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Nepal's community forestry: critical reflection from the governance perspective

Narayan Prasad Gautam^{a,b,c}, Prabin Bhusal^{b,f}, Nirmal Kumar Raut^d, Bir Bahadur Khanal Chhetri^b, Nirjala Raut^b, Muhammad Haroon U. Rashid^e and Pengfei Wu^{a,c}

^aCollege of Forestry, Fujian Agriculture and Forestry University, Fuzhou, People's Republic of China; ^bTribhuvan University, Institute of Forestry, Pokhara, Nepal; ^cFujian Provincial Colleges and University Engineering Research Center of Plantation Sustainable Management, Fuzhou, People's Republic of China; ^dCentral Department of Economics, Tribhuvan University, Kirtipur, Nepal; ^eDepartment of Forestry and Range Management, University of Agriculture, Faisalabad, Pakistan; ^fNorth Carolina State University, Raleigh, NC, USA

ABSTRACT

In recent decades, the role of community forestry (CF) has been to address the livelihoods of local people beyond its original objective of forest protection. Yet, there have been governance-related concerns, particularly the distribution of benefits among group members. We used a case study approach to better understand the CF model from the perspective of household satisfaction and benefit distribution at the local level. For data collection, we used multiple methods, including key informant interviews, focus group discussions, and household surveys. The study utilised the Henry-Garret ranking for analysing key elements of forest governance and a probit regression model for identifying the major contributing factors of satisfaction towards CF governance. Results suggested greater equity in CF governance and the empowerment of marginalised forest communities. Though CF has created new opportunities to consolidate forest users' efforts toward provisioning broader environmental services, the system continues to favour elites and other influential groups in CF decision-making. The study suggests improving equity and introducing incentives to primary forest dependents. The additional incentives will not only help communities to adapt to the changing context but also increase their interest in decision-making, particularly for equitable distribution of benefits and local collective action.

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Accountability; people's participation; equitable benefit sharing; marginalised groups

Introduction

Community forestry (CF) governance involves decision-making and forest management processes executed through a community-based approach to benefit forest users. Good governance is construed as a process in which participatory, transparent, accountable, and equitable decision-making and implementation of set goals guarantee improved forest management outcomes (UNESCAP 2006; Dressler et al. 2010). The global literature on natural resource governance shows that participatory forest governance has both constraints and unexpected outcomes (Agrawal and Ribot 1999; Mustalahti and Lund 2009; Adhikari et al. 2014). Nevertheless, participatory governance plays a key role in participatory forest management, an increasing global trend in forest management models (Gilmour 2016). Nepal's initial centralised CF model was deemed ineffective, leading to a compromise of forest resource sustainability and poor local forest governance. In response, the government initiated decentralisation of forest management in the country in the late 1970s aimed to minimise deforestation and administrative costs while giving local people more forest-derived benefits and motivating them to engage more fully in forest management activities (Ribot et al. 2006).

Today, Nepal's CF framework is a model for participatory forestry in the global south (Kimengsi et al. 2019). Nepal's

1993 and 2019 Forest Acts have assigned a bundle of forest management rights and responsibilities to community forest user groups (CFUGs) with defined sets of governance mechanisms. CFUGs are autonomous bodies with the rights to develop, use, and manage the forest and sell and distribute forest products by fixing the prices themselves (Dhakal and Masuda 2009; GoN 2019).

As a part of the CF governance system, participation, accountability, transparency, and the rule of law are the keys to ensuring collective actions and sustainable forest resources management. Secure community rights, active community participation, strong institutional advancement through equitable benefit sharing, and transparent activities are the building blocks of good governance (Ojha and Pokharel 2005). Participatory governance, exhibited through regular meetings and inclusive decision-making focusing on poor people and marginalised concerns and needs, has been a fundamental CF objective (Chhetri et al. 2012; Bhandari et al. 2019). This governance system has been well documented and executed through operational plans (OPs) (GoN 2014). In the new federal governance system, fair and equitable revenue and benefit-sharing across all levels of government are equally important. Unfortunately, many CFUGs have not followed the principles of good governance, with some committees operating without local community

participation, top-down accountability, and transparency in decision-making (Ribot 2009; Basnyat 2020).

Fifty years of decentralised CF governance has led to a well-established institution with substantive operational lessons, evolving into a nationwide system of sustainable forest resource management and local economic development (Ojha and Hall 2021). However, there is earnest debate about whether comprehensive local governance has been fully achieved. Indeed, the rules and governance mechanisms have largely favoured elites, resulting in outcomes that have further worsened the situation of disadvantaged, low-income and vulnerable groups (Basnyat 2020; Bhusal et al., 2020a; Devkota et al. 2018). Recent studies reveal the increased technical focus of forest governance through forest management planning (Baral et al. 2018), utilisation of the current CF governance to regain power and maximise benefits from CFs in Nepal (Basnyat 2020), and participation of meagre gender and marginalised community member in decision-making processes (Bhandari et al. 2018). Bhusal et al. (2020b) argued that increasingly technocentric efforts have failed to address the concerns and needs of low-income people. Instead, elite interests often prevail, suggesting a need for more in-depth analyses of the role of elites in CF governance. Among the important challenges related to disempowering the poor and habitually marginalised in CF governance are lower livelihood resources and decreased motivation to participate in forest management (Puri et al. 2020).

Although there are multiple policies, norms, and guidelines, the CF programme continues to face numerous obstacles to improving the governance structure inside CFUGs (Lamichhane and Parajuli 2014). As a result, many CFUGs have failed to align their forest management planning and implementation efforts with the objectives of Nepal's inclusive CF governance framework, resulting in an inequitable distribution of forest benefits within CFUGs. Research continues to strongly suggest the need for comprehensive and longitudinal investigations and prioritisation of governance issues in CFUGs.

Methodologically, the systematic development of a framework for assessing complex phenomena such as CF governance should not be underestimated. Therefore, our research attempted to unravel the present context of governance in CFUGs located in Nepal's lowland and mid-hills regions, especially as it pertains to the key governing principles of participation, transparency, accountability, and rules of law. In addition, we examined the enforcement status and users' satisfaction level related to mandatory provisions implemented by CFUGs in recent years. Lastly, we critically analysed and prioritised users' responses related to impediments to maintaining inclusive and participatory governance in the CFUGs.

Methods

Study area

We studied three CFUGs from Nawalpur, Kaski, and Gorkha districts of Gandaki Province, Nepal. The province comprises 8186.3 km² of forest, spreading from the lowland (Terai)

Table 1. Description of studied CFUGs.

Study area characteristics	Nandan CFUG.	Gahate Durakorukh CFUG	Ludhi daamgaade CFUG
Address	Gaindakot-6,8,9	Pokhara-28	Gorkha-8
Geo-location	X:242180, Y:3067081	X:213339; Y:3123503	X:267996; Y:3094619
Geographical region	Lowland (Terai)	Mid-hills	Mid-hills
Area (ha)	444.80	34.73	305.78
Mgmt. initiation from	1996	1993	1992
Year of handover	2007	1997	1992
Total Household (Hh)	1059	254	522
Dalit ² hh	124	53	75
Severe climatic shocked Hh	23	27	52
The ethnicity of CFUG chair	Brahmin ³	Brahmin	Brahmin
Conflict situation	No	Encroachment	No
Regular climatic hazards	Yes (flood, fire)	Yes (landslide, fire, hailstone)	Yes (landslide, fire)
Major tree species	<i>Shorea robusta</i> , <i>Terminalia alata</i> , <i>Adina cordifolia</i> , <i>Semecarpus anacardium</i> , <i>Ougeinia oojeinense</i>	<i>Schima wallichii</i> , <i>Pinus roxburghii</i> , <i>Castanopsis indica</i> , <i>Prunus cerasoides</i> , <i>Fraxinus floribunda</i>	<i>Shorea robusta</i> , <i>Schima wallichii</i> , <i>Anogeissus latifolia</i> , <i>Castanopsis indica</i> , <i>Terminalia alata</i>

region to the high Himalayas. The three districts studied are 37.11% forested, 11.91% of which have been managed as CFs for many years (MoITFE 2018). After consultation with the respective Provincial Ministry and Divisional Forest Offices, we developed the following criteria from a comprehensive list of all CFUGs: a) the existence of densely populated nearby forest communities; b) areas dominated by marginalised relatively low-income residents; c) geographic location in at least two zones (i.e. Terai and hills); and d) more than 20 years of forest management by the community, either formally or on an ad-hoc basis. We then purposively selected the following three sample CFUGs, one from each district, based on the above criteria. *Nandan* CFUG of Nawalpur, located in Nepal's Terai region, and *Gahate Durakorukh* and *Ludhi daamgaade*, located in the mid-hills districts of Kaski and Gorkha, respectively (Table 1).

Data collection

Using multiple social science methods to triangulate and document issues related to CFUG governance (Egan et al. 1995). We employed both qualitative (e.g. FGDs, KISs, and village-level meetings) and quantitative (e.g. household surveys) data collection methods. To develop in-depth community-level information and prepare for a subsequent household survey, older-aged (greater than 50 years of age) residents, local school teachers, and people experiencing

poverty who regularly collect forest products in each CFUG participated in village-level meetings. On average, there were 21 participants in the meetings. We asked the participants about forest management history, success, progress, and challenges they experienced during forest conservation. Likewise, we also noted households experiencing severe climatic and non-climatic shocks, such as landslides and floods, in the last ten years during the meeting. We categorised households into three groups: households affected with severe climatic shock, those affected with severe non-climatic shock, and those facing low or no climatic shocks. We recorded and summarised the meeting's discussions, developed checklists, and designed the interview schedule. The checklist helped recall the respondents' governance practices during the previous ten years.

The key themes covered during FGDs included the status of policy enforcement in CFUGs, the perceptions of forest users on governance practices over the previous ten years, and challenges and problems encountered in maintaining good governance in CFUGs. Altogether, we organised nine FGDs to discuss the status and challenges of forest governance in respective CFUGs. We classified each selected CFUG based on the locally developed criteria, including the distance of their hamlets to the forest and the user's caste. We formed groups from these locally-made classes for the discussion.

Similarly, we selected 14 key informants, including local teachers, large-scale farmers, forest authorities, local political leaders, and members of the Federation of Community Forestry Users Nepal (FECOFUN), where we discussed opportunities, challenges, and policy constraints in implementing CFUGs and forest management performance.

We collected secondary data from available minutes, financial documents, statutes, and OPs of the CFUGs. The information collected from CFUGs included the status of members' participation in meetings, punishment-award practices, demand for forest resources, product distribution scenarios, forest management activities, and income and expenditure status. The review of recent policy documents and the various roles and responsibilities of the different layers of government were also explored.

We conducted a household survey to provide quantitative information about the governance of CFUGs. We followed a separate randomisation procedure in each CFUG, where we chose 100 households out of the total households listed in each CFUG for an interview. Although the sizes of CFUG varied, we assumed that 100 households would be adequate to represent each CFUG based on their variation. We followed related papers to select around 100 households from each CFUG as a representative sample, see, e.g. (CIFOR 2007; Puri et al. 2020; Gautam et al. 2021). Altogether, we selected 300 households for the household survey using a neutral semi-structured schedule (questionnaire). This sample size selection is consistent with using the standard sample size formula assuming 95% confidence level, 5% margin of error, 60% population proportion with relevant characteristics¹, and population size of 1835 households overall CFUGs considered in the study (See Annex 2).

The survey posed questions in the following areas: household income from different sources; policy enforcement status in CFUGs; forest users' perceptions of governance practices and their satisfaction with their CFUG and its performance; and challenges and problems encountered in maintaining inclusive, participatory governance in CFUGs. We used undergraduate forestry students for data collection. We developed survey questions in English and oriented the students on the data collection tools and processes. In addition, we translated the questions into the local language (Nepali). After testing the survey instrument, we proceeded with the fieldwork.

Our study falls under the category of non-interventional studies (e.g. survey). The authors proclaim that the study has been conducted consistent with all ethical requirements. The study follows the rules, directives, and norms of the Statistics Act 1958 of Nepal. Before starting the interview, the enumerators read a statement mentioned in the preamble of the interview schedule about the research and confidentiality of the response and asked the household head for their verbal consent to participate. We requested the eldest household member to respond to the survey. We strictly enforced the confidentiality and anonymity of all study participants throughout the conduct and reporting of the study. In addition, The results are based on the data reported from the whole study site (three sample CFUGs), which does not represent the individual study unit.

Data analysis

In order to look at the forest dependency and CFUG governance, we merged all data from studied CFUGs. We then categorised the total household income of sampled households into three relative groups of equal sizes, or household income tertiles – i.e. low, medium, and high, where low means the relatively lower income group and high means the relatively higher income group among the sample households. Similarly, we also divided the total forest income generated by the households into three groups of equal sizes, or forest income tertiles, i.e. low, moderate, and high – to reflect relative levels of forest dependency. Fink et al. (2017) acknowledged that wealth quintiles (or tertiles in our case) are useful for comparing various welfare measures across equally sized groups within a given population and can easily be used in regression analysis. Several studies have used wealth and income quintiles or tertiles to analyse the effect of wealth or income on some welfare outcome measures (Arthur 2012; Yaya et al. 2016; Zimmer 2018; Jalloh et al. 2019). We determined the governance status by respondents' views acquired through the household surveys, and it is further supported by the written evidence collected from CFUG minutes, user's applications to CFUGs, and CFUG attendance records and documents. We interpreted the data using simple descriptive statistics, chi-square tests of independence, paired-samples t-tests, Henry-Garret ranking, relative importance ranking, probit, and response mean (weighted mean).

a. Henry-Garrett ranking for analysing four key elements of forest governance

We converted the answers reported by the respondents and their orders into a rank using Henry-Garrett ranking methods, which involves respondents rating the most important factors and then ranking them from best to worst. As described in several studies (Sedaghat 2011; Thangamani and Muthuselvi 2013; Dhanavandan 2016), rankings for the most significant factors were then converted into Garret scores using the percentage position formula:

$$\% \text{ Position} = \frac{100(R_{ij} - 0.5)}{N_j}$$

where, R_{ij} means 1st, 2nd, 3rd, ... n^{th} rank; N_j means total rank given by the total number of respondents. We then converted the percentage position to rankings by using the Henry-Garrett table (Garrett and Woodworth 1969) and multiplied the total number of responses for each factor rank by the corresponding Garret value. Sums for all ranks and multiplied values for each factor were then divided by the total number of respondents, yielding corresponding Garret average scores. We converted average scores to Henry-Garret ranks and assigned a rank from first for the highest score value (best or highly satisfied or very good) to last for the smallest score value (worst or highly dissatisfied)

b. Relative Importance Ranking (RII)

Ranking of major mandatory policies and activities related to forest governance in CFUGs was determined by the Relative Importance Index (RII) (Odeh and Battaineh 2002; Gündüz et al. 2013; Muhwezi et al. 2014; Hatkar and Hedaoo 2016) using the RII formula;

$$RII = \frac{\sum W}{A \times N}$$

where W is weight given to each provision (factors) by the respondents, ranging from 1 to 3 (where 1 = low enforcement and 3 high enforcement); A is the highest weight (i.e. 3 in our case); and N is the total number of the respondents (i.e. 300 in our case).

c. Regression analysis

We used regression analysis to identify the major contributing factors that explain the extent of satisfaction towards the CF governance process as reported by the households. A simple probit model was used where the dependent variable is a dummy variable equal to 1 for households expressing satisfaction towards the governance process and zero if otherwise, as follows:

$$\text{Satisfied}_h = \beta_0 + \beta_1 P_h + \beta_2 T_h + \beta_3 A_h + \beta_4 R_h + \beta_5 X_h + d_h + \varepsilon_h \quad (1)$$

$$\begin{aligned} \text{Satisfied}_h = & \alpha_0 + \alpha_1 \text{part_dmaking}_h + \alpha_2 \text{part_fmanage}_h \\ & + \alpha_3 \text{part_bsharing}_h + \alpha_4 \text{transp_CFfunds}_h \\ & + \alpha_5 \text{transp_FPprice}_h + \alpha_6 \text{transp_bsharing}_h \\ & + \alpha_7 \text{acc_rights}_h + \alpha_8 \text{acc_writdocs}_h \\ & + \alpha_9 \text{acc_disvictims}_h + \alpha_{10} \text{rol_goodduty}_h \\ & + \alpha_{11} \text{rol_goodrewardpun}_h + \alpha_{12} \text{rol_goodmeval}_h \\ & + \alpha_{13} X_h + d_h + \varepsilon_h \end{aligned} \quad (2)$$

In equation (1), subscript h for the outcome variable represents households. The explanatory variables, P_h , T_h , A_h , and R_h are vectors of households' responses to questions related to user participation, transparency, accountability, and rules of law, respectively. X_h is a suite of other independent variables that represent household or household head's characteristics such as forest income, wealth categories (classified as low, medium and high), gender of the household head, family size, and caste categories (classified as Brahmin/Chhetri, indigenous castes, and Dalits). The explanatory variable is designated as d_h , is a dummy for the districts (study areas), which are fixed district-level effects that usually capture unobserved and time-invariant attributes, such as infrastructure and culture. Finally, ε_h is a random error term that is clustered at the district level.

Equation (2) is the extended version of equation (1) where variables related to participation, transparency, accountability, and rule of law are shown in detail. Variables used for participation include participation in decision-making (part_dmaking_h), participation in forest management (part_fmanage_h), and participation in benefit sharing (part_bsharing_h). Variables used for transparency include transparency of CF fund (transp_CFfunds_h), transparency in setting forest product price (transp_FPprice_h), and benefit-sharing (transp_bsharing_h). Variables used for accountability include CF's accountability towards users' rights (acc_rights_h), whether CF's activities are in line with written documents (acc_writdocs_h), and whether CFs address the needs of the disaster victims (acc_disvictims_h). Variables used in the case of rules of law include the responsibilities of CFUGs and community forest user group committees (CFUGCs) and forest government authority in CF management (rol_goodduty_h), reward and punishment practice in CF ($\text{rol_goodrewardpun}_h$), and monitoring and evaluation practice in CF (rol_goodmeval_h). All these variables are included as dummies on the right-hand side of the equation (1). For example, if the household reports that participation in the decision-making process of CF is good, then the dummy for this variable is equal to 1; if otherwise, it is zero. Likewise, if the household perceives that the CFs do a good job of practising the transparency of funds, the dummy for this variable is equal to 1; if otherwise, it is zero. The same applies to other variables. Other variables X_h and ε_h are as defined in equation (1). The marginal effects of the probit model are reported. The variables used in the model and their measurement are given in Annex1.

Results

Status of governance in CFUGs

The status of governance practices in different CFUGs located in the study sites is presented based on the review of CFUG minutes and the status verified through FGDs (Table 2).

In most cases, female users' participation in the decision-making process of CFUGs was meagre, whereas male members' participation was more than 70% (Table 2). CF users were not strongly encouraged to participate in a general assembly, and the DAG and other marginal voices

Table 2. Status of participation, transparency, accountability, and rules of law in CFUGs.

Participation	Transparency
- Male user's participation in decision-making was above 70% - Female's participation in decision-making was below 20% - As a mandatory provision, participation in forestry meetings was relatively high (above 80%) - Forcefully manage (if not participate, CFUGC can punish absentees; mentioned in CF statute) the required quorum number of members in the general assembly - Participation of committee members in forest management was higher than that of forest users	- Most of the CFUGs have a bank account - In most of the cases, the use of funds was not in alignment with a statute - Mostly elite male members influence the price setting of forest products - Fewer than 50% of the users were satisfied with a resource distribution - Insufficient budget allocation for low-income users, disadvantaged groups (DAGs) and Forest dependent communities (FDC) - Only the elite can see meeting minutes and financial documents - Activities and financial works were not audited annually
Accountability	Rules of Law
- More than 75% of users were accountable (perform or obey) to the given responsibility - CFUGC was below 75% accountable for addressing CFUG's needs - CFUGC was partially accountable (below 25%) towards the low-income users, DAG, and FDC - Less than 75% of users were satisfied with the award and penalty	- The statute and OP were not amended in a timely way - The forest office was supportive in the enforcement of rules - Below 75% of the forest management activities were implemented, according to the OP 25% of annual activities were not implemented - Monitoring of illegal activities in the forest was regular but did not follow the guiding principles

were not fully heard. Participation of Dalits and other marginal groups in the executive committee was considered to be more token than substantive, and budgeting for these groups was considered insufficient. Committee members were more active in forest management activities than other user groups. CFUGs opened bank accounts to manage the forest fund as a mandatory provision. However, expenditure and monitoring processes were not aligned with written guidelines, and elite and male influence in these processes was prominent. CFUGC members were not fully responsible for the welfare of the marginal communities. In most cases, the CFUG statute and OP were not reviewed in time. The role of the forestry government body in monitoring the user group's activities was considered satisfactory.

Enforcement status and satisfaction level of mandatory provisions

The enforcement status of mandatory CFUG policies in the context of maintaining good governance was studied (Table 3). We analysed the responses of 12 mandatory provisions of CFUG policy according to wealth class, forest-dependency class, and shocked household class using weighted mean and statistically tested using chi-square. On average, most of the enforcement status was good, but the perception among the respondents' categories was not the

same in the majority of the policy provisions. For example, in the case of wealth class, formulation of the annual programme of the CFUG and ranking users' well-being status were found statistically significant at the 10% level, suggesting that perception among the wealth strata of the respondent differs in the enforcement of formulating annual plans and provision related to the wealth ranking.

Similarly, provision to form a CFUGC was found statistically significant at $\alpha = 0.05$, again suggesting differences among wealth classes for this attribute. Likewise, the forest-dependent class response was significantly different at $\alpha = 0.1$ in the provisions related to holding regular meetings, formulation of an annual programme for CFUGs, and financial signatory rights of female members. In addition, provisions related to group fund mobilisation, accounting (e.g. having a bank account and making vouchers for each financial transaction), and punishment-award system were found to be significantly different at the 0.05 level. While long-standing policy provisions inside the CFUGs appeared to be enforced effectively, new policies, such as developing an action plan related to climate change adaptation, were not effectively enforced.

The responses of severely shocked households also varied in some provisions, including holding regular meetings and signatory rights of female members, which was significant at $\alpha = 0.01$. Other provisions, including annual programme formulation and forest product (FP) sales and distribution, were significantly different at the 5% level.

Regarding the overall enforcement level of the provisions mentioned in Table 3, a general assembly of user groups ranked first, committee formation ranked second, and plan preparation to implement strategies for climate change adaptation ranked last.

We asked a question regarding respondents' satisfaction level with the various mandatory provisions of their CFUGs. Figure 1 shows the top five law-enforcement provisions among the CFUGs studied. To arrive at these provisions, all policy provisions of CFUGs were ordered, and the top five provisions were selected by categorising the satisfaction level experienced by the respondents. One-fourth of respondents were satisfied with the "wealth ranking system" practiced in CFUG, while only 15% were satisfied with the provision of "forest product sale and distribution."

Ranking of forest governance practices in CFUGs

Garret's values were calculated to rank four essential forest governance criteria for assessing the status of good governance and its practices in CFUGs (Table 4). Among the various indicators of participation, users' participation in forest meetings was ranked first, while DAG participation in decision-making was ranked last. Likewise, for transparency, public audit and hearing were ranked highest, while low-income people and DAG access to the fund were ranked lowest, with Garret scores of 54.83 and 52.77, respectively. Similarly, for the accountability criterion, the indicator for mass consensus in forest assembly achieved the highest Garret score (57.03), while addressing the needs of victims of a natural disaster had the lowest score (54.05). For the

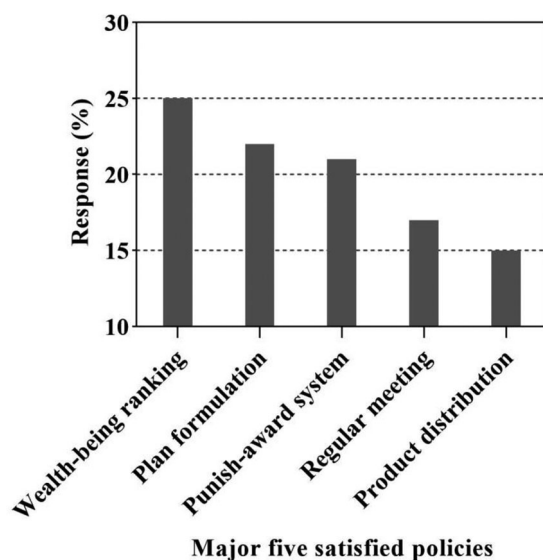
Table 3. Enforcement status of mandatory CFUG policies in the context of keeping good governance.

The mandatory provision in CFUG	Response (weighted) mean (1 = less enforce, 2 = moderately enforce, 3 = highly enforce) with χ^2 test											
	Wealth class				Forest dependent class				Severely shock household class (SShh)			
	Low (n = 100)	Medium (n = 100)	High (n = 100)	χ^2	Low (n = 100)	Moderate (n = 100)	High (n = 100)	χ^2	Climatic SShh (n = 102)	Non-climatic SShh n = (72)	χ^2	RII
General assembly	2.75	2.67	2.75	3.727	2.77	2.65	2.76	6.228	2.72	2.73	0.97	3.00(I)
Regular meeting	2.38	2.19	2.48	7.606	2.51	2.18	2.38	8.538*	2.25	2.53	9.295***	2.60(IV)
Annual programme formulation	2.39	2.25	2.43	9.245*	2.41	2.21	2.44	9.158*	2.26	2.52	8.973**	2.61(III)
FP sell and distribution	2.31	2.13	2.23	4.239	2.24	2.09	2.34	7.534	2.15	2.35	6.747**	2.46(VII)
Accounting (bank) provision	2.14	2.13	2.18	6.00	2.24	2.05	2.17	12.908**	2.11	2.24	4.768	2.38(X)
User's wealth being ranking	2.12	2.09	2.34	9.145*	2.31	2.08	2.16	6.363	2.24	2.1	3.394	2.40(IX)
Fund mobilisation ⁴	2.44	2.25	2.33	6.220	2.35	2.21	2.45	10.663**	2.28	2.42	3.852	2.58(V)
Disaster risk prioritisation	1.95	1.91	1.99	3.370	1.97	1.96	1.92	0.374	1.9	2.03	2.778	2.15(XI)
CC adaptation plan	1.73	1.64	1.80	4.989	1.76	1.68	1.74	1.936	1.68	1.79	4.338	1.90(XII)
Committee formation ⁵	2.68	2.47	2.55	10.993**	2.59	2.51	2.58	1.980	2.55	2.59	0.22	2.82(II)
Signature right to female	2.10	2.29	2.24	5.069	2.27	2.18	2.21	8.840*	2.36	1.97	12.207***	2.42(VIII)
Punishment and award system	2.38	2.18	2.35	6.355	2.43	2.1	2.38	11.785**	2.29	2.33	1.245	2.54(VI)

* Significant at 10% level, ** Significant at 5% level, *** Significant at 1% level, Weighted mean; 0.51–1.50 = low enforcement, 1.51–2.50 = moderately enforce, 2.51–3.0 = highly enforce.

last criterion – rules of law – the Garret score was highest for the effectiveness and performance of CFUGC and lowest for exercise to update CFUG statute and OP.

For all four criteria of good governance, the Garret score ranged from 53 to 58, with the average Garret score highest for participation (average score of 56.76), followed by accountability (55.38), rules of law with 55.16, and transparency (53.57).

**Figure 1.** Respondents' satisfaction level on the top five mandatory policies.

Factors contributing to insufficient forest governance

Weighted means of the factors hindering the achievement of good governance in the CFUGs studied were calculated (Table 5). Obstacles included natural disasters such as drought due to warming, flooding, and landslides due to the erratic nature of precipitation, and earthquakes. With a weighted score of 2.04, the households studied agreed that natural disasters were more of an obstacle to good governance than other barriers. With a weighted mean of 2.26, the second major obstacle was corruption among committee members and other forestry practitioners, while the least important obstacle to achieving good governance was unclear policies and weak enforcement, with a response mean of 2.48. Weak transparency and unaccountable decision-making, especially for marginalised and poorly represented CFUG members, had a weighted mean of 2.65, signifying a criterion that was somewhat neutral. This agrees with the notion that these often voice-less people lack the opportunity to express complaints about their rights and benefits.

Results from regression analysis

Regression estimation results and marginal effects of the coefficient estimates from the probit model expressed in equation (1) were tabulated (Table 6).

The estimation results reveal that only one participation and transparency-related variable is significantly associated with the probability of reporting high satisfaction towards

Table 4. Garret values and ranking of four major criteria and their indicators of forest governance (n = 300).

Indicators	Total score	Average score	Rank ⁶
Participation (average: 56.76)			
Forestry meetings	17505	58.35	1
Forest management and conservation activities	17435	58.12	2
Decision-making process	17170	57.23	3
Forest product sale and distribution	16530	55.1	4
DAG participation in decision-making	16495	54.98	5
Transparency (average: 53.57)			
Public audit and hearing	16450	54.83	1
Use of CFUG fund	16270	54.23	2
Setting price of forest products	15920	53.07	3
Forest product distribution system	15880	52.93	4
Low-income people and DAG access to fund	15830	52.77	5
Accountability (average: 55.38)			
Mass consensus in forest assembly	17110	57.03	1
CFUGC is accountable towards the user group	16795	55.98	2
Activities of CFUG as per formal rules	16645	55.48	3
Technical assistance from government authority	16300	54.33	4
Addressing the needs of victims of natural disaster	16215	54.05	5
Rules of law (average: 55.16)			
Effectiveness and performance of CFUGC	16640	55.47	1
Award and punishment practice as per formal rules	16510	55.03	2
Monitoring and Evaluation (M&E) system of forest management	16445	54.82	3
Duty of CFUGC and forest government authority	16165	53.88	4
Exercise to update CFUG statute and OP	15335	51.12	5

the governance system in the sample CFs. For example, if the sample households reported that participation in forest management activities was good, they were 14.4% more likely to be highly satisfied. On the other hand, if they felt good about the transparency of funds in CF, they were 18.2% more likely to report high satisfaction. Further, two of the three “rules of law” variables included in the probit model significantly indicated that the practice of the rule of law in CF is very important in determining satisfaction with its overall governance

Table 5. Respondent's perception of various impediment elements to keep good governance in CFUGs (n = 300).

The obstacle in keeping forest good governance	Response percentage (Strongly agree Strongly disagree)					Weighted mean
	1-SA	2-A	3-N	4-D	5-SD	
Natural hazards	41.60	36.77	1.83	15.31	4.49	2.04
Corruption and impunity	19.42	52.17	15.50	8.92	4.00	2.26
Weak inclusiveness	12.33	60.50	13.67	12.33	1.17	2.30
Elite captures decision mechanism	21.67	50.67	6.00	12.22	9.44	2.37
Unclear policy and weak enforcement	15.75	48.42	10.17	23.92	1.75	2.48
Insufficient funds and improper re-investment	16.86	45.58	9.35	18.86	9.35	2.58
Weak transparency and unaccountable decision	13.64	45.62	8.75	26.26	5.72	2.65

Weighted mean; 0.51–1.50 = strongly agree, 1.51–2.50 = agree, 2.51–3.50 = neutral, 3.51–4.50 = disagree, 4.51–5.0 = strongly disagree.

system. The stronger the role of CFUG, CFUGC, and government in CF management, the higher the probability of the households reporting high satisfaction towards the CF governance. Such a probability was higher by 9.3 percentage points vis-à-vis the households reporting a weaker role of CFUG and government in CF management. In addition, better reward and punishment practices in sample CFs were associated with higher probabilities of households reporting good governance in these CFs. Indeed, this probability was higher by 34.1 percentage points. Of all the coefficients studied, the coefficient relating to reward and punishment practices in CFs was the largest, suggesting that this aspect of rules of law is the most important to ensure good governance in CFs (Table 6).

So far as the variables relating to the household (head) characteristics are concerned, the estimation results show that only wealth and caste were significant. For example, the lower the household income, the less likely it was to

Table 6. Estimation results from probit model (marginal effects).

Variables	(Dep.Variable: Satisfied = 1)		
	Marginal effect	Robust Std. Err.	P-value
Participation-related variables (P)			
User's participation in decision-making is good (= 1)	0.022	0.077	0.780
User's participation in forest management is good (= 1)	0.144**	0.063	0.023
User's participation in benefit sharing is good (= 1)	−0.020	0.968	0.829
Transparency-related variables (T)			
Transparency of funds in CF is good (= 1)	0.182***	0.052	0.001
Transparency in setting forest product prices is good (= 1)	0.030	0.110	0.786
Transparency in benefit sharing (= 1)	0.007	0.074	0.930
Accountability-related variables (A)			
CF is accountable towards user's rights (= 1)	0.149	0.116	0.194
Activities of CF are in line with written documents (= 1)	−0.101	0.087	0.251
CF addresses the needs of disaster victims (= 1)	−0.005	0.068	0.945
Rules of law-related variables (R)			
Duty of CFUGC/C and government authority in CF management is good (= 1)	0.093**	0.039	0.018
Reward and punishment practice in CF is good (= 1)	0.341***	0.112	0.004
Monitoring and evaluation practice in CF is good (= 1)	0.026	0.058	0.653
Wealth categories^a			
Medium	−0.181**	0.080	0.032
Low	−0.130***	0.025	0.000
Caste categories^b			
Indigenous	0.188**	0.078	0.016
Dalit	0.097	0.228	0.667
Household head male (= 1)	0.048	0.048	0.323
Family size	0.008	0.011	0.470
Distance to forest more than 30 min (= 1)	−0.075	0.077	0.337
District fixed effect^c			
District1_Kaski (= 1)	−0.432***	0.087	0.000
District2_Gorkha (= 1)	−0.150**	0.064	0.022
Number of observations	300		
Prob > χ^2	0.000		

Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; Note:

^a Reference category is High; ^b Reference category is Brahmin and Chhetri. ^c Reference category is Nawalpur-Nandan CFUG.

report high satisfaction towards the governance of the CFs studied. Conversely, wealthier households were more likely to report high satisfaction than low and medium-income households. Regarding castes, indigenous households were more likely to report high satisfaction than Brahmin/Chhetri households. The probability of these households reporting high satisfaction was 18.8 percentage points higher as compared to the Brahmin/Chhetri households. Moreover, households in the hilly districts of Kaski and Gorkha were less likely to report high satisfaction towards CF governance than those in the Terai district of Nawalpur.

Discussion

This study examined the present context of governance in CFUGs from Nepal in the context of key governance principles – participation, transparency, accountability, and rules of law – in CFUGs. The study sampled CF cases and evidence from lowland and mid-hills regions. It examined the enforcement status and users' satisfaction levels on mandatory provisions implemented by CFUGs. Further, we critically analysed CF user's responses on impediments to maintaining good governance in CFUGs.

The study found that men users dominated decision-making, while women's participation was relatively meagre, despite the presence of women in CF governance, such as committees. This was also true of Dalits and other marginalised groups. The role of these groups in decision-making still requires substantial changes in CFUG mindsets, accepting and encouraging their critical roles in actual decision-making in ways that affirm their roles as more than simply token representation. This is supported by Bhandari et al.'s (2018) study of five CFUGs in the mid-hills region that argued that, though women representation in committees seemed fair, meaningful participation in decision-making processes was poor. Likewise, Chhetri et al. (2013) and Wagle et al. (2017) suggested that the long-awaited equity in decision-making has not yet been achieved. Agarwal (2001) argued that females had fewer choices and less access to CF decision-making opportunities, creating fewer opportunities for meaningful participation in governance and supporting the stereotypic notion that they could not make decisions effectively (Bhandari et al. 2018).

While most CFUGs have bank accounts, the financial decisions, resource distribution, and budget allocation decisions made by only a few committee members have left most users dissatisfied. Accountability toward CF users, particularly low-income and marginalised groups who may be afraid to share their needs and interests with key decision-makers, has also been found to be weak (Yadav et al. 2015). Despite forest OPs articulating precepts of good governance, their regular revision and subsequent implementation have not always been realised. While, in theory, OPs are designed to guide forest management for the good of CFUG members, some studies have argued that OPs more often become a tool that strengthens forest administration control over forest resources and forest product harvesting. Further, Baral et al. (2018) and Basnyat et al. (2018) contended that OPs had been used only as a ritual that

merely fulfils legal requirements on paper, lacking a sincere motivation or intention to implement them for the good of the CFUG.

We found that governance implementation of CFUGs in terms of participation, transparency, accountability, and the rule of law is above average (Table 4). This is most likely due to progressive policies and laws to ensure equity, distributive justice, fairness, and transparency. However, in practice, several structural and systemic flaws continue to favour elites and other dominating groups and actors in decision-making processes. While participatory governance, manifested through regular meetings and inclusive decision-making, may seem adequate at the policy level, it often fails at the local policy implementation level. The concerns of low-income and marginalised groups have been cited in several studies (Pokharel et al. 2007; Chhetri et al. 2012; Bhandari et al. 2019) and adequately spelt out in CFUGs' OPs (GoN 2014). Inclusion in CF committees has also been an issue. And female marginalisation, specifically, was addressed by recent provisions that granted females up to 50% of executive committee positions (GoN 2014; GoN 2019). However, the CFUGC acts as a supreme body when it comes to implementing governance. The formal mechanism of CFUGs grants full decision-making authority to a relatively few executive committee members (Agrawal and Chhatre 2006; Andersson and Agrawal 2011), and CFUGCs are largely composed of powerful local elites (Adhikari and Di Falco 2009). As a result, the elites' issues have increasingly dominated CF governance (Andersson and Agrawal 2011; Persha and Andersson 2014; Yadav et al. 2015). Sunam and McCarthy (2010) and Devkota et al. (2018) argued that structural and procedural setups in CFs allow elite domination, ultimately disadvantaging low-income and marginalised groups.

In the last ten years, among the governance indicators within four key principles, we found that CFUG meetings, public audits and hearings, and the mass consensus in the CFUG assembly received the highest rank by the users (Table 4), suggesting that these are the best practices regularly carried out in CFUGs. However, weak participation rates in decision-making and the inequitable distribution of CF-derived revenues and forest products among low-income and marginalised CFUG members, combined with an unwillingness to address their needs related to the aftermath of natural disasters, have weakened CF governance (Table 5). Studies have shown that low-income households have not fully benefited from the outcomes of CF management (Malla et al. 2003; Devkota et al. 2018) despite their more acute dependency on forest resources. Especially during emergencies, it has been shown that people with minimum assets depend more on forest resources (Van Bodegom et al. 2009; Gautam et al. 2020). Chaudhary et al. (2016) argued that natural disasters are among the leading causes of deforestation and the exploitation of forest resources. Agrawal et al. (2008) also suggested that natural disasters that impacted forest resources negatively impacted forest governance, ultimately affecting low-income users and more forest-dependent people, leaving households even more vulnerable to climate and other natural disturbances

(Gentle and Thwaites 2018). While CFUGs have the potential to act as strong local institutions to reduce climate change vulnerability at the local level, for example (Sapkota et al. 2018), the realisation of this will require the transformation of internal governance and decision-making processes to make them more equitable and responsive to the needs and realities of low-income and marginalised users. The obstacles manifested by natural hazards, increasing corruption within CFUGs, weak inclusive decision-making, and elites' domination of decision-making have been significant factors hindering the practice of good governance. Similarly, reducing the impacts of natural disasters through meaningful implementation of planned activities at the CFUG level is crucial.

Among participation and transparency-related variables, a sense of more inclusive participation in forest management activities and positive perceptions of fund transparency resulted in greater satisfaction with the overall CFUG governance processes (Table 6). These results align with Negi et al. (2018), who reported that meaningful participation of users in forest management activities ensures effective forest governance practices. In addition, Chaudhary et al. (2016) reported that users' engagement in forestry operations such as forest patrols, fire control, and monitoring of illegal harvesting improved forest and other environmental outcomes. Indeed, some studies have suggested that the lack of community involvement in forest management activities has resulted in an environmental disaster (Anup 2017), and the absence of financial transparency, which may suggest corruption within the CF, indicates poor forest governance (Lamichhane and Parajuli 2014; Von Hellermann 2016). The results also indicate that the stronger the presence of the various stakeholders, such as CFUG, CFUGC, and the government sector in CF management, the greater the likelihood that forest users will report good governance. These results are consistent with Rijal et al. (2021). The governance system is further strengthened when such involvement is linked with the presence of adequate reward and punishment systems within the CF that encourage forest users to participate in forestry operations and resolve conflicts, ultimately improving forest governance (Sarkar 2017).

Indigenous people are more likely to report satisfaction with forest governance practices in CF (Table 6). One of the reasons for this may be that these ethnic groups in the hills are relatively well-off, have more livelihood options, and may exercise greater authority in shaping CF benefits and influencing decision-making processes (Gautam et al. 2021). In contrast, low-income users are less likely to report satisfaction due to discriminatory practices and are therefore deprived of receiving a fair share of the benefits normally derived from forest management activities. This is despite the fact that low-income users depend more on forest resources (Karki and Poudyal 2021) and have been prioritised, for example, by being provided subsidies in CF (Cedamon et al. 2017).

Low-income and marginalised people are deprived of CF benefits. The adoption of Forest Act in 2019 did not improve the situation for these people, although it aimed at empowerment and development of leadership skills among

them (GoN 2019); the study showed that the CFUGC could not fulfil the objective mentioned in the act. These findings are similar to the findings of Dahal et al. (2021). Environmental considerations, including the conservation of biodiversity, have been delegated to the local government by the 2017 Local Government Operation Act. But, local governments were not found to support forest conservation in the area. Thakali et al. (2018) argued that local governments only want to access natural resources to raise revenues. Further, Rijal et al. (2021) highlighted an overlap in policies and powers among different levels of government, placing CF in a dilemma. This is consistent with our findings that unclear policies and weak enforcement impede the governance of CFUGs. Therefore, there should be accountability for forest conservation and proper coordination between local government and CFUGs to empower forest-based low-income and marginalised people.

Conclusions

The gaps between rhetoric and reality in CF governance have often been questioned. This study poses similar questions and argues that the central essence of governance implementation lies in how decisions are made and institutionalised. Though there are some promising signs in overall governance indicators, in practice, flaws in the system continue to favour elites and other influential groups and actors in CF decision-making. Therefore, reviewing CF policies is essential to ensuring gender and social inclusion, understanding issues of low-income and marginalised users, and creating enduring collective participation. In practice, our findings and those of other researchers show that the long-awaited equity in CF decision-making has not yet been fully realised.

The blanket approach to implementing policy provisions to account for users with differentiated needs and interests in forest resources, the lack of access of low-income people and women to decision-making processes and CFUG income and its distribution, and an apparent unwillingness to address the needs of climate and disaster victims are some of the areas in which CFUG governance is weak. Our regression analysis of governance indicators suggests a strong role for the rule of law in executing and instituting governance systems in CFUGs. The effective implementation of rules in practice coupled with reward and punishment systems enhance governance practices. Importantly, this also increases satisfaction with CF management among forest users. It is perhaps noteworthy that, while calculated Garret values can range from 0 (worst) to 100 (best), most of the verifiers of good governance in our study had average Garret values below 60, suggesting that there is a significant opportunity to achieve improvements in governance for the CFs studied. The governance system appears not to well function as expected by the CFUG cases that we studied. This further suggests a need for future research. Studies that utilise the framework employed herein and expand the sample size beyond the three CF cases we investigated will enable us to more confidently generalise results to Nepal's overall CF paradigm.

This study advances some suggestions to CF implementers and policymakers to rethink and rearrange CF institutions in changing socioeconomic and ecological contexts, including:

- Increasing the role and responsibility of primary forest dependents, including low-income, Dalits, and marginalised users, in CFUG decision-making and forest management through incentive mechanisms.
- Developing monitoring systems within CFUG institutions to effectively implement and navigate decision-making processes.
- CFUG management objectives should reflect and prioritise the evolving needs (expected needs) of relatively low-income, Dalit, and marginalised groups
- Sharing equitably the costs and benefits associated with CFUGs, meaning that based on identifying the conservation-related contribution and needs of users, users should be prioritised, monitored, and enforced.
- Empowering local governments to have a substantial role in empowering and developing leadership opportunities among women, low-income users, and members of marginalised communities.

Future research may extend the results of our case-study approach to a broader region- and nationwide study of CF governance that can more confidently generalise its outcomes to the larger CF paradigm. This is especially as it relates to equity in governance and distribution of CF-related benefits while at the same time remaining cognizant of regional CF needs, challenges, and approaches. It will also help to clarify whether “household satisfaction” with various aspects of CF governance is a reliable outcome variable and perhaps better define the most appropriate explanatory variables. In addition, longitudinal studies of a sample of CFs in each region that document the evolution of CFs and their governance over time will provide information in changing socio-political, climate, and economic contexts. This will require an acknowledgement of the challenges currently faced in CF governance and sustainability and a long-term funding commitment.

Notes

1. In fact, this proportion is very conservative given that majority of households possess the relevant characteristics that is atypical of a representative CFUG household.
2. Oppressed, marginalised and scheduled caste in Nepal, e.g. blacksmith.
3. Higher caste of Nepal, mostly Hindus.
4. Provision to allocate 25% of fund in forest protection and development, 35% in pro-poor income generating activities, 40% in administration and others heading.
5. It is a provision of 50% female should be on the committee. At least one female should be in either secretary or chair post.
6. 1-very good, 2-good, 3-somewhat good, 4 worse, 5-worst.

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Appendix

Annex 1: variables used in the study and their measurement.

Variables	Measurement
Dependent variable	
Satisfied (= 1)	Dummy; satisfied = 1, otherwise = 0
Independent variables	
Participation-related variables (P)	
User's participation in decision-making is good (= 1)	Dummy; good = 1, otherwise = 0
User's participation in benefit sharing is good (= 1)	Dummy; good = 1, otherwise = 0
User's participation in forest management is good (= 1)	Dummy; good = 1, otherwise = 0
Transparency-related variables (T)	
Transparency of funds in CF is good (= 1)	Dummy; good = 1, otherwise = 0
Transparency in setting forest product prices is good (= 1)	Dummy; good = 1, otherwise = 0
Transparency in benefit sharing (= 1)	Dummy; good = 1, otherwise = 0
Accountability-related variables (A)	
CF is accountable towards user's rights (= 1)	Dummy; accountable = 1, otherwise = 0
Activities of CF are in line with written documents (= 1)	Dummy; inline = 1, otherwise = 0
CF addresses the needs of disaster victims (= 1)	Dummy; address = 1, otherwise = 0
Rules of law-related variables (R)	
Duty of CFUG/C and government authority in CF management is good (= 1)	Dummy; good = 1, otherwise = 0
Reward and punishment practice in CF is good (= 1)	Dummy; good = 1, otherwise = 0
Monitoring and evaluation practice in CF is good (= 1)	Dummy; good = 1, otherwise = 0
Wealth categories	
Low (= 1)	Dummy; low = 1, otherwise = 0
Medium (= 1)	Dummy; medium = 1, otherwise = 0
High (= 1)	Dummy; high = 1, otherwise = 0
Caste categories	
Brahmin and Chhetri (= 1)	Dummy; Brahmin and Chhetri = 1, otherwise = 0
Indigenous (= 1)	Dummy; indigenous = 1, otherwise = 0
Dalit (= 1)	Dummy; dalit = 1, otherwise = 0
Other variables	
Household head male (= 1)	Dummy; head is a male = 1, otherwise = 0
Family size	Numerical (continuous)
Distance to forest more than 30 min (= 1)	Dummy; more than 30 mins = 1, Otherwise = 0
District-related variables	
Nawalpur (= 1)	Dummy; CFUG from Nawalpur = 1, Otherwise = 0
Kaski (= 1)	Dummy; CFUG from Kaski = 1, Otherwise = 0
Gorkha (= 1)	Dummy; CFUG from Gorkha = 1, Otherwise = 0

Annex 2: calculation of sample size

Total population size (N) = 1835; Margin of error (ϵ) = 5%; Proportion of population with relevant characteristics ($\hat{p}$) = 60%; and z- score corresponding to 95% confidence level (z) = 1.96

Sample size formula for finite population (n') = $\frac{n}{1 + \frac{z^2 * \hat{p}(1 - \hat{p})}{\epsilon^2 N}}$, where n is the sample size formula for an infinite population and $n = \frac{z^2 * \hat{p}(1 - \hat{p})}{\epsilon^2} \approx 369$. This gives $n' \approx 300$.