van Panchayat chief and participant observation.

Year	Participatory Observation	Interview with Mr. R.
2011	Introduced Mr. R., by Mr. K., Chief Forest Panchayat, FD	He had been the head of VP since its organization at Village D in 1993.
2012	Structured interview survey in village D (41 villages), Stay at Mr. R.’s house, Obtaining a micro-plan of village D (MDO 2002) and a hand-drawn map of the village, Visit to Mussoorie Forest Office with Mr. R	The Panchayat forest used to be a civil forest (Civil and <i>Soyam</i> forest). Anyone can access and use the forest freely. As for the rules of use of the forest, cutting of trees is prohibited, but there are no rules regarding the collection of firewood and leaves, or restrictions on branching, grazing, etc. Residents are always free to enter the panchayat forest to collect forest products and graze livestock There is a project site for bamboo forest, waiting for bamboo to take root. There was a bamboo forest project site, waiting for bamboo to take root. Although the species of tree was not required for planting, bamboo was planted in consideration of job creation in the village, as bamboo wood can be used as building material after growing.
2013 February	Meeting with the VP head of village D (Mr. R) and his daughter (Ms. B) at a hotel in the provincial capital, Dehradun	The year 2013 is the year of election of forest management committee members in the forest panchayat. I am proud to have worked as the head of the forest panchayat in village D since the establishment of the forest panchayat in 1993 until 2012.
2013 October	Semi-structured interviews with females, Interviews with new and old VP heads in village D, stay in village D (homestay)	VP head changed in 2013. For those households who were away for the last and current household surveys for the interview, they stayed in other places such as Dehradun or Delhi for work or child education, but returned home several times a year. The new VP chief was recommended by myself The forest warden has not been in village D for some time. There is no need for it. The wife of the second son who lives in the next house is a member of the MC.
2015	Forest (Trees) investment in Village D	The bamboo project had difficulty in rooting. In the early 2000s, a bamboo plantation project was launched in the state. There was a period of time when a subsidy of Rs 100,000 per year was provided for the preparation of afforestation, for a period of five years, which was paid by the state government to an account managed by the Chief of the VP in the early 2000s. The subsidy also encouraged other villages to implement the project. Village D has not only Panchayat forest but also Uttarakhand forest as well as large Reserved forest. Some of the residents do not know the boundaries.
2017	Stay in Village D (homestay in Village D)	In Village D, there are no pine forests large enough to collect pine needles from Himalayan pine.

Table 7. Cont.

Year	Participatory Observation	Interview with Mr. R.
2018	Interview with new VP head of village D and former VP and head of village D (overnight stay in village D)	In households where there is a male member of the management committee, no adult female can be a member. In the forest management committee, the ratio of male and female members is the same. The previous head did not understand the work well. The new VP chief recommended a man of the same caste who lives nearby. As for the management committee members, we have asked households with women who can serve on the committee to ensure that women make up half of the committee (4 members).
2019 March	Interview with the former VP of Village D and interviews in Village D (Homestay in Village D)	(Regarding the neighboring villages where the interviews were conducted) In village B, there is a forest panchayat chief, but no forest committee meeting is held; in village M, the organization does not seem to be active. Every household (which did not have LPG in the past) is now using LPG. Gas stoves are convenient for boiling water for chai, etc., but for cooking, wood is more convenient because of its higher heat.
2019 October	Participant observation in Village D (Homestay in Village D)	(The north side of the village is the area where the SC residents.) The place beyond (north side) the SC is a garbage dump. Household garbage is usually disposed of by building a fire and burning it by themselves.

From the above interviews, it can be seen that Mr. R. has been involved in the MC of village D even after the retirement from the position as the head of the VP. The number of women on the MC has been limited in the past, and four women members have been appointed (to the MC), as stipulated in the state rules. However, a possible situation where members are not elected, and meetings are conducted mainly by males, may be the second factor that prevents women from participating in the MC.

In one of the interviews with the women, one woman mentioned, “The forest is like a father to me, giving me blessings when I am in trouble” (No. 19, Table 7). In poor households, forest land is considered to be a place that provides the resources necessary for daily life, but meetings are not considered to be a place of power, and women are less inclined to actually participate in decision-making. These values of women can be considered as the third factor that prevents women from participating in the committees.

According to the results of participant observation with Mr. R. (Table 7), of D Village who was appointed in 1993, and was head of the VP until 2013 (4 terms, 20 years), he organized three to four meetings per year as a duty of the VP head. At that time three women (among a total of 8 members including the *Sarpanch* in the MC) were MC members, and including a wife of the second son of Mr. R. who lives in the adjoining house. It was the year of election of MC members in 2013, and where the new VP head was nominated.

The ratio of male and women members in the MC is 50/50 according to newest “VP Rules”. The previous leader (2013–2018) did not understand the job well; he did not organize forest meetings at all. Mr. R also committed to nominate the head of VP in 2018 onwards. New VP leader (2018–) recommended male MC members of the same caste who lived in his neighborhood, asked women to serve on the committee, and at that time, women make up half of the committee (four members). As Mr. R. said (Table 7), before the VP forest in D village, it was a civil forest (Civil and *Soyam* forest), which anyone can freely access and use. After organizing VP, in terms of forest use regulations, only the felling of trees is prohibited, while the local peoples of village D can enter the VP forest to collect forest products and graze livestock. Village D also has a large “Reserved” forest, and the villagers know well to utilize both the Uttarakhand forest (Reserved forest) as well as the VP forest, but do not know well the boundary between them. In village D, the forest is mainly oak forest, and there are no pine forests.

In the early 2000s, a subsidy of 100,000 rupees (per year) was provided to village D VP by the FD, hence Mr. R promoted neighboring villages to organize VPs and obtain the subsidy. The subsidy was paid by the state government into the account managed by

the VP head, thus, there was no need to have a forest warden for this. At the VP forest in village D, since in 2011 a bamboo forest project started and bamboo was planted; however, in 2015, it was deemed unsuccessful due to difficulties in rooting.

4. Discussion

4.1. Van Panchayat (VP): Pioneering Case Study of CBFM

In the present study, a case of the VP in Uttarakhand, India, was introduced as a pioneering case of CBFM. While “decentralized forest management” encompasses a wider range of participating entities, “CBFM” is a concept that encompasses various types of forest management with the involvement of local people in government policies. However, the full potential of CBFs has yet to be realized in most countries, and there are many hurdles in the way of effective implementation [1].

In the VP, decision-making power is held by the MC, which is organized by local people. It is not a top-down approach by the government, but an endogenous bottom-up approach by local people. Existing studies on VPs stipulate meetings organized by MCs in terms of community participation, but in reality, many organizations do not have community participation, and it cannot be said that VPs properly work as management entities. In order to achieve a sustainable use, cooperation of the local people is necessary in forest resource management, and the unification (consolidation) of the will of local people is considered important. In order to achieve this, it is desirable for local people to actively participate in decision-making forums such as meetings. However, the following facts were also recognized by the authors as field research results: unclear local regulations, lack of a functioning MC, and insufficient resource utilization and benefit sharing by the local people.

Yamauchi [23,24,44] considered the case of PFM based on “forest management customarily carried out by communities or individual local peoples” as “government involvement in forest management carried out by local peoples”. In this case, the government transfers the land used by local people as panchayat forest to the local people ($Z \rightarrow X \rightarrow W$). It is questionable whether it could be considered as PFM because of government involvement. The three vectors shown in blue alone are difficult to explain, hence we would like to propose a vector in red (Figure 6). As a modification of Yamauchi [44], we propose a re-examination of the typology of PFM. The process by which the government hands over the land customarily used by local people for their livelihood and security to the local people as a VP converting it into designated forest land follows the process of the establishment of the VP in 1932 [38].

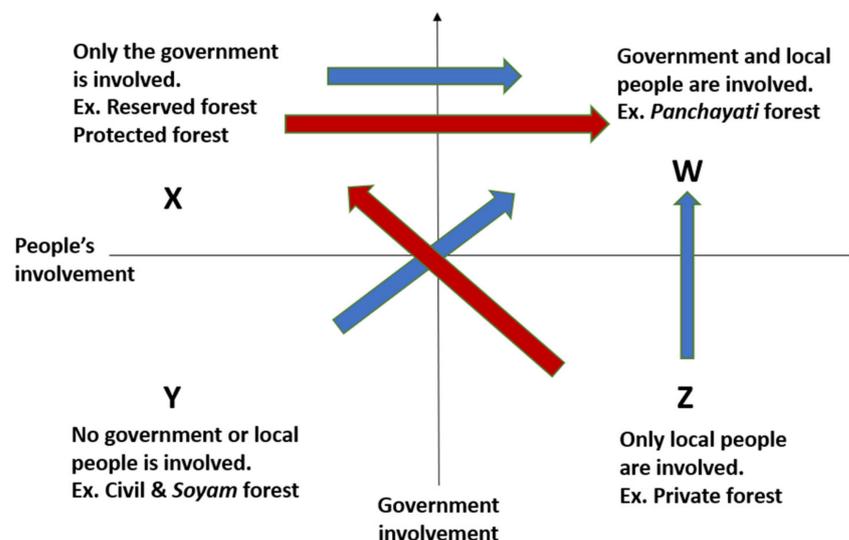


Figure 6. Formation process of panchayat forest land. Source: based on [23,24].

Thus, the VPs are considered “development” organizations structured by the government. However, the knowledge of the customary use of forest land by local people places them under “endogenous” forest management as for autonomous organizations instantaneously. To make VPs more dynamic, it is vital that they be given a free hand in the management and protection of the forests without any undue influence of the FDs or the government in their decision-making process for local people [28].

4.2. Categories in Participation

In the four villages surveyed in this study, panchayat forest land was managed by local people through active VPs, and rules were set according to actual situation of the local village. In village K, detailed rules for forest use and management were set at monthly meetings, and forest monitoring was conducted to enforce the rules. In order to enforce the rules, the villagers collected payments from all households to hire a Chowkidar, and restricted the collection of firewood and leaves by imposing penalties (payment of fines) for the use of non-members (village local people). In village K, the percentage of livestock grazing is low because of the existence of several regulated panchayat forest areas, so the local people have maintained strong ties between households by entrusting their livestock for several months to a household leader who is responsible for grazing the livestock. This can be attributed to the fact that the village is made up of a homogeneous caste.

Although the self-governing function of local people has declined in many cases, the reason behind active self-governing management in village K was that a micro-plan has been prepared with the support of CAMPA (a government organization), and local people participated in the meetings. The support of external organizations has made the organization active, which can be considered as a “bottom-up approach”. However, not all households viewed the external support positively; in village G, the support from CHEA (a NGO) was criticized as benefiting only the *Sarpanch* and those around him. Regarding Inoue’s [45] perspectives of “involvement” and “collaborative governance”, it can be said that there are many difficult aspects in practice. However, in order to maximize the potential of CBFM, concerted action is needed on the part of governments to create a level playing field for communities and smallholders in fiscal policy and regulations [4].

4.3. Participation Level and Form

Based on the percentage of people’s participation, it was determined that forest activities were at a level higher than decision making. In addition, the participation in preparation of forest management activity plans was high. In regard to the decrease in the number of people, it was found that there was no benefit for local people to participate in MC activities. In regard to the background of participation in village K (household heads tended to be highly educated) and in village M, the characteristic of high forest dependency ratio suggests that the former are aware of the importance of volunteer activities and ecosystem services even without remuneration, whereas the latter are aware of the aspect of necessity for livelihood. As the characteristics and backgrounds of villages and individual households differ, it is necessary to focus on the specific circumstances of each individual with regard to the background of participation.

Regarding participation of local people, two types of participation were seen: “participation in activities” and “participation in decision-making”. Since these were different in height, “participation by citizens” in the stage of participation (Arnstein 1969, Harashima 2005), and “management by citizens” could be further subdivided and analyzed. It is also possible to classify “participation in activities” and “participation in decision-making” in “self-mobilization”, where local people take the initiative in the degree of participation (Figure 7).

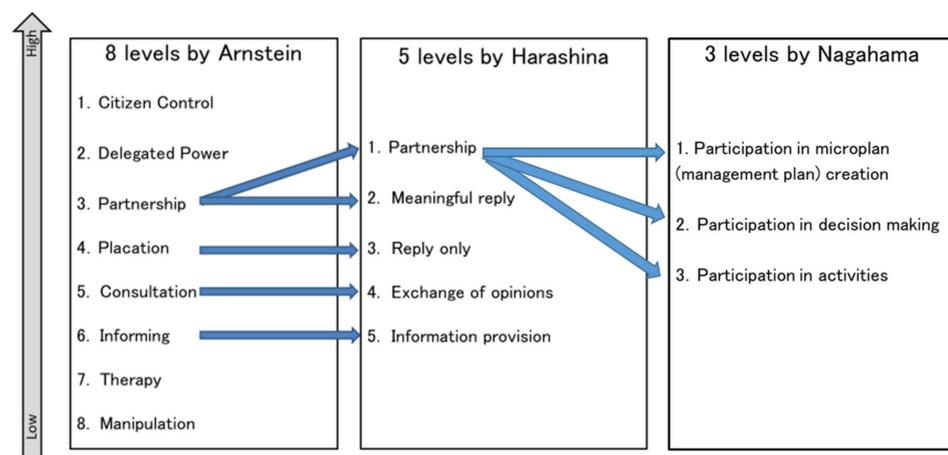


Figure 7. Subdivisions of the level of participation. Source: based on the results of the structural interview survey and [17,18].

Agrawal [46] argues that when there is insufficient monitoring in the forest, management rules are not strongly enforced, leading to a situation of forest degradation. This is comparable to the case of village D, where there is no forest monitoring. It also states that a large number of people migrating from villages to the plains and a lack of government support will degrade management, both of which situations are comparable to the case of village G. In addition, Agrawal [46] found that it is difficult for the MC to enforce forest regulations when members (local people) are not under the adequate control of the MC, and when the population is either too large or too small. The existence of rules and regulations that are appropriate to the local conditions encourages the local people to comply with the rules and regulations through the presence of forest wardens. VPs would be autonomous when they are under the proper control of the MC. The participation of each household in the MC and having a strong (active) voice in the meetings would be an elevated level of participation in decision making for forest management. Fischer [9] proposed that forest management requires policies that mandate public participation in public management, and that systems forestry and resilience thinking is an approach to forestry. This will be discussed as “Theory of Participation’s Form”.

4.4. Decision-Making by Women

More than a half of the households in village D were SC households, and that only certain members of the community were able to participate in the MC. Specific members who were able to participate in the MC may have weakened the awareness of local people to participate in management. The number of villagers involved in forest management was limited, and a limited number of women were nominated to take the position of MC members. It can be considered that priority was given to forest use.

Interviews with the women MC members revealed that decision-making positions are mostly occupied by male members. It is possible that a strong leadership of the VP chief who manages the meetings excludes households and members who want to participate in the decision-making process. It could be argued that this undermines democratic methods, reduces opportunities for diverse local people to participate in forest management, and reduces interest in decision-making, but could also be inevitable within the traditional knowledge and practices of India. With regard to the selection of members of the MC, an election every five years did not work, and more than a half of the members were continuously appointed/elected members. It was found that the members are organized by committee nomination or the VP chief and are constantly involved in the MC.

Labor such as collection of firewood and fodder (leaves and grasses) was essential for livelihood, not for income generation, and was performed by women in most of the households. Women’s involvement with forests was found to be higher than men’s, as women primarily use forests for their families.

Only a few women were involved in decision-making. The fact that most of the households were satisfied with their current forest use can be explained by the limited number of households and women who actively participate in forest management. In particular, MC members are often elected from upper caste households [33]. In addition, it can be considered that there is an actual situation where women's participation in decision-making is lowered due to their social and customary lack of high status. There is a perception that there is no "advantage to participation", which is based on the experience of being underrepresented, as pointed out by Agrawal [47], and low educational background. The structure of gender-based oppression and exclusion of women can be examined from the perspective of ecofeminism, in which the principles of ecology (harmony and symbiosis with nature) are combined with feminism (an ideology and movement for women's self-reliance), which holds that women and nature have a special connection [48].

The "Van Panchayat Rules" since 2001 have included a provision for half the number of women MC members. The question of how this will be adhered to in each VP and the composition of MC member membership will continue to be an issue, not only currently, but also in light of the changes that will occur in the next round of elections. Furthermore, meaningful devolution requires nurturing democratic, self-governing CBFM institutions with clear communal property rights and empowerment of forest-dependent women/men to make real choices for enhancing sustainable livelihoods in accordance with their own priorities [29]. Stevens and Krishnamurthy [49] suggested that "if supported by an empowering regulatory landscape, VPs may be the institution best poised to effectively safeguard biodiversity and human well-being".

5. Conclusions

Forest management in the VP is pioneering example of CBFM. The three stages of community participation in forest management are: participation in activities, participation in decision-making, and participation in the preparation of management plans. The main participatory activities for VP members are forest-related activities such as tree planting and forest patrolling. Firewood use was also prevalent in MCs where there were many upper caste members. The majority of VP forest users were women, but the number of female members in the MC was limited, and the women involved in decision making were fixed and did not voluntarily choose their positions. In the above context, it clearly implied a limited participation of women in the decision-making process, i.e., no or negligible involvement in the management plan by the main VP forest users. In summary, participation in CBFM activities was easy for the villagers (surveyed in the four villages/VPs); however, what was the most difficult was the participation leading to decision making in the MC and the VP as a whole. In order to increase the active participation of women in the MC, it is necessary to increase the number of items in forest policies such as the "Van Panchayat Rules" that encourage women's participation in decision-making and maintain a mechanism to ensure compliance with these rules.

Finally, the authors suggest (based on the outcome of the decade long research) two main actions for the VPs. Firstly, it would be desirable to make rules to ensure that each VP complies with the system, included in the "Van Panchayat Rules" from the Uttarakhand state, which requires half the number of women members of MC, and to elect new members to the MC every five years. Furthermore, with regard to the provision of half of all VP leaders being women in the state, if this system is adhered to, the percentage of women leaders in each VP will be increased. This is critical, as many of the VP forest users are women. Secondly, it is imperative for the state FD to actively appeal and promote the case of women's increased participation in decision-making and their contribution to sustained forest management and village revitalization through the appointment of women MCs and VP leaders.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/f13101667/s1>, Table S1: Van Panchayat information in Uttarakhand state title; Table S2: Interview with the *Sarpanch* (Van panchayat leader) at Uttarakhand; Table S3: Variation in data set of household (HH) numbers by interview at each VP.

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