

## Forest Governance at Micro Level and its Determinants: A Study in Purulia District of West Bengal

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### Abstract

*The paper attempts to measure forest governance at the micro level in the drought prone district of Purulia, West Bengal and also to estimate the factors responsible for forest governance. The paper is based on primary data collected from 252 households in the Bagmundi range of Purulia forest division. A questionnaire method has been used for the collection of data. The paper has formulated governance index based on FAO indicators like rules of law, transparency, accountability, participation, inclusive and equitable, efficient and effective. In addition, the paper has used beta regression model to estimate the factors responsible for it. The result shows that forest governance index is 0.446 while rule of law, transparency, accountability, participation, inclusive and equitable, efficient and effective indices are 0.263, 0.368, 0.317, 0.643, 0.579 and 0.504 respectively. The forest governance index is influenced by the socio-economic variables like caste, sex, education, landholdings, forest income and occupation. The paper has an important policy implication for sustainable forest management*

**Keywords:** *Governance Index, rule of law, transparency, accountability, participation index, beta regression, socio-economic factors.*

### 1. Introduction

Forests play an important role in global and local context. Some researchers have highlighted governance as one of the most important issues of sustainable forest management. Governance means, “The way of decision making and the way by which are applied or not” (Unescap, 2006). Governance is the arrangement of ways in which the relationship between the state, society and the market remains in ordered (Minogue et al., 1998). According to Human Development Report of UNDP (1999), “Governance means framework of rules, institutions, individuals, organization and firms”. Good Governance has eight major characteristics (GOI, 2002b). These are participatory, accountable, transparent, responsive, effective and efficient, equitable and inclusive; consensus oriented and follows the rule of law. Good governance is seen as a foundation for achieving positive social, environmental and economic outcomes (Agrawal and Chhatre, 2006). Good Governance is associated with efficient and effective management of natural, human and financial resources, fair and equitable allocation of resources and benefits (FAO, 2011). Forest governance is about how forests are used and managed, who are involved in the decision making process and how to

make effective forest laws and policies on the field. Good forest governance is needed to reduce deforestation, illegal logging, unclear tenure arrangements and the protection of forest values such as biodiversity, carbon sequestration, watershed protection, local livelihood needs and the goals of poverty alleviation (Goswami and Paul, 2012, Umemiya et al., 2010). In India approximately 370 million people directly or indirectly depend on forest products for fuel wood, fodder, food and medicine etc. (Vemuri, A., 2008). As per forest policy of 1988 (MOEF, GOI 1988) and Government resolution on participatory forest management (MOEF, GOI 1990) emphasized the need for community based programme in forest management, which is known as Joint Forest Management Programme (Court, 2002). Participation of local people, accountability, transparent government, rule and laws and policy change have been central to local which are important side of governance. Good forest governance involves multi stakeholders and multi institutions for decision making and use of forest resources. (Rayner et al., 2010) and is one of the ways to increase the income which has statistically significant negative impact on deforestation (Kishor and Belle, 2004). There have been arising a lot of debates who will plan, implement and monitor the forest laws in order to manage and protect forests (Hockings and Phillips, 1999; Igoe, 2004). Forest Governance known mainly in three forms i.e. decentralization, participation and marketization (Arts and Visseren-Hamakers, 2012). Decentralization means local administration gives the formal authority to some specific institutions that include mechanisms of accountability, resources transfer (Ribot et al., 2006; Agrawal & Ribot, 1999; Andersson, 2003; Blair, 2000; Fiszbein, 1997; Gibson & Lehoucq, 2003; Larson, 2002). Participation means local communities can involve more efficiently and effectively in conserving and using forest resources. The PFM have reported mixed result (Charnley and Poe, 2007; Mustalahti and Lund, 2010). Marketization implies market-based mechanisms for self-support labelling and monitoring that are meant to guarantee to both consumers and producers that timber products are derived from sustainably managed forest (Cashore et al., 2004). Poor quality of forest governance will have serious effects on sustainable forest management (bin Buang, 2001; Magrath and Grandalski, 2001) and have shown that users enforce basic rules more efficiently than the rules imposed on them externally (Tang, 1992; Wade, 1994; Baland and Platteau, 1996).

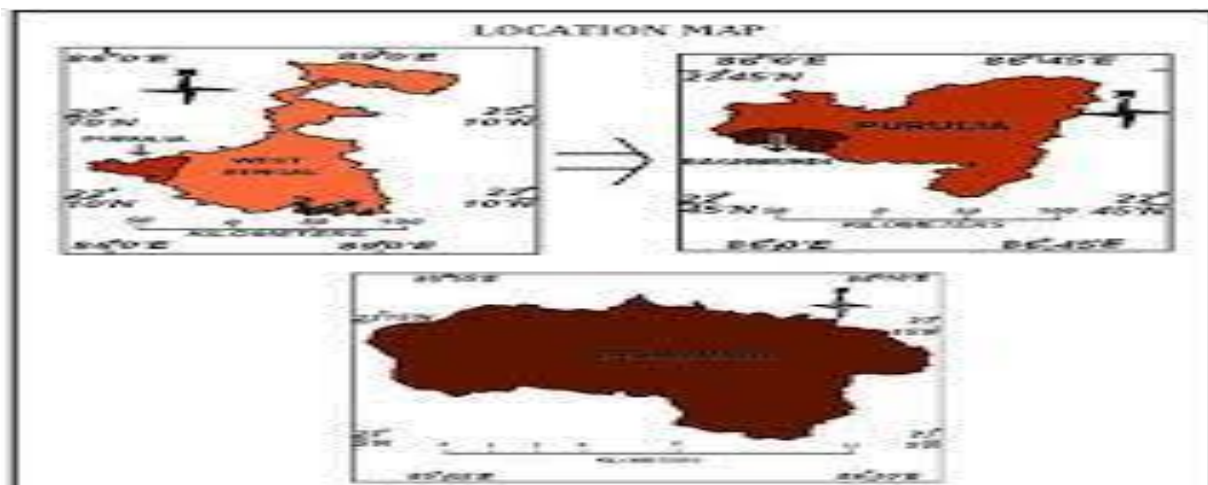
Given the above backdrop the present paper attempts to examine how the members of forest protection committee at the village level govern the rules and regulations. The objectives of the paper are of three folds. First is to formulate the community governance index in the Purulia forest divisions of West Bengal. Second is to formulate governance index across nine villages. Third is to estimate the factors responsible for community governance at the micro level.

## 2. Material and Methods

### 2.1 Study area

The study has been conducted in the district of Purulia in West Bengal (Fig: 1). It is the most western district of West Bengal lies between  $23^{\circ}42'N$  and  $22^{\circ}43'N$  latitude and  $86^{\circ}45'E$  and  $85^{\circ}49'E$  longitude. The district is poverty prone and the poverty rate in this district is 32% (Census 2011). This district occupies third position in term of scheduled tribes' population and sixteenth position in terms of scheduled caste population in the state. The forest area of this district is 14% of its geographical area. The important non-timber forest products available in this district are Sal, Kendu, Mahua flower (Mahul), Amla, Peasal, Bahera etc. The number of forest protection committees (FPCs) under Purulia forest division is 225 as of 2020. Near about 30845.22 hectare forest area has been protected by these FPCs and 21710

members of FPCs are involved in the protection of forests. The Purulia forest division is constituted by eight (08) forest range offices. These are Ajodhya, Arsha, Bagmundi, Balarampur, Jhalda, Joypur, Kotshila and Matha. Out of eight, one range office i.e. Bagmundi range office is selected on the basis of highest forest area (in ha) (State forest report, GoWB.). Under this range office all i.e., three beat offices are selected. In addition, nine FPCs under these three beat offices are selected on the basis of the distance of the villages from forest (in km).



Source: Roy and Jana, 2015

Fig 1: Location of the study area of Purulia district and Bagmundi Range office

**Table1. Details of Study area in Purulia forest division**

Division	Sl No.	Range office	Beat office	No. of FPC	Total Forest area (in ha)
Purulia	1	Ajodhya	2	21	13719.76
	2	Arsha	3	33	7927.81
	3	<b>Bagmundi</b>	<b>3</b>	<b>24</b>	<b>14244.52</b>
	4	Balarampur	3	30	6438.79
	5	Jhalda	3	33	7841.65
	6	Joypur	3	21	2649.49
	7	Kotshila	3	19	4614.47
	8	Matha	4	32	4259.752
		Total	24	213	61696.022

Source: Purulia forest division

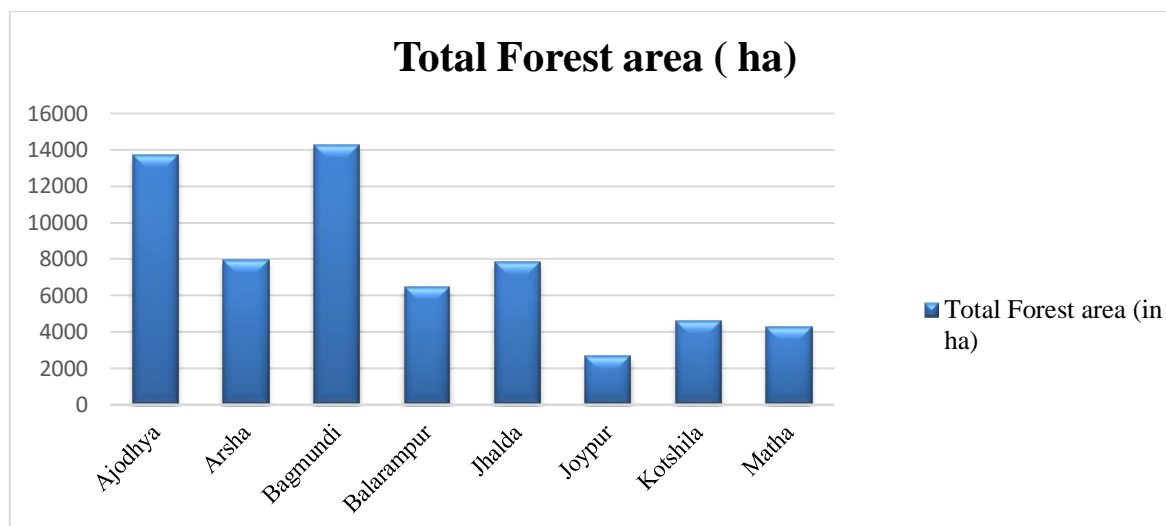


Fig 2: Total forest area in different range office in Purulia forest division in West Bengal

## 2.2 Data Collection

The present study is based on the primary data collection from Bagmundi range office in Purulia forest division in the district of Purulia, West Bengal. A multistage sampling technique has been followed. A questionnaire method is adopted to collect data from head of the households and member of the FPCs committees. The field survey was carried out in the month of February, 2020. The name of the villages and the name of the forest protection committees are same. After the selection of villages, about 20% of households from each village are selected randomly. Thus, total number of sample households consists of 252. The sample villages and sample households are shown in table2.

**Table2. Distribution of sample households across different villages in Purulia Forest Division, West Bengal**

Sample villages	Total number of households	No. of sample households
Bandhghutu	66	13
Tarpenia	117	23
Perorgoria	162	32
Rabidi	112	22
Charida	156	31
Lawadi	217	43
Bagti	222	44
Ichakota	92	18
Nischintapur	132	26
<b>Total</b>	<b>1276</b>	<b>252</b>

Source: Author's calculation from primary data

## 2.3 Analytical Methods

### 2.3.1 Governance index

How local forest users maintain the rules and regulations on forest management is measured by the governance index. Governance index (GI) value is the average of six indices i.e. rules of law index, transparency index, accountability index, participation index, inclusive and equitable index, efficient and effective index. Each index is subdivided into five or more sub-indicators. Each and every households were asked to respond their views in three or more Likert type of scale in which Yes=1, No=2, Don't Know=3 is assumed on all indicators' statement. For rule of law index (RI), sub-indicators are presents of formal and informal rules for use of forest products, political intervention, presents of weak administration etc. For transparency index (TI), households were asked to respond whether they are taking permission from FPC to collect forest products, any money involvement to get permission for extra collection, etc. For constructing accountability index (AI), sub-indices are they regular presence in general body meeting or not, whether community members obey the government rules or not, etc. In the case of participation index (PI), we take the responses from the households whether they are involved in forest management committee election, identifying forest users, forest boundary demarcation, reforestation of degraded forest area, nursery establishment, attending meetings, forest fire fighting, helps forest patrols, detecting illegal activities, forest boundary maintenance etc. Under inclusive and equitable index (IEI) only one sub indicator is taken i.e., female members formed any self-help groups. For efficient and effective index (EEI), sub-indicators are any changes in availability of wood and non-timber forest products in last 5 years, dependency on forest resources go down due to the implementation of poverty eradication programmes of the government.

In order to formulate index value we normalized each indicator. The normalized value lies between '0' and '1'. '0' means minimum and '1' means maximum value. The normalization procedure was followed by the methodology of Human Development Index (UNDP, 2006). After normalization we take the average of all sub-indicators or indices. Participation index i.e. averages of three sub-indices.  $PI = 1/3$  [Planning Index + Implementation Index + Monitoring Index]. Governance index is calculated as:

$$GI = 1/6 [RI + TI + AI + PI + IEI + EEI]$$

**Table3. Description of main and sub-indicators of Governance index**

Main Index	Sub Index	Description
Rule of Law	Is there any formal regulation for forest use?	Yes clear rules=1, Yes but Vague=2, None=3, Not Aware=4
	Is there any informal rule for the use of forest product?	Yes, but unclear=1, Yes, clear rules=2, No=3, Don't Know=4
	Are the timber brokers helped for Deforestation due to leakage of forest laws?	Yes=1, No=2, Don't Know=3
	Is there any weak forest administration?	Yes=1, No=2, Don't Know=3
	Is there political intervention for illegal encroachment and illegal logging?	Yes=1, No=2, Don't Know=3
	Is there any strong administration which helps to save reserve forest?	Yes=1, No=2, Don't Know=3
Transpare ncy	Do you know permissions to be taken from the forest protection committees beyond their specified level of forest product collection?	Yes, need to inform the authorities=1, Yes, written permission needed=2, No=3, Don't Know=4
	Is there any money involvement for getting	Yes=1, No=2, Don't Know=3

	permission for the extra collection of forest product without permission?		
	Do you know the decisions of the meeting of executive committee?	Yes=1, No=2, Don't Know=3	
	Do you know the agenda of meeting are placed before the general body meeting?	Yes=1, No=0	
Accountability	Are you regularly present in the general body meeting?	Yes=1, No=2, Don't Know=3	
	Have you experience of tackling conflict if any?	Yes=1, No=2, Don't Know=3	
	Do you know the community members obey government rules?	Yes by everyone= 1, Yes by some=2, No=3, No particular rules=4, Not aware=5	
Participation	Planning Index	Forest Boundary Demarcation	Yes=1, No=2, Don't Know=3
		Identifying Forest Users	
		Participatory Forest Resource Assessment	
		Forest Management Committee Election	
		Encouraging Others to Participate	
		Preparing Forest Management Plan	
		Developing Forest Management by Laws	
		Approval of Forest Management Agreement	
	Implementation Index	Reforestation of Degraded Forest Areas	Yes=1, No=2, Don't Know=3
		Planting of Fruit bearing Trees Such as Mahua & Mango	
		Planting Trees & Management	
		Nursery Establishment	
		Beekeeping	
		Forest Fire Fighting	
		Attending Meetings	
Participations in Knowledge & Skill Developing Training			
Monitoring Index	Follow ups Forest Managements by Law	Yes=1, No=2, Don't Know=3	
	Helps Forest Patrols		
	Detecting of Illegal Activities		
	Supervise Forest Management Plan Implementation		
	Forest Boundary Maintenance		
Inclusive and Equitable	Do you know the female members formed Self-Help Group?	Yes=1, No=0	
Efficient and Effective	Do you know that there has been an increased in availability of Wood & Non-timber forest products in the last 5 years?	Increased =1, No Change= 2, Decline= 3, Don't Know= 4	
	Do you know the dependency of forest resources go down due to the successful implementation of poverty eradication Programmes of the Government?	Yes=1, No=2, Don't Know=3	

Source: Author's calculation from primary data

**2.3.2 Beta Regression Model**

Beta regression model is used to estimate the factors responsible for governance index in the Purulia forest division of West Bengal. This model is used because the dependent variable takes a value in the open interval (0, 1) (Ferrari and Cribari-Neto 2004). A beta regression model is given by

$$g(\mu_i) = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + \beta_4 X_{i4} + \beta_5 X_{i5} + \beta_6 X_{i6} + \beta_7 X_{i7} + \eta_i, i = 1, \dots, n \text{-----}(1)$$

Here,  $\eta_i$  is the linear predictor for the  $i$ th observations and  $g(\cdot)$  is the link function. The logit link is used in our study [ $g(\mu) = \log \mu / 1-\mu$ ] for beta regression.

Here Governance Index (GI) of the  $i$ th households as the dependent variable.

$X_{1i}$  = Caste of the household head (SC= 1, ST=2, OBC=3 and GEN = 4)

$X_{2i}$  = Educational index

$X_{3i}$  = sex of the household head (Male = 1, Female = 0)

$X_{4i}$  = Total Land holdings (in acres)

$X_{5i}$  = Distance from home to forest (km)

$X_{6i}$  = Occupation of the head of the households

$X_{7i}$  = Monthly forest income as percentage of total income (Rs.)

**3. Results and Discussions**

**3.1 Governance Index and Sub-indices**

The governance index along with the indices values of sub-indicators are presented in Table4. The value of the governance index of the households as a whole of Purulia forest division is 0.446 shown in Table4. The value of the rule of law, transparency, accountability, participation, inclusive and equitable, efficient and effective indices of whole Purulia forest division are 0.263, 0.368, 0.317, 0.643, 0.579, and 0.504 respectively. The positive and higher values of indices indicate the success of governance. The value of participation index is highest in Purulia forest division (Fig: 5).The value of sub-indicator encouraging encroachers and illegal extraction due to political intervention is highest in rule of law index as a whole Purulia forest division. The value of sub-indicator forest users have to pay for collecting forest product is highest in transparency index. In participation index, the value of identifying forest users sub indicator in planning index, attending meetings in implementation index and reporting illegal activities in monitoring index are the highest. The value of changes in availability of wood and non-timber forest resources in last 5 years is highest in effective and efficient index.

**Table4. Value of the main index and sub-indices**

Main Index	Sub Index	Value
Rule of Law	Govt. Rules regulating Forest Use	0.017
	Existence of Any Rule for use of Forest Product	0.233

	Encouragement for Timber Brokers for Deforestation due to leakage in Forest Laws	0.391	
	Weak Forest administration leads Deforestation	0.044	
	Encouraging Encroachers and illegal extraction due to Political intervention	0.619	
	Strong administration saves RF	0.276	
		<b>0.263</b>	
Transparency	Need of Permission to Collect/ Harvest Forest Product	0.233	
	If Y, do the users have to pay	0.585	
	Issuance of Permit by the correct authority	0.452	
	Clearance of the agenda of the Meeting	0.202	
		<b>0.368</b>	
Accountability	Regular presence in the meeting of the FPC	0.355	
	Experience of Conflict in last 5 years	0.563	
	Obeying Govt. rules by Community Members	0.034	
		<b>0.317</b>	
Participation	Planning Index	Forest Boundary Demarcation	0.578
		Identifying Forest Users	0.867
		Participatory Forest Resource Assessment	0.579
		Forest Management Committee Election	0.779
		Encouraging Others to Participate	0.639
		Preparing Forest Management Plan	0.571
		Developing Forest Management by Laws	0.577
		Approval of Forest Management Agreement	0.857
			<b>0.681</b>
	Implementation Index	Reforestation of Degraded Forest Areas	0.721
		Planting of Fruit bearing Trees Such as Mahua	0.700



		& Mango	
		Planting Trees & Management	0.681
		Nursery Establishment	0.742
		Beekeeping	0.468
		Forest Fire Fighting	0.677
		Attending Meetings	0.863
		Participations in Knowledge & Skill Developing Training	0.500
			<b>0.669</b>
	Monitoring Index	Follow ups Forest Managements by Law	0.462
		Forest Patrols	0.528
		Reporting of Illegal Activities	0.873
		Supervise Forest Management Plan Implementation	0.521
		Forest Boundary Maintenance	0.511
			<b>0.579</b>
			<b>0.643</b>
Inclusive and Equitable		SHG formation for female members	<b>0.579</b>
Efficient and Effective		Changes in the availability of Wood & NTFP in last 5 years	0.536
		Poverty Eradication Programme reduce dependency on FPs	0.472
			<b>0.504</b>
<b>Governance Index</b>			<b>0.446</b>

Source: Author's calculation from primary data

The village wise forest governance index is presented in Table 5. The value of rule of law index is highest in the village Ichakota (0.363) followed by Charida (0.344), Bandhghutu (0.342) and so on. The value of transparency index is highest in the village Tarpenia (0.562) followed by Nischintapur (0.519), Bandhghutu (0.417) and so on. The value of accountability index is highest in the village Rabidi (0.568) followed by Bandhghutu (0.423), Charida (0.360) and so on. Participation index is highest in the village Nischintapur (0.693) followed by Bagti (0.679), Ichakota (0.667) and so on. One of the other indicators of governance index is inclusive and equitable index, which is highest in the village Bandhghutu (0.769), followed

by Nischintapur (0.731), Ichakota (0.722) and so on. Last indicator of governance index is efficient and effective index. This index is highest in the village Charida (0.645) followed by Perorgoria (0.547), Ichakota (0.537) and so on. The value of governance index is highest in the village Bandhghutu (0.509) followed by Charida (0.503), Rabidi (0.495) and so on (Fig: 4).

**Table 5. Value of the indices across sample villages**

Village	Rule of Law		Transparency		Accountability		Participation		Inclusive and Equitable		Efficient and Effective		Governance	
	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank	Index	Rank
Bandhghutu	0.342	3	0.417	3	0.423	2	0.629	7	0.769	1	0.474	6	0.509	1
Tarpenia	0.127	9	0.562	1	0.326	5	0.663	4	0.522	7	0.453	7	0.442	7
Perorgoria	0.316	4	0.271	8	0.344	4	0.558	9	0.625	6	0.547	2	0.443	6
Rabidi	0.256	6	0.360	6	0.568	1	0.644	6	0.636	5	0.504	5	0.495	3
Charida	0.344	2	0.360	5	0.360	3	0.602	8	0.710	4	0.645	1	0.503	2
Lawadi	0.182	8	0.370	4	0.202	9	0.651	5	0.442	8	0.450	8	0.383	9
Bagti	0.284	5	0.259	9	0.303	6	0.679	2	0.386	9	0.523	4	0.406	8
Ichakota	0.363	1	0.324	7	0.278	7	0.667	3	0.722	3	0.537	3	0.482	4
Nischintapur	0.219	7	0.519	2	0.205	8	0.693	1	0.731	2	0.378	9	0.458	5
<b>Purulia</b>	<b>0.263</b>		<b>0.368</b>		<b>0.317</b>		<b>0.643</b>		<b>0.579</b>		<b>0.504</b>		<b>0.446</b>	

Source: Author's calculation

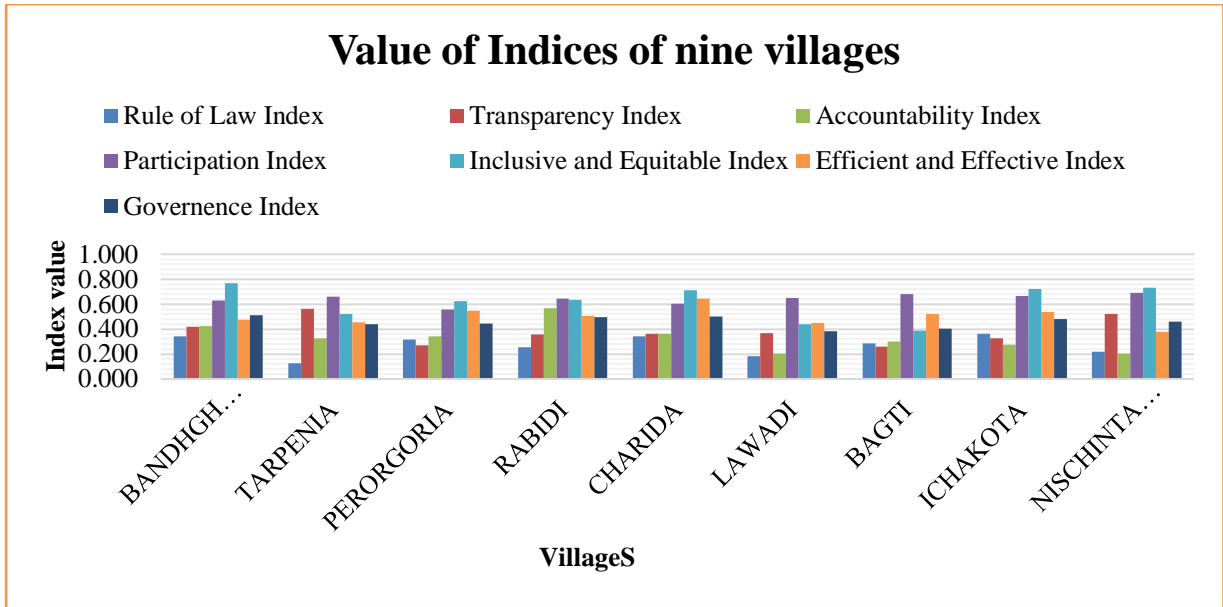


Fig 4: Value of all indices of the nine FPC

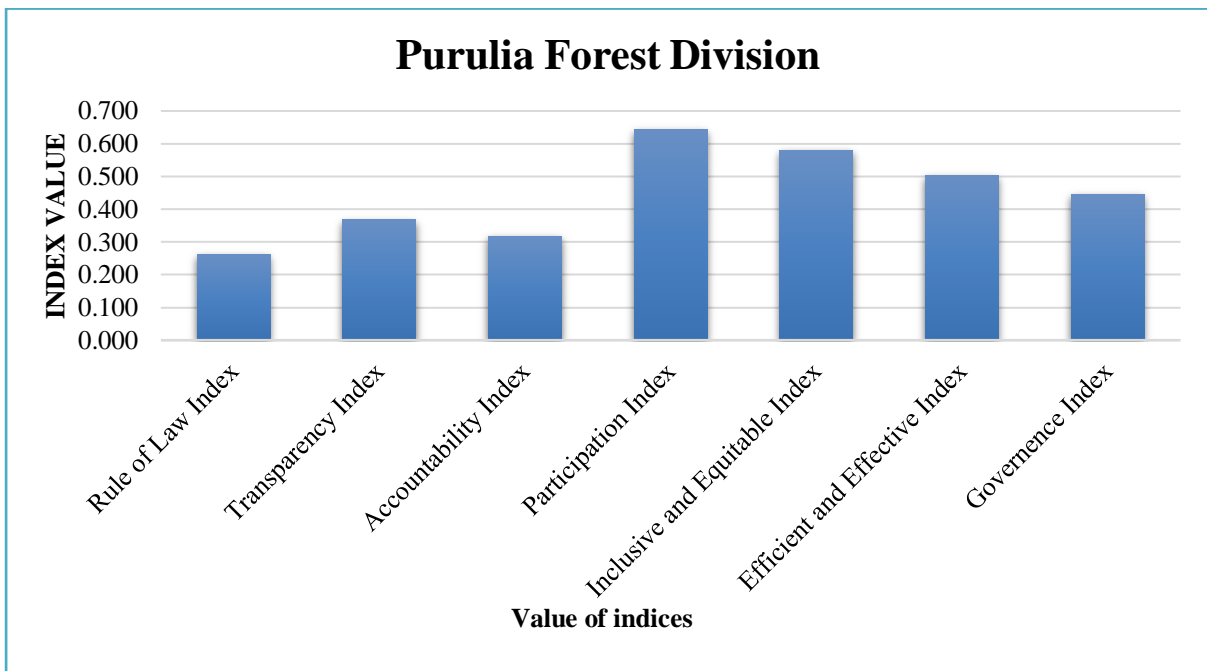


Fig 5: Value of all indices of Purulia forest division

### 3.2 Estimation of factors affecting Governance

In order to estimate the factors which are responsible for community governance programme, we have taken beta regression model. The independent variables and their basic statistics are shown in Table 6. The dependent variable is the governance index. The result of beta regression is given in the Table 7.

**Table 6. Basic statistics of independent variables of Purulia forest division**

Variable	Mean	Std. Dev.	Min	Max
Governance Index	0.4458343	0.1181948	0.1444445	0.8159722
Caste	2.40873	1.112946	1	4
Educational index**	0.1664594	0.1475945	0	0.6832222
Sex	0.8968254	0.3047921	0	1
Total land holdings(in acre)	0.5015742	0.6225793	0	3.966942
Distance from home to forest (in km.)	0.6829365	0.4057192	0	2
Occupation of the head of households	2.543651	1.030452	0	5
Monthly forest income as percentage of total income (in Rs.)	24.39367	15.10168	0	100

Source: Author's calculation

\*\*Education index of the households is measured on the basis of UNDP methodology where education index:  $EI = (MYSI + EYSI) / 2$ . MYSI is the mean years of schooling index and EYSI stands for expected years of schooling index. Due to Heteroscedasticity problem, we divided the regression model by total households' members. Total households' members are an explanatory variable.

**Table 7. Results of beta regression model of Governance index in Purulia forest division**

Independent Variable	Purulia forest division			
	Coefficient	SE	z	p-value
Caste	0.1917309	0.0604861	3.17	0.002
Educational index	2.89191	0.4150355	6.97	0.000
Sex	0.4817094	0.1728254	2.79	0.005
Total land holdings(in acre)	0.3546785	0.1064279	3.33	0.001
Distance from home to forest	-0.1094473	0.1735209	-0.63	0.528
Occupation of the head of households	0.3522639	0.082942	4.25	0.000
Monthly forest income as percentage of total income (in Rs)	0.0176731	0.0039737	4.45	0.000
Constant	-2.864929	0.0447507	-64.02	0.000
	LR $\chi^2(7)=251.05, Prob > \chi^2=0.000$ , Log likelihood=503.92444			

Source: Author's calculation

### 3.3 Discussions

From Table 7, For the purpose of examining the overall significance of model we use Likelihood Ratio- statistics (LR statistic) which is Chi-square with degrees of freedom. The degree of freedom is equal to the number of explanatory variables. The higher value of log-likelihood, the better a model fits in a dataset. We find that the model's goodness of fit is overall good as indicated by the value of log likelihood. The value of Log likelihood is 503.92444. Regression analysis shows that various social, environmental and economical factors influence the forest governance process in our study area. Here communities' governance process is taken as the dependent variable whereas social, environmental and economic factors are taken explanatory variables. These are caste of the households (SC=1, ST=2, GEN=3, OTH=4), sex of the households' head (male=1, female=0), occupation of the head of households, total land holdings of the households (in acre), education index, distance from home to forest (in km.), percent of forest income to total income etc. It can be

concluded that all taken independent variables of forest governance process are at satisfactory level. Out of the 7 independent variables tested in the regression model, six variables are proved statistically significant either at 1% or 5% probability level. The regression result shows that there is a positive and significant relation between caste and forest governance. It implies that upper caste communities' people follows forest rules and regulations for sustainable forest management more than the schedule and tribal households. This means that the governance process is successfully implemented by the upper caste than the schedule and tribal households. There is a positive and significant relation between education of the family members and forest governance processes. This means that the households who are more educated, they protect forest resources more than illiterate persons. Literate persons are more concern on forest governance in their area. There is a positive and significant relation between total land holding and forest governance process. This implies that large farmers are highly interested to implement forest laws and regulations than the landless farmers. Our finding supports the result of (Ranjit, 2014) who reported that a land holding highly determined by governance index. There is an inverse and insignificant relation between distance from home to forest and forest governance process. There is a positive and significant relation between forest governance and percentage of monthly forest income of the households. This implies that who earns more from forest resources are more concerned of protection and conservation of forest. They know that if the forest resources are used in sustainable ways then they can earn from these resources for a long time period. Occupation of the head of households is positively and significantly associated with forest governance. Local forest users who participate more in forest management process, know the rules and regulations more clearly and maintain the forest boundaries, fire, illegal logging etc. more efficiently. Lack of transparency and accountability is associated with problems of illegal logging and corruption. Lastly there is a positive and significant relation between sex and forest governance. This study shows that men are more involved in forest governance process. If these process such as following up forest management by law, forest patrolling, reporting illegal activities, maintain of forest boundaries, supervision of forest management plan etc. are implemented properly, there will be a successful forest governance and vice-versa, this study shows.

#### 4. Conclusions

The following conclusions have emerged from the above analysis. The result shows that governance process by the households is measured by the governance index. Governance index is comprised of rule of index, transparency, accountability, participation, inclusive and equitable, efficient and effective index. The values of these indices are 0.263, 0.368, 0.317, 0.643, 0.579 and 0.504 respectively as a whole Purulia forest division. The value of governance index is 0.446 as a whole Purulia forest division. The value of participation index is highest in our study area. The value of rule of law index is lowest in our study area. Local people are more participated in forest governs process. The level of forest governance is highly determined by caste, education, land holdings, sex and occupation of the households etc. In this paper we find that local forest users and local institutions like forest protection committees (FPCs) play a significant role for forest governance process. The findings of the paper support the result of (Ostrom and Nagendra, 2006; Pandey, 1993 & 2003). The paper has an important policy implication for better livelihood generation in future to the forest dependent communities. The paper also calls for the development of rule of law which leads to the improvement of quality of forest and vis-à-vis maintain forest conservation. In

addition, the focus of the paper is more towards for the development of the socio-economic conditions of the forest dependent communities.

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