GRASSROOTS JOURNALS
ISSN 2564-212X
01(01) | August 2021

JOURNAL OF POLICY & GOVERNANCE
Published by The Grassroots Institute, Canada
Website: http://grassrootsjournals.org/jpg

M – 00229 | Research Article

Community Forestry Governance in Federal System of Nepal

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ABSTRACT

This research was conducted to find out the relationship between Community Forests User Groups (CFUGs), local government, and provincial government concerning monitoring and management ownership. The benefit-sharing mechanism in community forestry has always been a point of discussion to deal with, that follows the share given by law and constitution. In this study, different stakeholders were interviewed to record the actual views of CFUGs, local political leaders, forest officials and others on forest use and management responsibility in the context of federal restructuring of Nepal. CFUGs along with local political leaders were found favoring to hand over the monitoring and management responsibility to the local government, whereas the forest officials were reluctant on this proposed arrangement. The forest officers considered that giving the functions of monitoring and management responsibilities to the local government would destroy the past successful history of community forestry in Nepal, and it would turn to massive deforestation along with degradation of forests in the name of development. Being the policy formulation process occurring on a provincial and local levels, a lack of coordination among local governments and CFUGs may create a major challenge in the forest management and utilization of resources. The benefit-sharing mechanism in both the scientifically managed and traditionally managed forests was found not following the provisions of the Forest Act, 2019 and 1993. In particular context of pro-poor livelihood activities and coordination with local government during the community development activities reflect weak governance. Proper coordination and cooperation among three tiers of government are necessary through involving the CFUGs in the local government planning process and support to CFUGs.

Keywords: Forest User Groups; Coordination; Federal system; Governance; Province

Received: 04 June 2021
Reviewed: 22 June 2021
Accepted: 09 July 2021
Published: 10 August 2021

How to cite this paper: Dahal, B., Joshi, R., Poudel, B., & Panta, M. (2021). Community Forestry Governance in Federal System of Nepal. Journal of Policy & Governance, 01(01), 30-45. http://dx.doi.org/10.33002/jpg010103

1. INTRODUCTION

Forest, the most important natural resource, has become the central point of attraction due to the modernization and urbanization that lead to global warming and other several changes in the world (Tsiantikoudis et al., 2019; Joshi et al., 2020). Nowadays, most of the developed countries have focused on the promotion of the protection and conservation of forest resources in developing countries by providing funding and other awareness programme (Rijal et al., 2021). Developing countries like Nepal have focused on conserving and managing the forest through different forest management modalities. This has resulted an increase in forest areas of Nepal. In the year 1957, the government enforced the Private Forest Nationalization Act, 1957 and nationalized privately owned forests within the country. Many scholars suggest the deforestation in Nepal can be traced to the nationalization of communal forest lands in the 1950s by the government, thereby alienating local people from their ancestral institutions and controls (Bhattarai, 2016). The Master Plan for Forestry Sector (MPFS), 1988 was developed and approved in 1989 that recognized community and private forestry as priority programs in the forestry sector and encouraged the transfer of forest access with management rights to the local community (Pokharel et al., 2012). Forestry institutions can be considered as main actors to lead the sustainable management of forest, especially for forest policy formulation, implementation, and analysis (Schusser et al., 2016); where government agencies, community-based institutions, Federation of Community Forest Users in Nepal (FECOFUN) and other agencies are main forestry institutions (Gautam et al., 2004). The FECOFUN is a non-government organization established in 1995 to complement government initiatives related to the development of community forestry.

The community forestry (CF) is considered as one of the most successful models addressing forest management and governance challenges in the developing world (Sapkota et al., 2020). It is also rewarded as the most successful participatory approach all over the world (Baral et al., 2019). In fact, community forest management in Nepal is managed by the community themselves through Community Forest User Groups (CFUGs), which were evolved after the late 1970s when massive deforestation happened in state-controlled forests (Joshi et al., 2020; Joshi et al., 2021). The community forest management approach ensures and encourages the active participation of local people in the forest management where local communities are provided with a certain degree of responsibility and authority for the forest management is regarded as the most effective way of addressing the subsistence needs of local people (Khadka et al., 2021; Bijaya et al., 2016). The total funds collected in the CF account are to be allocated in such a way that 25% of it should contribute the forest development, conservation, and management, 35% of the funds should be invested in women, dalits[1], Indigenous and underprivileged groups considering the well-being ranking of CF members (Poudel et al., 2015; Rijal et al., 2021). The rest of the funds can be spent on community development activities with community consent during general assembly (Community Forestry Division, 2014). The timber and non-timber forest products extracted from the community forests, such as fuelwood, fodder/grass, leaf litter, etc., are part of the local people's subsistence, and help strengthen the local economy improving the livelihoods of local people (Khanal & Devkota, 2020). In addition, the Government of Nepal provides the rights to the CFUGs to access, use, and manage according to their needs, but retain ownership through the community forestry (Paudel, 2018). The main goal of the community forestry program in Nepal is to increase the participation of the local user in the decision-making of forests and gaining benefits (Adhikari et al., 2016). Moreover, this program has been facing some shortcomings in some CFUGs due to poor record management, lack of technology, excessive politicization of the local issues, and others (Chhetri et al., 2013).

For a long, the terms of governance and good governance are being used increasingly in development literature wherein government acts as one of the main actors. Governance is described as the process of decision making and is perceived as the process of establishing, promoting, and supporting a specific type of liaison between governmental and non-governmental bodies by which decisions are implemented (Howlett et al., 2009). It includes both formal and informal actors involved in decision-making and in implementing the decisions. Additionally, governance is viewed in donor circles as the bedrock on which economic growth, poverty reduction, and the improvement in the quality of life and social well-being rest (Hyden et al., 2008). The problems associated with achieving targeted developmental goals are understood to be a result of poor governance. Conversely, good governance is seen as one way of achieving such goals. In fact, some consider it as a prerequisite for sustainable development and economic growth (Roberts et al.,

[1] Dalit is a name for people belonging to the lowest caste in Nepal, characterised as "untouchable".

2007). The key elements of good governance include transparency, accountability, and participatory decision-making (UNDP, 1997; Choudry, 2002; Pasape et al., 2015). FAO (2020) has defined governance as the processes through which public and private actors articulate their interests; frame and prioritize issues; and make, implement, monitor, and enforce the decisions.

The forest governance is defined as the way in which public and private actors, including formal and informal institutions, smallholder and indigenous organizations, small, medium-sized and large enterprises, civil-society organizations and other stakeholders negotiate, make and enforce the binding decisions about the management, use and conservation of forest resources from local to global (Piabuo et al., 2018). The analysis of forest governance in community forestry helps provide the condition of forest in respect of elements as participation, transparency, gender equality, and other things that determine the path towards sustainability. Community forestry governance has always been a top prioritized issue in Nepal that provides four decades of successful history of community forestry.

The political system has always become the major turning point for forest policy reform in Nepal. Nepal's forest management modalities are major departures from the state-centric, centralized, and expert-led approaches to decentralized and community-led forest management regimes with political change (Banjade et al., 2017); however, the land tenure was always controlled by the central government. The first time, the Constitution of Nepal, 2015 has introduced three layers of government (i.e., federal, provincial and local level) and forest has come under concurrent powers of federal, provincial, and local government (Muni, 2015). The recently approved Local Government Operation Act, 2017 has provided the responsibility of environment and biodiversity conservation to the local government. The national budget related to community forest has also been allocated under local government. However, the recently approved organizational and management arrangement of the Ministry of Forest and Environment has not recognized the local government during the organizational restructure of the Ministry of Forest and Soil Conservation. There is no unit within the local government of Nepal (Chaudhary, 2018). This unclarity in rights and powers of the hierarchical federal government has put community forests in dilemma (Rijal et al., 2021). Community forestry and good governance are interlinked; however, the federal system's obscurity in powers over community forestry has put governance at high risk (McDermott & Schreckenberg, 2009). The accountability and responsiveness principles of governance are the main considerations in this research.

Till now, only 663 sub-divisions have been authorized and managed in Nepal, but there are altogether 753 local bodies administered in the country (Acharya, 2018). The natural resource is regarded as the major revenue source for provincial and local government; however, community forest user groups have rights to get full benefits generated from the community forest (Bijaya et al., 2019). Local and provincial governments may feel pressure to over-exploit natural resources to raise revenues (Thakali et al., 2018). Similarly, there is no spatial linkage between the territory of local governments and forest sub-divisions. This has created ambiguity with regard to forest management modality and the authority to facilitate the community forestry process at the grassroots level. The provisions of the Constitution and the Forest Act 1993 have created debate among the stakeholders having rights over community forestry management, monitoring, and benefit-sharing. Being a new structure, no study has been conducted on forest tenure, revenue sharing mechanism, and the effects of forest administration restructuring in relation to community forest governance. Therefore, this research was conceived to focus on the issues that would further help in policy planning.

2. MATERIALS AND METHODS

2.1 Study Area

This study has been conducted in the territory of four local governments representing two different provinces and two different economic settings (Figure 1). Two local governments were selected from Chitwan district (Bagmati province) representing Inner Terai[2] and Siwalik region. Similarly, two local governments were selected from the Gorkha district (Gandaki province) representing mid-hill and high Himalayan physiographic zone. The Chitwan district represents low land with high-value timber forest and a highly sensitive biological corridor. Likewise, Gorkha represents mid-mountain and high Himal that is highly dependent on forest resources for local people's livelihoods. Among the selected local government in

[2] Terai is a lowland belt of southern Nepal, mainly characterised by tall grasslands, scrub savannah, Sal forests and clay rich swamps.

each district, one represents the rural area, and another represents the urban municipality, so that the findings of this research can represent different socio-economic settings. Two CFUGs from each of the local governments were selected; one being connected to CF implemented with Scientific Forest Management (SFM), and another linked to the CF with Traditional Forest Management (TFM). From Chitwan district, Kankali Community Forest managed scientifically, and Panchakanya Community Forest managed traditionally were selected. From the Gorkha district, Ghaledada-Ranakhola Community Forest managed scientifically, and Birinchowk Community Forest managed traditionally were selected (Table 1).

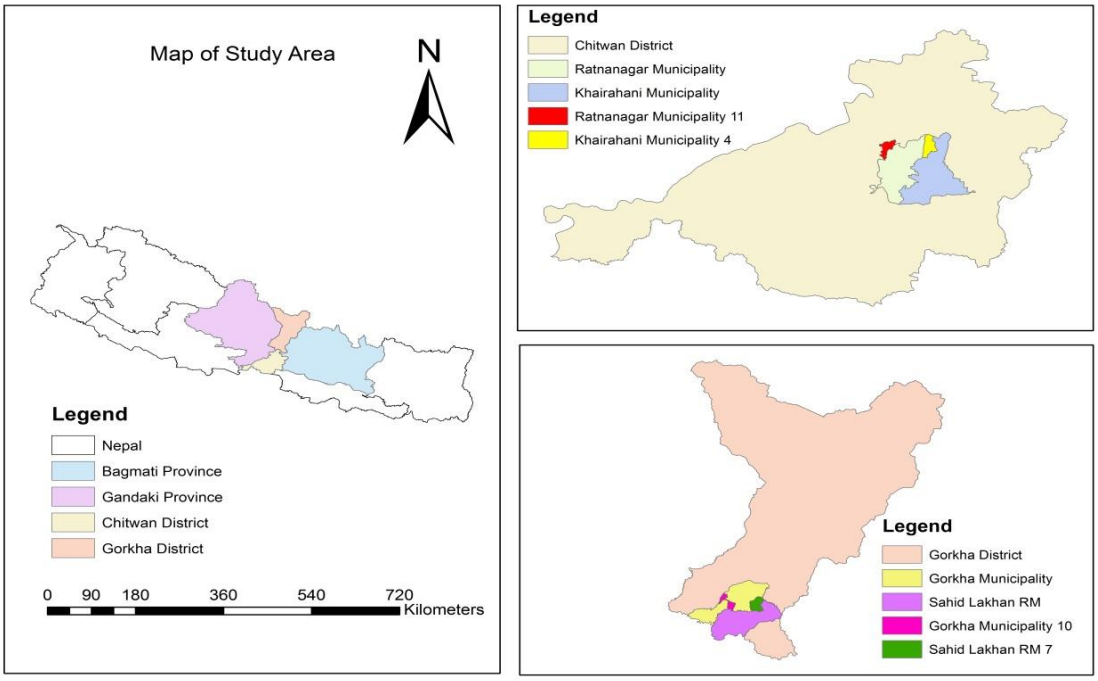

Figure 1: Map of the study area

Table 1: The main characteristics of selected CFs

Name	*Panchakanya CFUG*	*Kankali CFUG*	*Ghaledada-Ranakhola CFUG*	*Birinchowk CFUG*
Address	Ratnanagar municipality-11, Chitwan	Khairahani municipality-4, Chitwan	Sahid Lakhan rural municipality-7, Gorkha	Gorkha municipality-10, Gorkha
Date of handover	20/09/2010	20/06/1995	28/02/1999	23/12/1994
Area (ha)	198.73	749.13	475.8	114.82
Altitude (masl)	200-500	220-580	1100-1500	700-1200
Type of Forest	Natural forest	Natural forest	Natural forest	Natural forest
Dominant species	*Shorea robusta*	*Shorea robusta*	*Shorea robusta, Castanopsis indica, Schima wallichi*	*Shorea robusta, Schima wallichi*
Forest protection	Household rotation & bars	Household rotation & bars	Household rotation	Household rotation
No. of households	2,127	2,098	531	202
Office building	Own	Own	Own	Own
Management approach	TFM	SFM	SFM	TFM
Total population	10,635	11,802	1,139	1,038

2.2 Data Collection

2.2.1 Primary Data Collection

Primary data were collected using Participatory Rural Appraisal (PRA) tools such as an interview with stakeholders, key informant interviews, questionnaire surveys, formal and informal discussions, focus group discussions, and direct observation. To gather the information, firstly, key informant interviews were conducted to know the status of the socio-economic context and the condition of forest management and governance prevailing in community forests. Key informants having detailed information about community forests were chosen for an interview, and they included local political leaders, ex-presidents of community forests, schoolteachers, ward presidents, forest guards, and so on. A total of 25 forest officials were interviewed using an open and close-ended questionnaire to access the view of officers regarding monitoring and management responsibility of the forest. 12 forest officials from the Gorkha district and 13 forest officials from the Chitwan district were interviewed who represent the provincial government. The unstructured questionnaire was developed and used to access the views regarding management responsibility of forests from 15 FECOFUN members. The representative sample of 5% (i.e., 248) was drawn from total forest user households (4,958) of four CFs to conduct the questionnaire interviews. A stratified random sampling method was exercised for this study where proportionate samples of interviewees from each category of well-being were selected. The questionnaire survey method was used to collect data on various aspects affecting governance, such as income source, fund mobilization, transparency, forest tenure, revenue sharing mechanisms, effects of forest administration restructuring, and decision-making process prevailing among community forest user groups. Minute review of Operational Plan and Constitutions and official records were collected from each of the sampled CFUGs. The audit reports of the year 2016/17, 2017/18, 2018/19, and 2019/20 were collected to understand the benefit-sharing mechanism of CFUGs. Focus group discussion with the forest users was conducted focusing on the role of local government for the management of forest resources and the response of the users to fulfill their basic requirement of forest products from the existing forest management system. The most important five pillars of effective governance, i.e. the people, the land, laws & jurisdiction, governing systems, and resources, were investigated through key informant interviews and focus group discussions involving the local peoples, political leaders, elders, ward president, academics, CFUGs members, etc. These five pillars were developed to blend the traditional values of respective Indigenous peoples' nations with the modern realities of federal governance. The main principle of these five pillars was to develop and deliver tools and services to help transform the nations in federal system.

2.2.2 Economic Analysis

The economic analysis was done employing Net Present Value (NPV), Benefit-Cost Ratio (BCR), and Profitability Index (Schwab & Lusztig, 1969).

Net Present Value (NPV): Formulas and calculation

The first step involved in the calculation of NPV is the estimation of net cash flows from the project over its life. The second step is to discount those cash flows at the hurdle rate.

The net cash flows may be even (i.e., equal cash flows in different periods) or uneven (i.e., different cash flows in different periods). When they are even, the present value can be easily calculated by using the formula for the present value of an annuity. However, if they are uneven, we need to calculate the present value of each net cash inflow separately.

Once we have the total present value of all project cash flows, we subtract the initial investment on the project from the total present value of inflows to arrive at net present value.

Thus, we have the following two formulas for the calculation of NPV:

When net cash flows are even, i.e., when all net cash flows are equal:

$$\text{NPV} = \text{R} \times \frac{1 - (1 + \text{i})^{-\text{n}}}{\text{i}} - \text{Initial Investment}$$

In the above formula,
R is the net cash inflow expected to be received in each period;

i is the required rate of return per period (i.e., the hurdle rate, discount rate);
n is the number of periods during which the project is expected to operate and generate cash inflows.
When net cash flows are uneven, i.e. when net cash flows vary from period to period:

$$NPV = \frac{R_1}{(1+i)^1} + \frac{R_2}{(1+i)^2} + \frac{R_3}{(1+i)^3} + \ldots - \text{Initial Investment}$$

Where,
i is the hurdle rate (also called the discount rate);
R_1 is the net cash inflow during the first period;
R_2 is the net cash inflow during the second period; R_3 is the net cash inflow during the third period, and so on.

Benefit-Cost Ratio (B/C Ratio)

It is the ratio of the present worth of benefit stream to the present worth of cost stream. The investment is said to be profitable when the BCR is one or greater than 1. This method is widely used in economic analysis and not in private investment analysis.

Profitability Index

Profitability Index = (Net Present Value + Initial Investment) ÷ Initial Investment (Schwab & Lusztig, 1969). Therefore:

- If the PI > 1, the project generates value and the company may want to proceed with the project.
- If the PI < 1, the project destroys value and the company should not proceed with the project.
- If the PI = 1, the project breaks even and the company is indifferent between proceeding and not proceeding with the project.

2.2.3 Secondary Data Collection

Secondary data were collected for institutional information about the community forest user groups registered, forest conditions for the study area from the divisional forest office and local government office. The CFs' nominal and functional policies were reviewed to understand the constitutional provisions regarding forest resource management, federal government policy, state government policy, and local government policy. The Constitution, operational plan, minute register of CFUGs and Division Forest Office (DFO) records were reviewed to retrieve the information.

2.3. Data Analysis

Methods of both qualitative and quantitative analyses were applied to analyze the data. Information collected from the field was carefully recorded, compiled, categorized, coded, tabulated, and analyzed. Simple statistical tools, such as bar diagrams and pie charts, were used to analyze results with the help of MS-Excel.

3. RESULT AND DISCUSSIONS

3.1 Result

3.1.1 Response of People on Intergovernmental Relationship

The relationship between the local and provincial government (one representative is the Division Officer) determines the further path of community forest in the production and sustainable management of forests. However, the findings of this study reveal that majority of respondents (70%) fully sought that the monitoring and management responsibility should be of local government; whereas 19% of respondents said that the monitoring and management responsibility should be given to provincial government; and 11% of the respondents answered that management and monitoring responsibility should be delivered by the coordination of both provincial and the local government (Figure 2). Government officers, such as DFO (Divisional Forest Officer) and rangers, wanted that the responsibility of monitoring and forest management should be given to the provincial government, while some officers said that this responsibility needs to be delivered in coordination of both the parties. FECOFUN also gave the opinion that the monitoring and management responsibility of community forest should be

fulfilled through the coordination of both the parties, while all respondent CFUGs wanted that the local government should be given this responsibility.

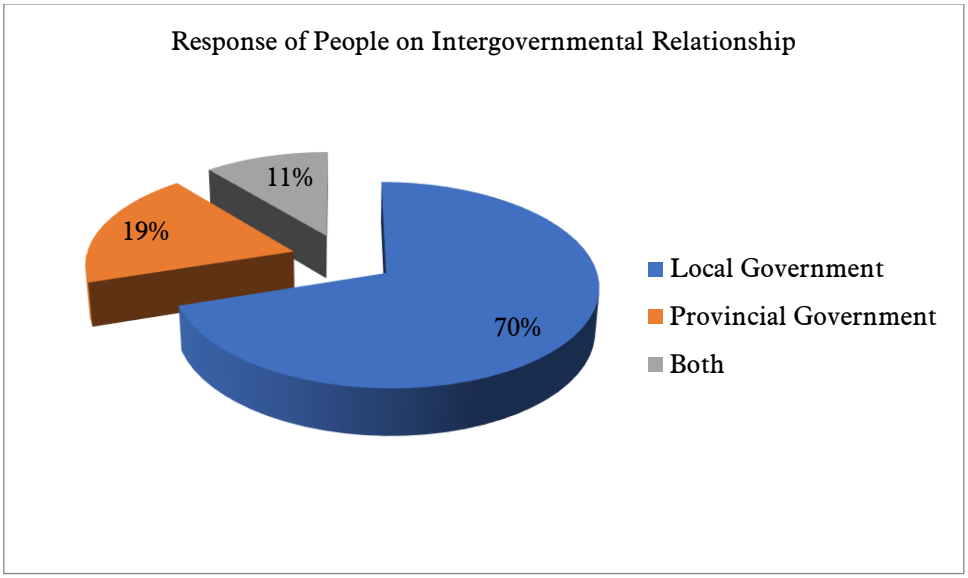

Figure 2: Monitoring and management responsibility of forest

3.1.2 Intergovernmental Relationship

Local government can also play a leading role in forest management by providing financial and technical support. The findings of this study show very good relationship between local leaders and CFUGs in Bagmati Province, mostly in Kankali CF. This relationship is seen in financial support and technical works such as trainings, tourism development, construction work, etc. (Figure 3). This kind of the relationship was absent in Panchakanya CF area. However, technical support such as trainings, plantation activities, were carried out in Ghaledada-Ranakhola CF, whereas this kind of support was not existing in Birinchowk CF.

3.1.3 CFUG Involvement in Planning Process of Municipality

Lack of coordination and cooperation has been seen in the local government and CFUGs. 72% of the respondents were not involved in any planning process of the municipality. Those who participated (i.e 28%) in the activities of municipality were also not actively involved, rather they were just present passively in the meetings (Figure 4). This seems to be an issue of concern for the forest management activities. It is apprehended that this can evolve later as the main point of dispute between CFUG and the local government.

Future collaboration among Local government and CFUGs: Almost all members from four CFUGs sought collaboration of the local government in the future in financial affairs and development activities. The CFUG members are highly attracted towards revenue from tourism development and promotion rather than production of the forests. In contrast, local political leaders perceived the environmental conservation as an area of collaboration in the future. These results show diversity of perceptions regarding the collaboration.

3.1.4 Income from Different Sources

Table 2 shows various sources of the income of all four CFUGs in the year 2016/17, 2017/18, 2018/19, and 2019/20 (Table 2). In the year 2019, Kankali and Ghaledada-Ranakhola CFUGs earned the highest income, which was calculated as USD 163028.93 and USD 14708.18, respectively. In 2016, they earned the lowest income i.e., USD 66031.04 and USD 9704.12, respectively. Likewise, in the year 2017, Panchakanya CFUG earned the highest income of USD 88879.99, while, in the year 2016, it had the least income (USD 62747.93). In 2017, Birinchowk CFUG earned the maximum income, which was recorded as USD 14564.91 and the minimum income was recorded in the year 2018 i.e., USD 4498.13. From this table, it can be said that CFUGs from the Terai region have a higher income from fuelwood i.e., Kankali and Panchakanya CFUGs. Likewise, the CFUGs from mid-hill region have a high source from timber

i.e., Ghaledada-Ranakhola and Birinchowk CFUG. The table also shows that CFUGs with scientific forest management has a high income in comparison to traditionally managed CFUGs.

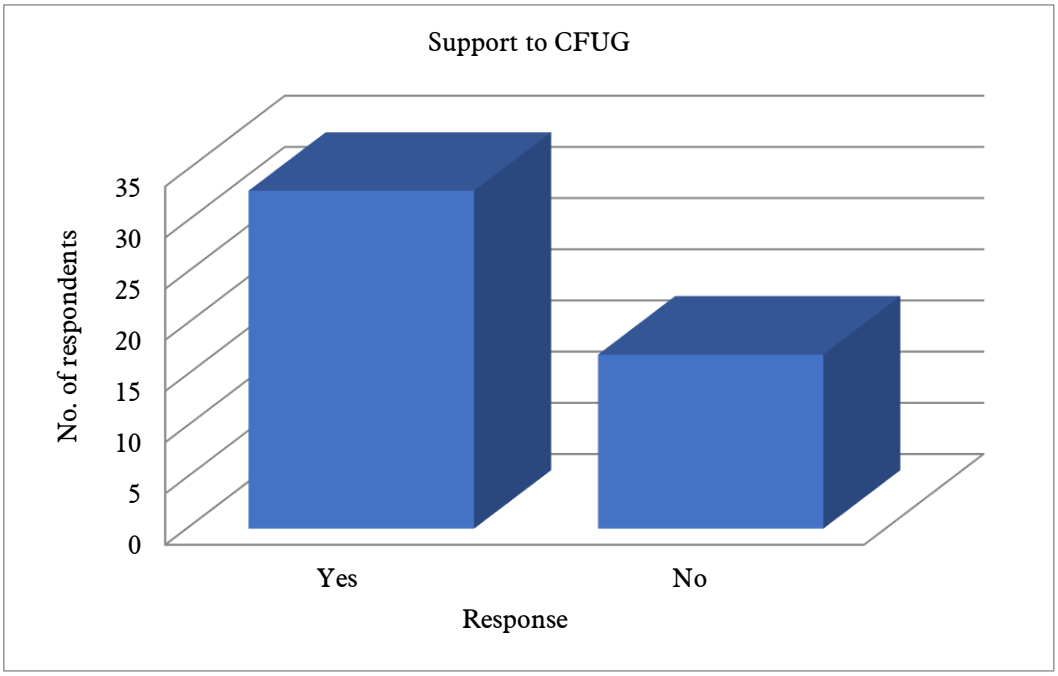

Figure 3: Support from the local government to forest management in CF

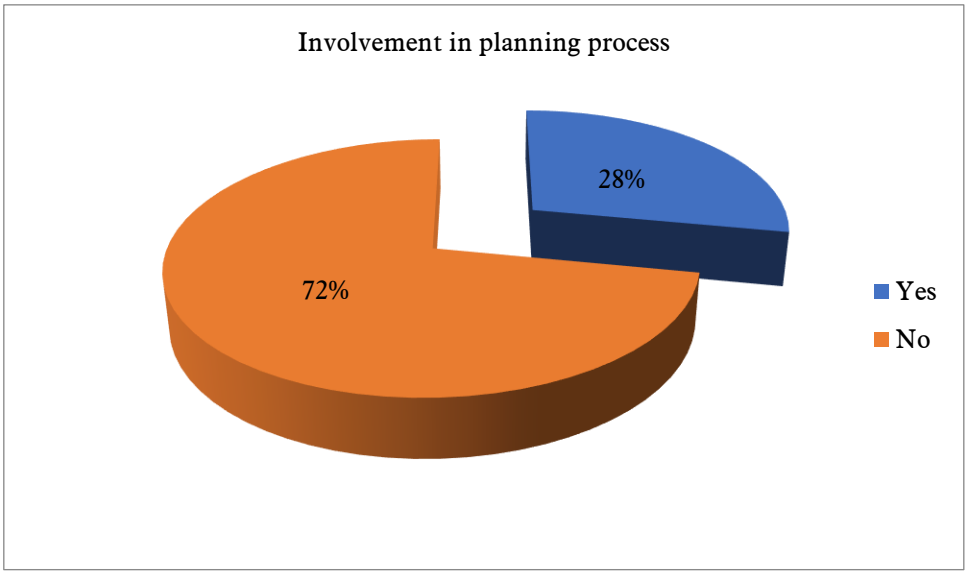

Figure 4: Involvement of CFUG in planning of municipality

Table 2: Sources of income of all CFUGs in different years

Particulars	*Income generation of Kankali CFUG (USD)*				*Income generation of Ghaledada-Ranakhola CFUG (USD)*			
	2016/17	*2017/18*	*2018/19*	*2019/20*	*2016/17*	*2017/18*	*2018/19*	*2019/20*
Timber	10421.58	38088.86	5102.22	16714.36	172.17	481.95	3166.96	1229.42
Fuel wood	36944.23	10782.44	69099.93	37466.36	944.33	1200.08	3792.47	1899.20
Non wood	625.52	645.40	1518.29	889.94	12.28	581.13	0.00	183.11
Donation	888.79	917.03	10050.27	3821.62	46.53	2304.59	0.00	725.47
Tourism	14358.07	14814.43	14383.83	13796.70	0.00	0.00	0.00	0.00
Other	2792.85	2881.62	7376.20	4166.93	8528.80	6871.05	7748.75	7342.87
Total	66031.04	114956.45	163028.93	109275.99	9704.12	11438.79	14708.18	11380.08
Particulars	*Income generation of Birinchowk CFUG (USD)*				*Income generation of Panchakanya CFUG (USD)*			
	2016/17	*2017/18*	*2018/19*	*2019/20*	*2016/17*	*2017/18*	*2018/19*	*2019/20*
Timber	228.01	576.02	2422.08	1034.87	43369.38	48137.56	128749.60	70354.98
Fuel wood	3116.80	963.65	1496.70	1773.74	75.94	13625.10	8369.93	6937.41
Non wood	4.75	288.07	0.00	90.34	160.82	1574.80	74.95	561.07
Donation	3804.14	12193.20	0.00	4970.40	10946.95	23125.53	68422.43	32781.50
Tourism	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	358.32	543.96	579.34	469.44	8194.83	2416.99	4900.83	4940.45
Total	7512.02	14564.91	4498.13	8338.80	62747.93	88879.99	81768.14	73863.61

3.1.5 Expenditure

Table 3 shows the expenditure on administrative work, forest conservation, tourism, and social development in the year 2016/17, 2017/18, 2018/19 and 2019/20. Among the four CFUGs, in 2018, Kankali CFUG spent the highest amount of budget in the field of administration, forest conservation, tourism, and social development, which was USD 68733.00. While in the year 2017, Birinchowk CF had the least spending on administration, forest conservation, tourism, and social development, which was estimated to be USD 1255.49.

Forest conservation has got high priority in all CFUGs, while social development and pro-poor upliftment were almost negligible in Kankali, Birinchowk and Panchakanya CF areas. Tourism development was highly focused in Kankali CF, which showed distraction from production forestry. In contrast, Panchakanya CF with a traditional forest management module seemed to be better than Kankali CF having scientific forest management. Likewise, Ghaledada-Ranakhola CF with scientific forest management seemed to be better managed than Birinchowk with traditional forest management.

3.1.6 Benefits Earned by Community Forests

Table 4 shows the benefits earned by Kankali, Ghaledada-Ranakhola, Birinchowk, and Panchakanya CFUGs. Kankali CFUG has the highest benefit in the year of 2018 that was recorded as USD 94295.93, while, in 2016, Ghaledada-Ranakhola CFUG has the lowest income from the various sources which was estimated as USD 1917.53. The average benefit of Kankali CFUG and Panchakanya CFUG was calculated to be USD 55524.21 and USD 46698.00, respectively. But Ghaledada-Ranakhola CFUG and Birinchowk CFUG earned only USD 4282.53 and USD 6014.74 of benefit, respectively. Among these, all four CFUGs, Kankali CFUG and Panchakanya CFUG earned a good income in the year 2016, but Birinchowk CFUG and Ghaledada-Ranakhola CFUG were not able to gain good benefit from the community forests. Therefore, the hilly region has the least amount of benefit from community forest management in comparison with the Terai forest.

Table 3: Amount of income spent in different activities of the community forest in percentage

Particular	*Expenditure of Kankali CF (USD)*				*Particular*	*Expenditure of Ghaledada-Ranakhola CF (USD)*			
	2016/17	*2017/18*	*2018/19*	*2019/20*		*2016/17*	*2017/18*	*2018/19*	*2019/20*
Administrative	4437.29	8115.93	9618.71	7168.51	Forest conservation	1339.16	2476.49	2343.01	1949.02
Forest conservation	8709.49	21623.31	16710.47	15389.7	Social activities	3218.85	983.736	2843.09	2317.74
Tourism	13397.7	21864.72	36860.84	22554.56	Pro poor	3228.56	3351.56	2922.51	3127.24
Social activities	18290.6	7276.74	5542.98	13634	Total	7786.58	6811.8	8108.61	7394.01
Total	44835.08	58880.7	68733	58746.77					

Particular	*Expenditure of Birinchowk CF (USD)*				*Particular*	*Expenditure of Panchakanya CF (USD)*			
	2016/17	*2017/18*	*2018/19*	*2019/20*		*2016/17*	*2017/18*	*2018/19*	*2019/20*
Forest conservation	1870.494	308.77615	1903.607	1927.375	Administrative	12204.47	16176.16	5069.62	10796.4
Pro poor	493.2395	466.0772	365.6977	497.4374	Social activities	4894.34	7021.52	899.45	4136.36
Social activities	1253.757	480.64212	452.5115	835.2701	Forest conservation	6939.92	12061.01	26288.46	13979.92
Total	3617.49	1255.4955	2721.816	3260.083	Total	24038.73	35258.69	32257.53	28912.68

Table 4: Total Benefits earned by community forests

S.N.	*Total Benefits*	*2016/17 (USD)*	*2017/18 (USD)*	*2018/19 (USD)*	*2019/20 (USD)*
1	Kankali CFUG	21195.96	56075.76	94295.9	50529.2
2	Ghaledada-Ranakhola CFUG	1917.53	4626.99	6599.56	3986.06
3	Birinchowk CFUG	3894.53	13309.42	1776.31	5078.72
4	Panchakanya CFUG	38709.2	53621.3	49510.6	44950.9

3.1.7 B/C, NPV, and Profitability Index of Community Forests

The investment is said to be profitable when the Benefit-Cost Ratio (B/C) is one or greater than 1. Data in table 5 shows that all four CFUGs are making a profit. Among them, Panchakanya CFUG has more B/C and Ghaledada-Ranakhola CFUG has the lowest B/C which was calculated as 2.61 and 1.1.25, respectively. Likewise, Kankali CFUG has a maximum net present value (NPV) i.e., USD 143452.02, and Ghaledada-Ranakhola CFUG has minimum NPV, which is USD 8823.89. Birinchowk CFUG has highest Profitability Index (PI) and Ghaledada-Ranakhola CFUG has least PI, which was calculated as 6.46 and 2.73, respectively (Table 5). Higher profitability index means it is more attractive for investment.

Table 5: B/C, NPV and profitability index of community forests

S.N.	*CFUGs*	*B/C*	*NPV*	*PI*
1	Kankali CFUG	0.96	143452.02	4.96
2	Ghaledada-Ranakhola CFUG	0.57	8823.89	2.73
3	Birinchowk CFUG	2.22	17363.97	7.21
4	Panchakanya CFUG	1.55	130285.34	6.46

3.1.8 Subsidy from Different Organisations

Table 6 shows subsidies received by CFUGs from various organizations, such as Division Forest Office, Municipality and others (Table 8). The CFs from the Terai regions are getting priority from local government and provincial government, whereas CFs seems to be weak in mid-hills i.e., Ghaledada-Ranakhola and Birinchowk community forests. Subsidy plays a great role in the upliftment of the rural livelihood through infrastructure development.

Table 6: Subsidy given to CFUGs from different organisations

Organizations	*2016/17*	*2017/18*	*2018/19*	*2019/20*
Subsidy to Birinchowk CF (USD)				
Division Forest Office	3469.33	-	-	-
Municipality	2730.07	-	-	-
Ward	5618.19	770.74	-	-
Subsidy to Panchakanya CF (USD)				
Division Forest Office	1628.66	7487.91	56005.5	-
Rural Municipality	3722.66	15637.62	12219.5	-
Subsidy to Kankali CF (USD)				
Division Forest Office	-	1436.53	913.99	-
Municipality	888.79	4585.17	11046.19	-
Subsidy to Ghaledada-Ranakhola CF (USD)				
ICIMOD	46.53	-	-	-

3.2 Discussion

The history of Nepal shows a gradual shift in the policy and management model of the forest. It is elaborated in the following discussion points.

3.2.1 Intergovernmental Relationship and Support

The study shows that the management and monitoring responsibility of the community forest should be vested in local government. Most of the CFUG members and local political leaders are in favor of the local government, whereas provincial government members strongly disagree with this view. The power in local government can lead to misleading the successful history of community forest towards deforestation and degradation in the name of infrastructure and tourism development. In contrast to this, the Forest Act 2076 has given provision of forest management and monitoring of CF to local government if approved by the provincial government.

The policy planning involves perceptions and suggestions from all tiers of the government. Merely a participation in the planning process cannot provide effectiveness and sustainability in policy formulation and implementation. Local Government Operational Act, 2017 has the clear provision that all CBOs within the boundary of local government should be involved in the local government planning process.

As the federal structure is the new provision of Nepal, limited research has been conducted on the community governance model. However, some research has identified local government for governance strengthening in the rural areas (Acharya, 2018). The study conducted by Thakali et al. (2018) has identified the increased role of local government for local resource management. The present research shows the main role of local government in fund mobilization for resource management mostly in the case of Panchakanya and Kankali CF; the other two CFs are quite lacking on this part.

3.2.2 Fund Mobilization and Benefit Sharing

This study indicates fuelwood and subsidy as sources of income generation in Kankali and Panchakanya CFUG. Tourism has become the main attraction point in all CFUGs except Ghaledada-Ranakhola CF. Community forestry guideline has a clear provision of at least 35% expenditure for the pro-poor's livelihood activities; however, the expenditure has no connection with the provision. The study finds a very weak benefit-sharing mechanism in all CFUGs except Ghaledada-Ranakhola CF. The Forest Act, 2019 has provision to expend up to 25% for forest development, conservation and management, while remaining 25% for pro-poor livelihood, women empowerment, industry development, and establishment in coordination with the local members, which is not found being implemented practically in all CFUGs.

Community forestry user groups seem to stop looking after forests if all three levels of government imposes taxes on them (Mandal, 2019). The Intergovernmental Fiscal Arrangement Act, 2017 has proposed that 15% tax collected from the sale of timber of *Shorea robusta* (Sal) and *Acacia catechu*

(Khayar) should be distributed among local, provincial, and federal governments. Likewise, the Local Government Operation Act, 2017 has stated that community forests will have to contribute 10 percent from their product sales to the Reserved Fund at the local level. Heavy taxes from three layers of government have created great stress on community forestry user group to conserve and protect the forest. Various enforced and proposed taxes at all three levels of government are estimated up to 90% of CFUG's annual transactions, and the FECOFUN has been protesting against this (Mandal, 2019). Focused Group Discussion during this study supports the same view of FECOFUN. There are presently 528 forest sub-divisions and 753 local bodies. As per the constitutional provision, national forests will be under the provincial government while CFs will be under local government (Acharya, 2018). The CFUGs and local government bodies are in favour of this, while forest officers are afraid of this.

3.2.3 Benefit Cost Ratio, Net Present Value and Profitability Index

Assessing the economic contribution of the community forest products and the inequality of the subsequent income are the significant steps towards the sympathetic role of community forestry in local people's day-to-day life (Chhetri, 2005). The study finds that the Kankali CFUG and Panchakanya CFUGs earned more benefit in comparison to Ghaledada-Ranakhola CFUG and Birinchowk CFUG. This means Terai forests are more productive than hilly forests due to various factors i.e., topographic, edaphic, climatic and management practice adopted in such regions. Community forests have very good potential to contribute to the local economy (Gilmour & Fisher, 1991). It helps fulfill the subsistence needs and improve the condition of natural resource management practice, supporting the conservation of an ecosystem and its biodiversity (Acharya, 2001). The majority of rural households depend upon the community forest resources for their daily needs i.e., fuelwood, timber, fodder, leaflitter, etc., which also play vital role in the local economy (Gharti-Chhetri et al., 2016). This study shows that the Net Present Value of Kankali CFUG and Panchakanya CFUG is higher than that of Ghaledada-Ranakhola CFUG and Birinchowk CFUG. The community forests are not only providing the forest products but also serving the user groups to generate the income.

The management of community forest is a good source of income (Lama, 2010; Gharti-Chhetri et al., 2016). The economic analysis of community forests is foremost part of transparency in any institution; however, the community forest user groups are not profit-oriented institutions (Iversen et al., 2006). The economic analysis of the community forest user group is used to carry out the income and expenditure (Richards et al., 2003). The economic analysis comprises the benefit-cost ratio analysis (B/C) and net present value (NPV). It is a very important part of the community forest to show how the forest users have been benefited and how they have been managing the forest in the situation of economic valuation. The benefit-cost ratio of these four CFUGs was found to be good, all CFUGs are said to be profitable because it has more than 1 B/C value. However, the amount of NPV is less but the Profitability Index of Birinchowk CFUG is found to be highest, while Ghaledada-Ranakhola CFUG has the lowest value of profitability index. More profitability index means a low risk of losses from investment (Mandal & Neupane, 2020).

4. CONCLUSION

The federal structure of government is somehow new in the case of Nepal. Lack of policy formulation has led to a communication gap between all three tiers of governance. The increased support to CFUG funds from the local government after a federal model has identified the need for increased role of local government in monitoring of community forests. The CFUGs and local political leaders support the view of community forestry monitoring rights should be given to the local government; however, forest officials were found reluctant on this. Lack of coordination, awareness, and cooperation among local government and CFUGs members has created some ambiguity on forest resource management at the local level. Benefit-sharing pattern has not followed the provision of the existing Forest Act and CF Guidelines. No coordination was found with local government during CF fund expenditure that is beyond the provision of Nepal Forest Policy 2019 and the law. An area of interest for future collaboration somehow seems to be a mismatch between local leaders and CFUGs. The findings show that the scientifically managed forests of mid-hills are highly dependent on donors, which triggers and provides weak efficiency and efficient principle of good governance. The weak benefit-sharing mechanism shows poor governance. Finally, it is recommended to conduct an orientation program for forest officials and

CFUGs on new forest provisions to involve local government. Similarly, CFUGs plan should be incorporated in the local government planning process for sustainability.

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AUTHORS' DECLARATIONS AND ESSENTIAL ETHICAL COMPLIANCES

Authors' Contributions (in accordance with ICMJE criteria for authorship)

Contribution	Author 1	Author 2	Author 3	Author 4
Conceived and designed the research or analysis	Yes	Yes	Yes	Yes
Collected the data	Yes	No	No	No
Contributed to data analysis & interpretation	Yes	Yes	Yes	Yes
Wrote the article/paper	Yes	Yes	Yes	Yes
Critical revision of the article/paper	No	Yes	No	No
Editing of the article/paper	Yes	Yes	Yes	Yes
Supervision	No	Yes	No	No
Project Administration	Yes	Yes	Yes	Yes
Funding Acquisition	No	No	No	No
Overall Contribution Proportion (%)	30	30	20	20

Funding
No funding was available for the research conducted for and writing of this paper.

Research involving human bodies (Helsinki Declaration)
Has this research used human subjects for experimentation? No

Research involving animals (ARRIVE Checklist)
Has this research involved animal subjects for experimentation? No

Research involving Plants
No plant was used to conduct this research.

Research on Indigenous Peoples and/or Traditional Knowledge
Has this research involved Indigenous Peoples as participants or respondents? No

(Optional) PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses)
Have authors complied with PRISMA standards? No

Competing Interests/Conflict of Interest
Authors have no competing financial, professional, or personal interests from other parties or in publishing this manuscript.

RIGHTS AND PERMISSIONS