

Out-Migration in Kumaon: Are Van Panchayats (Forest Councils)

Socially Resilient?

by

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ABSTRACT

What happens to community-based institutions (CBIs) when persistent out-migration changes the socio-demographic structures in the community? This question needs exploration in the context of increasing urbanization in the developing countries, where a substantial population depends on forests for subsistence livelihoods. In pursuance of this question, Almora district in India provided the necessary conditions of high out-migration, and the presence of oldest surviving CBIs of forest management (locally called as Van Panchayats or VPs). Framing the research question as social resilience of VPs amidst high out-migration, a representative sample of six VPs in Almora was investigated. Factors considered crucial to social resilience were analyzed by using qualitative and quantitative techniques on primary data collected through household surveys (n=111) and secondary data from authentic sources. Results, organized by three levels of analysis, highlight: 1) community - low participation, particularly of women, in proceedings of VPs, and a transition away from forest-based livelihoods; 2) institutional (VPs) - low adaptability to changes in gendered composition and a shift away from the community-specific needs; and, 3) policy - reduced use and access of forest resources for the community, and curtailed autonomy of VPs. The findings suggest that out-migration is one among the multiple factors, and its impacts on VPs are mediated by the broader political economy around VPs, thus obviating a linear causal relationship. Therefore, the findings arguably inform policy and future research by highlighting linkages between diverse contextual factors at the regional and community level, and the points of concern for social resilience of VPs, with particular focus on out-migration.

DEDICATION

This work is dedicated to my parents, my wife, and to the people of Almora.

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It was in the year 2014 when the question about the future of Forest Councils (Van Panchayats) was raised by a Forest Department official I interviewed for a research project. Towards the end of the interview, he had surmised that given the socio-demographic and political changes, the Van Panchayats might cease to exist after 10 or 20 years. It was after that interview that I started to think about the future of Van Panchayats, and it became the focus of my dissertation. Hence, I should first thank the Forest Department Official for steering my thinking towards the future of Van Panchayats.

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LIST OF ABBREVIATIONS

CBF	Community-based Forestry
CBI	Community-based Institution
CBNRM	Community-based Natural Resource Management
VPs	Van Panchayats
GPs	Gram Panchayats
SHGs	Self-help Groups
IFRI	International Forestry Resources and Institutions
MFSC	Ministry of Forests and Soil Conservation (Nepal)
NSDC	National Skill Development Corporation
FD	Forest Department
HOH	Head of Household
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNDESA	United Nations Department of Economic and Social Affairs
SGDP	State Gross Domestic Product
DGDP	District Gross Domestic Product
RD	Revenue Department
RLEK	Rural Litigation and Entitlement Kendra

Chapter 1

Introduction

Migration, or movement of people from one place to another, has shaped the global distribution of human population throughout the recorded history of the world. However, the trend towards increasing urbanization in the developing countries brings forth a number of challenges. One crucial challenge being, what are the implications of rapidly urbanizing, albeit predominantly rural, countries of Asia and Africa on the governance of forests. To illustrate, although Asia and Africa comprise 90% of the world's rural population, where the importance of forests to rural livelihoods is critical (Angelsen et al., 2014), they are also estimated to add nearly 90% to the urban population by the year 2050, India alone contributing 414 million (United Nations Department of Economic and Social Affairs, 2014).

As urbanization is associated with migration of people away from the rural areas (out-migration from rural areas), the implications of this demographic shift on forests becomes critical. Quantitative estimates of global population dependent on forests for livelihoods vary between 350 million and 1.2 billion, but the importance of forests for rural livelihoods is largely uncontested (Agrawal, 2007; Rasmussen, Watkins, & Agrawal, 2017). Further, the spread of community-based forestry (CBF) as a predominant form of decentralized forest governance around the world speaks to the need of examining the impacts of out-migration from rural areas on CBF, recently noted by a global review of 40 years of CBF (Gilmour, 2016).

Attempts to study impacts of out-migration on forests in general as well as CBF are gradually increasing with contributions from challenges to forest transition theory, and work on forest commons as well as resilience of social-ecological

systems. For instance, studies with the lens of forest transition theory have reported an increase in forest cover as a result of out-migration from rural areas, along with attendant land use changes, in United States of America, and parts of Europe and Latin America (Aide & Grau, 2004; Hecht, Kandel, Gomes, Cuellar, & Rosa, 2006; Mather, 2007). However, the forest transition theory has been critiqued for ignoring the socio-economic and political drivers of land use at the national and local level, prominently the role of community-based institutions at local level that mediate the use of forests by communities (Klooster, 2003; Robson & Berkes, 2011).

Moreover, scholarship on forest commons and social resilience also highlights the crucial role played by community-based institutions, like Van Panchayats (VPs), in forest management, and consequently the use of forests. Importantly, studies based on India, have reported that degradation in natural resources commons, including forests and other land uses, significantly affects out-migration in natural resource dependent communities, especially the rural poor (Chopra & Gulati, 1997, 2001). However, the opposite causal relation, that is, effect of out-migration on forest management, especially CBF, has not been given as much attention.

In this context, Kumaon region¹, in the state of Uttarakhand in India emerges as the ideal choice for a study on out-migration and CBF due to the following reasons. First, out-migration from the hilly areas of Kumaon has been a regular phenomenon since colonial times (Guha, 2001), but there has been a spurt in migration, as evident in low and negative population growth in the rural hilly areas between 2001 and 2011 (National Skill Development Corporation, 2013). Second, forests represent an important source of subsistence livelihood for a significant percentage of the

¹ Kumaon and Garhwal are two administrative divisions of the state of Uttarakhand. Kumaon division comprises of the following six districts: Almora, Bageshwar, Champawat, Nainital, Pithoragarh and Udham Singh Nagar.

population in Kumaon region (Tiwary & Joshi, 2015). Third, the Forest Councils of Kumaon (locally called as Van Panchayats) represent one of the oldest surviving examples of CBF in India (Guha, 2001), covering around 33% of the total forest area in the region.

Therefore, building on the scholarship on forest commons and social resilience, this study draws on impacts of out-migration on VPs and is framed as an exploratory study on social resilience of VPs. In other words, although this study examines the impact of out-migration on VPs, it considers social resilience as a theoretical and normative lens to select factors and draw inferences about the impacts of out-migration on VPs.

Resilience is defined as the capacity of the system in maintaining its essential functions when facing adverse changes (Maguire & Cartwright, 2008). When faced with adverse changes, the system may adjust itself as a “reaction” in the short term (coping capacity), and/or adapt and learn from the change “pro-actively” in the long term (adaptive capacity), and/or even transform itself to deal with change in the long term (transformative capacity) (Keck & Sakdapolrak, 2013; Pelling & Manuel-Navarrete, 2011). In all the above three scenarios, the system will be considered resilient. Therefore, with different degrees of change in different time horizons, maintenance of essential functions reflects resilience, and the broader goals of social and ecological sustainability can be used to define the essential functions. Drawing from the general concept of resilience, social resilience considers maintenance of essential functions from the perspective of community, like maintenance of livelihoods and social institutions in the community (Tanner et al., 2014). So, social resilience does recognize the critical role played by the ecology, but it places

analytical focus on the social aspects from the perspective of the community under consideration (Adger, Kelly, Winkels, Huy, & Locke, 2002). For example, in this dissertation on VPs, the lens of social resilience does recognize the critical role played by forest vegetation and cover, but it considers social factors, like livelihoods and collective action in community, for the analysis.

Following on the brief discussion, I now consider the approach to address the research question on impacts of out-migration on VPs through the lens of social resilience. To begin with, the two basic questions about resilience are: a) resilience of what?; b) resilience to what? (Tanner et al., 2014). In this dissertation, it is the resilience of VPs as community-based institutions of forest management that is under consideration. And, the focus is on out-migration, along with other contextual socio-economic and political factors that affect the working of VPs, and the community, where these VPs are located. Further, to approach resilience, a consideration of different levels of analysis needs to be considered, such as individual level, household level, community level and higher levels like regional, national and global level. This is because resilience at one level may not mean resilience at the other level, and this is what the systems-based understanding of resilience argues about (Berkes & Ross, 2013).

Having decided that resilience of VPs is the question, the lens of social resilience argues for consideration of social factors in the community that affect resilience, broadly categorized into factors related to, or processes leading to, agency and self-organization in the community (Berkes & Ross, 2013). Agency is defined at the level of groups (and individuals) as the ability of voluntary action towards preferred choices (Brown & Westaway, 2011). Further, self organization can be

understood as the independent collective action on the part of individuals in the community towards changes affecting them (Berkes & Ross, 2013).

Drawing from agency, the livelihoods in the community become one of the critical factors to consider, given that livelihoods resilience is also considered as a significant form of human and collective agency (Tanner et al., 2014). Moreover, as the core question is about resilience of VPs, livelihoods become contextually very relevant due to the dependence of a large percentage of population on forests for livelihoods in the study region. Hence, one of the factors that this dissertation examines through the lens of social resilience is livelihoods in the community, and the changes that have taken place in terms of livelihoods.

Drawing from self-organization, participation in collective action that builds on the idea of engaged governance becomes another important factor to examine social resilience (Berkes & Ross, 2013). Participation is collective action towards forest management through the VPs dates back to at least eight decades in Kumaon (Guha, 2001). Hence, considering participation in collective action through VPs is another factor that this dissertation considers to assess social resilience.

Finally, drawing from empirical studies on community-based institutions of forest management mentioned in a number of studies (Adger et al., 2002; Robson & Berkes, 2011) institutional flexibility emerges as an important factor to consider. Hence, flexibility of VPs towards changes, chiefly out-migration and other contextual factors, is the third and final factor that this dissertation considers to explore social resilience.

Having decided the factors to focus on, the next part deals with units of analysis. Given, resilience is contextual, and needs consideration of multiple relevant

layers, the three levels of analysis in this study are: a) Institutional level – dealing with VPs as community-based institutions; b) Community level – dealing with the analysis at the village level where VPs are located; and c) Regional level – dealing with district and state level analysis.

To summarize, the overall research question is about social resilience of VPs amidst increased out-migration, so the structure and function of these community-based institutions (institutional level) has been examined to explore flexibility of VPs and participation in collective action with respect to VPs. Further, as social resilience has been found to be crucially dependent on community-level livelihoods, this dissertation has examined livelihoods. Finally, as social resilience is context-specific, the socio-economic and political factors affecting livelihoods and the functioning of VPs at the regional level have also been considered in the study informing this dissertation.

Therefore, the broader research question that this dissertation aims to address is whether VPs are socially resilient amidst increased out-migration in Kumaon region of Uttarakhand. Based on the factors identified previously, the overall research question can be broken into three sub-questions:

- a) How has out-migration affected participation of community in VPs?
- b) How has out-migration affected forest-based livelihoods in the community?
- c) How have the contextual socio-economic and political factors, along with out-migration, affected the working of VPs?

The first research question encapsulates the two factors, namely flexibility of institutions and participation in collective action in the community. Flexibility in institutions has been captured as VPs adjusting governance structures according to the

demographic shift in Kumaon, where the number of women has increased relative to men in the rural and hilly areas (Tiwary & Joshi, 2015). In other words, this dissertation has examined if VPs have been responsive to the change in sex-ratio in terms of increased representation of women in the VPs. Participation in collective action has been captured as participation of households in the community-based institutions. The focus is on VPs, and two other community-based institutions, where participation of migrant and non-migrant households will be compared to ascertain increase or decrease of participation in the meetings and activities of VPs.

The second research question encapsulates the community-level factor, namely livelihoods in the community. This dissertation has captured forest-based livelihoods by examining the use of forest resources at the community level. Similarly, the third research question dealing with broader contextual factors will be captured by a review of changes in forest governance, amendments in policy on VPs, and livelihood activities at the regional level.

To pursue the research questions, this dissertation focused on VPs located in Almora district in Kumaon region, where women hold leadership positions. The prevalence of high rate of out-migration and the greatest concentration of VPs were the reasons behind choosing Almora. Focus on only those VPs where women are in leadership positions, or women-headed VPs, was purposive, and as a proxy of out-migration. Reason being, studies from different parts of the world indicate women gaining windows of opportunity due to out-migration of men (Giri & Darnhofer 2010; Robson & Berkes, 2011; Tiwary & Joshi, 2015). Also, finding no study on women-headed VPs as yet, this dissertation aimed to fill the research gap as well.

Further, in line with the exploratory nature of the study, a representative sample of six VPs out of entire 89 women-headed VPs in Almora district was selected as the final sample. The six VPs were selected based on four factors held as crucial to the working of community-based institutions for management of forest commons. They are: area under forests and population dependent on forests in the respective VPs, location of forests with reference to markets, elevation of the forest, and time of functioning of the VPs (Agrawal & Yadama, 1997). Both primary and secondary data has been used for analysis. The secondary data was collected through literature and policy documents from government sources, and also from scholars and activists working on VPs in Kumaon region (grey literature), while the primary data was collected by means of surveys in the six VPs.

The surveys were conducted at two levels: one, at the institutional level in each of the six VPs; and, second, at the household level in the six VPs. Modified versions of International Forestry Resources and Institutions' (IFRI) institutional and household survey questionnaire were used for data collection at the institutional and household level respectively (IFRI, 2011). Therefore, the final primary data sources were six women-headed VPs from Almora district and 111 households in aggregate from the six VPs. Both qualitative and quantitative analysis has been employed in this dissertation. In case of quantitative analysis, descriptive and inferential statistics have been used. For qualitative analysis, coding of themes has been utilized to answer the questions of interest.

The body of the dissertation that follows is structured in terms of three independently functioning papers, presented as chapters of this dissertation. The goal is to encapsulate the overall research question as well as the specific research

questions within the three papers combined. The first paper (Chapter 2) addresses the first research question on effects of out-migration on participation in the VPs and flexibility of VPs to demographic change caused by out-migration. Participation in VPs at the institutional level has been analyzed by means of descriptive statistics on women holding positions of decision-making in the VPs at the district level in Almora. Further, by using descriptive analysis, the paper analyzes differences between participation of migrant and non-migrant households, and specifically women, from these respective households, in the VPs and two other community-based institutions. Overall, the first paper aims to analyze the effect of out-migration on participation of households, and women specifically, in collective action in the VPs and two other community-based institutions. It also examines flexibility of institutions by analyzing changes in leadership positions occupied by women across the district and entire state of Uttarakhand in two community-based institutions.

The second paper (Chapter 3) emerged out of the findings of the first paper on low participation of women in VPs at the institutional and household level compared to other two community-based institutions. The aim was to answer the question on the determinants of participation of women so as to contextualize the findings from quantitative analysis of women's participation in the first paper. Drawing insights from feminist theories and gendered participation in collective action, this paper is an open exploration into the possible effects of out-migration of young men on women's participation in the VPs at the institutional and household level. Essentially, this paper also focuses on participation, but the analysis is majorly qualitative and exploratory in scope.

Finally, the third paper (Chapter 4) addresses the two other research questions on changes in forest-based livelihoods as well as broader contextual changes in socio-economic and political factors affecting the working of VPs. In case of forest-based livelihoods, the third paper presents a descriptive analysis of changes in use of forests for fuel and fodder at the level of VPs and compares it with trends in use of alternative means of fuel. Further, at the district and state level, the paper analyzes changes in land-use and livelihood-based economic activities to contextualize the changes observed at the level of VPs. Furthermore, the paper analyzes the changes in forest governance and policy on VPs at the state level that are relevant to the use of forest resources and functioning of VPs. Finally, this paper examines the changes in functioning of VPs because the focus of the study was on overall social resilience of VPs. Overall, the aim of the final paper has been to combine all findings from previous two papers along with an analysis of the overall question on social resilience of VPs.

Chapter 2

Out-migration and women's participation: Van Panchayats in Almora, Kumaon

Community participation has been central to the implementation of community-based natural resource management (CBNRM). The underlying assumption being, if the community of users have greater incentives towards management of natural resources around them, their consequent participation will be mutually beneficial for people as well as the natural resources. This assumption has been supported by the literature on natural resource commons with a caveat that community comprises multiple actors with multiple interests (Agrawal & Gibson, 1999). The promotion of community-based forestry (CBF) in India through Joint Forest Management in the 1990s, and other countries around the world, speaks to this approach that accords primacy to participation in community-based institutions for collaborative management of natural resources like forests in CBF (Lele, 2014).

In case of CBF, the Forest councils (locally called as Van Panchayats, referred as VPs hereafter) of Kumaon are cited as exemplary participatory institutions for the management of forests in academic and policy literature (Government of Uttarakhand, 2014; Gupte, 2004). The exemplary status is partly due to the survival of this statutory institution that comprises a two-tiered arrangement for the management of forests since 1931: elected executive committee and general assembly of eligible adult electorate (Guha, 2001). Part of it is arguably due to contributions from the scholarship that argues, VPs have maintained forests, at least as well as the government-managed forests (Baland, Bardhan, Das, & Mookherjee, 2010; Somanathan, Prabhakar, & Mehta, 2009), and withstood market and population pressure over the years (Agrawal & Yadama, 1997). Therefore, the interest of the

government in VPs has sustained over the years despite the interest being critiqued as interference affecting the autonomy of VPs (Negi, Chauhan, & Todaria, 2012).

Nevertheless, the government in the state of Uttarakhand, where Kumaon constitutes one of the two administrative divisions², has been promoting increased representation of women by making it mandatory for VPs to allocate 50% positions in executive committee in 2001, and 50% positions as head of the executive committee (locally called as *Sarpanch*) in 2012, to women. The scholarship has predominantly supported the idea of increasing women's representation in VPs from both the efficiency (beneficial to forest conservation) as well as the equity (erstwhile marginalized status of women) point of view³ (Pandey, 2010).

Debates in policy and academic arena on women's participation in VPs become all the more relevant when increased out-migration of predominantly young men has led to an increase in ratio of women with respect to men in the hilly regions of Kumaon (Census, 2011). Importantly, this demographic shift is more prominent in the hilly regions of Kumaon, where most of the VPs are located, and not in the plain regions where men outnumber women. Tiwary and Joshi (2015) suggest that this demographic shift has led to increased participation of women in VPs. However, the trends in participation at the level of executive committee of VPs and in general assembly meetings at the community level convened by VPs was not explicitly stated in the study. Interestingly, although previous studies on VPs have speculated about

² The state of Uttarakhand in India is constituted by two administrative divisions, namely Kumaon and Garhwal.

³ However, efficiency has been questioned by arguments that creating a homogeneous category of Kumaoni women as inherent conservationists is fraught with problems because it ignores everyday realities of women in the hills. And, equity has been questioned on the grounds of discounting the existing cultural constraints of patriarchy in Kumaon (Gururani, 2002).

the possible breakdown in VPs due to out-migration, there has not been a focused study on the impacts of migration as yet (Aggarwal, 2006; Agrawal, 2001).

A significant insight from international studies on the impact of out-migration on CBF has been the mixed effects on participation of women. In Mexico, it was found that community-based institutions have increased representation of women as a result of men's outmigration (Robson & Berkes, 2011), while in Nepal, both an increase and decrease in participation, depending on household characteristics, has been reported (Giri & Darnhofer 2010; Ministry of Forest and Soil Conservation, 2013). However, it is yet to be established whether there is a relationship between out-migration of young men and participation of women in the VPs, and this paper aims to fulfil this gap.

Focused on VPs, this paper attempts to contribute to the broader question on the impact of rural to urban migration on the governance structures associated with CBF and their functions - also raised by a global review of CBF in the last 40 years (Gilmour, 2016). Therefore, exploring women's participation in VPs, the objective is to contribute to the broader discourse on the impacts of out-migration on CBF. The findings of this paper will also provide useful insights on gendered aspects of participation in VPs.

In two stages of analysis, the paper will initially focus on women's participation in VPs across the districts in the state of Uttarakhand, followed by an analysis of participation at the household level drawn from a representative sample of VPs from Almora district. At first, trends in women's participation at the institutional level (i.e., executive committees) of VPs will be analyzed to examine the impacts on structures of VPs. Secondary data on composition of VPs, obtained from Forest

Department of Uttarakhand has been drawn at in the first stage. In the second stage, functions of VPs have been focused on by analyzing the trends in participation of households and women in general assembly meetings of VPs and other community-based institutions across different family structures within migrant and non-migrant households. For the second stage of analysis, primary data from 111 household-level surveys in six VPs of Almora has been used.

The next section in this paper reviews the literature on impacts of migration on CBF, including impacts on women's participation. Thereafter, the context of VPs in Kumaon, focusing on migration trends and changes in livelihood has been presented. The next two sections deal with methods used and results respectively. The discussion of results has been presented in the penultimate section, and the last section deals with conclusions along with questions for future research and policy implications.

Review of literature

Migration and forests: role of community based institutions

Migration has long been part of larger debates, framed either as impacts of migration on the environment, or environment on migration, predominantly through the lens of changing population pressure and its consequent impact on the environment and vice-versa (De Sherbinin et al., 2008; Jonsson, 2010; VanWey, Guedes, & D'Antona, 2012). Both these strands of research have affirmed that relation between migration and environment needs to account for the context (i.e., socio-economic, historic, political and environmental factors) relevant to the study. In this context, community-based institutions for the management of commons provide a useful entry point for exploring the impacts of migration on the environment as they represent the social dimension of the context. Essentially, the scholarship on

commons suggests the significance of community-based institutions in affecting resource use, and therefore the resource conditions or the environment.

The importance of community-based institutions becomes apparent in some recent challenges to Forest transition theory that focuses on changes in use of forests due to out-migration from rural areas. Based on studies in Europe and United States of America, forest transition theory initially posited the significant effect of development-induced migration to urban areas, coupled with agricultural abandonment and intensification, on increase in forest areas at the national level (Mather, 2007). Although this theory has been argued to be valid in certain developing countries of Latin America (Aide & Grau, 2004) and El Salvador (Hecht, Kandel, Gomes, Cuellar, & Rosa, 2006), it has been challenged by studies in Mexico (Klooster, 2003; Robson & Berkes, 2011). Both the cited studies on Mexico warn against studying the impacts of migration on forests only through change in resource due to population change and agricultural intensification. Rather, the authors argue about including the impact of community-based institutions on the use of forests as well.

In the context of VPs, studies have shown that community-managed forests are at par with the state managed forests in terms of canopy cover (Baland et al., 2010; Somanathan et al., 2009). Also, it has been previously shown that VPs having local rules of monitoring have been able to withstand population pressure and market forces in maintaining forests under their management (Agrawal & Yadama, 1997).

Importantly, the assumption underpinning the effective working of community-based institutions is related to the participation of involved community as

a stakeholder. Therefore, this paper now turns to the review of literature that attends to the impacts of migration on participation in the community-based institutions.

Migration and CBF: participation

In the context of CBF, studies on the impacts of migration on participation are increasing and one of the focus areas has been participation of women. A review of thirty years of CBF in Nepal indicates that migration has increased opportunities for participation of women, and also added to certain constraints that inhibit participation (MFSC, 2013). In terms of increased participation, the review indicates, women either take up spaces in the community-based institutions left vacant by their migrant husbands, or act as representatives of the migrant household. On the contrary, lack of sufficient remittances, as well as increased household and subsistence livelihood needs due to out-migration of men, have been suggested as factors inhibiting participation of women (Nayak & Berkes, 2011). Another study in Nepal indicates that self-employed women, belonging to nuclear families, are more likely to show increased participation in CBF after out-migration of males (Giri & Darnhofer, 2010). Similarly, evidence from Mexico also indicates that participation of women in CBF increases as a result of out-migration of men (Robson & Berkes, 2011).

Therefore, the limited number of studies reporting the impact of migration on participation of women indicates that migration of men may open up new opportunities for women in the community-based institutions. But, the participation also depends on certain household characteristics (e.g., nuclear family, livelihood needs, use of remittance income), and the flexibility of institutions towards demographic change (increased number of women) as a result of out-migration of men.

In summary, out-migration of males emerges as one pathway which may lead to increased participation of women in community-based institutions. At the same time, it is vital to recognize the fact that the impact of out-migration will be different on households, and women holding different positions within the household, with different socio-economic characteristics.

In case of VPs, there is only one study that posits that migration of young males has led to increased participation of women in the VPs, and other community-based institutions, in Kumaon region of Uttarakhand (Tiwary & Joshi, 2015). However, this study has left a vital question unanswered as to whether participation has increased at the institutional level in the executive committee of VPs, or in general assembly meetings. This question becomes important in the context of state governments' policy on VPs as it had proposed mandatory requirement of 50% positions in executive committee, and Sarpanch position, solely reserved for women in 2001 and 2012 respectively, while there has been no such requirement as yet for participation in general assembly meetings of VPs.

Therefore, the main objective of this paper is to explore the relationship between out-migration and women's participation in VPs at the institutional and household level. Essentially, the two levels of analysis reflect the focus on changes in governance structures (institutional level analysis) and functions (household level analysis) in VPs as an impact of out-migration. Although, in both the levels of analysis, the focus is on women, the participation of households in general has also been considered in the household level analysis. The plan of analysis has been discussed in detail in the results section in this paper.

Context of VPs

Examples of CBF existed even during the colonial times (circa 1815 to 1947), although CBF spread in India after official promulgation of Joint Forest Management in June, 1990 (Lele, 2014). One of the earliest surviving examples of CBF is VPs in the Kumaon region of India (Guha, 2001). VPs represent a collaborative arrangement between the Forest Department (FD) and community for the management of forest commons⁴ with a two tiered arrangement: democratically elected executive committee of 5 to 9 persons headed by one Sarpanch at the institutional level; and, general assembly consisting of community members having rights of access in the VPs. Although autonomous, the executive committee is responsible for making local rules about access, use, extraction and conservation of forest resources after approval from FD and consent from the general assembly.

After establishment in 1931, the guidelines for VPs governance have been amended in 1976, 2001, 2005 and 2012. If the most recent set of guidelines of 2012 are compared with the initial set of guidelines of 1931, the following changes are apparent: a) Increased representation of women with mandatory 50% positions in executive councils and 50% positions as Sarpanch of VPs; and, b) A rise of almost 50% in the number of VPs since 2001 (see Negi et al. (2012) and Agrawal (2005) for detailed discussion on changes in VPs). As this paper is dealing with participation of women, the focus is on the policy for increased representation of women through mandatory allocation of positions. Although this policy makes participation fixed, based on gender at the level of executive committee, it does not venture towards fixed participation of women in general assembly of VPs by means of, say quorum for

⁴ Forest commons are those forests that have a recognized user group or community for the management of forests (see Agrawal (2007) for details).

meetings or mandatory attendance. Also, increase in the number of VPs along with mandatory representation of women becomes a crucial point to examine with respect to women's participation in VPs.

Migration in Kumaon

A recent report (United Nations Educational Scientific and Cultural Organization, 2012) mentions Uttarakhand as showing the highest rate of out-migration among the low income states in India (7.8%) as well as highest inter-state out-migration (migration to different states within India). In Kumaon region of Uttarakhand, out-migration has been a regular phenomenon since the nineteenth century, when young men migrated to join the army (Guha, 2001). However, studies from the past decade have repeatedly pointed towards an increase in migration of young males from the hilly areas of Kumaon (Mamgain, 2004; Mamgain & Reddy, 2014; Tiwary & Joshi, 2015). As the migration is predominantly of young men, the proportion of women has increased in the hilly regions of Kumaon (Census, 2011). For instance, in the hilly districts of Almora and Pithoragarh of Kumaon, the sex-ratio has increased above 1000 women per 1000 men, which is unlike the male biased sex-ratio in the plain districts of Uttarakhand.

The two top reasons for out-migration by males are lack of livelihood options and education opportunities (Mamgain, 2004; Mamgain & Reddy, 2014). The rural areas are characterised by subsistence economy, predominantly dependent on agriculture and livestock keeping, with forest resources providing vital inputs for agriculture as well as livestock keeping (Agrawal, 2000). However, the dependence of relatively better-off households in the rural areas is transitioning to other modes of

income, such as small businesses, casual labour, salaries from jobs, and remittances sent by migrants (GoU, 2014).

One of the impacts of out-migration in the region, noted in academic and policy literature has been feminization of agriculture suggesting greater participation of women in agriculture following out-migration of males (Tiwary & Joshi, 2015). Similar studies on the impacts of out-migration on participation of women in forest management, especially through VPs, have been lacking as yet. Therefore, this paper investigates the participation of women in VPs by focusing on the district of Almora in Kumoan region that contains the highest concentration of VPs as well as high rates of out-migration in the recent decade, evident in negative population growth between 2001 and 2011 (District Census, 2011; Forest Department, 2007).

Methods

Women's participation is of central concern in both the institutional and household level of analysis in this paper. As mentioned previously, increased participation of women is one pathway through which out-migration may impact a household or community in general (Giri & Darnhofer, 2010; Robson & Berkes, 2011; Tiwary & Joshi, 2015). This forms an assumption that underlies both the levels of analysis and the other specific assumptions applicable to both levels are mentioned in the ensuing paragraphs.

At the institutional level, the increased participation of women is assumed to be reflecting the effect of out-migration of predominantly young men. The policy on reservations of 50% positions for women in executive committees has been controlled by considering only women in leadership positions, the policy for which came into effect in 2012. Similarly, the cultural factors that affect women in leadership positions

can be assumed to be uniform across all the districts in Uttarakhand. However, the individual factors affecting representation of women have not been considered and the emergent findings will be discussed in light of this, and other mentioned assumptions.

Based on empirical studies reviewed in the previous section on out-migration and CBF, out-migration of young men can impact households' participation through two predominant pathways: more women in the household; and, remittances received by the household. Now, increased proportion of women may present opportunities of participation to women. But, at the same time, lack of male member can increase labour demands within the household leading to decreased participation. Similarly, remittances received can provide more time for participation of women by fulfilling consumption needs. But, it can also decrease participation by means of decreasing dependence on forest resources.

It is the salience of this pathway that has been tested in the household level analysis by examining differences between participation of migrant and non-migrant households⁵ in general, and women from migrant and non-migrant households in particular. The assumption here is that the differences of two major pathways, that is, household composition (more women) and remittances received at the household level, are reflected in the status of household as migrant and non-migrant. Another assumption is that the cultural and policy factors (relevant to participation) affect migrant and non-migrant households in the same way across the community. Further, the individual factors that affect participation have not been considered in this analysis, and thus the implications of findings will be discussed in the light of this and other mentioned assumptions.

⁵ Migrant households in this study are those households from which one male member is living outside the village for work or education. The focus on only male migrants was deliberate so as to examine the effects of out-migration of men on women who stay behind in the household.

The analysis has been conducted in two stages to capture structural changes at the institutional level and functional changes through the household level participation. Both the structural and functional changes represent an aspect of participation: structural changes, in terms of women's proportion in executive committee, and Sarpanch position in the VPs; and, functional changes, in terms of participation in general assembly meetings.

There are a total of 2195 VPs, covering an area of 69,853 hectares in the district of Almora (Nagahama et al., 2016). Since the analysis in this paper is focused on the district of Almora, secondary data on women-headed VPs (women as Sarpanch) across the district was collected from the District Forest Office in Almora. One of the reasons behind selecting women-headed VPs, rather than making a selection based upon an index of women's representation in executive committee, is to control the effect of policy that mandated allocation of 50% positions in executive committee to women in 2001. Second being the assumption of women-headed VPs as proxies for VPs affected by out-migration of males.

This paper argues that women-headed VPs are better indicators of women's participation in VPs rather than their presence in executive committee, especially in the time period between 2001 and 2012, because 50% reservation in Sarpanch positions for women was announced in 2012. This means that Sarpanch positions before 2012 are less likely to be affected by the public policy on 50% reservations for women as Sarpanch.

To analyse participation of women at household level, a representative sample of six VPs was drawn from the entire women-headed VPs in Almora district. There are 89 women-headed VPs in Almora i.e., only 6.74% of 1319 VPs for which the

District Forest Office had updated records. All the 89 women-headed VPs in the district were stratified based on four contextual factors that have been reported to affect the working of CBIs for forest management: area under forests, population, distance from the nearest town and altitude of location (Agrawal, 2007).

The area under forests and the population reflects the pressure on forest resources, where the assumption is that more population and less area under forests will mean more pressure on the use of forest resources. Further, the distance from town reflects integration with markets and its influence on forest resources. In case of VPs, distance from town reflects more about the influence of forest department, as the assumption is that remote areas will be less under pressure from forest department, compared to areas close from the road. Finally, elevation affects the type of vegetation in the forests.

For all the 89 VPs, the area under forests was divided with population to create a factor called as population pressure, while the other three factors were taken as such without any manipulation. Distance from town was taken as a proxy of market pressure on the VPs. Further, population pressure and distance from nearest town were classified into three categories, consisting of high, medium and low values, based on calculation of quartiles for population pressure and road distance: top 25% values in each factor were considered as high; the lowest 25% as low; and, the middle 50% were taken as medium values. For elevation, only two categories of high and low values were created, based on the elevation of 1500 metres, because this elevation marks the separation of two different zones of vegetation (Hussain, Sultana, Khan, & Khan, 2008). Having categorized VPs into high, medium and low values of population pressure and distance from town, along with high and low values of

elevation, the final sample was chosen based on the following combination of values⁶, as shown in **Table 1** below.

Table 1

Classification of VPs for final sample

Population pressure	Distance from town	Altitude	VPs
Low	Low	High	VP-A
Low	Low	Low	VP-B
Medium	Medium	High	VP-C
Medium	Medium	Low	VP-D
High	High	High	VP-E
High	High	Low	VP-F

Sources: Forest Department (2014), District Census of India (2011).

In the hilly regions of Kumaon, especially in the rural areas that comprise around 92% of the population in the district (Census 2011), households generally associated with different castes tend to be located in clusters. Therefore, a representative sample of households on caste-basis would have meant surveying households in both general and marginalized caste clusters based on their relative proportion in the village.

However, due to lack of prior contact with the households and constraint of time, it was difficult to draw a representative sample in each of the six VPs. Hence, the focus was on getting an overall caste-based representative sample, and the final survey covered 72.97% of general caste households and the remaining 27.02% from marginalized class households in the total 111 households covered in our survey in six VPs. This caste composition closely approximates the overall caste composition in Almora district that reports 75.74% as general castes and 24.26% as marginalized

⁶ The reason behind choosing high-high, medium-medium and low-low combinations of population pressure and distance from towns was to control the direction of influence of the factors. For instance, a high population pressure suggests more pressure on the forest resources, and similar is the influence of high market pressure (distance from town) with respect to pressure on forest resources. Choosing different combinations like high-low or medium-high and medium-low would have meant direction of influence of one factors cancelling the effect of the other factor, and vice-versa.

castes in the rural areas (District Census, 2011). Overall, the final aggregate sample of 111 households corresponds to 21.55% of the total 515 households in the six VPs according to the latest census of 2011.

Modified versions of two of the International Forestry Resources and Institutions (IFRI) survey questionnaires, namely Institutional survey form and Household survey form (IFRI, 2011), were used to collect data on institutions and households respectively. The institutional questionnaire comprised questions on history, structure and functions of the institution, while the household survey covered a range of questions on socio-economic and demographic characteristics of households, livelihood needs, use of forest resources and participation in forest management.

Results

Analysis plan

Although this paper focuses on VPs, it also covers trends in participation in two other community-based institutions called as Gram Panchayats (Village Councils, referred as GPs hereafter) and Self-help Groups (SHGs) for comparative purpose. Similar to VPs, the GPs are also democratically elected bodies at the village level to work on projects and plans related to overall village development. Structurally, GPs are similar to VPs, as there is an executive committee for decision-making, presided by a Sarpanch, and a general body consisting of all the adult residents of the village. Further, SHGs are collective groups, usually initiated by the government or civil society organizations, for the purpose of bringing women together to pool their savings and then lending it periodically to fellow members. In this paper, SHGs have

been considered as community-based institutions. Keeping these three community-based institutions in consideration, our analysis plan is shown in **Table 2**.

Table 2

Analysis plan for women's participation in community-based institutions

Community-based institution	Participation at institutional Level	Participation at household Level
VPs	Sarpanch- Percentage of women-headed VPs in Almora	Percentage of household participation in migrant and non-migrant households.
	Executive committee - Percentage of women in executive committees in a sample of VPs in Kumaon	Percentages of different members of migrant and non-migrant household participating (Male HOH*, Female HOH*, Female sub, Both genders, None)
GPs	Percentage of women-headed GPs in Uttarakhand	Percentages of different members of migrant and non-migrant household participating (Male HOH*, Female HOH*, Female sub*, Both genders, None)
SHGs		Percentage of households participating and status of women members (Female HOH, Female sub, None)

* HOH - Head of household (senior-most woman); * sub - subordinate to head of household

In case of VPs and GPs, participation at both institutional level and household level has been considered, while in case of SHGs, only household level analysis has been conducted. At the institutional level, secondary data on women's participation as Sarpanch and membership in executive committee for VPs was obtained, while in case of GPs, only secondary data on women at Sarpanch level was available.

In case of household-level participation, differences in self-reported participation in meetings of the three CBIs, between migrant and non-migrant households, have been analyzed. First, differences in participation in three CBIs have been examined to see if migrant or non-migrant status affects participation at the household level. Then, participation in VPs, GPs and SHGs has been analyzed to examine whether household status as migrant versus non-migrant households affects participation of women. Thereafter, differences in participation of men and women in VPs and GPs have been analyzed with respect to migrant or non-migrant households.

Finally, differences in participation of women in VPs, GPs and SHGs with respect to their position within the household have been analyzed. Specifically, the different statuses for all the adult members (older than 18 years) within the household considered for the analysis are: a) Male HOH suggesting senior-most male member or any adult male as head of household; b) Female HOH suggesting female as head of household, usually senior-most woman in the household; and, c) Female subordinate suggesting female younger than senior-most woman in the household. It should be noted that the focus of the analysis was on participation of women in different household positions, the category of Male subordinate has been included in the Male HOH category, and not taken separately. So, any adult male in the household has been referred as Male HOH in the ensuing analysis.

Participation at institutional level: VPs and GPs

The impact of 2012 policy of 50% reservation for Sarpanch position is visible in 77.83% positions in the state of Uttarakhand, and 74.65% in the district of Almora occupied by women elected before 2012 in the updated figures published by Forest Department in 2017. Although it is difficult to attribute the impact of policy change

on around 20 to 25% of Sarpanch positions in the VPs across the state of Uttarakhand after 2012, it does point towards the possibility of public policy on increasing representation of women.

Women's participation at the institutional level in VPs can be either as just a member of the executive committee and/or as Sarpanch. As there is no secondary data available on women's representation in the executive committee, the dataset reported in Somanathan et al. (2007) was used for analysis. It comprised 67 VPs, out of a sample of 193 VPs, in the Kumaon region that had data on gender composition of executive councils. Around 16.41% of the sampled VPs had women in majority in the executive council. Further, the sampled VPs (n=61) had 21.20% of positions within the executive committees occupied by women on an average. The data was collected between 1998 and 2000, which means that the policy requiring 50% position in executive committee of VPs did not apply to this sample of VPs.

Importantly, the participation of women in GPs has been increasing over the years. In 1996, around 34.3% of the candidates elected to GPs were women in the state of Uttarakhand, and this rose to around 61.72% in 2008 (National Commission on Women, 2004; Rural Litigation and Entitlements Kendra, 2017).

Overall, an increase in participation of women in the GPs can be observed since the late 1990s, while the same does not reflect in participation in VPs at the institutional level. The 89 women-headed VPs represent only 6.74% of all VPs in Almora, and at the executive committee, women constituted around 21% in Kumaon region in the year 2000. Further, it is not just Almora, as only around 10.2% of the 12168 VPs in the state of Uttarakhand are women headed (Forest Department, 2017). Thus, the increasing trend of participation in one institution, and no perceptible

increase in the other community-based institution is an important issue for gendered analysis of VPs.

Participation in general assembly at household level: VPs, GPs and SHGs

In the first stage, this paper analyzes the differences between household's participation in VPs and GPs. Migrant households comprised 64% of the sample, while the rest 36% consisted of non-migrant households. In case of migrants, the focus was on male migrants as the aim was to examine the relationship between male out-migration with households' and women's participation⁷. The **Table 3** depicts households' participation (both men and women) in VPs, GPs and SHGs (only women), partitioned by migrant and non-migrant families based on the question: does any member from the household participate in the meetings of VPs, GPs and SHGs.

Table 3

Participation of migrant & non-migrant households in meetings of VPs, GPs & SHGs

Community-based institution	Migrant Household	Non-Migrant Household
		(%)
VPs	49.3	50.0
GPs	95.8	95.0
SHGs	54.9	60.0

Source: Field work in Almore (2016-2017)

The above table shows that participation in VPs is the least among both migrant and non-migrant households, compared to participation in GPs and SHGs. Also, there is not much difference between participation of migrant and non-migrant households in VPs and GPs, and only a small difference in case of SHGs where non-migrant households showed higher participation. Here, the statistical significance of

⁷ Moreover, the responses were also biased towards male migrants, usually sons, husbands, fathers, grand-fathers reported as migrants and not daughters, wives, mothers or grand-mothers.

differences was not tested as the categories of SHGs, GPs and VPs meetings are not independent – a requirement in Chi-square tests.

Next, women's participation in VPs, GPs and SHGs in migrant and non-migrant households was considered, as elucidated by study participants in response to: which members of the household participate in meetings of the three institutions respectively. Based on the responses of the members, the four categories were assigned: a) Male Head of Household (HOH) - indicating man as head-of-household; b) Female HOH indicating woman as head-of-household such as mother or mother-in-law; c) Female sub indicating woman in subordinate role as daughter in law or daughter; c) Both meaning Male HOH and Female HOH participate in meetings; and, d) None (indicating no participation from family). However, in the **Table 4** below, participation of Male HOH and no participation from household has been considered as no participation of women ("No" response category), while "Both" category indicates women rarely participate in the meetings.

Table 4

Women's participation in VPs, GPs and SHGs in migrant vs. non-migrant households

Variable	Response	Migrant household	Non-migrant household	$\chi^2 (p)$
Participation in VPs	Yes	14	4	0.21
	Rarely	5	6	
	No	52	30	
Participation in GPs	Yes	23	7	0.18
	Rarely	10	9	
	No	38	24	
Participation in SHGs	Yes	39	24	0.69
	No	32	16	

Source: Field work in Almora (2016-17)

As shown in the above table, there is no statistically significant difference between participation of women in VPs, GPs and SHGs based on their household

status as migrant and non-migrant. In other words, there is no evident statistically significant effect of migrant status of household on the participation of women in each of the three community-based institutions. But, the participation of women from migrant households is more than that of women from non-migrant households in case of VPs and GPs, while not so in case of SHGs.

Next, gender-based differences in participation in VPs and GPs were considered, as shown in **Table 5**. In both the tests, a combined category of female HOH was created by merging female as head of household with female in subordinate position representing women's participation, and was compared with men represented by male as head of household for both VPs and GPs.

Table 5

Participation in VPs and GPs by Male HOH and Female HOH, Both genders, and none in migrant and non-migrant households

Variable	Response (household member)	Migrant household	Non-migrant household	χ^2 (p)
Participation in VPs	Male HOH	13	6	0.35
	Female HOH	14	4	
	Both	5	6	
	None	39	24	
Participation in GPs	Male HOH	35	20	0.21
	Female HOH	23	7	
	Both	10	9	
	None	3	4	

Source: Field work in Almora (2016-17)

In **Table 5**, two insights are clearly observable. First, the participation of man as head of the household is more than that of woman in case of GPs, while women have marginally higher participation than men in case of VPs. However, there is no statistically significant difference between men and women with reference to

participation in VPs and GPs based on their migrant versus non-migrant status.

Finally, the participation of women in different positions in the household in case of VPs, GPs and SHGs has been analyzed to examine differences in participation by women in different positions within the household. The following **Table 6** shows percentage of women in different household positions from migrant and non-migrant households respectively participating in SHGs, VPs and GPs.

Table 6

Women's participation in VPs, GPs and SHGs with different household positions

Community-based institution	Women's position in household	Migrant Household	Non-Migrant Household
		(%)	
SHGs	Female HOH	87.2	100
	Female subordinate	12.8	0
GPs	Female HOH	91.3	100
	Female subordinate	8.7	0
VPs	Female HOH	85.7	100
	Female subordinate	14.3	0

Source: Field work in Almora (2016-2017)

It is clear that the participation of women in subordinate position is substantially less than that of women as head of household in VPs and GPs, irrespective of migrant and non-migrant household. There is actually no participation from non-migrant households in the considered sample. Among many, this could possibly be due to a number of factors, such as: a) cultural norm of senior woman representing the household in public meetings; and, b) division of labour within the households, suggesting less time constraints for senior women. The statistical significance of differences in case of variables in this table was not tested as they do not fulfil the mutually exhaustive category criteria for Chi-square tests because Woman HOH and Woman subordinate are not exhaustive categories.

Discussion

With respect to participation at the institutional level, low participation (6.74%) of women as Sarpanch of VPs in Almora was found. Even at the state level in Uttarakhand, the percentage of women-headed VPs constitutes only 10.2% of the total 12168 VPs. Lack of updated data prevents the comparison, but the available data from the previous decade suggests that participation of women as members of executive committee was low (Somanathan et al., 2007). The impact of public policy on increasing women's participation will be worth exploring as it may explain the rise in number of women headed VPs after 2012.

Therefore, at the institutional level, the low participation has not changed in more than one-and-half decades. The previous studies reporting increased participation have not clarified about increase in governance structures (Giri & Darnhofer 2010; Robson & Berkes, 2011; Tiwary & Joshi, 2015), but the findings in this paper suggest that there is low participation of women in leadership positions in the governance structures related to CBF in Kumaon. Perhaps, the flexibility in governance structures, as reported from Mexico (Robson and Berkes 2011), does not hold true in case of VPs in Almora and Kumaon as well.

At the household level, although women from migrant families participate in greater percentage, the lack of statistically significant difference is contrary to findings reported from Nepal where out-migration was found to have increased women's participation, and also statistically significant across migrant and non-migrant households (Giri & Darnhofer, 2010). However, the difference between participation of women as head-of-household and women in subordinate positions

reinforces the findings from Nepal where women as head-of-household were found to be more active in meetings of general assembly.

The findings in this paper are contrary to those of other studies suggesting no effect of the presence of males on participation of women as reported in case of water user associations in India (Prokopy, 2004), and also in case of agriculture in Nepal (Gartaula, Niehof, & Visser, 2010). It was only the case of participation in VPs from migrant households, where men had marginally lower participation than women, while in all the other three cases (shown in Table 5), men from the same household participate more in number than women of the household in the two community-based institutions considered for analysis.

Specifically, the findings on lower participation of women at the institutional and household level in VPs are contrary to those reported in Tiwary and Joshi (2015) from Kumaon region. The reported study considers marginal increase in percentage of women's participation in VPs as increase of participation due to out-migration. In this case, it is vital to recognize that out-migration may be one of the pathways through which participation of women can increase, but it is not the only pathway. Therefore, scholars must be cautious about attributing increased participation of women to out-migration of men.

This study did not find an increase in participation at the institutional level using secondary data, nor did it find statistically significant differences in participation of women across migrant and non-migrant families. Therefore, the pathway through which out-migration affects women's increased participation does not seem to hold good statistically. It may very well be the case that out-migration is affecting both migrant and non-migrant households in the community as a whole, but

the lack of statistical significance of the difference prevents the claim that out-migration is increasing women's participation in CBF in the considered sample. Perhaps, the low participation in the considered VPs is historical, and continues to hold true, where the increased opportunities due to out-migration failed to increase the women's participation. A bigger representative sample covering the entire state of Uttarakhand will be needed to examine this possibility.

Overall, low participation of women in VPs, lower participation compared to that of the males in case of GPs, and lower participation of woman in subordinate roles compared to women as head of households, can be explained by cultural constraints being faced by women in Kumaon (Gururani, 2002). But, arguably, cultural constraints should also inhibit participation in the GPs where participation of women is relatively more. Therefore, this paper argues that it is not just cultural constraints, but more likely a loss of interest in VPs that previous studies have reported (Aggarwal, 2006; Sarkar, 2008). There is also a possibility that participation in these VPs has always been low in case of women as well as the community in general. In both cases, insights on participation from a bigger representative sample of VPs from across the entire state of Uttarakhand will shed more light.

Conclusions

This paper was focused on the effect of out-migration on governance structures in CBF by focusing on the case of VPs in Almora district of Kumaon. The analysis suggests crucial insights from the perspective of VPs and two other community-based institutions. Further, the relevance of findings from a policy perspective, with respect to VPs, and institutions of collective action like GPs and SHGs has also been discussed.

There is low participation of women at the institutional level in VPs in Almora as well as the entire state of Uttarakhand. Even the effect of public policy is hard to conclude, but the cultural effects that were assumed to be uniform in the analysis may explain the low participation on women in Almora as well as the state of Uttarakhand. Therefore considering women's participation at the institutional level, there is lack of substantial evidence to claim that out-migration has increased it in the past one and half decades when it has continued to be low across the entire state of Uttarakhand.

Although women from migrant households are more likely to participate in community-based institutions (VPs and GPs), there was no statistically significant difference between migrant and non-migrant households in terms of participation of women in general assembly meetings of VPs, GPs and SHGs. As mentioned, the analysis in this paper was focused on one pathway through which out-migration of men can affect participation of women. The statistical analysis did not support the salience of the pathway in the considered sample. More research is therefore required to explore and examine factors that affect participation of women in VPs so that other factors and pathways can be probed for their relationship with out-migration.

The possible factors affecting participation of women could be livelihoods and cultural constraints at the community level or motivations and attitudes towards participation in forest management at the individual level. Livelihoods, motivations and attitudes are arguably more important as cultural constraints should also hold for women's participation in GPs which is actually higher than VPs. Perhaps, due to socio-economic and environmental changes, the dependence on forests has decreased as reflected in lesser participation at household level in forest management. More studies with a larger representative sample will shed more light on this relationship, as

this study was confined to a representative sample of six women-headed VPs out of 2199 VPs in Almora district. Comparison with other VPs, especially male-headed VPs, will also be helpful in this regard.

In terms of policy on increased representation of women in VPs, there seems to be a lack of specific attention towards increased participation of women, in case of Almora and Uttarakhand as well. There need to be further state-wide studies to explore enabling policies to support women's participation and possible policy outcomes as a result of increased participation of women in VPs. Also, the policy mandates increased participation at the executive committee level, and it does not cover general assembly. And, lower participation of women in general assembly suggests that increased participation by means of fixed representation in executive committees is probably not working to increase women's overall participation at the community level. Therefore, with decline in community participation, the policy of rapid increase in the number of VPs does not bode well. A comprehensive state level assessment on the working of VPs needs to be taken up in priority as our analysis suggests loss of interest in VPs while the other institutions of collective action like GPs have fared relatively better.

Reflecting on the broader question on the effects of migration on governance structures and functions of community-based institutions associated with CBF, this paper shows lack of substantial effects of out-migration as an opportunity for women. Perhaps, the governance structures have not shown the flexibility as it has been in case of Mexico and Nepal where out-migration of males led to institutions of forest management offering more places to women. It can be argued that a number of context-specific socio-cultural factors, combined with flexibility in the governance

structures of CBF, increase women's participation in CBF. Therefore, methodologically, in the studies on impacts of out-migration on governance structures of CBF or women's participation, consideration of socio-cultural and individual factors assumes critical importance. This paper shows the importance of social conditions at the community and household level, especially power dynamics within the household, and in the community to the study of impacts of migration.

Chapter 3

Women's participation in VPs: motivations and context

Participation of women in community-based institutions (CBIs) in particular and political positions at different levels in general, is increasingly becoming an important part of academic and policy analysis discourse. Globally, one of the predominant ways to increase participation of women has been through increased representation by statutory provisions (Agnihotri, 2008). In India, statutory provisions for fixed representation of women in CBIs for governance at local level (village, block and district) started with the 73rd constitutional amendment in 1993 (Johnson, Deshingkar, & Start, 2005). Following this amendment, different states in India have adopted the policy of fixed representation of women in the CBIs at the local level (Girard, 2114; Mueller, 2016). In the state of Uttarakhand, the CBIs at the village level namely, Van Panchayats (Forest Councils, hereafter referred as VPs) and Gram Panchayats⁸ (Village Councils, hereafter referred as GPs), have also made provisions for increased representation of women. But, the results on women's participation have been contrasting.

In case of GPs, that are institutions for planning and management of overall village development (e.g., identification of beneficiaries for government projects, implementing government projects on health, education and infrastructure), the percentage of women in elected positions has increased in the past two decades (Pandey, 2010). However, the percentage of elected women continues to be quite low

⁸ Both the GPs and VPs have a two-tiered arrangement consisting of an democratically elected executive committee that is responsible for decision making, while the electorate of eligible members (older than 18 years) constitutes the general body. The general body needs to be consulted by the executive committee in decision making.

in case of VPs. This contrast is striking for a number of reasons that are contextual to the state of Uttarakhand, especially the Kumaon region⁹ where this study is focused.

First, a significant proportion of the population in Uttarakhand depends on forests and agriculture for livelihood (Government of Uttarakhand, 2014). It is more so in the case of women in the hilly regions who are predominantly responsible for collecting fuel and fodder from forests (Pandey, 2010). Now, according to theory on collective action with reference to natural resource commons, one would expect women to have more incentives and greater participation in forest management. However, findings reported previously (Chapter 2) suggest low participation of women in general assembly meetings and leadership position in executive committees of VPs, suggesting factors other than dependence and incentives on participation of women.

Although low participation of women in the executive committee of VPs - institutional level - has been attributed to the prevalence of patriarchal culture (Sarin, 2001), higher and increasing representation of women in executive committee of GPs points towards more causal factors other than patriarchy. Importantly, a study exploring the motivations of women towards participation in VPs – institutional level and community-level - has not been yet attempted. This creates a significant gap of insight about women's perspective towards such community-based institutions in forest management.

Third, historically, the role of women in *Chipko* movement of the 1970s was substantial, as manifested in the widely circulated picture showing a group of women encircling a tree to protect it from being cut (see,

⁹ Kumaon and Garhwal are two administrative divisions in the state of Uttarakhand in India, and 48% of the total number of VPs i.e., 12089 in the state of Uttarakhand are located in Kumaon (Van Panchayat Atlas, 2007).

<http://indiatoday.intoday.in/education/story/sunderlal-bahuguna/1/566324.html>).

Popularly known as an environmental movement, Chipko had predominant linkages to the forest-related livelihoods in the region (Rangan, 1996). Therefore, women's participation in social movements, such as Chipko, also contrasts with their low participation in VPs in the recent decades. More so, because, VPs represent one of the oldest surviving CBIs for forest management, established after widespread social movements in the early twentieth century in Uttarakhand (Guha, 2001).

Fourth, although there has not been a comprehensive evaluation of women's representation in VPs in Uttarakhand (done in case of GPs) a number of studies point towards initiatives by women in Uttarakhand directed toward taking over the management of forests through informal collective groups (Pandey, 2010; Tiwary and Joshi, 2015). This again leads us to question why these initiatives have not translated into greater percentage of women in leadership positions in VPs, at least comparable to GPs. Moreover, if we assume that public policy of fixed proportion of women in the executive committee of GPs in 1994 and 2008 has contributed to their increased participation in elected positions, similar public policies on fixed proportion of women in VPs in 2001 and 2010 does not seem to have worked. This needs further exploration from an academic as well as policy standpoint.

Last, due to consistent out-migration of predominantly young males from the hilly regions of Uttarakhand, some scholars have alluded towards increased participation of women in VPs (Sarin, 2001; Tiwary & Joshi, 2015). However, previous research on women's participation in VPs in Almora district of Uttarakhand, reported in Chapter 2, suggests consistently low participation of women in VPs since

two decades, and no significant difference between participation of women from migrant and non-migrant families in the community-level meetings of VPs.

In this paper, the motivations behind women's participation in VPs in the executive committee as well as general assembly meetings have been explored. The analysis covers participation in executive committee by means of personal interviews with six women in leadership positions in VPs, and general assembly by means of a survey of 111 households spread across six VPs.

The scope of this paper is exploratory, because this paper builds on insights generated from previously reported findings (Chapter 2) using the same dataset. Moreover, lack of studies on women's participation in this geographical area makes the approach exploratory where the focus is on identifying factors promoting or inhibiting women's participation from their perspective. However, the findings have been contextualized with the feminist literature on women's participation in collective action, and the literature on women's participation in collective action in natural resource management, especially forests.

Background of the study: area and previous findings

The study reported in this paper focused on Almora district, located in North India, because Almora contains the highest concentration of VPs in the Kumaon region of Uttarakhand (Van Panchayat Atlas, 2007). Although out-migration in Kumaon has had a long history, Almora district had negative population growth between 2001 and 2011, mostly attributed to high out-migration (National Skill Development Corporation, 2013). Importantly, out-migration has been associated with increased women's participation in CBIs by previous studies in Kumaon (Sarin,

2001; Tiwary & Joshi, 2015). Hence, leadership of women in VPs was taken as a proxy of out-migration to select the sample of VPs for this study.

As mentioned, previous findings (Chapter 2) using the same data-set have raised the research questions that have been explored in this paper. In brief, previous findings suggest: low participation of women in the executive committee of VPs compared to the GPs; and, low participation of women in general body meetings of VPs compared to the GPs. Further, both in executive committees and general assembly meetings, lack of evident effect of out-migration on increased participation of women as reported (Tiwary & Joshi, 2015) and speculated (Sarin, 2001) previously was found. Therefore, the primary aim in this paper is to explore the personal motivations, and other factors, influencing participation of women in executive committees and general assembly meetings of VPs.

Methods

In Almora, a representative sample of six VPs was selected in two steps. The first step was identification of all the VPs with women as the head of the executive committee of the VPs. Out of a total of 1319 VPs for which the District Forest Office in Almora had records updated till 2013, there were 39 VPs with women as head of the executive committee elected before 2012, and 50 VPs where women were elected after 2012. The year 2012 assumes significance as the policy on 50% reservations for women as head of the VPs was announced in 2012 (Van Panchayat Act, 2012). The second step was drawing a representative sample of VPs from the 89 VPs, where women were heads of the executive committee. The entire sample of 89 VPs was used to draw a representative sample.

Next, four factors that have been identified to affect collective action in the management of forests were considered: population, area under forests, distance from the nearest town and elevation (Agrawal & Yadama, 1997). Although these four factors are not exhaustive by any means, the lack of availability of secondary data on other relevant factors constrained the sampling to these factors.

To create a sampling frame, the first two factors i.e., population and area under forests, were converted into a factor called as population pressure by dividing the area under forests with the population. The next three factors were considered as such, without any manipulation. Further, population pressure and distance from town were divided into three categories of high, medium and low values based on quartile analysis: the highest 25% of the values classified as high, lowest 25% as low and the middle 50% values as medium values. In case of elevation, the data was classified into high and low value categories based on the cut-off limit of 1500 meters above sea level, because previous studies have identified change in vegetation in the Himalayan region above the elevation of 1500 meters (Hussain, Sultana, Khan, & Khan, 2008). Overall, a list of VPs classified into high/medium/low values for population pressure and distance from nearest town, and high/low values in case of elevation was created.

In the next step, six combinations of the values of three factors were taken as final sample by considering high/low values of elevation with high/medium/low values (two for each) of population pressure and distance from town as depicted in **Table 1**. It should be noted that similarly paired categories of values of population pressure and distance from the town, like high population pressure with high distance from town values and so on, were paired with high and low values of elevation. The rationale behind pairing was similar directions of influence. For instance, high

population pressure and high pressure due to distance from town suggests same pressure on forest resources. This gave multiple VPs in certain combinations; hence, location of VPs in different administrative blocks was used to choose only one of the VPs from each block sample as shown in **Table 1**.

With the final sample of six VPs, data collection was conducted in two stages pertaining to two levels of analysis: executive committees and general assembly meetings. For analysis of executive committees, personal interviews with six women as head of VPs and analysis of meeting records of VPs was done. At first, personal interviews were conducted to discern motivations towards joining VPs, and other factors, relying on open-ended discussions using two questions primarily: 1) tell us about yourself and your family, mainly about education, source of livelihood and connections with VPs or similar community-based institutions; and, 2) how were you elected as the head of the executive committee in VPs?

VPs maintain records about attendance and agendas of their meetings and these documents are usually available with the head of the executive committee. Meeting records of four VPs were available for access, and were used to analyse issues being discussed and frequency of meetings. The analysis of meetings' records focused on bringing out agendas and issues that were mentioned in writing in the accessed documents.

In the second stage, data was collected through household surveys in the six VPs. A modified version of International Forestry Resources and Institutions (IFRI) survey questionnaire (IFRI, 2011) for household survey was used. The IFRI household survey questionnaire covers a range of questions on socio-economic and demographic characteristics of households, livelihood needs, use of forest resources

and participation in forest management and it has been used extensively in a number of research projects on forest management. The IFRI questionnaire was modified by eliminating questions on user groups as it does not apply to the VPs, and also certain questions that required details of family income and use of forest resources in detail. In addition, open-ended questions were included at the end of the survey questionnaire on reasons towards attending (or not attending) VPs, and the effect of women's leadership on the working of VPs.

The approach to analysis has been discussed after the discussion on theory in the ensuing section. As the analysis is informed by theory, it has been presented after the theoretical background that informs the analysis in this paper.

Theoretical Background

Broadly, gender can be understood as socially and culturally acceptable roles and responsibilities of men and women. In the past four decades, specifically focused on women, gender has become an integral part of academic and policy literature dealing with social as well as environmental issues (Arora-Jonsson, 2014). This chapter deals with participation of women in VPs that are CBIs for forest management in Uttarakhand. Therefore, for analytical purposes, this chapter mostly refers to that subset of scholarship on gender and environment which focuses on collective action in natural resource management. Importantly, insights from feminist scholarship that are fundamental to a gendered perspective, inform the understanding and approach to gender in this chapter.

Structure and Agency in Feminist Theory

Interactions between structures and agency have long remained a key concern, common in the broader social sciences as well as feminist scholarship (Gammage,

Kabeer, & Rogers, 2016). The underlying argument is that it is not only socio-economic and political structures that determine the agency of women, but vice versa as well (Wharton, 1991). Therefore, an exploratory study on participation of women in forest management suggests considering both the agency towards participation in VPs as well as socio-economic and cultural structures that affect participation such as socio-cultural rules and norms that guide the behaviour of women.

Agency can be understood as the choices that women make within the constraints of structures (Kabeer, 2008). Importantly, the policy emphasis on gender has mostly been towards changes in formal structures through laws and policies aimed towards bringing women in the mainstream (Girard, 2014), as evident in the case of CBIs at local level in India i.e., both VPs and GPs *via* policy of fixed representation. However, a concomitant shift in informal norms and social structures such as gender roles has not taken place.

Agency has been defined as a means towards an end by feminist scholars (Gammage et al., 2016). One way of defining agency is freedom of choice that is conscious, strategic, and leads towards fulfilment of self-defined goals, and creation of a democratic space between men and women (Kabeer, 2008). This definition of agency assumes importance in terms of participation of women in forest management as it considers participation based on individual preferences that are conscious and strategic. In other words, it recognizes that women's interest, or lack of interest, in forest management can be a strategic choice, and it does not essentialize the mountain-women myth (drawn from eco-feminism) that considers women as inherent conservationists (Gururani, 2004; Joshi, 2014). Further, this idea of agency also gives consideration to structures of constraints within which the agency is exercised. This

suggests that agency of women should be explored along with the structures of constraint, because it is then that a democratic space can be created.

Drawing from feminist scholarship, three key assumptions underpin the approach to constraints in this paper. First, structural constraints enable as well as inhibit agency (Giddens, 1984). Second, context of socio-economic, historical, political and environmental conditions in a given place and time is necessary towards understanding the constraints on agency. This context ranges from public forums at the global level to private domains of the household and individual person's specificities. This paper focuses on micro level factors at the individual and household level to meso-level factors at the community and local level (district and state level). Third, gender is intersectional, which implies that treating women as a separate homogeneous category is fraught with problems as gender undercuts other forms of stratification such as caste, class, race and ethnicity in a given place and time.

Examining the scholarship on VPs through the lens of structure-agency, two predominant themes emerge. Scholars have explored the influence of public policy (colonial and post-colonial) on forestry and development in the hilly regions of Kumaon through the evolution and working of VPs (Agrawal, 2005; Guha, 2001; Rangan, 1996; Tompsett, 2014). Although with subtle differences, most of the scholars agree that post-colonial policy on VPs has meant increased control of the government over the working of VPs as opposed to more autonomous VPs in the colonial era. Further, instrumental contribution of VPs, as an institution showing collective agency towards forest conservation, has also received considerable attention (Agrawal & Yadama, 1997; Baland, Bardhan, Das, & Mookherjee, 2010; Somanathan, Prabhakar, & Mehta, 2009). Additionally, with reference to women's

participation, studies in Kumaon have also mentioned about the constraints imposed by patriarchal social institutions and cultural norms on participation of women in VPs (Sarin, 2001; Gururani, 2004). But, increased participation in other CBIs under the same social constraints motivates this paper to re-examine both structures and agency with respect to women's participation in VPs.

With reference to structure and agency, a number of studies have attempted to examine and quantify different factors that enable or inhibit women's participation in collective action in general and collective action for forest management particularly. A review of these studies indicates a number of specific factors that can be broken into individual factors promoting agency and household, institutional and bio-physical factors as constraining¹⁰ structures. Agency related **individuals factors** are: education (Hanmer & Klugman, 2016), expected benefits from collective action, previous experience in collective action (Selhausen, 2016) and employment status (Giri & Darnhofer, 2010). Similarly, structural conditions constraining participation can be classified into the following:

a) household factors - family structure, mainly position as head of household (Giri & Darnhofer, 2010), and number of younger children (Selhausen, 2016), dependency on forests (Lise, 2000);

b) institutional factors – gender composition of groups (Agarwal, 2009), involvement in decision making (Lise, 2000), secure tenure rights, cultural norms (Gupte, 2004);

c) bio-physical factors – forest conditions (Lise, 2000), species of trees in forest (Salaam, Noguchi, & Koike, 2005).

¹⁰ Constraining is used to suggest both enabling and inhibiting factors throughout the paper.

Although the list of factors mentioned is not exhaustive, it does point out the salient factors of the context related to structure and agency. Moreover, the stream of scholarship exploring collective action in case of forest commons has also been quite extensive (Agrawal, 2007), but the attention to gendered participation has been less in this domain. The predominant focus has been on the impact of women's participation on forest conservation (Chhatre and Agrawal, 2007; Somanathan, Prabhakar, & Mehta, 2002), and less on determinants of women's participation. One of the lesser explored factors in terms of women's participation in institutions of collective action, especially in forest management, has been agency related factors such as personal aspirations and motivations (Gammage et al., 2016).

Scheme of analysis

In consonance with the above discussion and the research question on participation of women in VPs of Kumaon, the following insights on structure and agency guide the ensuing analysis. First, the analysis focuses on the factors associated with agency and structures at two levels: a) executive committee level in the VPs; and, b) general assembly level. Second, the executive committee represents participation at institutional level, while general assembly covers household level participation.

Before proceeding with the analysis at two levels, the working of four VPs has been described to contextualize the discussion on participation at executive committee and general assembly level. At the executive committee level, the objective of the analysis has been to explore and compare relevant individual, family-based and institutional factors that explain participation of women who have assumed leadership positions in the six VPs. At the general assembly level, the objective has been to

examine individual, family and institutional factors that explain the participation of women in general assembly meetings of VPs. This paper follows the classification scheme given by Girard (2014) to categorize all the relevant factors related to agency and structures at both levels of analysis (executive committee and general assembly) into individual, household, institutional and bio-physical factors. Essentially, this paper will examine factors enabling or inhibiting agency as well as enabling or inhibiting structures based on the classification scheme cited above.

Results

Before proceeding with the analysis at executive committee and general assembly, the functioning of VPs has been discussed by focusing on the rules made by VPs towards use of forest resources and decision-making at the level of executive committee. This is being done to uncover characteristics of VPs as community-based institutions of forest management and contextualize insights from two levels of analysis that follow.

VPs are required to maintain records of all meetings that they hold in discharging their duties towards management of forests. Meeting records of four VPs were accessed¹¹. To compare their working, three factors have been focused: working rules, annual frequency of meetings and the agenda of meetings. With reference to working rules, the VPs have also been classified in terms of their functioning: means for protecting the forests, rules regarding - grazing of livestock in forests, use of leaves or wood from forests, and their use (or non-use) of forests for commercial purposes (resin extraction). **Table 7** shows a comparison of the VPs in terms of their

¹¹ Meeting records of the other two VPs (two out of six VPs) were not available for access. Hence, the four accessed meeting records have been used for analysis in this paper.

rules meant for use of forest resources, while **Table 8** compares meeting agendas of four VPs.

Table 7

Comparison of VPs based on rules of forest management

VPs (names withheld)	Forest types	Forest guards (Yes/No)	Grazing Open/ Restricted	Dry wood Use (open/ restricted)	Resin extraction (Yes/No)
VP-B	Pine dominated, few Oak trees	No	Open	Open	Yes
VP-C	Mixed (Pine & Oak)	Yes	Restricted	Restricted	Yes
VP-D	Mixed (Less Pine, more Oak)	Yes	Restricted	Restricted	No
VP-F	Pine dominated, few Oak trees	No	Open	Open	Yes

Source: Field work in Almora (2016-17)

Table 8

Comparison of VPs based on meeting agendas and frequency

VPs	Meeting agendas	Frequency of meetings (total years) *
VP-B	a) Revenue generation- funds through resin extraction; government funds for forest conservation; selling dry wood; collecting penalty from intruders; b) Revenue utilisation- income/expense sharing; utilization of funds for community development and forest conservation; c) Others- hiring guards for forest protection.	3.5 (4 yrs)
VP-C	a) Revenue generation- funds through resin extraction; government funds for forest & water conservation works and overall village development; funds from grass and leaves. b) Revenue utilisation- income/expense sharing; funds for payment of guard, forest conservation and security and village development; c) Others- opening/closing of forest for grass and leaves; proposal for medicinal plants & fodder species from FD; boundary dispute resolution; dissolution of VPs; seeking non-interference of FD ; quorum in meetings; members' election; village contribution to fire protection; and, protection from animal grazing.	3.3 (7 yrs)

VP-F	a) Revenue generation- funds through resin extraction, government funds for forest conservation works, selling fallen and dry trees; b) Revenue utilisation- income/expense sharing, funds for community development and forest conservation; c) Others- election of members; village's contribution to fire protection.	1.2 (17 yrs)
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Source: Archival records of four VPs during field work in Almora (2016-17)

*Note – Average annual frequency of meetings till December 2016

From **Table 7**, two similarities between the VPs can be observed. One is that VPs with mixed forests have hired guards and also placed restrictions on the use of forest resources, while the pine dominated forests have fewer restrictions placed on rules of access and monitoring of rules. Fewer restrictions in pine dominated forests highlights lack of use of pine leaves as fodder for livestock. Secondly, raising income via resin extraction from pine trees is common across the three VPs i.e., VP-B, VP-C & VP-F. In total, four out of the six VPs keep their forests open for use throughout the year without any guards or social fencing, while the remainder two have employed guards for monitoring forest usage. The two VPs with appointed guards have mixed forests, comprising Oak and Pine trees, while the open VPs have mostly Pine dominated vegetation. As Pine dominated forests are less useful from the standpoint of fodder and fuel use, women mostly collect wood from non-VP governed forests for most part of the year in the four VPs where Pine trees are dominant. Moreover, due to restrictions in access of mixed forests with guards in two VPs, the same strategy of using non-VP forests is also being followed by women.

Meeting agendas reveal the kinds of issues that emerge during meeting discussions, thereby revealing the thrust areas of decision making in the VPs. For instance, it is clear that generation of revenue and utilization of revenue constitutes a significant focus in meeting agendas (**Table 8**). Pertaining to revenue generation, meetings are usually held to discuss source of funds, either from government projects,

or money obtained by VPs as royalty from resin extraction. Similarly, meetings on revenue utilization are usually around expenditure of funds sourced by the VPs, either spent on works on forest conservation, or on general village development like construction of road, temple, water-harvesting structures, boundary pillars in forests, and buying utensils and equipments for marriage ceremonies in the community. Beyond financial aspects, the agenda of the meetings is usually dictated by issues such as hiring of guards, election of members, and, opening and closing time of forests for grazing and dry wood collection.

Executive Committee Level Analysis

Individual and household factors.

Table 9 presents factors related to individual agency and household structure of six women who are heads of executive committee in the selected VPs. Most of the information is self-explanatory. The factor titled “position in family” indicates the position occupied by the women either as heads of households, or in subordinate positions, decided by absence or presence of other older women residing in the same household.

Table 9

Background information on six women heads of VPs

VPs	Age (years)	Education (highest)	Position in family	Livelihood (self)	Previous work with CBIs** (Yes/No)	Livelihood (spouse)
VP-A	45	Primary	HOH*	HW, AG, LS	No	GS (ER)
VP-B	47	Primary	HOH	HW, AG, LS	Yes	Business
VP-C	55	Primary	HOH	HW, AG, LS	Yes	GS (ER)
VP-D	58	Primary	HOH	HW, LS	Yes	GS (ER)
VP-E	68	Primary	HOH	HW, LS	No	Business (ER)
VP-F	70	Primary	HOH	Mostly inactive	No	AG & CL

Source: Field work during 2016 and 2017 in Almora

*Note- HOH: Head of household; ** CBIs: community-based institutions.

HW: Household work; AG: Agriculture; LS: Livestock keeping; GS: Government service; AG & CL: Agriculture and casual labour; Earlier: ER

To avoid any confusion in the ensuing paragraphs, woman or women, being referred in the executive committee level analysis refers to the women who are heads of the VPs.

Individual agency related factors.

In terms of agency related individual factors, one clear consistency is that all the women have had education up to the primary level. Further, three women (from VP-B, VP-C and VP-D respectively) reported previous or ongoing involvement in informal groups of collective action, namely self-help-groups, where a group of women pool funds for lending it to group members for consumption or production activities on a periodical basis. Out of these three, one woman from VP-B also reported being part of an informal group of women (locally called as *Mahila Mangal Dal*) in the village for protection of forests and agricultural fields in the villages from human and animal intruders.

Household relations based structural conditions.

In case of household-based factors that can be related to constraining structures, all the women reported being the head of the household, that is, senior-most position among women in their respective households. However, head of the household position is accorded to males and even in case of these women in leadership positions, it was the husband or adult son considered as head of household for all social purposes. Further, most of the women described their work as divided between household chores, agriculture and livestock keeping - all subsistence activities. Only one woman, in VP-F, reported being inactive due to her old age. In terms of spouse's livelihood source, five women claimed a regular source of cash income through their spouse's government service (three cases) or small business (two cases). Only one woman's husband did not have a regular source of income and relied on agriculture combined with casual labour in nearby areas for cash income.

Interactions: individual motivation (agency) and household relations (structures).

To the question on why and how they were elected as the leader of VPs, most of the women pointed towards the influence of their spouse. Unfortunately, in case of VP-E, the woman was elected as the head, because her husband had died while serving as the head of VP-E. In all other cases, invariably, it was the spouse who had motivated the participation of these women in being a part of executive committee in the first place.

Unlike the prescribed rule, all these women were elected as heads of the executive committee directly by the local government official responsible for holding the elections of VPs. Ideally, the head should be elected after democratic election in

the village with a show of hands, but this was not the case reported by any of the women. This had reportedly happened due to the recommendation of their respective husband who had prior contacts with the concerned official. As mentioned, three of these women mentioned that their husband's government job had led to their contact with the concerned official, while in case of the other three the concerned official had social relations with the husband. Overall, all these women's husbands, even in case of the head of VP-E, had prior social relations with the government official by virtue of their job or social network in the village.

Although three of these women had prior experience in collective action in a women's group at the village level, they did not attribute their election to prior experience. Moreover, all of them reported that they had negligible participation in any type of CBIs in the village before being elected as head of VPs. Also, they all were the first women head of VPs in the history of their respective village.

General Assembly Level Analysis

The data obtained from 111 household surveys informs the general assembly level analysis presented here where 62.16% of respondents were females and the rest 37.84% were male respondents. The analysis focuses on usage of forest resources, awareness and participation in meetings of VPs and self-reported reasons for participation and non-participation. To begin with, a quantitative analysis of use of forest products, namely grass and wood, awareness of meetings (self-reported), and participation in proceedings of meetings of VPs (self-reported) have been summarized in **Table 10** as percentages of surveyed households in the respective VPs. A qualitative analysis of reasons given by respondents (men and women both) for non-participation in VPs follows then.

Table 10

Households' forest-based livelihoods, awareness & participation in meetings of VPs

VPs	Respondents (n)	Grass use	Wood use	Gas use	VPs meeting awareness	PRE	PRI
(%)							
VP-D	20	20.0	75.0	15.0	70.0	15.0	20.0
VP-C	19	68.4	78.9	36.8	73.6	15.7	26.3
VP-F	20	65.0	75.0	45.0	30.0	15.0	15.0
VP-B	10	80.0	90.0	40.0	60.0	10.0	10.0
VP-A	21	57.2	76.2	0	28.6	9.5	4.7
Total	90	55.5	77.7	25.5	51.1	13.3	15.5

Source: Field work in Almora (2016-17)

n: number; PRE: Rule enforcement participation; PRI: Participation in raising issues during meetings.

It is clear in the above table that the majority of households still use forests for fodder and fuel. In case of one of the VPs, the grass usage is low at 20%. But, in the rest of cases, both grass and wood use is above 50%. In aggregate as well, the majority of households have reported use of forests for fodder and fuel.

Regarding meetings, besides two VPs, namely VP-A and VP-F, the majority of households in other three VPs reported awareness of meetings. Even in aggregate, the majority of households reported awareness of meetings. However, participation in meetings of VPs continues to be low in aggregate as well as individual VPs.

Considering participation in rule enforcement and raising issues in the meetings – attributes of active participation, a low percentage of the respondents answered in the affirmative. These percentages reflect household level participation in general assembly meetings of VPs, and it has been presented to contextualize women's participation which is the main focus in this paper. Therefore, the focus now shifts to a qualitative analysis of reasons reported by respondents about low participation of women in the VPs.

The ensuing analysis is based on responses to open-ended questions in the household survey on reasons behind participation or non-participation answered by both men and women (respondents) about women's participation in VPs. Importantly, the approach in the ensuing qualitative analysis was to bring forth all the relevant factors behind participation, rather than analysing the relative importance or priority of different factors. Based on answers to the question on participation, all the distinct themes (given as reasons) have been considered for explanation. But, any quantification in terms of relative preference or priority was not attempted. This approach is consistent with the exploratory nature of research reported in this paper where the idea is to find salient factors, and not relative salience of different factors.

Reasons for participation or non-participation

As previously done, the reasons for participation and non-participation were classified into individual agency related factors, along with household relations and institutional factors related to structures that constrain participation. However, this categorization is not entirely impermeable due to considerable overlaps between the three categories. For instance, lack of time can be an individual factor associated with the household relations based factor of gendered division of labour and/or the absence of other female members in the family.

Individual agency related factors.

Illiteracy, time constraints and lack of interest emerged as the three distinct reasons cited for non-participation by considering responses of all the study participants. For illiteracy, the reported rationale was that illiterate women are ill-suited to speak in a public platform, and thus shy away from participation in meetings. Interestingly, this was shared by both men and women. In case of time, the absence

of spare time due to gendered division of labour was mentioned as inhibiting women's participation. Responsibility of taking care of household chores, such as cooking, cleaning, feeding livestock, collecting wood from forests, child-care are typical tasks that women perform on a daily basis. Also, it emerged that time becomes crucial in the case of those women who have younger children to look after, and those who don't have other women in the household to share their work. Finally, lack of interest in management of forests was also mentioned as a reason for non-participation by some of the respondents who did not use wood or grass from forests.

Regarding participation, forests as a shared responsibility and information sharing during VPs meetings emerged as the two distinct reasons for participation. Forests were mentioned as a shared resource for the well being of the community, management of which was the responsibility of all community members. Similarly, sharing of information in terms of timing of opening or closing of the forests and details about government's employment-related projects being implemented in VPs emerged as prime concerns.

Household-based structural conditions.

Both the presence and absence of male members was mentioned as inhibiting participation of women because of the gendered norm of considering men as head of the household and division of labour by gender. Therefore, when male members are present in the household, the participation of women from the same household was reportedly inhibited because men attend the meetings as a cultural norm. Similarly, in case of absence of a male head of household, women reported non-participation because meetings are expected to be attended by the head of the household. Gendered division of labour means, household chores are the sole responsibility of women in

the household, thereby creating a significant demand on their leisure time for attending public meetings. It was not just men who raised this concern about women's household responsibilities but also the women among the respondents.

The same gendered division of labour as well as the absence of males were the two household related structural factors cited for participation in the meetings of VPs. Particularly, the presence of younger men in the same household, be it daughter or daughter-in-law, were cited as factors enabling participation. Further, absence of adult males in the household emerged as another reason promoting participation of women.

Institutional Factors

Lack of awareness of meetings and irregular meetings also emerged as reasons behind non-participation of women. Although awareness of meetings was present in case of the majority (51.1% in aggregate) of the households, there were still a considerable proportion of households (48.1%) that cited lack of information sharing by the head of respective VPs (**Table 10**). Further, lack of interest in participation was reported on the basis of respective VPs not getting enough funds from the government for different projects. These projects often provide employment, or opportunities of casual labour, which the respondents were in favour of. Finally, the critical importance of species of vegetation in the forests was also mentioned as a determinant of interest in forest management. Examples of weeds infesting the forests and dominance of Chir-pine trees in the forests were cited as the reasons behind lack of use of forests for livelihood needs and thus a decline in interest. Although these are bio-physical factors, they are affecting the institutional functioning of VPs.

Further, drawing from **Table 10** about the functioning of VPs, it is quite clear that meeting agenda in VPs is dominated by revenue generation and utilization while

operational issues, such as decision-making on forest conservation or needs of the community assume secondary importance in all the four VPs whose records were available.

Combining lack of participation due to less funds with VPs, along with increased focus on revenue generation in the decision-making, suggests one crucial insight. Women's expectation from VPs, as well as predominant focus of VPs on revenues, means a shift away from issues of forest conservation to one of employment generation through revenues.

Summary of executive committee and general assembly level analysis

Overall, the executive committee level analysis shows that there are two sources of women's increased participation: one related to women's agency as head of the household, and second related to the husbands' support as a structural factor. It can be argued that women's position, and relation in the family, with reference to other members, especially husband, plays a significant role towards their participation in leadership positions in VPs. Importantly, it is not just intra-family relations, or women's relation to husband and other members, that count, but also the inter-family relations, or husbands relation to influential people in the community.

At the general assembly level, the three individual agency related factors namely, position as HOH, availability of time, and interest in forest management are crucial towards women's participation in VPs. Importantly, the first two factors are also mediated by structural factors related to gendered norms about head of household and division of labour within the household. Interest in forest management was mentioned as being affected by two incentives: one, regarding the use of forest resources by women; and, second, regarding the interest in getting employment

opportunities through government projects in VPs. Again, both these agency related factors are linked to structural condition of functioning of VPs as institutions of forest management. Additionally, bio-physical factors, specifically the species of trees useful to the livelihood needs also emerged as determinants of interest and consequently participation of women in the VPs.

Discussion and Conclusions

This exploratory study was focused on factors underlying lower participation of women in VPs, compared to GPs, at the institutional and community level. The approach was focusing on participation in VPs and exploring the factors or reasons behind lower participation in VPs through personal interviews and archival analysis at executive committee level, and surveys at general assembly level in six VPs. Agency and structures, drawn from feminist scholarship, constitute the theoretical background of the exploratory analysis presented in this paper. Therefore, discussion on overall findings in the light of structure-agency debates around women and collective action in feminist studies has been presented at first. Thereafter, specific findings from the standpoint of women's participation in VPs that will be useful to the scholarship on forest commons have been discussed.

Through the lens of structure and agency, priority given to males as head and as a representative of household, combined with gendered division of labour, are two common cultural norms, or structural conditions, that explain participation of women in VPs at both the institutional and community level. However, at the institutional level, the lack of expressed agency, and prominence of only structural conditions, was quite revealing, because the individual motivation to join the executive committee of VPs, let alone assuming leadership position in VPs, was not expressed by any of the

six women in leadership positions in the VPs. This finding points towards male-dominance, quite possibly co-optation, in the context of VPs, previously reported in case of GPs in India (Johnson et al., 2005; Mueller, 2016). The argument for co-optation becomes more persuasive, because, in case of all the six women leaders, it was men (either husband or adult son) who performed all the official and documentary work related to the proceedings of the VPs. Hence, it is highly likely that it is men who decide on the issues for meetings. This should be explored in further studies on a bigger representative sample of VPs across Uttarakhand where both men and women headed VPs are considered.

Although individual agency expressed as interest in management of forests and time allocation emerged as vital to explaining women's participation, these agency-related factors were also mediated by structural conditions like household relations, institutional functioning and bio-physical conditions of forest. To illustrate, the presence, or absence of males, linked to the cultural norm of male as head and representative of household constituted a reason behind lower participation of women. Besides males assuming priority as head of household, the participation of senior woman from the household further suggests that next in the hierarchy of household representation are older females within the household, such as mother-in-law or mother, also reported by Giri and Darnhofer (2010). This could also possibly mean senior woman having more time to spare from household chores. Time as a constraint to participation due to gendered division of labour has been noted by previous studies on collective action of women with respect to natural resource management (Nuggehalli & Prokopy, 2009; Meizen-Dick & Zwartveen, 1998). Hence, relative salience of both hierarchy and gendered division of labour should be the two prime

factors for further analysis in future studies on women's participation. Both these factors reflect the influence of patriarchal norms or structures on the participation of women in VPs, also noted by previous studies in Kumaon region (Sarin, 2001; Gururani, 2004).

Now, this chapter will focus on findings specific to VPs. The analysis reveals that VPs are failing to elicit participation of women relative to GPs in the same socio-cultural context, suggesting strong possibility of factors other than patriarchal norms affecting participation in case of VPs. Some of the previous studies have explained lower participation of women by prevalence of patriarchal norms in Kumaon (Sarin, 2001), but the findings of this study reveal salience of other institutional and bio-physical conditions that can explain low participation of women. Specifically, the type of tree species in the forest and its use to women (and households), weeds affecting access to forests, likelihood of VPs generating employment for women, and sharing of information about meetings of general assembly emerged crucial for participation of women in general assembly meetings of VPs. This insight also emerges from the forest commons literature (Agrawal, 2007), but some of the studies exploring women's participation have not considered it explicitly (Giri & Darnhofer, 2010).

From an institutional standpoint, the analysis of working of four VPs (archival meeting records) shows that meetings are usually around formal and commercial issues, such as revenue generation and utilization, as laid down in rules of Van Panchayat Act of 2005 (amendment in 2012). Now, this focus gives rise to two sets of arguments with contradictory implications. On one hand, the focus of VPs on formal and commercial issues as opposed to informal and subsistence-use issues (e.g. rules

on forest management, voluntary contributions from the community in forest conservation and improvement) conveys a disconnect with women's preference for subsistence needs from the forests and VPs. But, on the other hand, seeking cash income through gainful employment in projects brought by VPs was also reported as being important to women in this study, reported by Tompsett (2014) as well. This preference matches well with the focus of VPs on commercial issues of forest management. I argue that this complexity can be partly resolved by means of focusing on the bio-physical forest conditions along with the institutional and subsistence livelihood conditions.

Even for subsistence, women get most of their fuel needs from forests beyond the control of VPs. This arguably reflects lack of strategic interest of women to participate in proceedings of VPs regularly when most of their subsistence needs are being met by non-VP forests. Further studies focusing on use of non-VP forests along with forests managed by VPs will help clarify the salience of this issue that may possibly explain women's lower participation in VPs.

From a policy standpoint, the provision of having half of all the leadership positions in VPs and other CBIs (GPs in this case) reserved for women is based on the assumption of gender equity through increased presence (Mueller, 2016). Compliance with the policy has increased the presence of women in CBIs, especially GPs all across India (Government of India, 2015). But, this exploratory analysis shows the significance of cultural norms along with institutional and bio-physical factors, and individual motivations in contributing towards women's participation in VPs. Therefore, the success of policy on fixed representation of women in VPs, or other CBIs, in increasing women's participation in management of VPs will depend on a

number of contextual factors. Focused studies on women's participation in leadership positions and household level in a much larger sample in the entire state of Uttarakhand are needed to unpack women's participation in VPs. Further, research on working of VPs where women have informally taken over the control of management (Pandey, 2010) will be useful towards understanding the interaction between constraining structures and individual agencies with respect to women's participation in VPs and other CBIs as well.

Overall, the analysis suggests that, in case of VPs, it is not simply structural conditions such as cultural norms regarding participation of women in public spaces and gendered division of labour, but also individual motivations that can be related to bio-physical factors such as vegetation type in forests and institutional focus on subsistence or commercial issues that determine women's participation. Therefore, focused studies on the linkages between individual motivation and bio-physical and institutional factors will provide substantial insights on determinants of women's participation in collective action in natural resource management. Importantly, this area of research has been lacking in studies on collective action with reference to management of commons (Pandolfeli, Meizen-Dick, & Dohrm, 2008). Methodologically, consideration of both the structures and agency is needed for better insights on women's participation in general.

With reference to the research question on the contrasts between women's participation in CBIs (VPs and GPs) in Kumaon, this analysis suggests consideration of individual interests that are linked to bio-physical and institutional factors in determining participation of women in collective action. In other words, this exploratory analysis goes beyond previous explanations rooted on cultural factors,

and presents preliminary insights on the determinants of participation of women within the complex interaction between individual agency and bio-physical and institutional factors applicable in the given context.

Taking an exploratory and qualitative approach helped to uncover the relevant factors related to individual agency and structural constraints and bio-physical conditions that underlie participation of women in the VPs of Kumaon. Building on the specific factors highlighted by this study, future research can now examine relative relevance of different agency-related and structural factors along with bio-physical conditions as determinants of participation of women in VPs. In general, the inter-play of agency as well as structure coupled with bio-physical conditions needs consideration because the analysis reported here shows that participation of women emerges in the complex interplay of these three broad factors.

Chapter 4

Impact of out-migration on VPs of Kumaon

An increasing number of studies are now addressing the impacts of out-migration from rural areas on the management of natural resources that are held as commons, such as coastal commons (Curran & Agardy, 2002; Robson & Nayak, 2010), irrigation commons (Baker, 1997), and forest commons (Robson & Berkes, 2011; Robson & Nayak, 2010) among others. Two primary reasons underlying this increased focus are livelihood dependence of a large number of people on natural resource commons such as forests, irrigation systems and grasslands and rising rates of migration from rural to urban areas, predominantly in the developing countries. In this paper, the focus is on the impacts of migration on a case of forest commons, namely Van Panchayats (hereafter VPs) or Forest Councils in Kumaon region of India, that involve a recognized user group involved in the management of forests within a defined boundary (Agrawal, 2007).

VPs are community-based institutions (CBIs) that were established in 1931 for the management of forest commons by a two-tier governance system: an executive committee comprising five to nine members for decision-making on forest management; and, a general assembly comprising of adults living within the jurisdiction of the concerned VPs (Guha, 2001). This paper focuses on VPs where women hold the leadership position (locally called *Sarpanch*) in the executive committee. Given the history of marginal participation of women in VPs, coupled with a number of studies reporting increasing participation of women in CBIs due to out-migration of men (Giri & Darnhofer, 2010; Ministry of Forests and Soil Conservation, 2013; Robson & Berkes, 2011; Tiwary & Joshi, 2015) this study

focused on women-headed VPs, seeking insights between out-migration, gender and VPs resilience. Although the literature on VPs has argued about the crucial role played by women in forest management and social movements for forest rights, there has been an academic gap in exploring women's participation in VPs, or VPs under women's leadership. Therefore, this study focuses on a representative sample of six women-headed VPs in Almora. Almora district was chosen for this study, because Almora represents a district with high out-migration from rural areas, and the highest concentration of VPs in Kumaon region (Tiwary & Joshi, 2015; Van Panchayat Atlas, 2007).

Although scholarship on migration and CBIs has had distinct trajectories, focused research on interactions between the two has grown in the last decade or so. A predominant approach in the study of interactions between the two frames the impacts of out-migration on CBIs as a question of social resilience of CBIs (Adger, Kelly, Winkels, Huy, & Locke, 2002; Curran & Agardy, 2002; Robson & Berkes, 2011). Considering both out-migration and CBIs as components of a social system in a given socio-economic, political, and ecological context, these studies have endeavored to understand social factors affecting both out-migration and CBIs, and the interactions between them. Importantly, these studies recognize the interdependence of social and ecological systems, but direct their analytical focus on social, rather than ecological aspects of resilience in the community (Adger, 2000).

Analytically integral to the study of social resilience in a community is the socio-economic and political context around the community, because it is within the interactions of these contextual factors that a given community is located. Beyond the broader contextual factors, analysis of community-level factors, such as livelihoods

and participation in CBIs is also crucial, because these factors are instrumental to the working of CBIs and social resilience of the community (Berkes & Ross, 2013). Also important at the community level are structure and function of CBIs, because these are critical to social resilience of CBIs. Therefore, identification of change in both the contextual and community level factors has been focused in this paper, as it highlights the trajectory and impacts of interactions between different factors, which is integral to social resilience.

Overall, the research question on impacts of out-migration on VPs can be framed as a question of social resilience of VPs amidst high out-migration and other socio-economic and political changes. This means, although the focus in this paper is on out-migration, but the other relevant changes in the socio-economic and political context have been considered in the analysis. So, the plan of analysis is to discuss political context through the review of literature on governance of forests in Kumaon region, and policy-level changes in governance of VPs since establishment in 1931 to the latest amendment of policy in 2012. Similarly, socio-economic context will be discussed as change in livelihoods and associated land-use change in Almora district. For community-level factors used in the analysis in this paper, forest-based livelihoods, structure and functions of VPs and community's participation in VPs has been considered by means of primary data collected through two surveys: one institutional survey in each of the six women-headed VPs, and 111 household surveys covering the six VPs.

Beginning with a review of literature on social resilience in the first section of the article, the methods used in the study are mentioned in the second section. In the third section, the discussion deals with the contextual factors, followed by analysis of

community-level factors in the fourth section. The fifth section deals with a discussion of findings in the previous two sections, while the last section presents conclusions and questions for further research on resilience of VPs in particular, and resilience of CBIs dealing with forest commons in general.

Theoretical foundations of resilience & social resilience

The concept of resilience is complex, and the understanding is evolving with research in this domain (Keck & Sakdapolrak, 2013; Magis, 2010). Analytically, three key concepts need to be understood about the concept of resilience, whether defined as social-ecological resilience or social resilience: *systems, coping capacity and change*. Further, it is based on conceptualizations of these concepts that the scope of research on resilience can be clearly defined and operationalized. These concepts will be covered one by one, first defining its relevance to the concept of resilience, and then its operationalization in this paper.

Resilience is defined with respect to a system, a social-ecological system in case of social-ecological resilience (Berkes & Jolly, 2001) and social systems in case of social and community resilience (Adger et al. 2002; Keck & Sakdapolrak, 2013). Therefore, defining the system and its components is important to the analysis of resilience. In this paper, although the focus is on the impacts of out-migration on the VPs, different components of the system at different levels, namely the historic, socio-economic and political factors at the regional level, as well as working and functions of VPs, livelihoods, land-use and participation in CBIs at the community level have been considered for analysis. It is important to note here that the system and its components are defined by the researcher, depending on the objectives of the

research. The rationale behind the chosen factors will be discussed while discussing the other two concepts integral to resilience i.e., coping capacity and change.

Ranging from engineering to ecology and disaster research to psychology, with subtle variations in the definition, a key commonality across varying definitions of resilience is focus on coping capacity of the system (or individual in psychology) facing usually adverse changes (Maguire & Cartwright, 2008). Changes can be obvious and fast in case of natural disasters, like flood, drought or earthquake, but they can also be complex and slow when we are dealing with factors like market integration, population change and out-migration. Further, change should not be analyzed in isolation because change occurs or emerges in a context where components of the system are contributory factors.

Therefore, in this analysis, out-migration and VPs have not been considered in isolation; rather, contextual factors at regional level and critical factors at community level have also been included for answering the research question on social resilience. In other words, it is within the interactions of broader historical, socio-economic and political factors that out-migration in Kumaon has emerged. And, out-migration impacts, and is in turn impacted by CBIs, including VPs, and changes in livelihood, land-use as well as functioning and participation in VPs. Additionally, it is not only important to focus on relevant changes in the system, but also the responses of the community with respect to those changes, which brings us to the discussion on coping capacity.

The concept of resilience has evolved from a consideration of coping capacity in reactive and proactive to transformational terms (Keck & Sakdapolrak, 2013; Pelling & Manuel-Navarrete, 2011). This means, when faced with adverse changes,

the system must not only be able to maintain its structure and functionality in the short term referred as coping capacity, but also prepare itself to deal with changes in the future referred to as adaptive capacity. Irrespective of the short-term or long-term capacity, it is the metaphor of coping capacity that brings social factors in the community under analytical focus. In other words, beyond the change in broader contextual factors, coping capacity brings focus on community-level responses to the change under consideration. In the context of this study, the factors at the community level, namely changes in livelihood, land-use, structure and functions of VPs and participation in VPs, are analytically being taken as community-based responses to the factor of interest i.e., out-migration under the historic, socio-economic and political context of Kumaon region. It is important to note that the community level factors in this analysis can be taken as changes in the system as well as responses of the community to the broader change in the context and the factor of interest, that is, out-migration. Since the focus is on social resilience, changes in community-level factors as responses of the community to the broader socio-economic and political change taking place in the Kumaon region have been considered for analysis.

Therefore, the three concepts linked to resilience help to organize relevant factors for the analysis of social resilience. The factors being focused have not just been derived analytically from the concept of resilience, but also supported by the literature on forest commons and studies on out-migration and CBIs.

Drawing insights from the work on common pool resources, the literature on forest commons highlights a number of critical factors that affect the working and success of CBIs associated with forest management. Among the broader contextual factors, referred to as external environment in the literature, demographic, socio-

cultural and technological factors along with integration of markets and involvement of government or other external institutions have been considered as critical to the governance of forest commons (Agrawal, 2007). Among these, technological factors have not been included in this analysis, because there is minimal scope to employ technological tools for extraction of forest resources by the community of users in the Kumaon region. Additionally, studies in migration and CBIs also underscore the importance of contextual factors while analyzing social resilience (Adger et al., 2002; Curran & Agardy, 2002; Robson & Berkes, 2011).

Similarly, among the large number of community-level factors deemed crucial for effective functioning of CBIs, dependence of community on forest resources for livelihoods and related land-use prevalent in the community figure prominently (Agrawal, 2007). Further, diversification in livelihoods has been found to be critical to the social resilience of the community facing out-migration (Adger et al., 2002). Similarly, participation of the community in CBIs has been found to be integral to the effective functioning of CBIs. Further, focus on livelihoods and participation is also due to the theoretical framework of structure and agency related factors that have been considered crucial to social resilience of CBIs.

Overall, the approach in this paper on impacts of out-migration on VPs, framed as social resilience of VPs, is about identifying changes in contextual factors along with out-migration. The aim is not to conduct an exhaustive analysis of social resilience; rather, to observe changes in certain crucial factors that are associated with social resilience and effective working of CBIs.

Methods

Data Collection

The data collection was focused on two types of factors: contextual factors at regional level and community level factors. Secondary data from the literature and official data from government sources in Uttarakhand has been used. Primary data was gathered through household survey in six villages of Almora district. In case of contextual factors, secondary data was used mostly for: a) political context – literature on evolution of forest governance in Uttarakhand; government policies and literature on policy on VPs; and, b) socio-economic context – scholarship on economic activities and population in Kumaon region, and secondary data on land-use change in Almora and Uttarakhand.

For community level factors, institutional survey was conducted in six VPs (one in each) supplemented with 111 household surveys spread across the six VPs. In both the surveys, modified versions of survey questionnaires developed by International Forestry Resources and Institutions (IFRI), namely IFRI institutional survey, and IFRI household survey questionnaire (IFRI, 2011) were used. The institutional survey was used to collect information on rules of monitoring and sanctioning along with the structure and functioning of each of the six VPs. Similarly, the data collected from household survey was employed to explore participation in VPs and livelihood activities in the community.

Sampling

A sample of 89 women-headed VPs in Almora was considered to draw the representative sample for institutional and household surveys. There could be more women-headed VPs in Almora, but official records constrained our sample to a total

of 1319 VPs, for which the Forest Department Office in Almora had official records updated in March, 2013 (and, available in October, 2016).

To draw a representative sample, the availability of secondary data was a constraint. Nevertheless, access to data on population, forest area, distance from nearest town, and elevation was available. Drawing upon insights from literature on forest commons, the VPs were classified based on factors considered to affect working of CBIs: population pressure, market pressure, and elevation (Agrawal & Yadama, 1997). Population pressure was calculated by dividing the forest area with the population in the respective VPs, while distance from nearest town was taken as market pressure, whereas elevation was considered without manipulation.

Further, population pressure and market pressure were classified into three categories of high, medium and low values with the highest 25% quartile of the values classified as high, lowest 25% as low, and the middle 50% as medium values. For elevation, the data was classified into high and low value categories based on the cut-off limit of 1500 meters above sea level, because of reported change in vegetation in Himalayan region at 1500 meters elevation (Hussain, Sultana, Khan, & Khan, 2008). Therefore, the entire sample of 89 VPs was classified into high, medium, low values for population and market pressure, and high, low values of elevation.

In the next step, six combinations of the values of the three factors (population pressure, market pressure and elevation) were created by considering similar combination of values of population and market pressure for high and low values of elevation¹². To illustrate, high population pressure along with high market pressure was once taken in combination with high elevation, and then with low elevation,

¹² Pairing of similar values of population and market pressure (High-High, Med-Med, Low-Low) along with each of the two values (High & Low) of elevation was done as the direction of influence of both population and markets is arguably similar on use of forest resources.

yielding combinations of High-High-High and High-High-Low for population pressure, market pressure and elevation respectively. Similar combinations were chosen for medium and low values of population and market pressure with high and low elevations. This yielded multiple VPs in certain combination of three factors. To choose only one case from each combination, priority to the area of VPs and also VPs from different administrative blocks was given. The final sample of six VPs (names withheld) is shown in **Table 1**.

Results

Contextual Factors

The three broad themes that organize the ensuing analysis are: expansion of government control on forests, commercial harvesting of forest resources and restrictions on community rights to access forests. The expansion of government control can further be divided into expansion of forest area under government control as well as expansion of government oversight over forests in general. All the themes are overlapping and inter-related, and have been discussed in the ensuing analysis.

Political context.

In the political context of Kumaon, two major phases of forest governance can be identified: colonial and post-colonial. The period before 1815 is referred as the pre-colonial period, that is, before the British took control of Kumaon region from the Gurkhas (Bergman, Gerwin, Nusser, & Sax, 2012). Relatively less is known about forest governance in the pre-colonial era, but there were fewer restrictions on subsistence-use of forest resources, with only minor tax paid to the ruling king for commercial use of forest resources (Ballabh & Singh, 1988; Guha, 2001). However, parts of Garhwal remained outside colonial rule till the early 1900s, and the extant

literature points to relatively more restrictions on the commercial use of forests in these parts of Garhwal with respect to Kumaon (Das, 2000a).

Forest governance in colonial and post-colonial era can be studied by tracking the significant developments in governance of forests in chronological order, as previously done in Guha (2001), Agrawal (2005), Rangan (1996), Shrivastava, A. (1996), and many others. However, this paper will focus on major changes that have taken place in the governance of forests from the perspective of a forest-dependent community.

Forest governance in colonial era: 1815 to 1947.

A significant expansion of government's control over forests in Kumaon started with the passage of Indian Forest Act in 1878. Prior developments like organization of forest governance through establishment of a Forest Department (FD) in 1864 and classification of different types of forests in 1865 were significant, but the real expansion in governments' control over forests happened after the 1878 Act (Springate-Baginski et al., 2007). Two major changes heralded by the 1878 Act were increase in forest area under governments' control (shown in **Table 11** below) and classification of different forests under different government agencies. The entire forests in Kumaon were divided (and India) into: a) Reserve Forests managed by FD, with commercially valuable trees, and negligible rights of access to the community; b) Protected Forests managed by RD, with relatively more access rights to the community; and, c) Village Forests - based on village boundaries of Trails' settlement of 1815, to be managed by the community (Guha, 2001).

Table 11

Year-wise area of reserved forests

Year	Area of reserved forest (ha)
1878	3,625,983
1890	19,683,910
1900	21,082,503

Source: (Guha, 2001).

The increase in forest area under reserve forests significantly reduced the rights of community to access forest resources. Alongside, by 1893, all the waste and uncultivable land was converted into protected forests, and in 1894 the cutting and lopping of the commercially useful trees, like Pine, Oak and Deodar in the protected forests, was prohibited (Agrawal, 2005).

In terms of harvesting of forest resources, the 1850s were significant when the expansion of railways in India led to large-scale harvesting of forest resources throughout India, including Kumaon (Agrawal, 2005). There was an expansion of railway tracks from 838 miles in 1860 to 37,029 miles in 1920. Importantly, most of the private contractors involved in harvesting wood for railway sleepers were not the locals of Kumaon (Tucker, 1984). Besides wood, tapping of forest resources in the form of resin was also rampant in the Kumaon region in the period around First World War (Guha, 2001).

On account of the combined effect of increasing governmental control, reduced access and exploitation of forest resources, there were major protests in Kumaon in 1904, 1906, 1916 and 1921, which finally spurred the colonial government to set-up the Kumaon Forest Grievance Commission in 1921. The commission examined 5,040 respondents throughout Kumaon for forest-related

grievances, and one of its major recommendations was formation of VPs. However, the actual establishment of VPs took place in 1931, under section 28(2) of the Indian Forest Act of 1927 (Negi, Chauhan, & Todaria, 2012).

Forest governance in post-colonial era: after 1947.

Arguably, the policy discourse in post-colonial India did not change much till the 1980s as the focus remained on using forests for commercial purposes and community rights over access to forests remained dormant. Significant developments, like the 1952 Forest Policy as well as recommendations of National Commission on Agriculture in 1976, were similarly focused on commercial interests defined by the government and negligible focus on community rights (Lele, 2014, pp.27; Springate-Baginski et al., 2007). Further, restrictions were imposed in Kumaon on cutting of protected species of trees like Oak with the passing of Uttar Pradesh Tree Protection Act in 1976.

As a result of restrictions on access and focus of forest management on commercial aspects, 1970s witnessed resistance movements, like Chipko in Kumaon and Garhwal, and similar protests in other parts of India, where forest-dependent communities expressed dissent against the encroachment of their rights (Lele & Menon, 2014, pp.4). However, an adverse effect of these resistance movements, especially Chipko, was the blanket ban on felling of green trees above the height of 1000 meters above sea level in the Himalayan region that further constrained the use of forest wood by the communities in Kumaon (Aggarwal, 2006).

In a significant departure from the colonial and antecedent post-colonial forest policy, the National Forest Policy of 1988 proposed focus on rights of access to forest-dependent communities and ecological value of forests. However, it remained

as a policy and did not become a legislative Act, thereby failing to bring changes in forest governance as such (Springate-Baginski et al., 2007). Specific to VPs, the revised Forest Conservation Act of 1988 restricted reforestation in VPs without permission of the forest department, thereby making approvals more time-consuming (Agrawal, 1996).

Following the rise of participatory forestry in the 1990s, Joint Forest Management (JFM) scheme was initiated in Uttarakhand in 1997. The objective behind implementation of JFM was to improve biodiversity in the degraded forests by the involvement of local communities (Dhanagare, 2000). With funding from World Bank, JFM led to the formation of a number of forest protection committees in Kumaon including new as well as existing VPs (Sarin, Sundar, & Bhogal, 2003). These newly created forest protection committees were to work under the guidance of FD. Additionally, unlike other states where JFM scheme was applied for creation of forest protection committees in the reserved forests (where community had very limited rights), it was applied on civil forests and VPs forests in Uttarkhand. Thus, implementation of JFM in Kumaon meant more power to the FD and less autonomy for the VPs (Sarin, 2001).

Overall, the history of forest governance in Kumaon, beginning from Trails' settlement in 1823, through to the implementation of Joint Forest Management between 1997 and 2001, there has been an increase of government's control, particularly FD, over forests and concomitantly restrictions on rights of the community to access forest resources. The latest Forest Rights Act of 2006 that proposes empowering CBIs for management of forest resources at the village level is yet to be effectively implemented in Kumaon (Kumar, Singh, & Giri, 2017). Similar

is the case of evolution of policy of the government on the VPs, as discussed in the ensuing section.

Policy on VPs: from 1931 to 2012.

The social unrest that led to the creation of VPs in Kumaon also prompted the creation of community-based institutions for forest management in other parts of India, like Jharkhand, Himachal Pradesh and parts of Karnataka (Lele & Menon, 2014). Significant changes have taken place in the structure and functioning of VPs as a result of amendments over a period of 86 years, mainly in the powers of executive committee of VPs with reference to: rules of access and distribution; dispute settlement; sharing of income; and, quotas for women and socially marginalized castes in the executive committee of VPs.

Functions of VPs.

With regards to rules of access, the executive committee enjoyed the power of deciding on the distribution of forest products in 1931, but the latest amendment adds a condition of seeking approval from Divisional Forest Officer. Similarly, the executive committee had the power to sell forest products to other non-right holders in 1931, while now it needs approval from the Divisional Forest Officer. In case of dispute settlement, the executive committee could decide on the level of punishment of the offenders according to the 1931 Act, while the latest amendment stipulates filing of court cases for the same.

In case of income from forest resources, VPs could keep all the revenue from sale of non-timber forest produce, while now it needs to be deposited in a fund monitored by the Divisional Forest Officer. For income from timber and resin, VPs had access to the revenue based on approval of Conservator of Forests in 1931, while

the latest amendment needs all the revenue from resin to be deposited in a fund monitored by Divisional Forest Officer. With reference to aggregate income of VPs, the executive committee had powers to allocate it autonomously, while the latest amendment provides for a proportional allocation of income between VPs, FD and Gram Panchayats: 10% of aggregate to FD as charges; and, the remaining income to be distributed as 30% to Gram Panchayats, 40% for forest development, 30% to local projects.

Structure of VPs.

Structurally, the amendment in 2001 provided for reservation of 50% positions in the executive committee to be allocated to women including one woman from a marginalized caste, and the 2012 amendment requires 50% position of head of the executive committee should be women.

Summing up the discussion on evolution of forest governance and policy on VPs, it can be argued that the power of FD over forests as well VPs has increased. VPs in 1931 were more autonomous, but over the years their power to create rules of access, settle disputes and income sharing have been subordinated to FD. Although, FD has emerged as the major source of funds for VPs, it has also meant greater managerial control over the VPs. Quite certainly, some of the VPs have maintained their autonomy amidst these changes, as described in Singh (2013) and Pandey (2010), but the greater majority is arguably more constrained due to these all encompassing changes in policy.

Socio-economic change in Kumaon.

Within socio-economic change, this chapter will cover changes in livelihood patterns and demographic profile at the level of state of Uttarakhand and Kumaon

region. Thereafter, changes in land-use in the district of Almora will be uncovered. Topographically, the state of Uttarakhand is mostly mountainous with ten of its constituent districts located in hilly terrain, while the remaining three are located in the plains. The predominance of hilly terrain and its unique needs was one of the main reasons behind the demand and creation of state of Uttarakhand in November, 2000 (Mawdsley, 1999; Moller, 2000).

Economic change: livelihood profile.

Forests and agriculture covering 65% and 14.5% of the land respectively highlight two leading land-uses and consequently two major sources of livelihood in Uttarakhand. Forests are integral to subsistence livelihoods as a source of fuel, fodder, timber, manure and bedding for livestock in the hilly areas of Uttarakhand. Agriculture, which employs around 65% of the population in the hilly areas of Kumaon, is marginal and subsistence-based (Mamgain and Reddy, 2015; Sarkar, 2008). For instance, the average land holdings size in Uttarakhand is .95 hectares, against the national average of 1.32 hectares, and in Almora around 88.7% of the land holdings are either small or marginal i.e., less than 2 hectares (Kashyap, 2011).

The economic activities have changed in terms of their contribution to the gross domestic product of the state of Uttarakhand (SGDP) as well as gross domestic product of the district Almora (DGDP). As shown in **Table 12**, changes in economic activity in terms of contributions of different sectors to SGDP and DGDP are apparent.

Table 12

Percentage contribution to District Gross Domestic Product (DGDP) & State Gross Domestic Product (SGDP) in Almora and Uttarakhand (1999-2009)

Sectors	Almora		Uttarakhand	
	1999-2000	2008-2009	1999-2000	2008-2009
%				
Primary	35.7	27.2	30.1	15.0
Secondary	15.0	26.3	18.8	31.5
Tertiary	49.3	46.5	51.1	53.7

Source: National Skill Development Report (2013)

*Primary: agriculture, forestry & logging, mining & quarrying; Secondary: manufacturing, electricity & gas supply, construction; Tertiary: services including trade, hotels, restaurants, transport, railways, storage etc.

Although these figures do not reveal actual employment figures, they do highlight the changing economic profile in Almora and Uttarakhand, where livelihood contribution of agriculture and allied sectors is decreasing in terms of economic output. Interestingly, agriculture still continues to be the largest employer in case of both Almora and Uttarakhand (National Skill Development Corporation, 2013). Overall, in Almora, it can be argued that a shift in economic activity from agriculture towards other sectors, like tourism and hospitality (NSDC, 2013), is gradually taking place. But, agriculture still continues to employ majority of the population with less land available on a per capita basis or increasing prevalence of marginal agriculture.

Social and demographic change.

Between 2001 and 2011, the decadal growth of population in Uttarakhand was 19.7% against the national average of 17.6% in the same period. However, the population growth in hilly regions of Uttarakhand (including Kumaon) has been quite less, in fact, negative in case of Almora (-1.73%) and Garhwal (-1.51%) between 2001 and 2011 (NSDC, 2013). In aggregate, the population in hilly areas of

Uttarakhand has decreased from 52% to 48% of the total population between 2001 and 2011 (Reddy & Mamgain, 2015). Migration from the hilly areas towards the plains is apparent in increasing population growth in plain areas of Uttarakhand.

Alongside low and negative population growth, the demographic structure has changed in the hilly areas of Uttarakhand due to out-migration. All the hilly districts, except Champawat, have more women per thousand men as compared to the male bias in overall sex ratio in Uttarakhand (Census, 2011). Specifically, Almora has 1141 females per thousand males compared to 963 females per thousand males in Uttarakhand.

Although migration of young men from the hilly areas of Uttarakhand has been going on since colonial times, the increase in migration can be seen in increased gender ratio as well as negative and low population growth in the hilly districts of Uttarakhand, something which academic and grey literature also points out (Kashyap, 2011; Kaushik, 2004; NSDC, 2013; Tiwary & Joshi, 2015). Previous studies report livelihood and education as the leading reasons behind migration of young males in Kumaon (Mamgain, 2004; Reddy & Mamgain, 2015).

Therefore, in general, it can be argued that socio-demographic change in Almora, especially out-migration, can be seen in the skewed gender ratio (greater number of females) and negative population growth. In terms of other documented effects of demographic change, feminization and marginalization of agriculture has also been mentioned in the context of hilly districts of Uttarakhand, like Almora (Kashyap, 2011; Tiwary & Joshi, 2015).

Land-use in Almora.

Forest and agriculture continue to be the two leading land-uses in Uttarakhand and Almora. However, the changes in land-use in the past decade or so are apparent in **Figure 1** shown below.

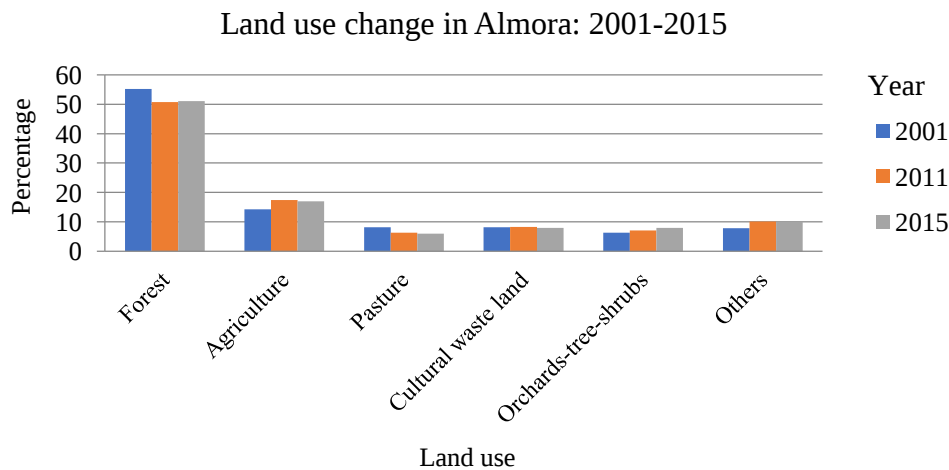


Figure 1. Land-use in Almora as percentage of total land (2001-2015)

Source: Data compiled from District Statistical Handbook of Almora (2016) and Kashyap (2011).

The above graph shows two dominant trends. First, the area under forests has decreased in the last decade and a half. Second, there has been an increase in area under cultivation. Although it seems that the decrease in forest area has majorly been taken up by agriculture, data on diversion of forest land for non-forest purposes suggests other causes. Since 1981, around 44,648 hectares of forest land in Uttarakhand has been diverted for non-forest uses, like road construction, hydel-power projects and transmission lines, and likewise in Almora, around 598.42 hectares of forest land has been used for non-forest purposes, major being road construction (Shrivastava, 2013). Furthermore, even if the area under agriculture has increased, the literature points towards increased prevalence of marginalized

agriculture (NSDC, 2013). Therefore, the changes in land-use in Almora indicate pressure on forests along with increase of marginalized agriculture, the latter arguably suggesting efforts to secure livelihood from a livelihood activity whose returns are diminishing (as noted in socio-economic change).

Further, with respect to livestock keeping, there has been a decrease in livestock in the region as shown in **Table 13** below.

Table 13

Change in livestock numbers in Almora between 2003 and 2012

Livestock	2003	2007	2012
Cow (>3 years)	227,869	231,880	174,135
Bullock (>3 years)	109,728	117,938	96,662

Source: District Statistical Handbook of Almora (2016)

The above table suggests that there has been a decrease in cow and bullock numbers over the years, suggesting decreasing livelihood of livestock keeping. Importantly, livestock-keeping figures among the agriculture and allied livelihoods that is prominent in Almora and Uttarakhand as well. Hence, although land-use classification shows increase in area under pastures (Figure 1), the livelihood of livestock keeping is arguably on a decline.

Having discussed the changes in agriculture and livestock keeping – two main sources of livelihood in hilly areas of Uttarakhand, especially Almora, the focus is now on changes in forest-dependent livelihoods and functioning of VPs by drawing from primary survey data collected from six VPs covering 111 households.

Forest-dependent livelihoods.

Forests are integral to the livelihood of a large number of people in rural areas of Uttarakhand, most prominent in the hilly districts. It is subsistence livelihoods derived from use of forest resources such as fuel, fodder, timber, manure and bedding for livestock. According to previous estimates, around 90% of domestic fuel requirement in Uttarakhand is sourced from forests. In the household survey, the focus was on household dependence on fuel and fodder and the results are summarized in **Figure 2**.

The sample consisted of 111 households, 71% of which represented migrant households and 29% as non-migrant households. The classification of migrant and non-migrant households was based on the criteria of at least one member of household not residing in the village as migrant, and all members of household living in the same village as non-migrant. Further, a total of 62.16% of the respondents were females compared to 37.84% of male respondents.

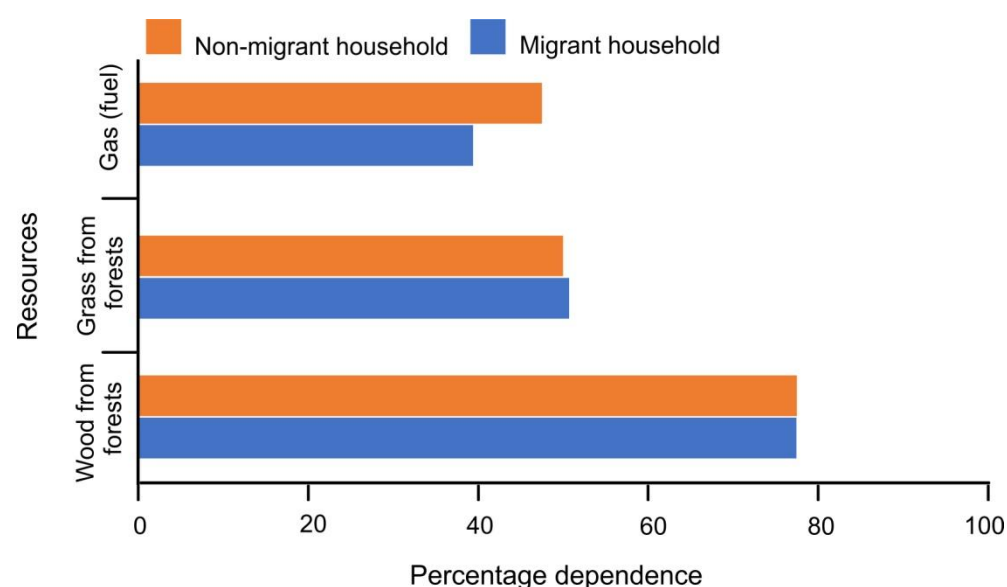


Figure 2. Household's dependence on fuel & fodder

Source: Primary data from household survey

According to **Figure 2**, shown above, majority of households depend on forests for fuel as well as fodder. Also, there is negligible difference between migrant and non-migrant families in terms of dependence on forests for livelihood. Concomitantly, the use of gas, instead of wood, as fuel is increasing at the household level, revealed by percentage of both migrant and non-migrant families in our sample. Although use of gas suggests a decrease in reliance on forest resources for fuel, the high percentages of families using wood shows the combined use of wood and gas as fuel, indicating a relatively smaller decrease in reliance on forest resources in the community.

Functions of VPs.

In the context of functions of VPs, this study relied on the institutional surveys in six VPs in Almora. The focus was rules of monitoring and decision making in the VPs. Part of the decision making function was covered in the analysis of archival records of meeting minutes of four VPs, and part of the decision making was measured as participation in meetings of VPs at the household level. **Table 14** summarizes the results with respect to changes in functions of VPs.

Table 14

Rules of monitoring, meeting agendas and participation in meeting of VPs

VPs	Forest guards presently	Forests guards earlier	Grazing (Open/ Restricted)	Meeting agenda	Participation in meetings (%)
VP-A	No	Yes	Open	NA*	28.6
VP-B	No	Yes	Open	a) Primary focus- revenue generation, revenue utilization; b) Secondary focus - Hiring guards	63.6

VP-C	Yes	Yes	Restricted	a) Primary focus - revenue generation, revenue utilization; b) Secondary focus - Opening/closing of forest announcement; coordinating with FD for settling disputes & demands; voluntary contribution for fire, paying guard & grazing control; meeting participation	52.6
VP-D	Yes	Yes	Restricted	a) Primary focus - revenue generation, revenue utilization; b) Secondary focus - Opening/closing of forest announcement; voluntary contribution for fire, paying guard & intruder control; election of VPs committee	65.0
VP-E	No	Yes	Open	NA*	0.0
VP-F	No	No	Open	a) Primary focus - revenue generation, revenue utilization; b) Secondary focus - election of VPs committee; voluntary contribution to fire protection	30.0

NA* - No data as records were not accessed

As shown in the table above, all the VPs, except one, hired guards previously for the protection of forests, but presently, it is only two VPs continuing with the same. Shortage of funds was the reason pointed out by all the VPs, except one, for not hiring guards. Those VPs that do not employ guards have also kept their forests open for grazing i.e., almost open access conditions.

The meeting agenda is mostly centered on issues around revenue generation or utilization. Revenue generation usually covers meetings dealing with contracts for resin tapping in VPs, or procuring government funds for VPs. Similarly, revenue expenditure covers meetings where executive members show expenses made by them on various developmental works in the respective VPs. Further, secondary focus is mostly around issues, such as seeking FD's help in resolving organizational issues, hiring of guards, election of members, and announcement of opening/closing time of

forests (where guards are hired). Seeking voluntary contribution from members of VPs is mostly restricted towards fire protection.

Revenue generation and utilization, both are largely controlled at the behest of FD, because even when VPs raise revenue from their own resources like resin tapping, the contracts are awarded after FD's approval. And, the revenue raised is monitored by FD as well. As such, VPs are mostly meeting for purposes largely controlled by FD and formal rules laid down in Van Panchayat Act of 2012. Focus on crucial operational issues of forest management, like plantation, forest protection or removal of weeds, is hardly reflected in the meeting agendas. Also, meeting around seeking or inviting participation of community members are quite low, and planning on forest management with a long-term view did not figure in the agenda of any of the VPs.

Although participation in individual VPs ranges from zero to 65%, when compared with participation in other CBIs, participation in meetings of VPs is invariably lower (Prateek & Knopf, 2017). Also, when participation in rule enforcement, or raising issues in meetings, was probed, the percentage of participation fell much lower than general participation in meetings (Prateek & Knopf, 2017). This suggests, low participation in VPs is also compounded by mostly passive participation in meetings of VPs.

Overall, the functioning of VPs can be summarized by low active participation of the community, less focus on community needs vis-à-vis formal procedural requirements and growing tendency of relaxed monitoring rules.

Discussion on social resilience of VPs

Overall, this chapter attempts to answer the research question on impacts of out-migration on VPs, by exploring the contextual and community level factors. In other words, the analysis focused on migration as a socio-demographic change along with other changes in the contextual conditions at regional level. Household responses at the community level were also considered along with changes in functioning of VPs to uncover the impacts of out-migration on VPs. Beginning from overall contextual factors applicable to the state of Uttarakhand as well as Kumaon, the chapter will focus on Almora *via* discussion on community-level factors. The summary of contextual factors is presented in **Figure 3** below.

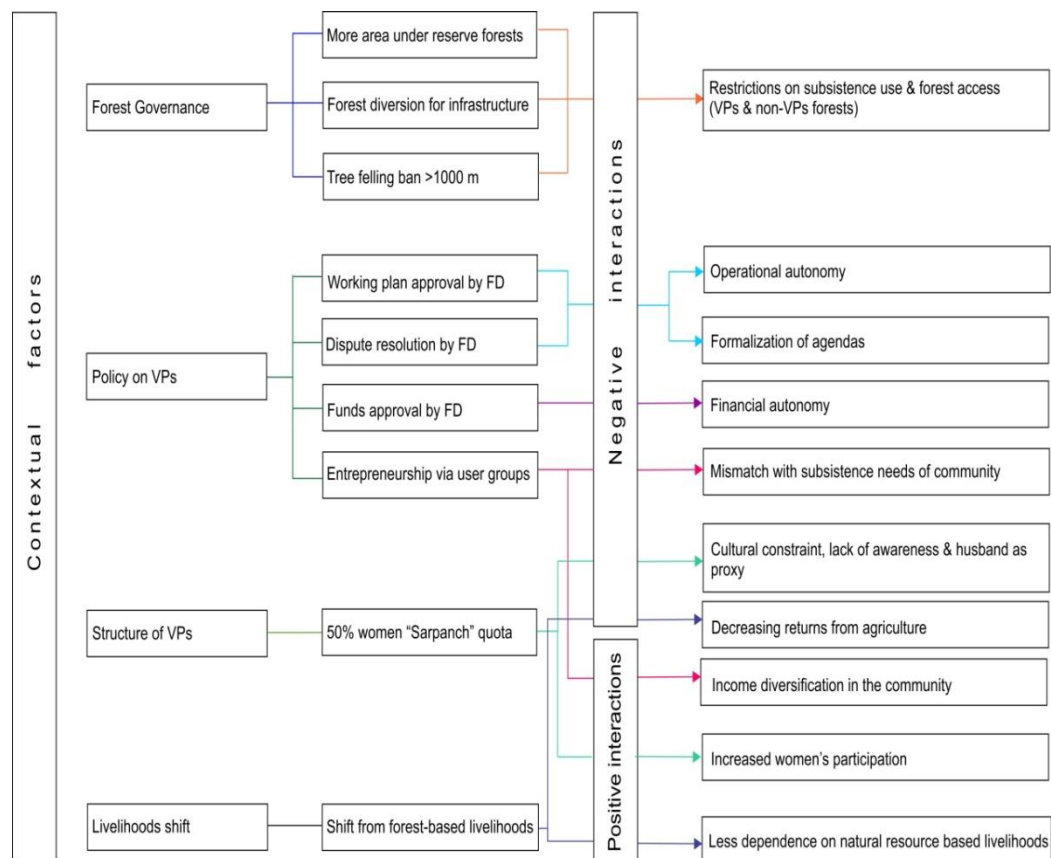


Figure 3. Contextual factors and their effects on VPs

In the above figure, the first column mentions the contextual factors followed by major changes that have resulted from change in respective contextual factor in the second column. Thereafter, the positive or negative effect of changes on the VPs, corresponding to the major changes, has been mentioned. Finally, the last column denotes the effects on use of forests as well as changes in functioning of VPs resulting from the positive or negative changes in contextual factors. It should be noted that positive or negative classification is based on insights from literature and the insights gathered from the study on six VPs.

All the effects mentioned in the above figure can be organized into three broad categories based on our analytical scheme discussed. The three categories are: forest policy and governance (contextual factors); functioning of VPs (institution); and, livelihood linkages (community level responses).

Beginning from the effects of evolution of forest governance, policy on VPs and livelihood shifts at the state level can be argued to be largely negative for functioning of VPs and use of forests in general. To illustrate, considering forest governance and policy on VPs, the dominant effects, such as increase in pressure on forests, restrictions in access, reduced autonomy of VPs (financial and operational), and increased formalization of VPs have negatively affected the functioning of VPs and use of forests by the community. Further, even the policy of making VPs gender inclusive by means of 50% reservation for women in executive committee does not seem to be working due to the cultural constraints of women in the hilly areas of Uttarakhand (Gururani, 2004). Therefore, there is a likelihood that males will emerge as proxy candidates in the background, while women will remain leaders on paper, as

evident in a previous study in Kumaon, as well as reports from other parts of India in case of other CBIs (Mueller, 2016).

The shift from natural resource based livelihoods can have both positive and negative impacts with respect to VPs. Arguably, it is positive in the sense that agriculture is already known to be marginal and mostly rain-fed, thereby providing less returns to the community (NSDC, 2013). Hence, with increasing population in aggregate, a shift away from agriculture can be positive. However, lack of dependence on natural resources can also mean a change in interest towards forest management. Although the report makes a passing mention of youth aspirations as more interested in city-based jobs, a detailed study of youth aspirations with respect to forest management and VPs in particular will be more informative.

Now, the focus will be on community-level factors in Almora. The **Figure 4** shown below is similar to **Figure 3** in terms of structure where four columns, representing, factors, major changes in the factors and positive or negative interaction with respect to VPs and use of forests respectively (read vertically).

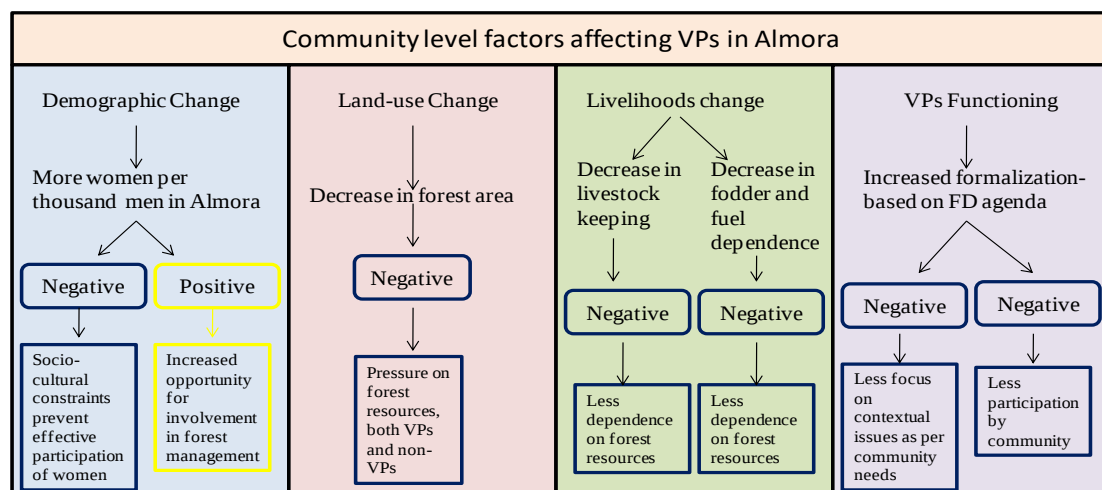


Figure 4. Showing changes in community-level factors in Almora

Demographic change in Almora, particularly, out-migration of young men, has changed the sex-ratio in Almora, where women outnumber men in the overall sex-composition at the district level. This has been argued to increase women's participation in VPs, and other CBIs (Tiwary & Joshi, 2015). But insights from this study, and others, report cultural constraints that inhibit effective participation of women, as described above. Therefore, the demographic change appears less likely to promote women's participation unless supported by capacity building needs of women in hilly districts such as Almora. Also, data obtained from FD (updated till 2013) shows negligible representation of women as "*Sarpanch*" in the entire state of Uttarakhand, including Almora. Interestingly, participation of women in particular, and community in general, is more in case of other CBIs, which arguably reflects less interest in VPs. Less interest is possibly linked to decrease in livestock rearing, decreasing dependence on forest-based livelihoods, and formalization of VPs. Therefore, although this study provides initial insights to link the decrease in forest-based livelihoods and formalization in VPs to participation in VPs, more research is needed to confirm the suggested linkages.

Overall, the analysis indicates that the greater majority of contextual factors point towards increasing pressure on forests, restrictions in access of forest resources, and decrease in natural-resource based livelihoods in Uttarakhand. Additionally, decrease in autonomy of VPs and mismatch of FD approach with community's needs in the policy on VPs in general was also found. In case of mismatch, the analysis highlights differences, such as preference to commercial needs given by FD versus subsistence needs of the community, and FD's approach of participation through increased representation of women versus capacity building needs and cultural

constraints of women emphasized by the community. Particularly in Almora, the primary data suggested increased formalization in functioning of VPs, reflecting increased attention to organizational goals defined by the FD. Further, change in livelihoods such as decreased dependence on livestock rearing, fuel and fodder from forests, alongside low participation in VPs suggests decrease in community's interest in VPs. Our findings also suggest that over the years, VPs have relaxed the need for monitoring of forests by means of appointed guards, again possibly suggesting a loss in interest of community member towards VPs.

Conclusions

Out-migration, along with a combination of socio-economic and political factors, has arguably created detrimental pressures on functioning of VPs, most prominently evident in decreased participation at the community level. In spite of limitations of focus on six women headed VPs in Almora, the broader contextual factors do suggest negative pressures, which can be detrimental to the functioning of VPs as a community-based institution that is responsive to dynamic needs of the community. Particularly, formalization of VPs and predominant focus on commercial aspects, as evident in meeting agenda of four women-headed VPs suggests a shift away from a community-based institution that previous literature on VPs has forcefully argued. This analysis cannot fully answer whether VPs are socially resilient or not. However, it does point out relevant issues on three broad areas of concern that need attention with respect to social resilience of VPs. Similar to the approach in this analysis, these issues are divided into functioning of VPs (institutions), livelihood linkages to VPs (community) and forest governance and policy on VPs (contextual factors).

In order to ascertain the social resilience of VPs, more studies should be directed towards the functioning of VPs based on issues emerging from the reported findings, prominently formalization and move away from community needs. The sample in this study was limited to those VPs, where women were elected as heads for the first time, and that too in one district of Uttarakhand. Due to the diversity of local arrangements in VPs that many scholars have noted previously, an expanded and a bigger representative sample of VPs will provide conclusive insights towards the trend of formalization that emerged in the study that informs this paper. This will be vital to the social resilience as it represents the responsiveness of VPs towards community specific needs, especially livelihood needs.

Further, the implications of change in livelihood patterns, mainly decrease of livestock keeping and increased marginalization of agriculture, should also be probed for linkages with decreasing interest in forest management as these will arguably become more pronounced due to socio-economic and demographic changes in Uttarakhand. Livelihood linkages are critical to collective efforts towards natural resource management through community-based institutions. The shift from natural resource dependent livelihoods towards other sectors should be probed for its linkages with interest of community towards natural resource management. Specifically, in case of VPs, more generalizable insights can be gained from studies with a larger representative sample, covering the entire state of Uttarakhand. These insights will also be useful to the literature on social resilience and management of forest commons.

From the standpoint of larger contextual factors, like forest governance and policy on VPs focused in this article, restrictions on access to forests and decrease in

autonomy of VPs appear to be detrimental to the social resilience of VPs in the given context of Almora. These two issues are well established in the literature. However, related to governance and policy on VPs, there are other crucial issues that were not covered, such as wildlife-animal conflicts threatening livelihoods in Uttarakhand and infestation of weeds in the forests that the policy on VPs and future research should be attentive to. From a policy standpoint, these are negative externalities from the forests that deserve a large-scale response keeping the social resilience of VPs in mind. Further, it is time that the literature on forest commons should start engaging with negative externalities of forests and the case of VPs brings it to the fore.

Overall, this paper set out to analyze broader socio-economic and political changes, including the socio-demographic changes due to out-migration, impacting forests and management of VPs, and the response of community amidst changes through livelihoods as well as the changes in functions of the VPs. Based on findings, out-migration along with many other factors is affecting the functioning of VPs negatively and that is arguable detrimental to the social resilience of VPs. The study identified multiple causal factors that are detrimental to the social resilience of VPs and future research should engage with these factors to answer the question on social resilience of VPs as community-based institutions for forest management.

Summary

In the first paper (Chapter 2), both descriptive and inferential statistical analysis was used to examine trends of participation in VPs and two other community-based institutions, namely GPs and SHGs. Descriptive analysis shows the following five trends in participation: a) low participation of women in the leadership positions at the institutional level; b) low participation of households in VPs compared to GPs and SHGs; c) low participation of women in VPs compared to GPs and SHGs; d) higher participation of men in GPs and almost equal participation of men and women in VPs; and, e) low participation of women in subordinate positions in all the community-based institutions compare to women as head of household.

By means of inferential statistics, some of these differences were further probed for differences between migrant and non-migrant households. Although women from migrant households were found to be more likely to participate in VPs and GPs, there was no statistically significant difference between participation of women from migrant and non-migrant households in the three community-based institutions (VPs, GPs and SHGs). Further, no statistically significant difference was found between participation of men and women from migrant and non-migrant households in two community-based institutions, namely VPs and GPs.

Therefore, with reference to the research question on the effect of out-migration on participation of households in the community, the findings suggest no clear difference between migrant and non-migrant families as the participation was almost equal in case of VPs and GPs. However, with respect to women's participation, low participation at the institutional level consistent over one-and-half decades, and no-statistically significant difference between participation of women

from migrant and non-migrant households highlights lack of evidence supporting the assertion that migration of men leads to higher participation of women. This suggests that the pathway through which out-migration increases participation of women in the community-based institutions lacks statistical support. A number of cultural as well as bio-physical and institutional factors (Chapter 3) that explain participation of women suggest that a linear causal relationship between out-migration and women's participation is problematic.

In the second paper (Chapter 3), the exploratory analysis shows that priority given to males as head and representative of household, combined with gendered division of labour, are the two common cultural norms, or structural conditions, that explain participation of women in VPs at both the institutional and community level. At the institutional level, the predominance of structural conditions as opposed to individual agency explained women's participation in leadership positions in the VPs. Similarly, at the household level, although individual agency expressed as interest in forest management and time allocation for public meetings emerged as vital to explaining women's participation, structural conditions like household relations, institutional functioning and bio-physical conditions of forest were also found to be affecting participation of women.

Overall, the exploratory analysis in paper two (Chapter 3) suggests that, in case of VPs, it is not simply structural conditions, such as cultural norms regarding participation of women in public spaces or gendered division of labour within households, but also individual motivations and interests related to bio-physical conditions, such as vegetation type in forests, and institutional focus on subsistence or commercial issues, that determine women's participation. The exploratory analysis in

paper two creates grounds for moving beyond the focus on cultural factors and presents preliminary insights on the determinants of participation of women within the complex interaction between individual agency, bio-physical and institutional factors applicable in the given context. An exploratory approach helped to uncover the relevant factors related to individual agency as well as structural and bio-physical conditions that underlie participation of women in the VPs of Kumaon. Building on the specific factors highlighted by this study, future research can examine relative relevance of different agency-related and structural factors (including bio-physical conditions) as determinants of participation of women in VPs.

The third paper (Chapter 4) focused on the analysis of three types of factors: community level factors; community-based institution level factors; and, broader socio-economic and political factors. In terms of contextual factors, the policy on forest governance and VPs has largely led to increased pressure on forests, reduced access to forests, decreased autonomy of VPs and formalization of agenda of VPs. These effects, along with shift from natural resource based livelihoods, has negatively impacted the functioning of VPs and community participation in VPs. The socio-demographic change in terms of increased sex ratio has not translated into greater participation of women which suggests another weakness about lack of flexibility in VPs as community-based institutions. Even at the household level, there are indications of decrease in dependence on forest-based livelihoods due to less livestock rearing.

Out-migration, along with a combination of socio-economic and political factors have arguably created detrimental pressures on functioning of VPs, most prominently evident in decreased participation at the community level. In spite of

limitations of focus on six women headed VPs in Almora, the broader contextual factors do suggest negative pressures which can be detrimental to the functioning of VPs as a community-based institution that is responsive to the subsistence needs of the community. Particularly, formalization of VPs suggests a shift in functioning of VPs from a community-based institution that the previous literature has argued.

The sample considered in this dissertation was limited to those VPs, where women were elected as heads for the first time, and that too in one district of Uttarakhand. Due to the diversity of local arrangements in VPs that scholars have noted previously, a bigger representative sample of VPs across the state of Uttarakhand will provide conclusive insights towards the trends of transformation in the functioning of VPs. This will be vital to the overall question on social resilience of VPs amidst socio-economic and political changes around it.

Further, the implications of change in livelihood patterns, mainly decrease of livestock keeping and increased marginalization of agriculture, should also be probed for linkages with interest in forest management. These issues will arguably amplify due to socio-economic and demographic changes in Uttarakhand. Livelihood linkages are critical to collective efforts towards natural resource management through community-based institutions and future studies should examine this change in livelihoods. The insights thus gained will also be useful to the literature on social resilience and management of forest commons.

From the standpoint of larger contextual factors, like forest governance and policy on VPs, restrictions on access to forests and decrease in autonomy of VPs are arguably threatening social resilience of VPs in the given context of Almora. These two issues are well established in the literature. However, related to governance and

policy on VPs, there are other crucial issues that were not covered in this dissertation. Critical issues, such as wildlife-animal conflicts threatening livelihoods in Uttarakhand and infestation of weeds in the forests, should be under focus in the policy on VPs and future research should be attentive to these two issues as well. From a policy standpoint, both the positive and negative externalities from the forests deserve consideration.

Overall, the final paper (Chapter 4) set out to analyze broader socio-economic and political changes, including the socio-demographic changes due to out-migration, impacting forests and management of VPs, and the response of community amidst changes through livelihoods as well as the changes in functions of the VPs. Based on findings, out-migration along with many other factors is affecting the functioning of VPs negatively, and that is arguably detrimental to the social resilience of VPs. This dissertation has identified multiple causal factors that are detrimental to the social resilience of VPs, and future research in other districts of Uttarakhand, should engage with these factors to answer the question on social resilience of VPs as community-based institutions for forest management.

In summary, this dissertation raises three key questions linked to the social resilience of VPs amidst high out-migration and other contextual changes that need to be taken up for further research. As social resilience is dynamic and places significant weight on community-level factors of social resilience, these questions need to be explored periodically and in different contexts. Firstly, what are the linkages between level of participation in VPs and the functioning of VPs. Secondly, what role do women leaders have in the functioning of VPs under the inhibiting cultural constraints combined with increased representation promoted by policy of gender mainstreaming.

Thirdly, what do livelihood changes away from forest-based livelihoods suggest for the future of VPs. These are key questions from a community perspective that will be necessary to explore the future of VPs, or CBF, amidst socio-economic and political changes being observed in the developing countries facing increased urbanization. Although this dissertation raises these questions, a much bigger sample that is representative of the entire state of Uttarakhand is more suited to answer these key questions about the future of VPs and CBF in general.

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