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Do Locals Have a Say? Community Experiences of Participation in Governing Forest Plantations in Tanzania

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Abstract: As large-scale forest plantations expand in developing countries, concerns are rising about their relation to and integration with adjacent local communities. In developing countries with weak enforcement of property rights, private plantations are more likely than state-owned plantations to involve villagers in plantation's activities in order to secure and guarantee their access to land and labor resources. Certification standards of the Forest Stewardship Council (FSC) and adherence to responsible investment guidelines further strengthen this likelihood by requiring plantations to consult and engage local communities. Using household data from Tanzania, we assess households' experiences with their participation in plantation activities by comparing the experiences of households in villages adjacent to private, FSC-certified plantations with those of households in villages adjacent to a non-certified, state-owned plantation. Our quantitative analyses show that households in the villages adjacent to the private, certified plantations are more likely to report to participate in plantation activities. Our results show that the certified plantations are more likely to respond to community complaints and grievances. We further find that male-headed households and households of plantation employees are more likely than female-headed households and households without plantation employees to participate in plantations' activities. Our results imply that forest management certification can complement state policy approaches of sustainable forest management to enhance community participation in forest management.

Keywords: forest plantations; participation; access; certification; FSC; Tanzania

1. Introduction

Tanzania has seen a rapid expansion of forest plantations on state and village lands since the 1990s [1,2]. The forest policy of the country specifically emphasizes the role of private sector investment in its forestry sector and private forest plantations are predicted to supply the largest share of the country's industrial wood demand in the coming years [3–5]. An important challenge to the management and expansion of forest plantations in Tanzania and other developing countries is related to their governance vis-à-vis the expectations of adjacent communities [1,6]. Government allocation of land under customary tenure, known as village lands, to plantations has led to concerns among researchers and socially oriented NGOs regarding the relation of private plantation companies with

adjacent local communities and whether the voices of locals are taken into account in the activities of the private forest plantations [7,8]. Local communities are “communities of any size that are in or adjacent to a forest plantation, and also those that are close enough to have a significant impact on the economy or the environmental values of the forest plantation or to have their economies, rights or environments significantly affected by the management activities or the biophysical aspects of the plantation.” [1]. The relation between private plantations and communities could be strained due to loss of customary land uses and access to natural resources for local communities [9], and adverse environmental effects such as loss of soil quality, reduced water quantity and quality and the spread of invasive trees to farms in adjacent communities [10,11].

Community participation is regarded as one of the key factors for effective forest governance in tropical countries [12]. Forest governance comprises rules, norms, principles and decision procedures with regards to the use and conservation of forests and affects the type and level of involvement of local communities in the management of forests [13]. Community participation can improve sense of ownership among stakeholders and foster transparency and accountability among plantation owners [14]. Recent empirical studies on the socio-economic impacts of large-scale forest plantations recommend that plantations should engage local communities to enhance positive and mitigate negative outcomes of plantations for local communities [15,16]. Tanzania is one of the few developing countries with well-developed participatory forest governance policies. The country’s forest policies and regulations emphasize the participation of local communities in management of forests [17]. Community participation and consultation between forestry companies and local communities are growing in importance with the increasing recognition of voluntary certification standards such as the Forest Stewardship Council (FSC) [1]. (Forest Stewardship Council (FSC) is an independent worldwide not-for-profit organization that establishes standards and predefined criteria for responsible forest management to encourage socially, economically and environmentally beneficial outcomes of forest resources [18]). Voluntary forest certification has been recognized as a contemporary form of forest governance [19–21]. Forest certification is a private initiative that uses the market-based mechanism of independent labelling and monitoring to pursue sustainable forest management [19]. Tanzania is among the African countries with fastest growing area of certified forests [22].

We compare the experiences of the participation of local communities adjacent to FSC-certified, private plantations with those of communities adjacent to a non-certified, state-owned plantation in rural Tanzania. In developing countries such as Tanzania, land is essentially owned by the state and weak definition and enforcement of property rights pose a risk for land related investments [23]. In this regard, private plantations are more likely than state-owned plantations to use community participation to secure and maintain their benefits from investment in forest land [24]. Voluntary certification standards for responsible forest management such as FSC require plantation owners to allow for community participation and consultation in the governance of plantations [1]. Our main research question is: are differences in community participation between forest plantations related to differences in ownership and certification status of the plantations? In addition, we examine whether the perception of local communities about their participation in the activities of forest plantations differs over socio-economic characteristics. While studies on participation in community forests and natural forests found that participation varies over socio-economic characteristics [25–27], whether this holds true in case of forest plantations has not been studied before. Ideally, we would compare community participation in FSC-certified private plantation and FSC-certified state-owned plantation. However, there are no FSC-certified state-owned plantations in East Africa [28]. By selecting an area in Tanzania with a history of large-scale plantations developed in a similar ecological, administrative and socio-economic context, we can explore the correlation between community participation and the combined effect of ownership and certification status of plantations. This approach will enable us to minimize the effects of idiosyncratic factors that may be correlated with differences in community participation between the forest plantations we compare in the study.

Previous studies have not examined whether community participation differs between private and state-owned plantations. The literature on participatory forest governance has mostly focused on community and natural forests. Plantation forests pose different challenges than natural forests, such as land rights and employment instability, affecting the engagement of plantations owners and managers with communities [29]. This context has led FSC to make the distinction between plantation and natural forests explicit in its standards, including the National Forest Stewardship Standard for Tanzania [30]. Mustalahti and Lund [17] used interviews to collect qualitative data from stakeholders in villages with forests under participatory forest management (PFM) in Tanzania, Mozambique and Laos and found that the policy framework in Tanzania recognizes the rights of communities to participate in the management of adjacent forests. In Mozambique and Laos, however, the economic interests of powerful private actors are promoted at the expense of those of the local communities. The study also found that, despite policies supporting community participation in forestry, local communities were systematically excluded from sharing in returns from commercially valuable forest resources in all three countries. Recent studies on economic returns from various models of land sharing by commercial forest plantations in Laos show that models that integrate local communities in participatory land use planning (for example, plantation models that integrate local food production) yield the highest returns to plantation companies and contribute the most to household livelihoods [31,32]. Szulecka et al. [33] traced the development of forest plantations in Indonesia and used an exploratory empirical case-study of a large FSC-certified, public-private plantation company to identify historical and current approaches in plantation management and governance. The authors found that while the plantation is positively rated by stakeholders in terms of community participation (due to access to trainings, good access to information regarding the plantation such as bulletins, secretariat), there are difficulties in local mechanisms for conflict resolution between communities and the company (such as managing conflicts due to disagreements between in-migrant plantation workers and permanent settlers). Dare et al. [34] assess the link between forest certification and community engagement in plantation management in Australia. Using a qualitative survey of plantation managers and community members combined with a document analysis of forest regulations and forest certification standards, the authors found that forest certification is positively related with community engagement processes. Cubbage et al. [35] reported that certified forest plantations lead to improved community relations in Argentina and Chile. However, the authors based their study on interviews of plantation managers only and the sample size of the study was too small (10 respondents) to perform a quantitative analysis. Unlike previous studies on community participation in forest governance, we use data from a large sample of households to quantitatively assess how local communities experience their involvement in the activities of forest plantations in rural Tanzania. Our study contributes to the literature and debate on community participation in large-scale forest plantation land use practices in Africa by assessing differences in community participation across forest management and certification types.

2. Conceptual Framework

Forest governance comprises "(a) all formal and informal, public and private regulatory structures, i.e., institutions consisting of rules, norms, principles, decision procedures concerning forests, their utilization and their conservation, (b) the interactions between public and private actors therein and c) the effects of either on forests" [13] (p. 1). Our study deals with forest governance at the local level, i.e., "... the smallest area at which a forest project or program can be implemented by involving various actors" [36] (p. 61). Local forest governance commonly includes decentralization of forest governance and participation [37–39] where participation refers to "the process where stakeholders make choices that determine (or co-determine) new institutions" [14] (p. 436). Stakeholders include local individuals and communities who are affected by these institutions and choices. Participation has been identified as one of the most important factors for good forest governance [27]. Participation can take various forms depending on the degree of stakeholder involvement and power [14,40–43] Handberg [14] distinguishes between weak and strong participation. Weak participation refers to stakeholder

consultation, where stakeholders have the role of informing decision makers. Strong participation refers to stakeholder control, where stakeholders have the power to make choices that (co-)determine the institutions [14]. Our paper deals with weak participation in governance of forest plantations by assessing the experiences of local communities regarding their say in the activities of forest plantations adjacent to their villages.

The dimensions of forest governance can be measured using indicators; i.e., quantitative or qualitative variables to concisely describe, understand, monitor and assess governance quality [36]. Secco et al. [36] identified participation as one of the key dimensions of governance and further divided participation into seven sub-dimensions with possible indicators. In this study, we focus on three sub-dimensions of participation: stakeholder inclusion, representativeness and equity in participation. We use the perception of local households regarding whether they have a say in the activities of plantations as a proxy for stakeholder inclusion in plantation activities. Furthermore, we assess household satisfaction with the governance of forest plantations for which we use household's self-reported satisfaction with their say in forest plantations activities as a proxy. We developed an additional proxy for community participation based on insights from Good Neighbour Charters (GNCs). The objective of GNCs is to enable local people to participate in company decisions and practices that can potentially impact local communities or the environment [34]. Based on this, we use the response of households whether they consider plantations in their villages as "friendly good neighbour" to assess households' experience with their participation in plantation activities. To address the question of representativeness and equity in community participation in plantation activities, we assess whether the likelihood of respondents to report that they have a say in plantations' activities and the satisfaction with their say varies over the socio-economic characteristics of households.

Our expectation regarding the relationship between ownership of forest plantations and the likelihood that adjacent communities report that they have a say in plantation activities is guided by insights from access theory. Access theory posits that actors may use various mechanisms to secure and maintain their benefits from resource use [24]. One of these mechanisms is engaging adjacent communities [44]. Since forest plantations are often established on village lands which used to be governed by customary rules, investors in plantations may commit some resources to cultivate relations with villagers to gain control and maintain their access over the plantations they own [24]. Furthermore, plantation owners may decide to invest in improving their relations with adjacent communities to gain and maintain access to a workforce. Community participation in natural resource governance is an important example of a shift in control of territory and people from the state to private actors [44]. Plantation investors actively engage local people to access and control village lands and mitigate social risks such as conflicts over land access [44]. In many developing countries, where the state essentially owns land and land tenure regimes have often been used to build state authority in rural areas, the need to secure and maintain access to resources (land and labor) is likely to be stronger for private plantations than for state-owned plantations [23]. Even though regulations on forest governance in Tanzania require all types of forest owners to consult and engage local communities, compliance with such regulations is low, particularly in state-owned forests, due to absence of enforcement coupled with incentive problems in state enterprises [17]. Hence, we expect the likelihood to involve local communities in plantation activities to be higher in the case of private plantations than in state-owned plantations.

Guidelines for responsible forest management typically reflect principles of accountability, fairness/equity, participation of all stakeholders, transparency and availability of information on how forests are governed and managed [45–49]. Compliance with guidelines of certification schemes is an indicator of responsible forest management. Voluntary forest certification has been identified as a prime example of non-state market-driven governance [20]. Forest certification bodies such as FSC recognize forest owners who voluntarily comply with predefined principles of sustainable forest management. Compliance with the principles emanates partly from market and non-market benefits of certified plantations and timber [20,50]. Using a qualitative meta-synthesis approach, Carlson

and Palmer [50] identified improved governance, community empowerment and reputational gains as less tangible benefits of FSC certification commonly reported by producers and these benefits justify the cost of certification. Principle 3 of FSC's sustainable forest management principles requires forest owners to recognize and respect indigenous people's rights. Indicator 4.4 of FSC's Principle 4 of community relations states that "[c]onsultations shall be maintained with people and groups (both men and women) directly affected by management operations" [18]. Investors and shareholders in plantations may recognize compliance with these principles of FSC as indicators of responsible forest governance [51]. Hence, we expect that the likelihood of community participation in plantation activities is higher in the case of FSC-certified plantations than in non-certified plantations.

Based on our conceptual framework, we formulate the following hypotheses to be tested empirically:

Households in villages adjacent to the FSC-certified private plantations are more likely than households in villages adjacent to the state-owned, non-certified plantation:

Hypothesis 1. *to report to have a say in the activities of the plantations.*

Hypothesis 2. *to report higher satisfaction with their say in the activities of the plantations.*

Hypothesis 3. *to consider the plantations in their villages 'a friendly good neighbor'.*

Hypothesis 4. *to report that the plantations address and respond to community complaints and grievances.*

The likelihood of participation of households in natural resource governance may vary across socio-economic and demographic characteristics. Agrawal and Gupta [25] found that the likelihood of participation in environmental governance in Nepal increases with wealth and social status while it decreases with education, while Lacuna–Richman et al. [27] report that the middle-class participate more than the rich, who can afford to pay non-attendance fees of meetings of community forest governance in Nepal. Ribot et al. [43] find that social stratification affects who participates in forest governance. Szulecka et al. [33] in their study in Indonesia found that stakeholders positively rated an FSC-certified forest plantation company in terms of participation (access to training and information regarding the plantation to workers). However, the study relied on qualitative interviews of small number of selected stakeholders (plantation managers, workers and community members) and did not explore whether responses differ across the socio-economic characteristics of the interviewees. Based on these findings, we formulate the following hypothesis:

Hypothesis 5. *Male-headed households, richer households and households of plantation workers are more likely than their counterparts to report to have a say in the activities of the plantations.*

We test these hypotheses by comparing household survey data from two villages adjacent to FSC-certified private forest plantations and two villages adjacent to a non-certified, state-owned forest plantation in Tanzania.

3. Materials and Methods

3.1. Forest Governance Framework in Tanzania

The 1998 National Forest Policy of Tanzania covers all types of forests and emphasizes that the country's forests and forest-based industries contribute to sustainable and equitable national development [52]. The policy calls for the consultation and participation of adjacent communities in the management of forests. The 2001 National Forest Programme highlights the need to create an enabling environment for gender balanced participation of all stakeholders in forest governance. The Programme promotes devolution of forest management and recognizes local communities as

key partners in plantation forest management [53]. In 2002, the Forest Act was enacted as the legal framework for the forest management in Tanzania [54]. The main objective of the Act is to promote and enhance the contribution of the forest sector to sustainable national development. The Act requires forest owners to have a forest management plan which includes a description of adjacent local communities and an outline of a scheme for the involvement of these communities in the use and management of the forest. According to the 2002 Forest Act, local communities should be consulted in the preparation of detailed forest management plans [54]. Despite these policies, the implementation of participatory forest governance in Tanzania has suffered from two major bottlenecks: slower progress in areas with high value forest resources and a lack of support to local communities to assert their legal rights [17].

3.2. Study Area

The study was carried out in Iringa region in Tanzania, a region which has seen major expansions of plantations in the past few decades [55]. We identified two FSC-certified plantations owned by a private forestry company, Green Resources AS (hereafter GR), located in Mufindi district in Iringa (see Figure 1). GR had developed about 17,000 ha of eucalyptus and pine plantations on 74,000 ha of land in Tanzania by 2016. Before the establishment of the plantations, the land used to be grassland with scattered shrubs and isolated trees. The company acquired the land on a 99 years lease from the Government of Tanzania in accordance with the 2006 Land Law [56,57]. According to this law, land is granted by the village under the supervision and mandate of the District authorities and authenticated by the Ministry of Lands and Human Settlement Development through the Regional Office in Mbeya.

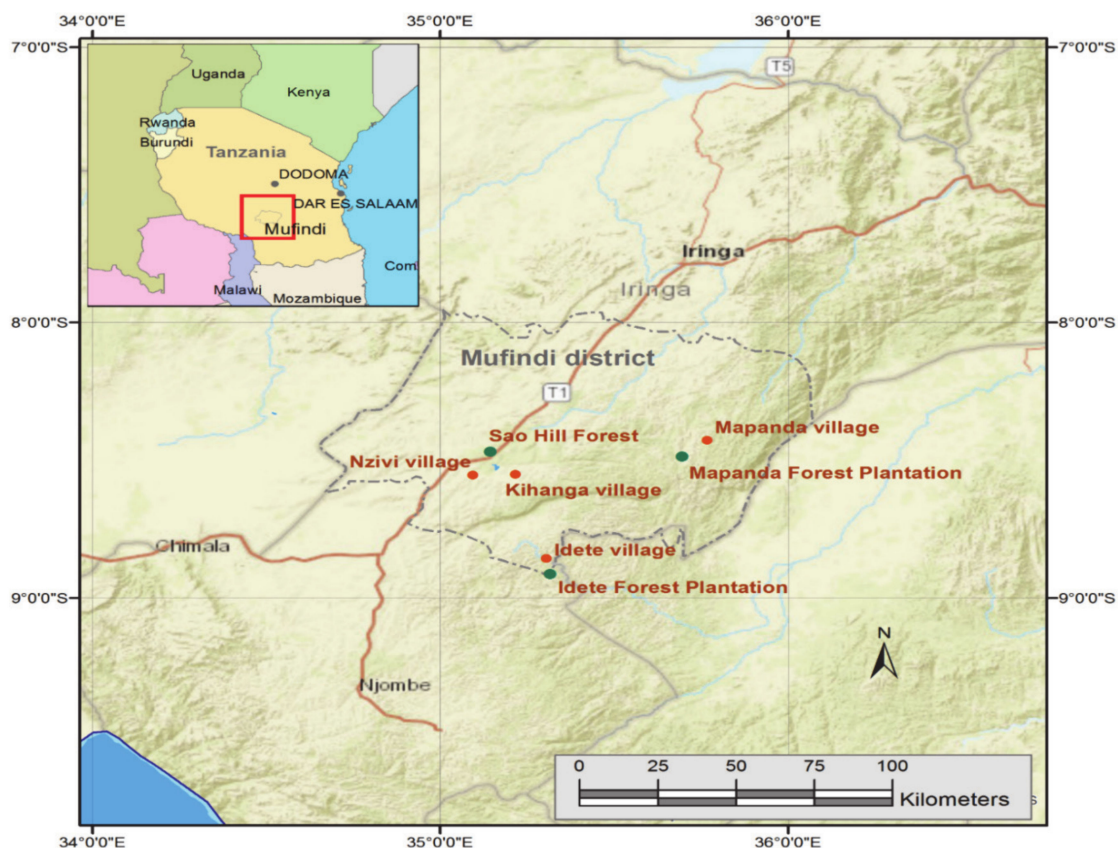


Figure 1. Map of study villages, Mufindi district, Tanzania.

For comparing community participation in the FSC-certified private plantations with community participation in a non-certified, state-owned plantation, we selected Sao-Hill forest plantation as a

comparison. Sao-Hill is a state-owned eucalyptus and pine plantation of comparable size to GR. The Sao-Hill forest plantation is also located in Mufindi district and is the largest state-owned forest plantation in Tanzania. By 2016, it had a total area of 41,600 ha of standing trees on 65,000 ha of land. Large scale afforestation took place between 1950 and 1990 with funds from the government of Tanzania and aids from development partners, mainly the World Bank. Administratively, Sao-Hill plantation is divided in four divisions, each being headed by a divisional manager. By 2013, Sao-Hill forest plantation Division I, which includes the plantation block adjacent to our study villages, covered a total planted area of 12,829 ha [58].

We used the following four criteria to select villages adjacent to the GR and Sao-Hill forest plantations for conducting our household surveys: proximity to the selected forest plantations; plantations had started operations (such as planting and community projects) in the villages such that we will be able to compare plantations at relatively similar stages of development; plantations employ villagers; and there is sufficient distance between the villages adjacent to the FSC-certified private and the non-certified, state-owned forest plantations to minimize spill-over effects. (Even though the state-owned plantation in Kihanga village was established earlier than the other plantations, major planting and expansions occurred in all plantations in the late 1980s and 1990s.) We used maps, information from district offices and plantation managers as well as company documents to identify villages that fulfil these criteria. Accordingly, the villages of Idete and Mapanda, which are adjacent to the Idete and Mapanda forest plantations of GR respectively, and the villages of Kihanga and Nzivi, adjacent to the Sao-Hill plantation Division I, were selected for the study (Figure 1). Table 1 provides an overview of the characteristics of the study villages.

The study villages and plantations are in the same district under the same administrative setting and have similar socio-economic and environmental characteristics, which reduces the chance of confounding factors affecting the results. The focus group discussions (FGDs) and documents from the plantations and district offices did not show differences between the villages which could plausibly contribute to differences in community participation in the plantations' activities. As shown in Table 1, all villages were established in 1974 and are connected to at least one road accessible by motor transport throughout the year. There was at least one functioning school in each study village in 2015. Table 2 shows that the sampled households in the villages adjacent to the FSC-certified private plantations and the non-certified state-owned plantation are similar in terms of average age, gender and education of household head and household size. The households in the villages adjacent to the FSC-certified plantations do not differ significantly from the households in the villages adjacent to the non-certified, state-owned plantation [59]. Most households in both groups of villages are farmers, with agriculture the main source of livelihoods in the district. These household socio-economic characteristics reflect a picture apparent at district level: average household size was 4.2 in Mufindi district and 4.3 in the Iringa region according to the 2012 census. The major ethnic group in the district and study villages is the Wahehe, constituting about 85 percent of the total population of the district. The study villages are located on the Mufindi plateau, with an altitude of 1700–2000 m above sea level and soils of yellow highly leached clays [60].

Table 1. Characteristics of Study Villages.

Village	Year Village was Established	Number of Households in the Village	Number of Sampled Households	Distance to the Nearest town Market (in Minutes by Public Transport)	Village Is Connected to at Least One Road Useable by Cars in all Seasons?	Was There at Least One Functioning School in the Village in 2015?	Owner of Nearby Plantation	FSC Certification Status of Nearby Plantation
Idete	1974	864	81	42	Yes	Yes	Private	Yes
Mapanda	1974	1080	90	105	Yes	Yes	Private	Yes
Kihanga	1974	850	92	50	Yes	Yes	State	No
Nzivi	1974	821	75	40	Yes	Yes	State	No

Source: Focus Group Discussions and [56].

Table 2. Descriptive Statistics of Variables.

Variable	Mean		Std. Deviation		Min.		Max.		N	
	Private, FSC	State	Private, FSC	State	Private, FSC	State	Private, FSC	State	Private, FSC	State
A. Dependent variables										
Household has say in the activities of plantations ^a	0.38	0.19	0.49	0.39	0	0	1	1	156	145
Extent of household satisfaction with say in plantation activities ^b	3.58	2.82	0.83	1.12	2	1	5	5	60	28
Plantation company responds to community complaints and grievances ^a	0.57	0.36	0.49	0.48	0	0	1	1	141	126
Household considers plantation 'a friendly good neighbor' ^c	3.36	3.17	1.09	1.30	1	1	5	5	165	150
B. Household (hh) characteristics										
Age of head (in years)	44.50	44.91	15.59	13.15	23	20	85	85	169	163
Sex of head (0 = female, 1 = male)	0.82	0.76	0.38	0.42	0	0	1	1	171	167
Education of head ^d (0–3)	0.98	0.99	0.62	0.58	0	0	3	3	171	167
Household size (in number)	4.49	5.23	1.96	2.06	1	1	12	11	171	167
Total farm size (in hectares)	1.98	1.43	2.33	1.58	0.10	0.20	12	16.4	168	164
Employed by plantation (0 = No, 1 = Yes)	0.07	0.09	0.26	0.29	0	0	1	1	170	169
Forest use (0 = No, 1 = Yes)	0.95	0.90	0.21	0.29	0	0	1	1	170	166
Total hh income (in million Tzs ^e)	1.27	1.81	1.48	4.09	0.03	0	10	39.8	155	150
Share of agricultural income (%)	59.13	43.45	39.81	39.20	0	0	100	100	164	159
Share of business income (%)	11.30	22.44	25.36	33.53	0	0	100	100	164	159
Share of forest income (%)	5.18	7.39	19.47	21.50	0	0	100	100	164	160
Share of off-farm income (%)	17.24	22.14	30.63	35.60	0	0	100	100	164	159

Note: ^a binary variable: 1 = Yes, 0 = No; ^b categorical variable: 1 = very dissatisfied, 2 = dissatisfied, 3 = neutral, 4 = satisfied, 5 = very satisfied; ^c categorical variable: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree; ^d categorical variable: 0 = no schooling, 1 = primary, 2 = secondary, 3 = college and above; ^e Tzs is the Tanzanian currency shilling. The August 8, 2016 exchange rate was €0.41 for 1000 TZS.

3.3. Land Acquisition by GR

The nature of land tenure and the process of land acquisition in Tanzania have been well documented in a study by Purdon [57]. He states that the 1999 Land Act and the 1999 Village Land Act in the country recognized customary land rights through the creation of a new land tenure category, Village Land (the Village Land Act affirms the occupation and use of Village Land in accordance with the customary law of the area). Village Land is among the three basic land tenure categories created under the Land Act, in addition to Reserved Land (generally protected areas and government forest reserves) and General Land. Despite being termed Village Land, all land in Tanzania officially belongs to the state or the president. Although according to the Land Act only General Land can be leased to foreign investors, foreign investment projects almost always entail some transfer of Village Land to General Land due to the large availability of Village Land in Tanzania [57].

One of the land acquisition projects investigated in the study by Purdon [57] is the plantations project of Green Resources in the villages of Idete and Mapanda. These plantations and villages are included in our study as well, as we describe below. Purdon [57] found that the villages of Idete and Mapanda had recognized jurisdiction over village lands, as they both possessed a Certificate of Village Land. Under the Village Land Act, having such a certificate affirms the ownership and use of Village Land in accordance with the customary law of the area. According to Purdon [57], Village Council minutes in Mapanda record an initial meeting with GR in June 1997, when the company requested 20,000 ha. At a subsequent Village Assembly meeting in October 1997, the Village Council recommended the area to be handed over. The vote was 272 to 1 in favour of the land transfer. Minutes from a Village Assembly meeting in September 1997 in Idete indicate that GR initially sought a large tract of land, up to 70,000 ha, but minutes from a 1998 meeting of a District Land Acquisition Committee indicate that GR initially requested 24,993 ha. This was reduced by the district government to 15,000 ha, but eventually only 11,663 ha was transferred in Idete. The final extent of Mapanda village lands transferred to GR was 4652 ha. Since the acquisitions involved lands greater than 250 ha, it was necessary for GR to obtain approval from the National Commissioner for Lands at the Ministry of Lands. The findings of the study by Purdon [57] imply that private and state-owned plantations in Tanzania fall under the legal tenure regime of General Land.

The common historical context regarding land tenure and the process of land acquisition in Tanzania, together with the study plantations being in the same district, implies that the plantations face the same administrative and socio-economic features. Moreover, the plantations undertook major planting activities relatively during the same period. Thus, the study setting will enable us to mitigate the effects of specific factors that may derive differences in the participation of communities in plantations' activities between the plantations selected for the study.

3.4. Data

Survey data were collected between January and March 2016 from 338 systematically selected households in the study villages. We used the following procedure to select survey respondents. First, we obtained lists of households in the selected villages from village chiefs. Then, we selected every fourth household in the list to participate in the survey. We sampled roughly similar numbers of households in the villages since the total number of households in the villages was not significantly different (except Mapanda where we sampled larger number of households) as shown in Table 1. Sampled households include members of local communities namely smallholders, forest owners, landless people such as teachers, health workers, plantation employees and petty traders. We interviewed the head of the household for the survey. If the head was not available during the time of the survey, the spouse of the head or adult member of the household was interviewed. 193 of the respondents interviewed for the survey were household heads. Among the respondents we interviewed, 207 were female and 131 were male. Using structured questionnaires, we collected data on the socio-demographic and economic characteristics of the households and their perceptions about their participation in the activities of the plantations. We asked respondents whether they have a

say in the activities of the plantations in their villages and the extent of their satisfaction with their say. To make the concept of “having a say” clear to respondents of our survey and link the concept to factual mechanisms of participation, we asked respondents how they express their views about plantation activities to plantation companies. As a follow up question, we asked in which activities of the forest plantations the households have a say. We further asked households whether they think that the plantation company responds to community grievances and complaints and to what extent households agree with the statement the plantation in your village is “a ‘friendly’ good neighbor”. Two enumerators administered the survey per respondent to minimize bias and errors from fatigue. A focus group discussion (FGD) was held in each village to discuss community perceptions about the consultation of adjacent communities in the activities of the plantations as well as about land tenure and use before the establishment of the plantations. The focus groups consisted of 10–20 individuals to allow for a detailed discussion and active participation and took between one and two hours. The household surveys and FGDs were conducted by enumerators fluent in the local languages and English.

Table 2 provides the descriptive statistics of the variables used in the regressions. We can see from the table that the mean values for the dependent variables are higher in villages adjacent to the private, FSC-certified forest plantations than in villages adjacent to the non-certified, state-owned plantation. The percentage of households who reported to have a say in the activities of the plantations in the villages adjacent to the FSC-certified private plantations and the non-certified state-owned plantation is 38% and 19% respectively. Although the percentage of households who reported to have a say is higher in the villages near by the FSC-certified plantations than in the villages near by the non-certified plantation, the percentage is low given the requirement for consultations about plantation management operations enshrined in FSC’s principles of sustainable forest management. This can be explained by limited actual engagement by GR. In 2014, GR started a project with Monkey Forest Consulting (MFC) to review its community engagement to improve it and started identifying stakeholders in communities and developed a new engagement strategy to involve them in the company’s stakeholder management, to manage grievances, and to improve stakeholder communication [61,62]. Despite developing and implementing a stakeholder engagement plan, a communication plan, and a grievance mechanism, GR reported that meetings with communities were infrequent and community programs were not fulfilled due to financial reasons, resulting in feedback that the company had not fulfilled its promises on community commitments, leading to some individuals to become disengaged [63]. On average, those households nearby the private, FSC-certified plantations that report that they have a say in plantation activities are satisfied with their say while on average those households nearby the state-owned plantation are slightly dissatisfied. According to 57% of the respondents nearby the private, FSC-certified plantations, the company responds to community complaints and grievances. For households nearby the state-owned, non-certified plantation this percentage is 36%. Finally, on average both sets of households slightly agree with the statement that the plantation is a friendly good neighbor.

The average age and average education level of the household heads in the two groups of villages are almost identical. The majority of the sampled households in the villages are headed by males. Households in villages adjacent to the certified, private forest plantations are on average slightly smaller in size than households in villages adjacent to the non-certified, state-owned plantation, but farm on average a larger area of land. The villages adjacent to the non-certified, state-owned plantations have a slightly higher portion of households with at least one member working at the plantation than the villages adjacent to the certified, private plantations. The majority of the households in both categories of villages had collected some forest products (mostly firewood) in 2015. Households in villages adjacent to the non-certified, state-owned plantation on average earned higher self-reported incomes for the year 2015 than households in the villages adjacent to the certified, private forest plantations. Agriculture is the main source of income in both sets of study villages. Households in the villages adjacent to the non-certified, state-owned plantation earn a larger share of their income from business,

forest and off-farm income sources than households in the villages adjacent to the certified, private plantations do.

3.5. Method of Analysis

We estimated a series of logistic regressions with village dummies and relevant household controls to analyze the perception of households about their participation in the activities of the private, FSC-certified plantations and the non-certified, state-owned plantation. The dependent variables include four indicators of outcomes of community participation in forest governance to test Hypotheses 1–4:

1. Whether household i from village j has a say in the activities of the plantation in its village (1 = yes and 0 = no);
2. To what extent a household is satisfied with its say, only if the respondent answered ‘yes’ to the question whether her/his household has a say in plantation activities, (5-point Likert scale ranging from 1 = very dissatisfied to 5 = very satisfied);
3. Whether a household perceives the plantation company to address and respond to community complaints and grievances (1 = yes and 0 = no) and;
4. To what extent a household agrees with the statement “the plantation in your village is a friendly good neighbor” (5-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree).

The main explanatory variable, labelled as “Private, FSC_{ij}” in Table 3, indicates whether household i lives in a village j that is adjacent to a private, FSC-certified forest plantation. (Our main explanatory variable in the regression analyses, i.e., “Private, FSC_{ij}”, does not vary across households who live in the same village. Hence, we cluster standard errors at the village level.) The variable takes a value of 1 if the household lives in a village adjacent to a private, FSC-certified plantation, and 0 otherwise.

We estimated the regressions using the software STATA 14. Since coefficients from logit regressions cannot be directly interpreted, we provide and interpret odds ratios (Table 3). Let $P(Y_{ij} = k|x_{ij})$ denote the probability for household i in village j that the outcome variable Y_{ij} takes value k , conditional on a vector of control variables x_{ij} . Then the odds ratio is the ratio of the odds of outcome k – i.e., $P(Y_{ij} = k|x_{ij})/(1 - P(Y_{ij} = k|x_{ij}))$ – to the odds of the same outcome when an explanatory variable changes by a unit while holding the other explanatory variables (x_{ij}) constant [64]. For example, if the odds ratio of male-headed households to report that they have a say in plantations’ activities is two, this indicates that male-headed households are twice as likely as female-headed households to report that they have a say in plantation activities. An odds ratio of greater than one indicates a positive relation between the explanatory and dependent variable and an odds ratio of less than one indicates a negative relation.

Table 3. Odds Ratios of Estimated Logit Models.

Variables	Household has a Say in Plantation Activities (a)	Extent of hh Satisfaction with Its Say in Plantation Activities (b)	Plantation Company Responds to Community Complaints and Grievances (c)	Plantation is a 'Friendly Good Neighbor' (d)	
Private, FSC (1 = yes)	2.230 *** (0.397)	18.554 ** a (18.081)	3.383 *** (0.278)	1.511 *** (0.157)	
Age of head	0.991 (0.019)	1.027 *** (0.006)	1.032 * (0.018)	1.005 (0.005)	
Sex of head (1= male)	2.396 ** (0.723)	0.127 (0.258)	1.779 ** (0.348)	0.799 * (0.099)	
Education of head	Primary	0.616 (0.201)	8.751 *** (3.917)	2.395 (2.066)	1.612 ** (0.366)
	Secondary	0.771 (0.514)	40.553 *** a (18.587)	1.814 (2.136)	2.881 (1.941)
	College and above	1.047 (1.782)	63.263 ** a (127.732)	6.655 ** (5.746)	2.127 (1.447)
Household size	1.089 (0.103)	1.220 (0.155)	1.051 (0.045)	1.083 (0.067)	
Total farm size	1.079 (0.058)	0.758 ** (0.109)	0.831 *** (0.018)	0.946 (0.101)	
Employed by plantation (1 = yes)	4.016 *** (1.426)	1.565 (1.128)	1.270 (0.460)	1.775 (1.005)	
Forest use (1 = yes)	0.601 * (0.173)	3.369 ** (1.405)	0.469 (0.380)	4.003 *** (0.712)	
Total household income	0.997 (0.013)	0.943 ** (0.022)	1.123 ** (0.046)	1.035 ** (0.016)	
Share of agriculture income	1.012 ** (0.004)	0.977 (0.018)	0.998 (0.008)	1.001 (0.003)	
Share of business income	1.008 (0.008)	0.990 (0.014)	0.999 (0.013)	1.001 (0.006)	
Share of off-farm income	1.003 (0.003)	1.001 (0.010)	1.005 (0.005)	1.009 * (0.005)	
Share of forest income	1.006 (0.009)	0.993 (0.018)	0.985 (0.013)	1.001 (0.007)	
Constant	0.082 ** (0.102)	-	0.069 *** (0.037)	-	
Village dummies	Yes	Yes	Yes	Yes	
Pseudo-R ²	0.095	0.192	0.113	0.030	
Observations	261 ^b	78	234	274	

Note: Robust standard errors in parentheses are clustered at village level. */**/** denote statistically significantly different from 1 at 10/5/1 % levels respectively. ^a These high odds ratios are due to the small number of households (78) that reported to have a say in plantation activities; ^b Due to missing observations, which are evenly distributed over the villages nearby the private, certified and the state-owned, non-certified plantations, the regressions were done using smaller number of observations than the total number of households included in the study. In column (a), the dependent variable is the response of the household to the question: "Do you have a say in the activities of the forest plantation in your village", (1 = yes); In column (b), the dependent variable is the extent of satisfaction of a household with its say in the activities of the plantation in its village (i.e., if the household reported to have a say in plantation activities); In column (c), the dependent variable is the response of a respondent to the question: "Do you think that the plantation company in your village addresses and responds to complaints and grievances from the village", (1 = yes); In column (d), the dependent variable is to what extent a household agrees with the statement: "the plantation in your village is a friendly good neighbor". The data and STATA commands used for the regression in Table 3 are provided as Supplementary Materials.

4. Results

In this section, we present the results of the regressions related to each hypothesis and the results from the FGDs. Table 3 provides the odds ratios of the estimated regressions for the four dependent variables.

4.1. Households' Say in Plantation Activities

Our first hypothesis states that households in the villages adjacent to the FSC-certified, private plantations are more likely than households in the villages adjacent to the state-owned, non-certified plantation to report having a say in the activities of the plantations. The results in column (a) of Table 3 show a statistically significant positive relation between households living in the villages near by the private, FSC-certified plantations and the odds of households to report that they have a say in plantation activities. Hence, we fail to reject Hypothesis 1. The odds ratio of 2.23 indicates that the odds of households in the villages adjacent to the FSC-certified, private plantations reporting that they have a say in plantations' activities are 123% higher than the odds for households in the villages adjacent to the non-certified, state-owned plantation.

Furthermore, we asked households in which activities of the plantations they have a say and the ways through which they voice their say. The most common activities in which households reported to have a say include expansion of plantations and planting of new areas, investments in community development projects such as roads and schools by plantation owners and the use of chemicals in plantation and timber processing activities. The most common ways of having a say for villagers are through the village chief and village meetings.

4.2. Households' Satisfaction with Their Say in Plantation Activities

Households who responded "yes" to the survey question for Hypothesis 1 were asked about their extent of satisfaction with their say in the activities of the plantation in their village. Hypothesis 2 states that households in the villages near the certified, private plantations are more likely than households near the non-certified, state-owned plantation to report that they are satisfied with their say. The results in column (b) show that odds ratio is 18.55 and is statistically significant different from unity. Hence, we fail to reject Hypothesis 2. The high odds ratio is due to the small number of households (78) that reported to have a say in plantation activities and the fact that the dependent variable is a categorical variable with five categories. The odds ratio is computed for the highest category ('very satisfied') versus the other categories, resulting in the case of rare events where some of the response categories (in this case the category 'very satisfied' and 'very dissatisfied') have only few observations (only four and three households respectively) and therefore the standard error is large.

4.3. Plantation Company Addresses and Responds to Community Complaints and Grievances

Hypothesis 3 states that households in the villages adjacent to the FSC-certified private plantations are more likely than households in the villages adjacent to the non-certified, state-owned plantation to report that the plantations respond to community complaints and grievances. There is a statistically significant positive relation between households living in the villages nearby the certified, private plantations and the odds of households to report that the plantation in their village addresses and responds to community complaints and grievances (column (c)). Hence, we fail to reject Hypothesis 3. The odds ratio of 3.38 indicates that the odds of households in the villages adjacent to the FSC certified, private plantations to report that the plantations in their villages address and respond to community complaints and grievances are 238% higher than the odds for households in the villages adjacent to the non-certified, state-owned plantation.

4.4. Extent Households Agree with the Statement: “the Plantation in Your Village is a Friendly Good Neighbor”

Hypothesis 4 is about the relation between ownership and certification status of plantations and to what extent households in the nearby villages agree with the statement: “the plantation in your village is a friendly good neighbor”. Households in the villages adjacent to the certified, private forest plantations are more likely than households in the villages adjacent to the non-certified, state-owned plantation to agree with the statement. The odds ratio is 1.51 and statistically significant. Hence, we fail to reject Hypothesis 4.

4.5. Relation between Household Characteristics and Household Participation

Given the expected relationships between household socio-economic characteristics and having a say (a proxy for participation) in forest plantation activities, Hypothesis 5 concerns the relation between household characteristics (sex of head, whether a household member works for the plantation in the village and household income) and the likelihood of households reporting having a say in plantation activities. The results shown in column (a) of Table 3 show that male-headed households are more likely than female-headed households to report having a say in plantation activities. Households with a member working for the plantations and households who earn a higher proportion of their income from agriculture are more likely than their counterparts to report having a say in the plantations’ activities. However, households engaged in collecting forest products are less likely than those who do not collect forest products to report to have a say in the activities of the plantations. We did not find a statistically significant relation between household income and the odds of households reporting having a say in plantation activities.

4.6. Sensitivity Analyses

We examine the sensitiveness of our results to alternative specifications as follows. First, we exclude the village dummies and estimate the models to assess the sensitiveness of the estimates to the exclusion of the village dummies. As can be seen in Table A1 in Appendix A, the odds ratios are roughly the same as those of the odds ratios of the regressions with the village dummies reported in Table 3. This suggests that it is unlikely that our results are driven by any potential (un)observable time invariant differences between the study villages which might otherwise explain the differences. Second, we estimate the logit models using the observations for which responses are non-missing across the four specifications. This results in exactly the same number of observations across the three specifications. (Note that the model in Column (b) in Table 3 uses households who replied ‘Yes = 1’ to the survey question in Column (a) and as a result has the smallest number of observations. However, as this estimation is based on responses to a follow up question, it cannot be considered as the model with the highest number of missing observations.) The results of this exercise are shown in Table A2 in Appendix A and our results remain robust.

4.7. Community Perceptions about Participation

In the FGDs in each study village, we asked the participants about the ownership and use type of the land before the establishment of plantations (see Table 4). While participants in Idete indicated that before the plantations were established the land was under state ownership, participants in the other three villages indicated that the land was village land. Participants in the villages of Idete and Nzivi reported that the land before the plantations was used for agriculture. On the other hand, in the villages of Mapanda and Kihanga, it was indicated that the land prior to the plantations was grassland.

To obtain insights about community participation, we asked participants whether villagers were consulted about the establishment of the plantations in their villages, and whether villagers have a say in the community projects of the plantations (which is a community level analog of the question of whether a household has a say we asked in the survey). Except in the village of Kihanga (where the plantation was established long before the village existed), participants in the FGDs reported that

villagers were consulted before the plantations were established. In addition, all communities reported that they have a say in the community projects of plantations.

Table 4. Community Perceptions about Participation, Pre-plantation Land Use and Tenure Type.

Village	Plantation Owner	Land Ownership before Plantations	Land Use Type before Plantations	Were Villagers Consulted before the Plantations Started?	Does the Village Has a Say in the Community Projects of Plantations?
Idete	Private, FSC certified	State	Agricultural land	yes	yes
Mapanda	Private, FSC certified	Village land	Grass land and forest	yes	yes
Kihanga	State, non-certified	Village land	Grass land	NA ^a	yes
Nzivi	State, non-certified	Village land	Agricultural land	yes	yes

Note: ^a The plantation was established before the establishment of the village. Source: Focus Group Discussions and [56,65].

5. Discussions and Conclusions

In recent years the relations between forest plantations and adjacent communities have come under increased scrutiny by researchers and NGOs. Community participation can influence the outcomes of plantation's operations and shape plantation-community relations. Understanding community perceptions about their participation in plantations' activities helps to design effective governance structures regarding land use change and planning. We examined how local communities experience their participation in the activities of forest plantations adjacent to their villages in Tanzania. Using case study data from households living nearby FSC-certified, private plantations and a non-certified, state-owned forest plantation, we explored differences in community participation in the plantation's operations. Our results indicate that households adjacent to the FSC-certified, private plantations in the study villages are more likely than households adjacent to the non-certified, state-owned plantation to report having a say and being satisfied with their say in the plantations' activities. In addition, households near the certified, private plantations are more likely than households near the non-certified, state-owned plantation to report that the plantation company addresses and responds to community complaints and grievances, and to view the plantation as a 'friendly good neighbor'. These results suggest that stakeholder, more specifically community, inclusion or participation in plantation management is more likely in the case of the FSC-certified, private plantations. Results from FGDs show that villagers have a say in the community development projects of plantations in all villages. These projects include building schools, health centers and road and bridges.

Given the setting of our study, we have three important lessons learned. First, since forest plantations are often established on village lands that used to be governed by customary rules, investors in plantations may commit resources to cultivate relations with villagers to gain, control, legitimize and maintain their access to plantation lands [24]. Access theory posits that actors use various mechanisms and processes to secure and maintain their access to resources needed for their investments. In developing countries with weak enforcement of property rights, private plantations are more likely than state-owned plantations to involve villagers in plantation's activities in order to secure and guarantee their access to land and labor resources. Such community engagement occurred in the study area, with the private plantation company (GR) undertaking community relations and community development projects using dedicated community relations staff [61,63,65,66]. The private plantation company in this case explicitly mentions the importance of its relationships with local communities, in terms of community projects and employee satisfaction and retention, as a way to manage risks such as fires and personnel grievances [65] (p. 17, p. 45) and avoid conflicts, for example concerning land tenure [63] (p. 27). Our results confirm that the private forest owners were able to use community participation as a route to legitimacy and to increase acceptance by locals as also observed by other studies (e.g., [67–69]). Hence, we also find support for the claim that plantation companies can use community involvement to secure a "social license" for their operations, in which legitimation plays a key role [70].

Second, given the motives of private companies to maximize profit, adhering to corporate social responsibility as part of a (certification) strategy that requires community participation can also add to the incentives of certified, private plantations to engage local villagers in plantations' activities. As a non-state market driven governance system, forest certification uses the timber product value chain to incentivize and coerce plantation companies to comply with principles and criteria of sustainable forest governance [20,71]. Shareholders, donors and investors in plantation companies may require community participation for sustainable investments [72,73]. Timber plantation management models that engage local communities result in the highest economic returns to plantation companies and improve local livelihoods, leading to avoidance of potential conflicts over land [31,32]. Van der Meer Simo et al. [32] further found that local households were open to expansion of plantation models that provide beneficial effects to local villagers by incorporating their interests. A participatory approach is important because rural households highly depend on land as a source of livelihood and may contest plantation development unless their interests are integrated and recognized in land use and plantation development processes [74,75]. In the case of the private plantation in our study, voluntary certification as a demonstration of sustainability was a prerequisite of its major investors [76,77]. The private plantation company also proclaimed the importance of sustainability certification (FSC) as part of its strategy of sustainable development of the areas where it operates [65]. The participation of local communities in the activities of forest plantations may also reduce the plantations' vulnerability to and associated costs resulting from pressures from socially and environmentally oriented NGOs, which may otherwise lead to reputational risks. As such, community participation may enable private forest plantation companies to reduce these risks for their businesses. The company's viewpoint in this case mirrors this assumption, with GR stating that "close co-operation with local stakeholders, leading development banks and progressive NGOs provide important inputs that are highly beneficial for our operations" [66] (p. 2) and that "GR aims to mitigate all negative impacts, it actively manages the risks associated with its operations, and seeks to mitigate (and where mitigation is not possible minimize) negative impacts. GR aims to have an overall positive impact on the environment, surrounding communities, and stakeholders" [63] (p. 3).

Third, even though national regulations on forest governance require all types of forest owners to involve local communities, inefficiencies and lower incentives in state-owned enterprises in developing countries imply that state-owned plantations are less likely to implement this on the ground [78]. Our findings are in line with those of Cabbage et al. [35], Dare et al. [34] and Szulecka et al. [33], who found that FSC-certified forest plantations were positively assessed in terms of participation and engagement by stakeholders. Our study goes a step further and compares private, certified plantations with a non-certified, state-owned plantation to tease out the correlation between ownership and certification of plantations and experiences of community participation.

The results of our case study have wider implications. First, our results suggest that creating incentives for encouraging plantations to comply with national guidelines of sustainable management of forests and monitoring plantations' compliance with these guidelines can improve community engagement in plantation management. Second, we find a significant correlation between forest certification and the likelihood of community engagement in plantation management as reported by others as well (e.g., [34,35,79–82]). Our results support the argument that market-based forest governance mechanisms, such as forest management certification, can complement top-down approaches of state policy instruments of sustainable forest management to foster community participation in forest management as already mentioned by Bartley [83] and Bernstein and Cashore [84].

The differences in the likelihood to reporting having a say in plantations' activities for households with different socioeconomic and demographic characteristics suggests that some social groups (e.g., women-headed households) are less likely to participate in plantation activities. Our results suggest that not all community members are equally likely to be represented in plantation management. This finding is in line with the results of studies on community participation in the governance of forests and other natural resources [25,85–87]. Participation of women in governance of community

forests in developing countries was limited because of gender norms and even in situation when women participate, they have a passive role [88].

The following points warrant due consideration regarding our results. First, there is a need for caution in interpreting our results since community participation is not an end by itself. Our results show a positive correlation between the private, FSC-certified plantations and community participation in the study area. This does not necessarily imply that private, FSC-certified plantations lead to positive socio-economic outcomes for local communities. Whether community involvement in the governance of forest plantations improves socio-economic outcomes for local villagers depends partly on the purpose for which it is used and is beyond the scope of this study [67,68,87,89]. In this regard, the social and economic outcomes associated with different forms of plantation governance and participation are of interest for future research. Community participation can be used as a means to legitimize plantations' access to land and labor and can be a tool to dispossession of locals unless the rights and benefits of local villagers are protected [67,69]. Weak community participation (consultation) has often been found to be tokenistic with no active involvement of communities in activities of forest owners that can potentially affect communities [67,89]. In our study, households in the villages nearby the certified, private plantations are more likely to consider the plantations "a friendly good neighbor" and this suggests that the participation of households is not merely tokenistic. Further studies are needed to better understand the relative merits of weak and strong participation in promoting the active involvement of communities in forest governance. Second, we used subjective measures of community participation based on the perceptions of households about their say in plantations' activities. Perceptions may be affected by other factors not directly related to community participation in plantation activities such as, wage levels and employment opportunities in plantation companies and other economic opportunities. Future studies could also incorporate quantitative measures of community participation (such as counting the number and type of participants in community meetings, the frequency of community meetings, and the gender composition of (active) participants) and triangulating those with results of perceptions-based data for identifying possible biases. These will also help to uncover the role of socio-economic and demographic characteristics in community participation. Third, our study compares FSC-certified private plantations with a non-certified state-owned plantation, as there are no FSC-certified state-owned plantations in East Africa. Hence, our results provide insights about the links between community participation and the combined effects of ownership and certification status of the plantations. An important line for further research would be to separate ownership and certification status of plantations and their link with community participation. Refining the indicators of community participation could also provide more in-depth insights. Fourth, the number of plantations and villages in our study is limited, and hence it is not possible to generalize our findings to other plantations in different contexts. Extending the analysis by including more plantations and villages within different contexts is an important avenue for future research.

Supplementary Materials: The following are available online: <http://www.mdpi.com/1999-4907/11/7/782/s1>. the STATA data file used for the econometric analyses of the study and a description of the variables and the STATA commands used for the main regressions reported in Table 3 of the paper.

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Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. Excerpt of Survey Questions from Household Questionnaire.

6.12	Do you think that the plantation company in your village responds to and addresses the complaints /grievances from the village?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Do not want to answer <input type="checkbox"/> Not applicable
6.23	Do you have a say in the activities of the plantation company in your village?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Do not want to answer
6.23.1	If yes to 6.23, how do you have your say in the activities of the plantation company? (More than 1 answer possible)	<input type="checkbox"/> In meetings <input type="checkbox"/> Through letters <input type="checkbox"/> I'm a representative <input type="checkbox"/> As a worker <input type="checkbox"/> Through the council <input type="checkbox"/> Through the village chief <input type="checkbox"/> Through village development committee <input type="checkbox"/> Other, specify:
6.23.2	If yes to 6.23, to what extent are you satisfied about your say in the activities of the plantation company?	<input type="checkbox"/> Very dissatisfied <input type="checkbox"/> Dissatisfied <input type="checkbox"/> Neutral <input type="checkbox"/> Satisfied <input type="checkbox"/> Very satisfied <input type="checkbox"/> Do not want to answer <input type="checkbox"/> Not applicable
To what extent do you agree with the following statement?		Strongly disagree Disagree Neutral Agree Strongly agree Not applicable Do not want to answer
7.34	"The plantation company is a 'friendly' good neighbor."	

Note: In the survey questions in the original questionnaire the phrase "the plantation company" in the tables above was replaced with "Green Resources" for the respondents in the villages adjacent to the private, FSC-certified company. For respondents in the villages adjacent to the non-certified, state-owned plantation, the phrase "the plantation company" was replaced by "Sao-Hill".

Table A2. Odds Ratios of Estimated Logit Models without Including Village Dummies.

Variables	Household Has A Say in Plantation Activities (a)	Extent of HH Satisfaction With Its Say in Plantation Activities (b)	Plantation Company Responds to Community Complaints and Grievances (c)	Plantation is A 'Friendly Good Neighbor' (d)	
Private, FSC (1 = yes)	2.389 *** (0.516)	14.465 *** (12.10)	3.566 *** (0.193)	1.532 ** (0.217)	
Age of head	0.991 (0.019)	1.022 *** (0.007)	1.032 * (0.018)	1.005 (0.005)	
Sex of head (1 = male)	2.588 *** (0.738)	0.165 (0.291)	1.743 *** (0.289)	0.800 (0.095)	
Education of head	Primary	0.598 (0.193)	7.139 *** (3.400)	2.388 (2.025)	1.608 * (0.364)
	Secondary	0.728 (0.488)	21.62 *** (7.431)	1.821 (2.114)	2.874 (1.908)
	College and above	1.028 (1.763)	25.51 (48.93)	6.437 * (5.614)	2.119 (1.457)
Household size	1.102 (0.101)	1.165 (0.151)	1.046 (0.046)	1.083 (0.067)	
Total farm size	1.066 (0.057)	0.752 * (0.108)	0.835 *** (0.017)	0.947 (0.099)	
Employed by plantation (1 = yes)	4.051 *** (1.431)	1.253 (0.803)	1.253 (0.450)	1.777 (1.003)	
Forest use (1 = yes)	0.526 * (0.150)	1.947 (0.880)	0.539 (0.378)	4.053 *** (0.700)	
Total household income	0.995 (0.014)	0.924 ** (0.025)	1.129 ** (0.042)	1.036 * (0.017)	
Share of agriculture income	1.013 ** (0.004)	0.982 (0.016)	0.998 (0.008)	1.001 (0.003)	
Share of business income	1.009 (0.008)	0.995 (0.014)	1.000 (0.013)	1.001 (0.006)	

Table A2. Cont.

Variables	Household Has A Say in Plantation Activities (a)	Extent of HH Satisfaction With Its Say in Plantation Activities (b)	Plantation Company Responds to Community Complaints and Grievances (c)	Plantation is A 'Friendly Good Neighbor' (d)
Share of off-farm income	1.003 (0.003)	1.004 (0.009)	1.006 (0.006)	1.009 (0.005)
Share of forest income	1.007 (0.009)	0.995 (0.017)	0.986 (0.013)	1.001 (0.007)
Constant	0.0919 (0.117)	-	0.0572 *** (0.035)	-
Village dummies	No	No	No	No
Pseudo-R ²	0.093	0.176	0.112	0.030
Observations	261	78	234	274

Note: Robust standard errors in parentheses are clustered at village level. ***/** denote statistically significantly different from 1 at 10/5/1 % levels respectively. In column (a), the dependent variable is the response of the household to the question: "Do you have a say in Green Resources' (Sao-Hill's for households in the villages adjacent to the non-certified, state-owned plantation) activities?" (1 = yes); In column (b), the dependent variable is the extent of satisfaction of a household with its say in the activities of the plantation in its village (i.e., if the household reported to have a say in plantation activities); In column (c), the dependent variable is the response of a respondent to the question: "Do you think that the plantation company in your village responds to and addresses the complaints /grievances from the village?" (1 = yes); In column (d), the dependent variable is to what extent a household agrees with the statement: "the plantation in your village is a friendly good neighbor".

Table A3. Odds Ratios of Estimated Logit Models using the Observations for which Responses are Non-missing across the Four Specifications.

Variables	Household Has A Say in Plantation Activities (a)	Extent of HH Satisfaction With Its Say in Plantation Activities (b)	Plantation Company Responds to Community Complaints and Grievances (c)	Plantation is A 'Friendly Good Neighbor' (d)
Private, FSC (1 = yes)	2.512 *** (0.395)	20.611 ** (20.127)	3.473 *** (0.373)	1.501 *** (0.136)
Age of head	0.994 (0.019)	1.026 *** (0.007)	1.033 ** (0.017)	1.002 (0.002)
Sex of head (1 = male)	3.778 *** (1.029)	0.176 (0.338)	1.793 ** (0.351)	0.752 (0.191)
Education of head	0.467 ** (0.173)	8.809 *** (3.278)	2.679 (2.071)	1.848 ** (0.519)
Primary	0.478 (0.357)	49.351 *** (19.174)	1.830 (2.159)	2.924 (2.847)
Secondary	0.864 (1.630)	81.671 ** (160.582)	7.628 ** (5.825)	4.334 (5.235)
College and above	1.108 (0.094)	1.216 (0.152)	1.069 (0.055)	1.048 (0.092)
Household size	1.068 (0.038)	0.757 * (0.111)	0.799 *** (0.056)	1.005 (0.086)
Total farm size	3.348 ** (1.443)	1.512 (1.170)	1.259 (0.445)	1.922 * (0.668)
Employed by plantation (1 = yes)	0.365 (0.266)	3.730 ** (1.617)	0.672 (0.835)	6.882 *** (4.096)
Forest use (1 = yes)	0.992 (0.014)	0.944 ** (0.021)	1.103 ** (0.056)	1.023 ** (0.008)
Total household income	1.011 (0.007)	0.976 (0.018)	0.998 (0.008)	0.994 (0.007)
Share of agriculture income	1.006 (0.009)	0.989 (0.014)	1.000 (0.013)	0.992 (0.008)
Share of business income	1.003 (0.004)	1.002 (0.010)	1.006 (0.005)	1.003 (0.009)
Share of off-farm income	1.004 (0.012)	0.992 (0.018)	0.987 (0.013)	0.995 (0.009)
Share of forest income	0.126 (0.209)	-	0.041 *** (0.015)	-
Constant	Yes	Yes	Yes	Yes
Village dummies	0.110	0.192	0.114	0.035
Pseudo-R ²	232	76	232	232
Observations				

Note: Robust standard errors in parentheses are clustered at village level. ***/** denote statistically significantly different from 1 at 10/5/1 % levels respectively. In column (a), the dependent variable is the response of the household to the question: "Do you have a say in Green Resources' (Sao-Hill's for households in the villages adjacent to the non-certified, state-owned plantation) activities?" (1 = yes); In column (b), the dependent variable is the extent of satisfaction of a household with its say in the activities of the plantation in its village (i.e., if the household reported to have a say in plantation activities). Hence, the number of observations are smaller than those in the other columns; In column (c), the dependent variable is the response of a respondent to the question: "Do you think that the plantation company in your village responds to and addresses the complaints /grievances from the village?" (1 = yes); In column (d), the dependent variable is to what extent a household agrees with the statement: "the plantation in your village is a friendly good neighbor".

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