Article

Rural Residents' Participation Intention in Community Forestry-Challenge and Prospect of Community Forestry in Sri Lanka

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Abstract: The contribution of local communities has become widely recognized as a better alternative in forest management than the traditional command-based control approach. However, several years later of implementation, most programs were failed due to a lack of community participation, imposing an uncertain future for community forestry. This paper examines rural Sri Lankans' participation intention in community forestry (CF) program by using the Probit regression model. Randomly selected 300 individuals representing both CF members and non-CF members were interviewed for the study. The study results indicate that rural residents' intention in future CF program negatively correlated with the participation status (CF membership) of individuals. Accordingly, CF members show less participation intention in future CF program than non-CF members. Socio-economic variables such as education level ($p < 0.01$) and the occupation of head of the household ($p < 0.05$) and total household income ($p < 0.01$) have significant influences on individuals' participation intention in CF. In addition, non-monetary benefits derived from CF and perception on the product regulation and conflict mitigation are also appeared to significantly and positively affect villagers' intention. The findings also revealed the knowledge gap on the purpose of the CF program and CF policy design. Hence, require immediate attention to improve awareness. Moreover, failure to raise local people's participation intention in CF may indicate inadequate or ineffective government policies. Therefore, the Department of Forest Conservation should take sound measures to ensure that community-based forest management policies are consistently implemented at different administrative levels across the country and its rightness should be evaluated strictly.

Keywords: forest management; community involvement; future intention; Sri Lanka

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1. Introduction

Community forestry (CF) is increasingly recognized as one of the key alternatives to centralized state-led management to tackle the loss of forests and achieve sustainable use of forest ecosystems, as well as social well-being in the developing world [1]. Currently, more than half a billion people in developing countries are dependent on the forest managed by CF for their livelihoods [2]. Moreover, around 732 million hectares of forest representing 62 countries in the developing world (28% of the world's forests) are managed under community-based approaches [1,3]. Further expanding the scale of CF is of great significance in developing countries.

Though CF programs have advantages as improving forest condition, social stability, and rural incomes [4,5], and progressively reducing deforestation rates than protected forests [6], and supporting maintenance and restoration of forest resources [7], the community-based approaches have had inconsistent impacts, of which enhanced income and livelihood benefits have been questioned especially, in developing countries in Asia [8]. Several studies have shown a lack of transparency in financial and product extraction

rights, and genuine high-level government support for inadequate democratic governance, making CF a just slogan for rural communities in developing countries [6,9,10]. However, any definition of success is proclaimed by the evaluation standard, indicators used, and the perspective of the people making decisions. Consequently, it is increasingly recognized that the success of the CF program needs to be measured not only by adopting ecological and socio-economic indicators but also by involving broader social processes and perceptions [11].

The fundamental idea of CF is that communities are in the prime position to protect and manage forest resources when they see that this is in their interests [12,13]. They are used to sustaining livelihood on the utilization of natural resources and land use. Therefore, local people are both the main contributors and the most affected groups in CF programs [5,6,14]. Being a member of CF is a voluntary process where people can share information, express views, and communicate desires individually or through coordinated groups and have an option to influence decisions or the outcomes of the matter concerned [15]. In conservation means, involving local people throughout the organization and decision-making processes is considered as effective participation or valid membership. Therefore, for the success of CF, more attention should be paid to local people's intentions and expectations toward the program, especially in areas where suffering conflicts between forest management and local economic development with a large forest dependence population.

The Sri Lanka Community Forestry Program (SLCFP) is one of the most significant community-based forest management programs in Sri Lanka because of its massive scale and potentially enormous impact [16]. The program, which commenced with financial support in 2012 and ended in 2017, was aimed to increase community involvement and development. The program has been implemented in 18 districts across 167 CF sites, with a participation of approximately 125,000 individuals. Nearly 23,500 ha of forest lands were involved respectively as a buffer zone for planting, farm wood lots, and enrichment planting. In 2020, three years after the end of the program, most CF sites have been poorly operated due to the absence of community participation. This phenomenon has been observed in several previous studies which highlighted ineffective community participation in the CF program in Sri Lanka [17–19] and advocated a better understanding of factors influencing local peoples' intention to hold the community forestry membership in the future.

Globally, numerous studies have been conducted to explore how to promote the participation of local people in forest management [20,21]. Soe et al. [21] revealed that remoteness of the village, resource availability, as well as people's awareness of the seriousness of deforestation and the need for food security, would promote CF participation in South-Central Myanmar. Participation in CF may vary according to the nature of people's interests [22,23]. Rasul et al. [24] revealed that community involvement in participatory forestry practices differed according to the approach adopted. Also, levels of participation may vary with simple involvement as a member of an interest group, active participation in decision making [25], genuine participation (local people have effective authority), or pseudo participation (local people play a minimal role) [26].

Due to the increasing attention on sustainable management of forest resources in Sri Lanka, the challenge of discovering how to motivate and support rural communities' participation in community-based forest management has become crucial. Although the Department of Forest Conservation (DFC) applied the CF approach for forest management, informative evidence regarding the potentiality of local communities' participation in future CF programs is not available. This weakness might lead policymakers to be unable to design appropriate strategies, failed to provide adequate incentives to promote local communities' participation in CF programs. To address this challenge and fill the knowledge gap, we aim at identifying dominant factors that influence rural residents' intention to keep their CF membership in the future or obtain their CF membership as new participants, by checking whether their participation status (as an old CF member,

or a new CF member) have significant effects on their intention of participation in a new program. We also studied the impacts of rural residents' knowledge, and perception of the CF program, and socio-economic characteristics on their intention by following the findings of [17–19].

To our narrow understanding of the existing research, we find our current study is novel in two aspects. Firstly, we examine the determinants of rural residents' CF membership and its subsequent effects on participation intention in the future by using quantitative methods. Previously, very few quantitative studies address the participation intention of CF in developing countries [27] with no studies conducted in Sri Lanka. Secondly, we provide insight into rural Sri Lankans' perception and knowledge of the CF program. Most of the previous works in Sri Lanka were narrowly focusing on the impact of CF on livelihood without examining the rural residents' perceived status and knowledge of CF program [5,28].

2. Materials and Methods

2.1. Conceptual Framework Specification

Participation is a very broad concept. Community participation has been defined as “a process in which local communities are involved to play a role in issues affecting them” [29]. Rural residents' participation intention in a program such as CF is an effort to achieve profitable rural livelihood [30]. Therefore, the standard economic models used to assess participation intention are based on profit maximization theory, utility maximization theory, or some expanded versions such as the expected profit or expected utility maximization theories [31]. Friedman [32] emphasized that the theoretic assumption of profit or utility maximization can be effective in predicting behavior even if rural residents do not really maximize profits or utility, where the value of the profit or utility maximization is derived from human behavioral prediction. We formulate our conceptual framework based on profit maximization theory rather than utility maximization theory because rural residents in developing countries typically pay little or no attention to the amenity values, an excess when measuring the utility over the profit [33,34].

It is argued that individual participation behaviors are influenced by their knowledge, social norms, perceptions, and rules, in addition to the attributes and endowments of those being acted on [2]. The relationships among individual knowledge, perceptions, behavioral intentions, and behaviors in the context of environmental and social issues are much studied and debated topics. According to the theory of planned behavior, individuals' behavioral intentions are influenced by their attitudes, subjective norms, and perceived behavioral control and not only by their knowledge [35]. On the other hand, several researchers argue that increased related knowledge leads to the adoption of sound behavioral practices [36–38].

Focusing on the findings derived from the existing literature, we propose a conceptual framework that examines factors affecting rural resident's intention to be a member of the CF program and later to continue their participation in the future program. Figure 1 presents our proposed integrative framework graphically.

Figure 1. Conceptual framework of the study.

Our conceptual framework contains three main components, namely individual knowledge of CF, perception of CF, and socio-economic factors. As shown in the framework, three categories of factors are interactive with each other. Several previous studies highlighted that the individual socio-economic factors are the most critical factors affecting their participation in CF [20,39]. Hence, this study also involves socio-economic factors as the main determinants affecting rural resident's intention to act or participate in the CF program. There are defined different types of and different degrees of participation in existing literature [40,41]. Consider the different types of participation, active members, other stakeholders, and non-CF members are common in most of the CF sites [42]. However, rural residents' willingness to be active members in the program varies across situations (i.e., socio economic condition) and actions (i.e., membership) as well as the knowledge and perception. All these factors are combined together to investigate the residents' different interests of the previous CF, and then their divergences in participation intentions in the future CF program.

The diagram (as shown in Figure 1) illustrates a top-down flow in the development of intentions to action (i.e., become a new member in CF) and future behavior (hold the membership in future), and involving new variables exceeding those considered in the current study to reveal dynamic process. As an instance, situational factors such as environmental dynamics (rainy seasons, winter), natural and physical hazards (earthquakes, floods, and hurricanes), social pressure (unemployment), and economic constraints (poor governance and corruption, barriers to trade) that appeared to affect individual behaviors.

Institutions are organizations with the ability to use force to compel or incentive to encourage people to follow rules and obey commands [43]. Institutions, thus, can empower and disempower people in ways that we might not expect. Local policy processes in forestry that implemented by DFC and local governments, influenced the local grassroots actors (local communities). Most of the time it may lead to less responsive local governance and negative relationship [44]. Therefore, we include institutions and policies in our

framework since their influence on the rural residents' participation intention might be significant and need to be tested.

2.2. Study Area

The study was conducted in the Kandy District. Kandy is a pilot project district of the CF program with a start in 2013, based on the SLCFP. Kandy is situated in the central highlands of Sri Lanka between 69°56' and 70°29' N and 80°00' and 80°25' E. It encompasses an area of 190,630 ha, ranging from 100 m to 1600 m in altitude. The topography of the district consists of mountain ranges and valleys. Kandy has an average temperature of 28 °C with an annual climate ranging from 15 °C to 32 °C. The highest temperatures are recorded in July and August. The annual rainfall in the District varies from 1100 mm to 3300 mm with approximately 1600 mm in the east [45]. Approximately 41,521 ha or 21% of the total land areas in Kandy is covered with forests. Among these, 23,317 ha is dense forest, and 10,759 ha are open forest cultivations. Most forest coverage can be seen in the Northeast to Southeast of the District. The dominant forest type is the tropical semi-evergreen forest, followed by the Montane and sub-Montane Forest.

The total population of the district is 1,416,000 [46]. Per capita land use is 0.15 ha. Due to pressure on the use of land, natural forest coverage in Kandy District has drastically decreased throughout the last two decades [47]. Land clearing for agriculture (i.e., *Chena* cultivation), frequent forest fires, and illicit felling are the major driving forces for deforestation and forest degradation [48].

With implementing the five-year management plan (2013–2017), nine CF sites were established in eight different forest zones in the Kandy district. Based on a systematical sampling method, we selected three out of the nine CF sites, namely Bambarabedda, Kumbukgolla, and Bambarella, as our sample sites, purposefully representing socio-economic and geographical variations, and commonalities of the CF program executed in this district and the whole Sri Lanka. Firstly, these three CF sites were located in the same forest type namely semi-mixed evergreen. The semi-mixed evergreen forest is the main forest type in Sri Lanka where the majority of CF sites were established [5]. Moreover, approximately 71.3% of the total lands at these sites are state-owned forest lands (managed by the Department of Forest Conservation or Department of Wildlife Conservation) and the lands belong to the Temple of the Tooth (Buddhist sacred place). Therefore, the extent of private lands is comparatively low (less than 0.2 ha) and generates local rural residents' high demand for forest land [49]. Several studies highlighted that lack of private lands is the main driving force for rural residents to join the CF program in Sri Lanka [50]. Secondly, about 30% of the population living in this area is under poverty [51]. Poorest households are more forest-dependent for their daily needs [52]. One of the main goals of SLCFP was poverty alleviation of the rural people living in dry and intermediary zones of Sri Lanka [53]. Hence, our study site selection was compiled with the main objectives of SLCFP. Under the SLCFP, enrichment planting has been launched to enrich the existing and degraded protected forests [53]. Therefore, our study selects CF sites that were established in two protected areas classified under the Reserve Forest and Conservation Forest. For example, the Bambarabedda CF site located in Bambarabedda Weliketiya Mukalana Forest Reserve and Kumbukgolla and Bambarella CF sites were established in Knuckles Conservation Forest. Before establishing the CF sites, all protected forests were restricted from the access and extraction of forest resources. The CF is the only way for villagers to get access and extraction rights under authorized permission. Therefore, our study site selection was compiled with a conservation status of the majority of study sites under the SLCFP.

2.3. Data Collection

We used a two-stage sampling method to confirm sample households based on a general name list of all households in three sample CF sites collected from the Grama Niladhari Office (i.e., Grama Niladhari Division is the smallest administrative division in Sri Lanka). Accordingly, the population in Bambarabedda is 663, Kumbukgolla 279, and

Bambarella is 326. We firstly subdivided the households into two groups, respectively CF members, and non-CF members, by their membership (number of registered members) recorded on the CF Management Plan and then formed two (correspondingly specific name lists. We secondly selected sample households respectively from the name list of CF members and the other name list of non-CF members. A study by United Nations Children's Fund highlighted that to achieve equal precision for all sites used for the demographic and social survey, the study may select the same number of households in each site [54]. Accordingly, 100 households from each CF site (50 CF members and 50 non-CF members) were counted by selecting every second household from the name lists of two groups. Totally 300 households were selected to participate in the survey. None of the households refused to participate in the survey.

A structured questionnaire, consisting of three sections, was developed to collect the data. The first section is to investigate the socio-economic status of respondents, including gender, age, and education level of the head, household heads' occupation, landholding by households, annual non-forest income, water availability for agriculture, and distance for the forest.

The second section is to gather the information of the benefit and losses of CF, of which the respondents were asked to answer the three questions namely. (1) How many monetary benefits do you receive from CF? (2) How many other benefits do you receive from CF? and the third question asked to know whether the CF program brings losses or not (as shown in Table 1). From those questions, monetary benefits are the benefits that members directly received from the CF program and are also called the initial direct economic benefit. It includes financial payments of FD on the works done by CF members. CF members are entitled to claim for forestry activities (land preparation, planting, and maintenance) and community development activities (construction and maintenance of public places), and payments are being done according to FD norms. The 'other benefits' were classified as the benefits derived from the CF other than the direct monetary benefits. Those benefits include access to water from the forest, infrastructure development (maintaining public roads, provide households equipment), support to community organizations (provide sportswear, books), training programs, etc. The losses refer to all those possible economic losses caused by CF. For instance, restriction of grazing, product extraction may cause losses to some individuals.

Table 1. Benefits and Losses derived from CF program.

Variable	Description	Value (% of Respondent)		
		CF Members	Non CF Members	Total
<i>Money:</i> How many Monetary benefits do you receive from CF?	Nothing	29	100	65
	Low	33	0	17
	Medium	29	0	14
	High	9	0	4
<i>Benefit:</i> How many other benefits do you receive from CF?	Nothing	19	35	27
	Low	24	39	31
	Medium	33	24	29
	High	24	3	13
<i>Loss:</i> CF program bring you Losses?	No	89	87	88
	Yes	11	13	12

The third section of the structured questionnaire is delineated to collect the data related to perception and knowledge of CF policies, product regulation, and its impacts. During the study, the residents' perception and knowledge were measured on a nominal scale and rated using 2-point or 3-point scales.

The data on socio-economic variables were collected in the year 2013 and 2020 respectively. The other two types of variables (benefit and losses of CF, and perception and knowledge on CF program) data were collected in the year 2020. We usually conducted

our interviews with the head of the household to obtain a sound understanding of the household. However, the other family member being elder than 18 years old and familiar with the family situation was also interviewed by us when the head of household was not available.

2.4. Analysis Methods

Collected data were analyzed by using descriptive statistics to present the intention of participation in CF, perceptions on CF, and knowledge of CF and socio-economic profiles of the residents. The econometric analytical methods were then used to explore the factors affecting the rural residents' intention of participation in CF and to continue their membership or to be a new member. The econometric regressions were executed on STATA version 15.

Two different Probit regression models were employed to assess the factors affecting the rural Sri Lankans' participation intention in community forestry, in which the first model estimates whether and why rural residents are members of the CF and the second model estimates whether and why rural residents have the participation intention in the future CF program. In addition, for a robustness check, Logit models were estimated corresponding to Probit models [55]. The first Probit model is specified in Equation (1). Socio-economic data collected in the year 2013 were used in the analysis.

$$MCF = \alpha_0 + \alpha_1 Gen + \alpha_2 Age + \alpha_3 Edu + \alpha_4 Occu + \alpha_5 Land + \alpha_6 Inc + \alpha_7 Water + \alpha_8 Dist + \delta \quad (1)$$

where, *MCF* is the residents' member in CF (1 = yes, and 0 = otherwise), α_0 is the intercept, $\alpha_1 - \alpha_8$ are the coefficient of independent variables (socioeconomic factors in Table 2), and δ is the normally distributed error term.

Table 2. Socio-economic status of the respondents.

Variable	Description	CF Members (2013)	Non-CF Members (2013)	Total (2013)	CF Members (2020)	Non-CF Members (2020)	Total (2020)
<i>Gen</i>	Male (%)	84	85	84	83	85	84
	Female (%)	16	15	16	17	15	16
<i>Age</i>	18 ≤ 25 (%)	4	2	3	2	1	1
	26–30 (%)	26	26	26	4	3	4
	31–40 (%)	34	30	32	48	46	47
	41–50 (%)	24	31	28	31	37	34
	51–60 (%)	8	8	9	13	11	12
	≥61 (%)	2	1	2	2	2	2
<i>Edu</i>	Illiteracy (%)	1	0	1	1	0	1
	Primary school (%)	15	10	13	15	10	13
	Ordinary level (%)	47	51	49	46	51	49
	Advanced level (%)	26	32	29	26	31	28
	Technical college/ University (%)	9	6	8	10	7	9
<i>Occu</i>	<i>Chena</i> cultivation farmers (%)	8	4	6	2	3	3
	Paddy farmers (%)	54	53	54	48	53	51
	Livestock farmers (%)	0	1	0	0	1	0
	Wage labors (%)	14	19	17	22	20	21
	Service sector (%)	22	23	23	26	23	25
<i>Land</i>	Land holding by households (hectare)	0.12	0.12	0.12	0.13	0.12	0.13
<i>Inc</i>	Annual non-forest income (SLRs)	237,909.9	227,343.5	232,626.7	243,086.4	230,778.5	236,932.5
<i>Water</i>	Water availability for agriculture (month)	6	7	7	6	7	7
<i>Dist</i>	Distance for forest (km)	0.7	1	0.8	0.7	1	0.8

The second Probit model examines the factors affecting the villagers' intention to continue their participation in CF. Accordingly, their participation intention implies that the members of the CF program are willing to continue their membership, and the other residents without membership are willing to become new members. The independent variables are participation status (membership), socio-economic data collected in the year 2020 (Table 2), benefit and losses of CF (Table 1), and perceptions and knowledge on CF (Table 3). The second model is specified in Equation (2).

$$PI = \beta_0 + \beta_1 MCF + \beta_2 Gen + \beta_3 Age + \beta_4 Edu + \beta_5 Occu + \beta_6 Land + \beta_7 Inc + \beta_8 Water + \beta_9 Dist + \beta_{10} Money + \beta_{11} Benefit + \beta_{12} Loss + \beta_{13} Manage + \beta_{14} Productreg + \beta_{15} Culture + \beta_{16} Conflict + \beta_{17} Purpose + \beta_{18} Policy + \varepsilon \quad (2)$$

where, PI is the resident's participation intention in the future CF program (1 = yes, 0 = otherwise), β_0 is the intercept, $\beta_1 - \beta_{18}$ are the coefficient of independent variables and ε is the normally distributed error term.

Table 3. Residents' perception and knowledge on the CF program.

Variables	Description	Value (% of the Respondents)		
		CF Members	Non CF Members	Total
<i>Manage</i> : Satisfied with decentralized forest management	Yes	85	81	83
	No	15	19	17
<i>Product reg</i> : Satisfied with the regulation of forest product extraction	Yes	68	65	66
	No	32	35	34
<i>Culture</i> : CF program do not influence local cultural value	Yes	99	100	100
	No	1	0	0
<i>Conflict</i> : Increase of CF program can mitigate conflict between forest management staff and local people	Yes	81	88	85
	No	19	12	15
<i>Purpose</i> : Do you know the purpose of implementing CF program?	Yes	65	48	56
	No	35	52	44
<i>Policy</i> : Do you know the CF management policies?	Yes	11	2	6
	No	89	98	94

2.5. Data Description

Table 1 presents the socioeconomic characters of the respondent households. According to our result, both CF and non-CF members show similar socio-economic condition. Findings indicated that 84% of the total respondents were male and 16% were female. The far majority of household heads interviewed in the year 2013 (60%) and in the year 2020 (81%) are middle-aged (31–50 years).

In terms of educational level, 49% were completed ordinary level of education., 13% were at primary education level and numbers of the respondent at the advanced level and higher education (training college and university) were respectively 29% and 8% in the year 2013 and 28% and 9% in the year 2020. About 1% of the household heads were illiterate.

Regarding their occupation, more than half of the household heads in both target groups were paddy farmers, nearly equal percentage of them were occupied in the service sector (totally 23% in the year 2013 and 25% in 2020). At the initial stage, the respondent sample consists of 17% of wage labors and 6% of *Chena* cultivation farmers. After seven years, the occupation of the same sample changed into 21% wage labors and 3% of *Chena* cultivation farmers. It seems some of the *Chena* farmers converted their occupation into wage labors. Only 1% of CF members were engaged in livestock farming and none of the non-CF members were doing livestock farming as their main income source.

The average household landholding in the sample was 0.12 ha in the year 2013 and 0.13 ha in the year 2020 with a minimum of 0.001 ha and a maximum of 3 ha. The survey

illustrated that at the initial stage average annual household income is around SLRs 232,626 and later it shows a slight increment of SLRs 236,932.

The respondents reported that water availability for agriculture was limited to 7 months. In addition, the results indicated that respondents had a 0.8 km average distance from the forest to home while some were located just adjacent to the boundary of the forest and others with a maximum 2.5 km distance.

3. Results

3.1. The Rural Residents' Participation in, and Benefit and Loss of the CF Program

Table 2 presents the perceived status of benefits and losses derived from the CF program among members and non-members at varying degrees. All non-CF members answered that they did not receive any monetary benefit from CF, while only 29% of CF members stated that they received nothing in terms of monetary benefit (Table 2). In total, approximately 27% of the total respondents responded that they did not receive any other subsistence benefits from CF. The percentage of non-CF members who received higher other benefits was comparatively eight times less than CF members.

A nearly equal number of respondents representing both CF (89%) and non-CF (87%) members stated that the CF program did not bring losses to them. On the other hand, 12% of the total sample indicated that they faced losses due to the CF program.

3.2. The Rural Residents' Perception and Knowledge on the CF Program

The survey data shows that both groups have almost similar perceptions towards the CF program (as shown in Table 3). For an instance, 85% of CF members and 81% of non-CF members were satisfied with the decentralized forest management. Furthermore, a nearly equal percentage of individuals (68% of CF members and 65% of non-CF members) were satisfied with the regulation of forest products. Also, almost all respondents perceived that the CF program did not have influences on local cultural values. On the other hand, 19% of CF members and 12% of non-CF members stated that the CF program was unable to mitigate the conflict between forest management staff and local people.

The majority of CF members (65%) had knowledge of the purpose of implementing the CF program. More than half of the non-CF members (52%) did not have an adequate understanding of the purpose of implementing the CF program. Moreover, 89% of CF members and 98% of non-CF members indicated that they do not have knowledge of CF management policies.

3.3. Factors Affecting the Rural Residents' Membership in the CF Program

According to the interview, 57% of the respondents (62% CF members and 53% CF members) prefer to participate in CF or hold the membership further. Table 4 indicates the regression result of factors affecting to be a member of the CF program. Logit model also provided similar results to the Probit model regarding significant impacts of the independent variables on the dependent variables, which enables us to believe the results of the two types of models be robust [55]. For spatial efficiency, the discussion below is based on the Probit model, and the results of the Logit model are reported as a reference.

The variables such as the water availability for agriculture ($p < 0.01$) and the distance from the forest has significant ($p < 0.001$) negative influence on joining as a member. On the other hand, total household income has a significant ($p < 0.05$) positive influence on membership in CF. However, the result illustrated that socio-economic variables, such as *Gen*, *Age*, *Edu*, *Ocu*, and *Land*, have no significant influence on individuals' membership in the CF program. But except for the *Gen*, variable all other variables show a negative correlation to CF membership.

Table 4. Results of Probit and Logit models of factors affecting the rural residents' memberships in the CF program.

Variables	The Probit Model			The Logit Model		
	Coefficient	Standard Error	Z Statistics	Coefficient	Standard Error	Z Statistics
<i>Gen</i>	0.035	0.207	0.17	0.073	0.348	0.21
<i>Age</i>	−0.036	0.074	−0.48	−0.062	0.122	−0.50
<i>Edu</i>	−0.041	0.121	−0.34	−0.079	0.198	−0.40
<i>Occu</i>	−0.016	0.066	−0.24	−0.025	0.111	−0.22
<i>Land</i>	−0.186	0.313	−0.59	−0.347	0.518	−0.67
<i>Inc</i>	$2.03 \times 10^{-6} *$	8.63×10^{-7}	2.35	$3.68 \times 10^{-6} *$	1.58×10^{-6}	2.33
<i>Water</i>	−0.242 **	0.079	−3.04	−0.408 **	0.133	−3.05
<i>Dist</i>	−0.817 ***	0.184	−4.44	−1.3495 ***	0.314	−4.29
Constant	2.113 **	0.652	3.24	3.506 **	1.092	3.21
Statistical diagnosis						
Log likelihood = −188.38			Log likelihood = −188.13			
LR $\chi^2(8)$ = 39.12			LR $\chi^2(8)$ = 39.61			
Prob > χ^2 = 0.0000			Prob > χ^2 = 0.0000			
Pseudo R ² = 0.0941			Pseudo R ² = 0.0952			

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

3.4. Factors Affecting the Rural Residents' Participation Intention in the Future CF Program

Table 5 shows the effect of participation status and other socio-economic and cognition variable on the residents' intention to participate in the future CF program. For those who have participated in the CF program, their future participation intention implies whether they have the intention to hold the membership further.

Table 5. Results of Probit and Logit models on the residents' intention to participation in the future CF program.

Variables	Probit		Logit	
	Estimated Coefficient	Z Statistics	Estimated Coefficient	Z Statistics
Membership	−0.2127	−0.68	−0.2887	−0.51
Gen	−0.2376	−0.85	−0.3381	−0.67
Age	−0.0651	−0.52	−0.1411	−0.63
Edu	−0.5551 **	−3.18	−1.1168 ***	−3.40
Occu	−0.1984 *	−2.09	−0.3369 *	−2.00
Land	0.1777	0.38	0.2606	0.29
Inc	$-3.93 \times 10^{-6} **$	−2.74	$-6.96 \times 10^{-6} **$	−2.78
Water	−0.1590	−1.45	0.3315	1.66
Dist	−0.1161	−0.65	−0.1678	−0.55
Money	0.0998	0.62	0.1535	0.55
Benefit	0.2445 *	1.97	0.4337 *	2.00
Loss	0.2129	0.43	0.1855	0.19
Manage	0.7997	1.55	1.2239	1.18
Product reg	1.2600 ***	4.53	2.3289 ***	4.57
Culture	0.1676	0.05	0.3105	0.05
Conflict	1.1606 ***	3.81	2.1335 ***	3.72
Purpose	0.2019	0.93	0.4054	1.02
Policy	0.6349	1.41	1.2012	1.52
Constant	−0.0451	−0.01	−0.0691	−0.01
Statistical diagnosis				
Log likelihood = −104.33			Log likelihood = −103.47385	
LR $\chi^2(18)$ = 200.14			LR $\chi^2(18)$ = 201.86	
Prob > χ^2 = 0.0000			Prob > χ^2 = 0.0000	
Pseudo R ² = 0.4896			Pseudo R ² = 0.4938	

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

According to the results, being a CF member is negatively related to residents' decision on participation intention in CF. In addition, the result shows that intention to CF participation depends on other cognition variables. For example, residents' perception of forest product regulation and conflict between forest management staff and local people have significant positive ($p < 0.001$) influence on their decision on participation in CF. In addition, other benefits derived from CF and participation intention also show a significant positive correlation at $p < 0.05$ level.

Consider the socio-economic variables, the households heads' education ($p < 0.01$), household heads' occupation ($p < 0.05$), and total household income ($p < 0.01$) shows a significant negative correlation to the decision on participation on CF as well as hold the membership further. Accordingly, educated people with well-paid jobs and higher incomes were less willing to participate in the CF program. However, the second Probit model shows that *Gen*, *Age*, *Land*, and *Water* variable do not show significant influence on the residents' intention of continue their participation in CF or being a new member. Moreover, the study found that knowledge of CF policies and the purpose of CF also do not have a significant influence on their intention.

4. Discussion

Most households who are involved in the CF are middle-aged paddy farmers who completed ordinary level education. In line with [56,57], our study also found that villagers who live in Knuckles peripheral areas have smaller landholdings (i.e., 0.11 ha). Rainfed cultivation is mainly practiced in Kandy Districts in Sri Lanka, and it is characterized by seasonally limited water availability. The residents reported that water availability for agriculture is limited to nearly half of the year, and they faced scarcity of water during the dry season. Moreover, the villagers surveyed in the study area lack knowledge on community-based forest policies, and nearly half of them were unaware of the purpose of implementing CF.

Information gathered in the present study indicated that socio-economic variables such as gender, age, and land holdings do not have a significant influence on both to be a CF member and their intention on participation. The previous studies showed both resemblance and contrast findings to our results on socio-economic variables. In Ghana by Ansong and Roskaft [4] find respondents' gender did not influence their decision to participate in forest management. While Tadesse et al. [58] show that gender had a significant positive impact on participation in community forest associations due to forestry is considered a man's field, women's roles are often invisible. However, Dolisca et al. [59] reported a negative impact, showing female farmers were more willing to participate in social and environmental activities of the CF program.

Similar to our findings on the age variable, Thacher et al. [60] and Zhang and Flick [61] reported that age had no significant influence on participation in forestry activities. In contrast to these findings, a study conducted in Haiti found that age had a negative impact on explaining the level of participation. This implies that younger people are willing to participate in forestry activities [59]. On the other hand, a study by Ezebilo [62] shows that age had a significant positive impact on willingness to participate in community forestry projects in Nigeria.

Consider the findings of the second Probit approach, it indicated that CF members have less intention to hold the membership in the future. In addition, the result shows that, even though water availability for agriculture and distance to the forest significantly influence members of the CF program, it will not influence their intention to hold the membership further. Due to the lack of water for paddy farming and vegetable cultivation, some farm families try to find additional income generation activities during the dry spell. Accordingly, farm households which nearby forests are willing to join the CF program to earn additional income by participating as wage labor in forestry activities (e.g., Planting and maintenance activities of enrichment plantations). However, after ending the financial support for the program they are more willing to search for additional income

from the outside villages or joining as construction labor in the cities. Therefore, CF members' intention to hold the membership further or being a member in the future do not significantly influence by water availability for agriculture and distance to the forest. However, results showed a negative correlation, indicating that even though it does not significantly influence, those who live nearby forests and lack adequate water facilities are more willing to stay with the CF program.

Also, landholding by households does not show significant influence on the members' intention to continue their membership or to be a new member. The reason for this is, as, in many parts of the world, demand for agricultural land is the most noticeable element that influenced the dependency of forest products and forest land [4,59]. In Sri Lanka, those who live in the periphery of natural forests are mainly agriculture farmers [5,63] and those who have fewer landholdings are demanding forest land for *Chena* (Shifting) cultivation. Therefore, the relationship between the CF program and villagers' participation seems to be driven more by the demand for forest land for cultivation. Therefore, in the first stage Probit model shows landholding had a negative influence on membership in CF. However, villagers in these three CF sites did not get land for cultivation as they are established in conservation and reserve forests. Therefore, the villagers are already aware that they will not get any land for cultivation. Hence, landholdings do not show significant influence on their decision to hold the membership in further or participation intention in CF. In contrast to our finding, a study done by [20] found a significant negative association between land tenure status and participation in forest management programs in Burkina Faso, West Africa. They further mentioned that individuals who had inherited land were less involved in the forest management program than farmers who did not own land.

Nevertheless, the second stage Probit analysis (Table 5) showed under which socio-economic conditions people are most likely to increase their participation intention. Accordingly, respondents who have less education qualification, low income, and engaged in traditional farming (*Chena* cultivation farmers) tended to have more positive intention in participation. Residents who had higher education skills have more opportunities in the government and private jobs, also they like to move to cities. Less-educated persons had no other career skills except for *Chena* cultivation or other conventional farming, and in the absence of a career, training could hardly find new jobs. Therefore, residents' who have fewer educational qualifications tend to be more willing to continue their participation in the CF. However, the findings of [64] and [21] claimed that education levels did not influence individuals' decisions on the participation in forest protection and conservation. The contrast to our findings Oli and Treue [65] reported that higher education levels increase the level of participation in CF activities.

As same as higher education, higher income levels caused a stable economic situation and they are not interested in joining and uphold forestry activities. This is also consistent with the finding of [66] that highlighted low-income households were more like to participate in community-based forest rehabilitation programs in Gorno Badakhshan, Tajikistan than high-income households. Similarly in China, [67] reported that income is one of the most important predictors of deciding members' temperament of participation in forest management programs. They indicate that low-income households were more willing to participate in the reforestation program due to the additional source of income provide by the program. Contrast findings were observed by [68] in Taiwan, China. They observed higher-income families are acutely aware of the fatal consequences of deforestation and are more likely to join in a community-based forest management program.

The SLCFP has contributed to increasing the flow of direct incomes to targeted communities through payments for labor work [16]. In addition, participants getting much benefit from community development activities and training programs implemented through CF. However, these monetary payments are comparatively lower than the labor payment of other activities such as construction sites and agriculture fields. Chukwuone and Okorji [69] also highlighted that monetary benefits derived from the CF are not sufficient to meet the rural livelihoods needs. Therefore, villagers are less willing to participate in

the CF-based on monetary benefits. A study in Myanmar also found that the incentives of direct payment could be more motivational for the household to engage in participatory forest management [21]. However, most of the other benefits such as community development activities (i.e., micro-credit facilities, water supply, construction and maintain of common infrastructure) and training programs (i.e., crop production, tailoring and handicraft, beekeeping) induce locals' motivation on CF participation. Similar to our study, the study by [59] has found that without creating opportunities for local communities to obtain benefit from the forest it would be difficult to motivate local people to become or stay involved in CF.

In terms of cognition variables, the local people who were satisfied with forest product regulations and who perceived that the CF program can mitigate conflict between forest management staff and local people were more intention to participate in the program. The CF program supports villagers by providing legal access to utilize selected forest resources (i.e., NTFP, water) that were restricted in the reserve or conservation forest under the forest law [5]. However, during the extraction of forest products members need to follow regulations and rules enforced by the community-based organization and DFC. These regulations negatively affect those who are involved in illegal activities such as over extracting NTFP, grazing in conservation forests. Therefore, those local people who affected by regulations are do not have the interest to continue their CF membership as well as incline to participate in CF. Moreover, CF encouraged boundary demarcation and restrict illegal encroachment opportunities. Due to this legal coverage, some residents generate conflict between forest management staff and do not have intention to participate in CF.

Overall, the study found a lack of knowledge on community-based forest policies, burdens of forest product regulation, losses from CF are main challenges in the CF program and significantly influence the development of future programs. similar to our study, recent studies were done by Sapkota et al. [10] in Nepal and Millner et al. [11] in Guatemala also highlighted that lack of a system to review the program, lack of coordinated efforts among stakeholders, regulatory burdens, and weak governance, are barriers to CF delivering on its potential.

5. Conclusions

The purpose of this study was to determine the factors which influence the membership of the CF program and its subsequent effects on continued participation and intention to join in the CF by focusing on a socio-economic approach. The study found that being a member of the CF program negatively affects participation intention in CF. It is argued that the low level of education of program members, lack of youth involvement, and product regulation issues were the reasons for CF members to quit their intention to participate in CF.

The findings obtained in this study indicate that factors related to education, income, occupation, other benefits from CF, and perception on forest product regulation and conflict mitigation are the most important determinants of residents' incline to participate in CF. Moreover, the main vegetation type in these study sites (semi-mixed evergreen forest) and the socio-economic condition of the community are similar to the majority of CF sites in Sri Lanka. Therefore, the findings of this study are applicable to areas outside sample sites in Sri Lanka.

Other than academic purposes, these results have several policy implications. First, the level of educated local people's participation in the CF should be increased for the program to be more literacy sensitive than it is now. More educated people are not interested in continuing their activities in the CF program since they believe that CF is targeted only at forest dependence, less educated people. These perception problems could be due to the low levels of awareness and knowledge on CF. Thus, more awareness creation is required for the CF program in order to avoid these negative perceptions. Although, 84% of our study sample was comprised of the male gender. Hence one might think the perception of women has not been captured in this study. Therefore, designing specific gender-based research is suggested.

Second, involving local people in decision-making could increase the degree of participation in CF activities. For instance, still, the DFC is heavily involved in the decision-making process to the extent of limiting the active participation of local communities. Particularly, the decision on forest product regulation and benefit-sharing from the forestry activities should be negotiated by local people and its rightness should be evaluated strictly. Third, failure to evoke residents' intention to participate in CF activities may indicate inadequate or ineffective government policies. The DFC should take sound measures to ensure that CF management policies are consistently implemented at different levels and across the country. Also, DFC should make sure that policies are implemented properly.

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References

1. Gilmour, D. Forty years of community-based forestry: A review of its extent and effectiveness. *FAO For. Pap.* **2016**.
2. Agarwal, B. Gender and forest conservation: The impact of women's participation in community forest governance. *Ecol. Econ.* **2009**, *68*, 2785–2799. [[CrossRef](#)]
3. Group, W.B. *A Revised Forest Strategy for the World Bank Group*; World Bank Group: Washington, DC, USA, 2002.
4. Ansong, M.; Røskaft, E. Local communities' willingness to pay for sustainable forest management in Ghana. *J. Energy Nat. Resour. Manag.* **2014**, *1*. [[CrossRef](#)]
5. Ekanayake, E.; Xie, Y.; Ahmad, S.; Geldard, R.; Nissanka, A. Community Forestry for livelihood Improvement: Evidence from the intermediate zone, Sri Lanka. *J. Sustain. For.* **2020**, 1–17. [[CrossRef](#)]
6. Bowler, D.E.; Buyung-Ali, L.M.; Healey, J.R.; Jones, J.P.; Knight, T.M.; Pullin, A.S. Does community forest management provide global environmental benefits and improve local welfare? *Front. Ecol. Environ.* **2012**, *10*, 29–36. [[CrossRef](#)]
7. Rai, P.B.; Sears, R.R.; Dukpa, D.; Phuntsho, S.; Artati, Y.; Baral, H. Participatory Assessment of Ecosystem Services from Community-Managed Planted Forests in Bhutan. *Forests* **2020**, *11*, 1062. [[CrossRef](#)]
8. Fisher, R.J. *Lessons Learned from Community Forestry in Asia and Their Relevance for Redd+: Forest Carbon, Markets and Communities (Fcmf) Program*; USAID: Washington, DC, USA, 2014.
9. Beauchamp, E.; Ingram, V. Impacts of community forests on livelihoods in Cameroon: Lessons from two case studies. *Int. For. Rev.* **2011**, *13*, 389–403. [[CrossRef](#)]
10. Sapkota, L.M.; Dhungana, H.; Poudyal, B.H.; Chapagain, B.; Gritten, D. Understanding the barriers to community forestry delivering on its potential: An illustration from two heterogeneous districts in Nepal. *Environ. Manag.* **2020**, *65*, 463–477. [[CrossRef](#)] [[PubMed](#)]
11. Millner, N.; Peñagaricano, I.; Fernandez, M.; Snook, L.K. The politics of participation: Negotiating relationships through community forestry in the Maya Biosphere Reserve, Guatemala. *World Dev.* **2020**, *127*, 104743. [[CrossRef](#)]
12. Maryudi, A.; Devkota, R.R.; Schusser, C.; Yufanyi, C.; Salla, M.; Aurenhammer, H.; Rotchanaphatharawit, R.; Krott, M. Back to basics: Considerations in evaluating the outcomes of community forestry. *For. Policy Econ.* **2012**, *14*, 1–5. [[CrossRef](#)]

13. Baynes, J.; Herbohn, J.; Smith, C.; Fisher, R.; Bray, D. Key factors which influence the success of community forestry in developing countries. *Glob. Environ. Chang.* **2015**, *35*, 226–238. [\[CrossRef\]](#)
14. Agrawal, A.; Ribot, J. Making decentralization accountable: A framework for analysis and empirical studies from South Asia and West Africa. *Dev. Areas* **1999**, *33*, 473–490.
15. International Labour Office; Sectoral Activities Department, Joint FAO/ECE/ILO Committee on Forest Technology, and Management. *Public Participation in Forestry in Europe and North America: Report of the Team of Specialists on Participation in Forestry*; Sectoral Activities Department, International Labour Office: Geneva, Switzerland, 2000; Volume 163.
16. Tacconi, L.; Gamage, D. *Sri Lanka Community Forestry Program (SLCFP): Independent Completion Report*; Department of Foreign Affairs Trade: Colombo, Sri Lanka, 2017.
17. Carter, J.; Connelly, S.; Wilson, N. *Participatory Forestry in Sri Lanka: Why so Limited? Change on the Horizon*; Overseas Development Institute: London, UK, 1994.
18. Keller, D. *Community Participation in Sustainable Forest Management*; Stichting Tropenbos International: Ede, The Netherlands, 2009; p. 66.
19. De Zoysa, M.; Inoue, M. Farmers' woodlots management and sustainable livelihood development: A case study in Southern Sri Lanka. *Environ. Ecol. Res.* **2016**, *4*, 88–98. [\[CrossRef\]](#)
20. Coulibaly-Lingani, P.; Savadogo, P.; Tigabu, M.; Oden, P.-C. Factors influencing people's participation in the forest management program in Burkina Faso, West Africa. *For. Policy Econ.* **2011**, *13*, 292–302. [\[CrossRef\]](#)
21. Soe, K.T.; Yeo-Chang, Y. Perceptions of forest-dependent communities toward participation in forest conservation: A case study in Bago Yoma, South-Central Myanmar. *For. Policy Econ.* **2019**, *100*, 129–141. [\[CrossRef\]](#)
22. White, S.C. Depoliticising development: The uses and abuses of participation. *Dev. Pract.* **1996**, *6*, 6–15. [\[CrossRef\]](#)
23. Clarke, B. Seeking the grail: Evaluating whether Australia's Coastcare Program achieved "meaningful" community participation. *Soc. Nat. Resour.* **2008**, *21*, 891–907. [\[CrossRef\]](#)
24. Rasul, G.; Thapa, G.B.; Karki, M.B. Comparative analysis of evolution of participatory forest management institutions in South Asia. *Soc. Nat. Resour.* **2011**, *24*, 1322–1334. [\[CrossRef\]](#)
25. Agarwal, B. Participatory exclusions, community forestry, and gender: An analysis for South Asia and a conceptual framework. *World Dev.* **2001**, *29*, 1623–1648. [\[CrossRef\]](#)
26. Michener, V.J. The participatory approach: Contradiction and co-option in Burkina Faso. *World Dev.* **1998**, *26*, 2105–2118. [\[CrossRef\]](#)
27. Gatiso, T.T.; Wossen, T. Forest dependence and income inequality in rural Ethiopia: Evidence from Chilimo-Gaji community forest users. *Int. J. Sustain. Dev. World Ecol.* **2015**, *22*, 14–24. [\[CrossRef\]](#)
28. De Zoysa, M.; Inoue, M. Forest governance and community based forest management in Sri Lanka: Past, present and future perspectives. *Int. J. Soc. Forestry* **2008**, *1*, 27–49.
29. Chirenje, L.I.; Giliba, R.A.; Musamba, E.B. Local communities' participation in decision-making processes through planning and budgeting in African countries. *Chin. J. Popul. Resour. Environ.* **2013**, *11*, 10–16. [\[CrossRef\]](#)
30. D'Annolfo, R.; Gemmill-Herren, B.; Amudavi, D.; Shiraku, H.W.; Piva, M.; Garibaldi, L.A. The effects of agroecological farming systems on smallholder livelihoods: A case study on push–pull system from Western Kenya. *Int. J. Agric. Sustain.* **2020**, *19*, 56–70. [\[CrossRef\]](#)
31. Weersink, A.; Fulton, M. Limits to profit maximization as a guide to behavior change. *Appl. Econ. Perspect. Policy* **2020**, *42*, 67–79. [\[CrossRef\]](#)
32. Friedman, M. The Methodology of Positive Economics. In *Essays in Positive Economics*; University of Chicago Press: Chicago, IL, USA, 1953.
33. Zhang, D.; Owiredo, E.A. Land tenure, market, and the establishment of forest plantations in Ghana. *For. Policy Econ.* **2007**, *9*, 602–610. [\[CrossRef\]](#)
34. Xie, Y.; Gong, P.; Han, X.; Wen, Y. The effect of collective forestland tenure reform in China: Does land parcelization reduce forest management intensity? *J. For. Econ.* **2014**, *20*, 126–140. [\[CrossRef\]](#)
35. Ajzen, I. The theory of planned behavior. *Organ. Behav. Hum. Decis. Process.* **1991**, *50*, 179–211. [\[CrossRef\]](#)
36. Prokop, P.; Lešková, A.; Kubiato, M.; Diran, C. Slovakian students' knowledge of and attitudes toward biotechnology. *Int. J. Sci. Educ.* **2007**, *29*, 895–907. [\[CrossRef\]](#)
37. Halder, P.; Pietarinen, J.; Havu-Nuutinen, S.; Pelkonen, P.; Chang, C.-Y.; Prokop, P.; Usak, M. Knowledge, perceptions, and attitudes as determinants of youths' intentions to use Bioenergy—A cross-national perspective. *Int. J. Green Energy* **2013**, *10*, 797–813. [\[CrossRef\]](#)
38. Luswaga, H.; Nuppenau, E.-A. Participatory forest management in West Usambara Tanzania: What is the community perception on success? *Sustainability* **2020**, *12*, 921. [\[CrossRef\]](#)
39. Hlaing, E.E.S.; Inoue, M. Factors affecting participation of user group members: Comparative studies on two types of community forestry in the Dry Zone, Myanmar. *J. For. Res.* **2013**, *18*, 60–72. [\[CrossRef\]](#)
40. Hoffman, S.M.; High-Pippert, A. From private lives to collective action: Recruitment and participation incentives for a community energy program. *Energy Policy* **2010**, *38*, 7567–7574. [\[CrossRef\]](#)
41. Seyfang, G.; Smith, A. Grassroots innovations for sustainable development: Towards a new research and policy agenda. *Environ. Politics* **2007**, *16*, 584–603. [\[CrossRef\]](#)

42. Dasgupta, P.; Southerton, D.; Ulph, A.; Ulph, D. Consumer behaviour with environmental and social externalities: Implications for analysis and policy. *Environ. Resour. Econ.* **2016**, *65*, 191–226. [\[CrossRef\]](#)
43. James, W. *How Power and Institutions Affect Development*; World Economic Forum: Geneva, Switzerland, 2015.
44. Sun, X.; Zhang, Z.; Zhang, Y. Factors influencing farmer's decision-making behavior on rural construction land transformation. *Sustainability* **2018**, *10*, 4288. [\[CrossRef\]](#)
45. Panabokke, C.R. *Soils and Agro-Ecological Environments of Sri Lanka*; NARESA: Colombo, Sri Lanka, 1996.
46. Lanka, S. Department of Census and Statistics. 2012. Available online: <http://www.statistics.gov.lk/> (accessed on 27 June 2021).
47. Dharmasena, P.D. Current Status of Land Degradation in Kandy District: Rehabilitation of Degraded Agricultural Lands in Kandy, Badulla and Nuwara Eliya Districts of the Central Highlands/FAO, Colombo, Sri Lanka. 2014.
48. Secretariat, K.D. *Kandy District: Overview*, 1st ed.; Ministry of Public Administration & Home Affairs: Kandy, Sri Lanka, 2017; pp. 8–31.
49. Office, H.R.F. *Management Plan*, 1st ed.; Range Forest Office: Hunnasgiriya, Sri Lanka, 2015; pp. 4–61.
50. De Zoysa, M. Community-based forest management in Sri Lanka: Approaching a green economy and environment. *Sri Lanka For.* **2017**, *38*, 1–23.
51. *Sampath Pathikada*; Udadumbara Divisional Secretariat: Madugoda, Sri Lanka, 2015.
52. Nerfa, L.; Rhemtulla, J.M.; Zerriffi, H. Forest dependence is more than forest income: Development of a new index of forest product collection and livelihood resources. *World Dev.* **2020**, *125*, 104689. [\[CrossRef\]](#)
53. Fernando, D. Economic Benefits of Sri Lanka Community Forestry Program (SLCFP). *Ecosyst* **2017**, *7*, 1–6. [\[CrossRef\]](#)
54. *Thailand Multiple Indicator Cluster Survey 2019*; Survey Findings Report; National Statistical Office: Bangkok, Thailand; National Statistical Office of Thailand: Bangkok, Thailand, 2020; pp. 10–65.
55. Greene, W.H. *Econometric Analysis*; Pearson Education India: London, UK, 2003.
56. Gunatilake, H.; Senaratne, D.; Abeygunawardena, P. Role of non-timber forest products in the economy of peripheral communities of knuckles national wilderness area of Sri Lanka: A farming systems approach. *Econ. Bot.* **1993**, *47*, 275–281. [\[CrossRef\]](#)
57. Ekanayake, E.; Feng, M.; Murindahabi, T.; Nissanka, A.; Patrick, G. Contribution of Indian Gooseberry (*Phyllanthus emblica*) to Household Economy in Sri Lanka: A Case Study from Udadumbara Divisional Secretariat. *Small Scale For.* **2018**, *17*, 277–292. [\[CrossRef\]](#)
58. Tadesse, S.; Woldetsadik, M.; Senbeta, F. Forest users' level of participation in a participatory forest management program in southwestern Ethiopia. *For. Sci Technol* **2017**, *13*, 164–173. [\[CrossRef\]](#)
59. Dolisca, F.; Carter, D.R.; McDaniel, J.M.; Shannon, D.A.; Jolly, C.M. Factors influencing farmers' participation in forestry management programs: A case study from Haiti. *For. Ecol. Manag.* **2006**, *236*, 324–331. [\[CrossRef\]](#)
60. Thacher, T.; Lee, D.R.; Schelhas, J.W. Farmer participation in reforestation incentive programs in Costa Rica. *Agrofor. Syst.* **1996**, *35*, 269–289. [\[CrossRef\]](#)
61. Zhang, D.; Flick, W.A. Sticks, carrots, and reforestation investment. *Land Econ.* **2001**, *77*, 443–456. [\[CrossRef\]](#)
62. Ezebilo, E.E. Nature conservation in Cross River National Park, south-east Nigeria: Promoting collaboration between local people and conservation authorities. *Int. J. Biodivers. Sci. Ecosyst. Serv. Manag.* **2013**, *9*, 215–224. [\[CrossRef\]](#)
63. Wickramasinghe, A.; Pérez, M.R.; Blockhus, J.M. Nontimber forest product gathering in Ritigala Forest (Sri Lanka): Household strategies and community differentiation. *Hum. Ecol.* **1996**, *24*, 493–519. [\[CrossRef\]](#)
64. Chhetri, B.B.K.; Johnsen, F.H.; Konoshima, M.; Yoshimoto, A. Community forestry in the hills of Nepal: Determinants of user participation in forest management. *For. Policy Econ.* **2013**, *30*, 6–13. [\[CrossRef\]](#)
65. Oli, B.; Treue, T. Determinants of participation in Community Forestry in Nepal. *Int. For. Rev.* **2015**, *17*, 311–325. [\[CrossRef\]](#)
66. Mislimeshoeva, B.; Hable, R.; Fezakov, M.; Samimi, C.; Abdunazarov, A.; Koellner, T. Factors influencing households' firewood consumption in the Western Pamirs, Tajikistan. *Mt. Res. Dev.* **2014**, *34*, 147–156. [\[CrossRef\]](#)
67. Ma, H.; Lu, Y.; Xing, Y.; He, G.; Sun, Y. Rural households' attitude and economic strategies toward the conversion of cropland to forest and grassland program (CCFG): A case study in Qira, China. *Environ. Manag.* **2009**, *43*, 1039–1047. [\[CrossRef\]](#)
68. Liu, W.Y.; Lin, J.C.; Lin, C.-C. Landowners' willingness to participate in the green forestation plan in Taiwan. *World Acad. Sci. Eng. Technol.* **2010**, *46*, 329–333.
69. Chukwuone, N.A.; Okorji, C.E. Willingness to pay for systematic management of community forests for conservation of non-timber forest products in Nigeria's rainforest region: Implications for poverty alleviation. *Frontis* **2008**, 117–137.