



Article Determinants and Challenges of Community Sand Forest Management in Vietnam

Hoang Huy Tuan ¹,*¹, Nguyen Van Minh ¹, Nguyen Thi Hong Mai ¹, Tran Thi Thuy Hang ¹ and Seiji Iwanaga ²

- ¹ Faculty of Forestry, University of Agriculture and Forestry, Hue University, 102 Phung Hung, Hue 530000, Vietnam; nvminhhuaf@hueuni.edu.vn (N.V.M.); nthmai@hueuni.edu.vn (N.T.H.M.); tranthithuyhang@hueuni.edu.vn (T.T.T.H.)
- ² Graduate School of Bioagricultural Sciences, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8601, Aichi, Japan; iwanagas@agr.nagoya-u.ac.jp
- * Correspondence: hhtuan@hueuni.edu.vn

Abstract: In the inland sandy areas along the central coast of Vietnam, there is a specific type of ecosystem that local people call a sand forest. Over time, despite many economic, political, and social upheavals, local people in some places still maintain these sand forests. In this study, we aimed to investigate the determinants and challenges of community sand forest management in coastal north central Vietnam. For this purpose, we explore insights regarding the changing roles of sand forests in community perception, community challenges, and the role of stakeholders in sand forest management. We then discuss policy implications for sustainable sand forest management. By applying focus group discussions, household surveys, and in-depth interviews, this study found that local people have used village conventions to manage the sand forest for hundreds of years because they have been aware of the role of the sand forest in daily life, especially the spiritual and environmental roles of the sand forest. However, sand forest management is confusing and inefficient due to the neglect of the role of traditional organizations. Along with this, local people face several challenges, such as conflicts over the use of sand forests, and a lack of recognition of the community's legal rights to such forests. Based on these results, some policy implications are proposed, such as strengthening the participation of related stakeholders, and providing coordination between traditional organizations and local authorities in forest management and conflict management in forest use. It is necessary to promote the allocation of sand forests to local communities so that they have the legal rights to effectively manage and protect their forests and to obtain potential benefits in the future.

Keywords: ecosystem services; policy implications; sand forest management; village conventions; Vietnam

1. Introduction

Community forest management (CFM) was promoted in the Asia-Pacific region in the 1980s–1990s by progressive forest officials and donors in response to community demands and environmental concerns. In practice, CFM initiatives were inherited from a long history of customary forest management by the community [1]. This included forest management based on fallow swidden practices in Southeast Asian countries; traditional forest management in Nepal; management of forbidden forests near Mount Merapi in Indonesia or the Himachal Pradesh of India; management of common resources in a semi-arid environment in South Asia, such as the common resources of forests, trees, and soils in Gujurat of India; forest management associated with community water resources in Ifugao, Philippines and Terai, Nepal; and management of "sacred, ghost forests" in many communities in India, the Philippines, and Thailand [2]. These communities manage their forests based on traditional rules and management systems [3]. Experience in countries in the region shows that traditionally managed community forests were highly effective



Citation: Tuan, H.H.; Minh, N.V.; Mai, N.T.H.; Hang, T.T.T.; Iwanaga, S. Determinants and Challenges of Community Sand Forest Management in Vietnam. *Forests* 2022, 13, 561. https://doi.org/ 10.3390/f13040561

Academic Editor: Luis Diaz-Balteiro

Received: 11 February 2022 Accepted: 29 March 2022 Published: 31 March 2022

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https:// creativecommons.org/licenses/by/ 4.0/). resources have been controlled and used by communities without significant negative impacts because communities have complied with the regulations set by them and their needs, and demand for wood is small compared to reserves [5]. By conducting empirical testing in the seven developing countries of Brazil, Honduras, Malawi, Mozambique, Uganda, Indonesia, and Vietnam, Sunderlin et al. (2007) showed that traditional community forestry refers to local systems of forest management that can date back many decades or centuries and is different from introduced community forestry models. The introduced CFM models are brought into the community by external agents, such as the government, a local non-governmental entity, an international agency, or a combination of these [6]. CFM models in the Asia-Pacific region offer opportunities to improve local livelihoods, reduce deforestation and improve forest quality, and strengthen good governance [1]. However, some CFM initiatives have failed to deliver their promised expectations because the empowerment of communities or transfer of management responsibility of forests to the local community has only been partial [7].

In Vietnam, forms of forest management by communities appeared a long time ago [8,9]. Specifically, before the French colonial period (before the 1880s), forest dwellers and forest-dependent communities who have long lived on goods and services from forests staked claims on the resource across the history of its formation and development of their communities [10]. In this form, all members of the community participate in planting trees, keeping forests, conserving trees, and sharing the benefits of forest resources and forest land use, which are owned by the community by establishing and complying with conventions on forest resource use. However, it is only after the issuance of the Law on Forest Protection and Management 2004 (replaced by Law on Forestry in 2017) that communities have been allocated forests to manage and stably use for forestry purposes. Therefore, the legal status of community forest management has been recognized at the policy level under such law. At the practice level, the Vietnamese government has promoted forest allocation to local communities nationwide. To date, about 7.95% (1,166,470 ha) of the total forest area (14,677,215 ha), including both natural and plantation forests, has been allocated to local communities [11].

In conjunction with policy that allocates forests to communities for management, the Forestry Law also encourages the integration of village conventions into the development of community forest management regulations in areas where forests have been allocated to communities [12,13].

Village conventions are mandatory rules of conduct issued by communities and villages and have been effective in enforcement within the village's territory [14]. Village conventions appeared a long time ago, at least under the reign of King Le Thanh Tong (1460–1497), and are relatively common in Vietnamese villages in the northern delta and midland, and the north central region [15]. Village conventions are formed based on unification/agreement between local people [14,16,17]. When change or adjustment is desired, the convention must be agreed upon by the local people in the village. Previously, village conventions existed in oral form, and then, they were recorded both orally and in documentation [16,17].

The sand forest is a specific ecosystem in the inland sandy areas of theoastal north central Vietnam. These sand forests are considered to be common-pool resources and have been governed by village conventions for hundreds of years. Over time and under the influence of changes to the economic and political institutions and the remaining resources of the sand forest, the role of the sand forest, and village conventions regarding the management of sand forest, has changed. Besides, although the allocation of forests to the community for management was legalized by the state in 2004 [12], such sand forests have not yet been allocated to villages as recognition of the legal rights over these sand forests. Therefore, in this study, we aimed to clarify the determinants and challenges of community sand forest management in coastal north central Vietnam. For this purpose,

3 of 16

we explore insights regarding the changing roles of sand forests in community perception, community challenges, and the role of stakeholders in sand forest management. We then discuss policy implications for sustainable sand forest management.

2. Materials and Methods

2.1. Study Site

Phong Dien is a northern district of the Thua Thien Hue province in coastal north central Vietnam, with a total natural area of 95,081 hectares and 87,781 people [18]. Its terrain decreases from West to East and is divided into 3 main topographical regions: the western part is mountainous, followed by a narrow plain between the Bo and O Lau river basins, and then the coastal region with lowland areas. Inland sand strips are quite flat adjacent to Tam Giang lagoon [19].

The climate of the Phong Dien district is divided into 2 distinct seasons. The dry season from March to August is influenced by the southwest wind blowing from the continent, so it is hot and dry, and the average temperature is higher than 25 °C, often causing severe and prolonged drought. The rainy season from September to February of the next year is influenced by the northeast monsoon with high humidity and cold temperatures. The precipitation in this season reaches 2800–3000 mm, in which the precipitation of October and November accounts for 45% of the total rainfall in the year, with many storms and floods that seriously affect production and people's lives [19].

Inland sand covers a large area of over 10,470 ha, approximately 11.3% of the total area of the district [20]. This inland sand area was formed by the natural encroachment process in the sea and then the long-term impacts of wind and streamflow changed the topography, but it is still rather flat, which is not like the dunes in coastal areas [19].

The sand forest that formed in Phong Dien district is a lowland forest growing on sandy soil with a relatively diverse and abundant plant species composition. In general, the tree layer (tree stratum) of the sand barnacle includes major tree species, such as *Litsea sebifera*, *Mallotus apelta*, *Garcinia fusca*, *Castanopsis indica*, *Shorea vulgaris*, *Evodia lepta*, *Elaeocarpus* sp., *Quercus platycalyx*, *Pasania ducampii*, *Talauma gioi*, *Sindora cochinchinensis*, *Tarrietia javanica*, *Crotalaria alata*, *Buchanania florida*, *Rapanea* sp., *Carallia integerrima*, *Shuteria annamica*, *Adinandra* sp., *Fagraea fragrans*, *Ixora coccinea*, *Combretum* sp., *Tarenna* sp., *Barringtonia acutangula*, *Ficus benjamina*, and *Artocarpus rigidus*. These species do not grow strongly in height but tend to create a wide and thick canopy [21].

Previously, the sand forest area covered most of the inland sand region in the field of Phong Dien district. Over time, due to the effects of war and other human activities [17], the sand forest area remained at about 460.21 ha, which was concentrated in 5 communes in the district, including Phong Binh, Phong Hoa, Phong Thu, Dien Huong, and Dien Mon [22]. To analyze the changing roles of the sand forest in community perception and the role of stakeholders in sand forest management, this study selected two communes, including Phong Binh commune and Dien Huong commune, to conduct this study in (Figure 1). Phong Binh and Dien Huong communes were selected as the sand forest areas of the two study sites are still relatively large at 246.37 and 96.35 ha, respectively [22].



LOCATION OF DIEN HUONG AND PHONG BINH COMMUNES IN PHONG DIEN DISTRICT

Figure 1. Location of the study area.

2.2. Research Methods

2.2.1. Pilot Trips and Preparation for Field Trips

Based on the meetings with the Forest Protection Unit (FPU) of the Phong Dien district, we selected the two communes to collect data for the study. Documents on natural and socio-economic conditions were collected by the Commune People's Committees (CPCs) of the studied communes. Information about the area of different land types and forests and the management and protection of the sand forest was gathered from Phong Dien FPU.

2.2.2. Focus Group Discussions (FGDs)

This method was implemented using semi-structured interviews to collect initial issues and identify factors related to the research topics/contents, which focused on the influencing factors in the management of the sand forest. Two villages where the sand forest still covers a relatively large area were selected to conduct the FGDs, namely Pho Trach village (Phong Binh commune) and Thanh Huong village (Dien Huong commune). The FGDs were carried out from February to March 2021. In each village, the research team conducted one FGD with various stakeholders, including the head of the village, the village council, leaders of the sand forest protection team, and representatives of the villagers. The main questions were used to clarify changes related to the purposes for using the sand forests, features of the sand forest, and the form of the conventions (oral tradition or documentation), including how the convention was changed or adjusted. During the processes of the FGDs, we encouraged participants to identify the main timelines and to share their opinions regarding the above changes in sand forest management. In addition, we also helped members of the group to unify general information to ensure that the obtained information was accurate.

2.2.3. Household Survey

After collecting and classifying information from the FGDs, household interviews were conducted to collect data related to local people's perceptions of the roles of the sand

forests and stakeholder relations in sand forest management. A total of 177 households were selected for the survey using a questionnaire, including 87 households in Phong Binh commune and 90 households in Dien Huong commune (Table 1). The interviews were carried out from March to May 2021. The criteria used for selecting households to complete the survey included being villagers, who lived in the two surveyed communes and in the community, with at least 25 years experience in sand forest management. The calculation of the sample size was based on the formula by Asaduzzaman et al. [23]:

$$n = \frac{N}{(1+N^*e^2)}$$

where *n* is the sample size determined for the survey; *N* is the overall quantity of households in the selected commune; and *e* is a margin of error (0.1).

Table 1. Sample structure.

Commune Name	Number of Households	Sample Size
Phong Binh	679	87.2 (87 households)
Dien Huong	852	89.5 (90 households)

Especially, in the interview, we focused on local people's perceptions of the roles of sand forests in the period before and after 2005. The reason for focusing on the timeline before and after 2005 was that the 2004 Law on Forestry Protection and Development was implemented, and it recognized the legal rights of communities in forest management and protection by allocating natural forests to communities for management, protection, and benefits [12]. Changes in the sand forest roles in this period (before and after 2005) were also recorded from the result of FGDs. Eight out of nine options in the list of questions were selected through FGDs when defining the role of forests in the period before and after 2005. The interviews consisted of questions about the main information, such as the economic values of sand forest (i.e., providing timber, firewood, and medicinal plants), environmental protection values of sand forest (i.e., preventing sand flying, providing water for daily life and production, and reducing vulnerability to flood and drought), and the spiritual value of sand forest (i.e., grave burial place) in the period before and after 2005. In each question, respondents chose one of two options (yes or no) to confirm the role of sand forests. Although the period before and after 2005 was quite long ago from when we conducted the household interviews, all interviewees remembered the events that occurred in that time well. The key event that occurred in 2005 was that villagers established their forest protection team to prevent firewood exploitation in the sand forest. This was also the period when people were no longer allowed to exploit firewood [12], so they voluntarily contributed rice to support the forest protection team while patrolling and protecting the sand forests. The role of stakeholders in governing the sand forest was analyzed using a Likert scale [24]: "not important", "less important", "neutral", "important", and "very important".

2.2.4. In-Depth Interviews

After collecting and analyzing data from the household survey, in-depth interviews were conducted to cross-check the information reported by representatives of the households. On the other hand, these were also used to further explore the personal opinions of interviewees on topics related to the roles of the sand forests and the stakeholder relations in sand forest management recorded from the household survey. A total of 10 interviewees were selected for the in-depth interviews, including 2 village heads and 4 elderly people from the Pho Trach and Thanh Huong villages, 2 officers from CPC, and 2 commune rangers from the Phong Binh and Dien Huong communes. The interviews were carried out in May 2021.

2.2.5. Data Analysis Method

This research combined qualitative and quantitative analysis using the functions of Excel (Microsoft Co., Ltd., Redmond, DC, USA) or SPSS (BM SPSS statistics for window). The qualitative analysis was used to explain changes in local people's perceptions of the roles of sand forests. The Chi-square (χ^2) tests were employed to assess whether there was any difference in local people's perceptions of the important roles of the sand forests before and after 2005. The role of stakeholders in governing the sand forest identified in the household interviews was analyzed using Likert scales [24] with an interval score: from 0.0 to 0.8, from 0.81 to 1.60, from 1.61 to 2.40, from 2.41 to 3.20, or from 3.21 to 4.0, indicating "not important", "less important", "neutral", "important", and "very important", respectively.

3. Research Results and Discussions

3.1. Changes of the Sand Forest Roles in Local People's Perception and Behavior

The sand forests have existed for a long time and played an essential role in the local life in coastal central Vietnam in general and in the studied sites in particular (Figure 2). The provision of timber, firewood, and medicinal plants for local uses represented identified roles of the sand forest. Among the roles identified by local people, the role of the sand forests in protecting houses, gardens, and paddies from the effects of harsh climates is highly valued by local people. From their view, the sand forests have formed natural belts that people consider to act as a shield during the wind season because these sand forests are located northeast of the village. The elder villagers who participated in the FGDs and in-depth interviews confirmed that "in the old days when the houses were primitive and simple, many sandstorms were very terrible, but our village still stood strong thanks to the protection of the sand forest". This information was also found in previous studies related to sand forests' roles in reducing natural disasters in the coastal areas of central Vietnam [16,17,25].

Sand forest roles									
Providing timber	Providing firewood	Providing medicinal plants	Preventing sand flying	Providing water for daily life	Providing water for production	Reducing vulnerability from flood and drought	Grave burial place		

Figure 2. Roles of the sand forests in the study site.

The results of the FGDs also showed that these sand forests are higher than the surrounding areas, so villagers often evacuate people, livestock, and poultry to the sand forest when the villages are flooded. According to the survey result of Thua Thien Hue province's authorities, 80 natural lakes are located in the inland sand areas [26]. These lakes are concentrated in the Phong Dien and Quang Dien districts [26]. In the dry season, many lakes still maintain surface water and are often surrounded by forests while some other lakes or low-lying areas in the inland sandy area without sand forest only have surface water during the rainy season. Apart from Phong Dien, some other inland sandy areas in the neighboring Quang Tri are also similar [13]. These lakes are sources that provide water for daily life and agricultural production for local people. For example, these reservoirs provide water for 120 hectares of rice in the winter-spring crop, and 85 hectares of rice in the summer-autumn crop even though the amount of irrigation water has decreased. In addition to the material value, sand forests also have significant spiritual value for local people because part of the sand forest is used by the villagers as a burial place for the residents of the villages.

The roles of the sand forests are not constant but have changed over time. The results of FGDs showed that the sand forest's role shifted from the provision of economic values to the protection of environmental and spiritual values associated with 3 main timelines, including before 1979, from 1979 to 2004, and from 2005 to the present, and these timelines mainly relate to the purposes of using the sand forest and the convention form (Table 2).

Period	Before 1979	From 1979 to 2004	From 2005 Up to Now			
The main purpose	 Providing wood and firewood Protecting water sources and providing aquatic products Preventing sand from moving Providing medicinal plants Cemetery 	 Providing firewood Protecting water sources Preventing sand from moving Providing medicinal plants Cemetery 	 Protecting water sources Preventing sand from moving Providing medicinal plants Cemetery 			
The features of the sand forest	 Many big trees covered most of the villages' inland sandy land There were many animal species 	 Many big trees and tree species were destroyed (mainly by war). Many animals were lost 	 Very few big trees Woody shrubs dominate The sand forest areas have shrunk 			
The form of the conventionsThe sand forest protection convention had been propagated by oral tradition		The sand forest protection convention had been documented by the village	The sand forest protection convention had been documented by the village without official recognition			

Table 2. The changes in the sand forest's roles in the studied villages.

Source: FGDs, 2021.

During FGDs, participants recognized that in the context of an undeveloped market and the closed life of the communities around the sand forests, the sand forests played an important role in providing products, such as firewood, small timber for building the house, and medicinal plants for daily subsistence, especially for poor communities. This is the main reason for the decrease in the density of tree species reported in previous studies conducted at the same study site [21,25]. To stop the degradation of the sand forest caused by war and the daily subsistence demands of villagers, since 1979, the villagers have agreed to ban the harvesting of timber trees from the sand forests. Furthermore, the village convention was also documented at the same time.

Until 2004, the Law on Forest Protection and Development was launched, with legal recognition of community forest tenure through the allocation of natural forest for local communities [12]. Although the studied district authorities have not yet legally allocated the sand forests to the local communities, district authorities, with the support of the district Forest Protection Unit, have helped villages located near sand forests to develop forest protection teams and mobilized local people to stop collecting firewood from the sand forest. On the other hand, local people are also aware of the sand forest's roles in relation to environmental protection (preventing sand moving and protecting water sources), so they also decided to stop collecting firewood since this time. In addition, the country's developed economy has also changed the forest use behavior of local people. This situation has also occurred in other places in the Asia-Pacific Region, caused by large-scale drivers, where economic growth has allowed many countries in this region to move beyond a low-income status. Besides, the growth of urban labor markets attracted rural laborers, which created a flow of people out of agriculture and rural areas, which has reduced the pressure on forests as a source of subsistence [1]. Local people have more relationships and jobs in larger society and the market, and thus people have had more choices regarding the products for daily life. The products collected from sand forests have been replaced by other more convenient products.

Moreover, in recent decades, the negative effects of the climate have increasingly affected people's lives, which has made local people appreciate the importance of the sand forest in protecting their living environment as opposed to the economic benefit (Table 3).

Variable Names	The Sand Forest Role before 2005	The Sand Forest Role after 2005	<i>x</i> ²	<i>p</i> -Value
Providing timber	56.5%	0.0%	139.37	<0.001 ***
Providing firewood	54.8%	0.0%	133.61	<0.001 ***
Providing medicinal plants	43.5%	6.8%	63.42	< 0.001 ***
Preventing sandstorms	65.0%	67.2%	0.20	0.653
Providing water for daily life	25.4%	14.1%	7.12	<0.01 **
Providing water for Agricultural production	75.1%	77.4%	0.25	0.617
Reducing vulnerability to flood and drought	79.7%	89.3%	6.97	<0.01 **
Grave burial place (Graveyard)	94.4%	99.4%	7.60	<0.01 **

Table 3. Change in the sand forest's roles before and after 2005 in the studied communes.

Note: **, *** Statistically significant differences between the sand forest roles before and after 2005 (Chi-square test) at ** p < 0.01 and *** p < 0.001.

The result of the household survey showed that the roles of the sand forests in providing timber, firewood, medicinal plants, and water for daily life were different before and after 2005 (p < 0.01, Table 3). In other words, people no longer depended on the forest for these needs. The roles of the sand forests as a grave and in reducing vulnerability caused by natural disasters, such as flood and drought, also had statistically significant differences before and after 2005 (p < 0.01, Table 3). This meant that the roles of the sand forests have been increasingly appreciated by people and are very important currently. Meanwhile, no statistically significant difference was observed between the past and present sand forest's role in terms of preventing sand from flying and providing water for production. On the other hand, there has been no alternative solution for these roles of the sand forest until now.

3.2. Changing the Role of Stakeholders in Sand Forest Management

People in the inland sandy area of the Phong Dien district had a sand forest management convention when the village was established more than 500 years ago along the Tam Giang lagoon. Until now, the management, protection, and use of the sand forests have been undertaken by the communities and local people and guided by the village conventions.

According to local people, in the period before 1979, the sand forests were considered livelihood sources, places connected to the spiritual life, and an evacuation location in some emergency cases, such as flooding or to avoid war. The sand forest protection convention was maintained by oral traditions and monitored by the clan heads and village council. Specifically, a village contains clans, and in each clan, there is a head who collects and mobilizes relatives to undertake common activities in the clan or village [27]. The village council in the traditional village was established, including villagers with property, titles, positions, or degrees [28]. Presently, the village council in the studied villages consists of the village head and resident cluster heads (sub-village heads). From 1979 to the early 2000s, due to the pressure of the demands for resources for life and production, the sand forests became exhausted. Then, the convention was documented by the village and supported by local authorities, including the Commune People's Committee (CPC) and District People Committee (DPC), for implementation in this period. By 2005, the 2004 Law on Forest Protection and Development was enacted and became the legal basis for adjusting the sand forest management convention through the provisions of the law, which especially emphasized the restriction of exploitation of sand forests and enhanced the environmental protection role of the sand forest.

The results of the focus group discussions and in-depth interviews in the two studied villages revealed the following common points of the actual village convention in sand

forest management: (1) local people are not allowed to cut trees or dig roots in the sand forest located in the administrative boundaries of the village; (2) the dead old trees need to be liquidated and this is decided by the village head; (3) the area within 50m of the residential area adjacent to forest must be strictly protected, and all activities that negatively affect the forest must be banned; (4) people in the village are only allowed to collect dry firewood and are also banned from cutting down live trees; (5) the northern sand forests must be strictly protected to prevent the cold northeast monsoon winds; (6) the goal of protecting reservoirs is always a top priority of the local people to ensure reservoirs contain adequate amounts of water for production; (7) people in the village can take medicinal plants from the sand forests for treatment; and (8) villagers who are living in the village or work far away are buried in the village's sand forest (village cemetery) when they die.

On the other hand, the 2004 Law on Forest Protection and Development was also the basis for the change in the role of stakeholders in sand forest management. The Forest Protection Unit (FPU), at the district level, is responsible for checking and inspecting the implementation of the forest protection, and the CPC is assigned the state managerial responsibility of forests and forest land in the area [25]. CPC also plays an important role in most activities, especially in supporting villagers to develop village conventions, assigning forest patrols, and preventing and fighting forest fire while the FPU only implements penalties related to sand forest violations when villagers or CPC report them. In villages, the village head helps villagers to set up forest protection teams. Furthermore, the role of the forest protection team is to take charge in patrolling and mobilizing villagers for fire prevention and fighting. Each forest protection team includes about five persons, including one leader and four members. Change in the personnel of the protection team is reviewed every two years. The source of payment for the team is contributed by the villagers. This contribution represents the community's consensus and willingness to pay for sand forest protection.

Along with the increase in the role of local authorities (CPC, DPC), in which the village head is the representative with the lowest level, the roles of the village council and the clan head tend to be overlooked. In the past, all members of the clan obeyed the orders of their clan head. In this situation, the role of the clan head was emphasized. The village council communicated with the heads of the clans to inform their decisions regarding sand forest management and communication with each household. As this relationship had existed for generations, the local people were united and strictly adhered to the regulations regarding the management and protection of the sand forest. The perceived roles of stakeholders in the current management of sand withdrawal are shown in Table 4.

Stakeholders	Development and Facilitation of Village Convention	Assignment for Sand Forest Patrol	Sand Forest Fire Prevention and Fighting	Conflict Resolution	Penalties for Violations
Village council	2.16	1.93	1.84	0.68	0.56
Clan head	0.28	0.44	0.20	1.06	0.97
The sand forest protection team	2.12	2.79	2.27	0.99	0.94
Village head	3.28	2.92	2.93	1.68	1.48
СРС	3.47	3.28	2.05	2.80	3.13
FPU	0.6	0.2	1.4	0.0	3.7

Table 4. Local people's perceptions of stakeholders' roles in sand forest management.

Note: from 0–0.8: not important; from 0.81–1.60: less important; from 1.61–2.40: neutral; from 2.41–3.20: important; from 3.21–4.0: very important.

In general, the roles of the village council and the village head are not legally recognized in sand forest management. Local people perceive that these traditional roles are still recognized. At the same time, the sand forest is still protected based on the village convention, without being legally recognized by the state. This may create a premise for the exclusion of the village council element from community sand forest management, although it will continue to include the customary element in forest management. Sikor and Thanh (2007), in a study on CFM in Cham B of the Dak Lak province of Vietnam, found that the exclusion of some traditional elements may increase the level of conflict and inclusive devolution can reduce the gap between legal regulations and asserted rights by involving local actors in the adjustment of rights and responsibilities [29].

Besides, the roles of other stakeholders, such as FPU and CPC, are presented as their duties, and it seems support for communities from these agencies is absent in the protection and development of their sand forests, which was indicated in previous studies on the necessity of other support from these agencies for CFM [8].

3.3. Challenges of the Community in Sand Forest Management

3.3.1. Conflict in Sand Forest Management

Conflict in the use of natural resources often arises when the demand exceeds the supply capacity of the resource. Conflict in the use of sand forest has existed for a long time, especially as the sand forest area is shrinking (Table 5).

Table 5.	Difference	between	the con	nmunity's	awareness	of the	regulations	and	the	sand	forest
manager	nent practic	es.									

	Villagers			Inside Commune			Outside Commune		
Rights	Regulation	Community Awareness	Practice	Regulation	Community Awareness	Practice	Regulation	Community Awareness	Practice
Exploring fresh firewood	No	No	No	No	No	No	No	No	No
Exploring dry firewood	Yes	Yes	No	Yes	No	No	Yes	No	No
Harvesting medicinal herb	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes
Burying the dead (graveyard)	No	Yes	Yes	No	Yes	Yes	No	No	Yes

Conflict in the use of sand forest resources is mainly related to the collection of medicinal herbs and the burial of the dead. Conflict occurs in the use of resources between different groups as follows: (1) Conflict between villages without sand forest and villages with sand forest (study sites), which belong to the same commune ('inside commune' in Table 5). In the past, conflict arose between the collection of herbs and burial of the dead, but later, under the intervention of the CPC, the sand forests of the study villages were considered a common cemetery of the whole commune; (2) conflict between people outside the commune with the study villages ('outside commune' in Table 5). This means that conflict occurred when outsiders accessed the sand forest to collect medicinal herbs and bury the dead. Based on local people's opinion, it is very difficult to prevent outsiders from using the sand forest, because the village does not have legal ownership rights to the sand forest. So, when outsiders violate sand forests, they will question the community's ownership rights to stop them. People in the same village do not have conflict related the above two interests ('villagers' in Table 5). This finding showed the difference between the awareness of the provisions and the practice. As previous studies on common resource management in Vietnam showed that for resources that are not owned or are owned but the owners are incompetent and lack rights, the rights and responsibilities differ between practices and the law or regulations [30,31].

3.3.2. Changing Stakeholder Roles in Conflict Management Related to the Use of the Sand Forest

Previously, to resolve any conflict in the use of sand forest, the village council and clan heads would play the main role in reaching resolution. Gradually, there has been a shift in the role of the mediator and conflict resolver from the village council and clan head (traditional role) to the village head and CPC (government role). Even in conflict between villages, the village heads are the representatives that negotiate and resolve the conflict. If the conflict cannot be resolved, they will ask for the CPC to intervene. The result of the household survey also mentioned that this role had shifted, in which the percentage of local people confirming the important role of the village head and CPC instead of traditional actors during conflict management was 55.1% and 55.6%, respectively.

The shifting of stakeholder roles in sand forest management can be seen as a challenge for sustainable community forest management as the traditional role of local organizations has disappeared and the local government now resolves conflict or problems in common resource management. However, this can result in local authorities being overloaded when they take charge of all activities, including forest management. Furthermore, there are many internal problems within the community that can arise at any time, during which the traditional role of the village council and clan heads can be reinstated.

3.3.3. The Lack of Recognition of the Community's Legal Rights to Forests

Sand forests have been considered as common forests and local people have applied the village convention to manage the forests. So far, the entire sand forest area has not been officially allocated to the communities for management in the Phong Dien district. This is because the natural characteristics of the sand forests do not meet the criteria for forest formation outlined in Circular No. 34/2009/TT-BNNPTNT of The Ministry of Agriculture and Rural Development [32]. Specifically, although the criteria regarding the canopy cover and adjacent area are satisfied, the average height of the treetops has not reached 5 m, and consequently, the sand forests have not been recognized as natural forests on sandy soils [32]. However, the Vietnamese government recently issued Decree No. 156/2018/ND-CP, dated 16 November 2018, which details several articles of the Law on Forestry [33] and replaces the Circular 34, in which the criteria for natural forests on a rocky mountain, sandy land, saline water wetland, and forest types in other special ecosystems were adjusted to allow an average forest tree height of at least 1.0 m. This is an opportunity for local communities to be allocated sand forests.

Some scholars have defined this kind of sand forest, and fisheries, groundwater basins, and irrigation systems, as common resources [34–37]. Two points of view on common-pool resources exist while the context of common resources is increasingly exhausted. Hardin's theory of "tragedy of the commons" stated that the inevitable destruction of common resources is due to the overuse of resources with free access [11] as he sees common-pool resources as having open access, and that they have no ownership or regulation. In other scenarios, many scholars pointed out that common pool resource management with community conventions is considered the basis for a successful community forest management model [38]. Based on both points of view, the lack of legal recognition of forest ownership has reduced the effectiveness of the community in managing forests, resolving conflicts, and overshadowing the traditional role of local organizations. Meanwhile, these traditional roles still have significant value in rural construction and development in Vietnam and should be integrated into new rural construction [39] and resource management [12,13].

3.4. Policy Implications for Sand Forest Management

Community forest management in Vietnam has a long tradition. The community jointly managed the common resources with the conventions established by themselves. This form not only existed in mountainous areas [40] but also in the coastal communities along the north central coast [16,41]. Until the beginning of the 21st century, land and forest allocation has become major policy of the Vietnam government. However, natural forest

allocation to the community for management has only been officially recognized since 2004 after the government issued the amended Land Law 2003 [42] and the Law on Forest Protection and Development 2004 [12]. After a period of the implementation of forest allocation to the community for management, stakeholders and forestry policymakers have agreed that legal recognition of the community in forest allocation along with rights strengthened the community's right to preventing outsiders from affecting the community's forest because tenure insecurity has negative consequences. This may create a de facto open-access situation [43].

Previous studies have indicated that community-managed forests have a rate of deforestation that is lower than forests managed by other actors [44]. Specifically, research conducted in 14 countries in Latin America, Africa, and Asia found that the legal rights regarding forest tenure provided to indigenous and local communities will help them to have greater capability in controlling deforestation than if the forests belong to the state [21,45,46]. The assignment of forests to the community has led to better management, preventing and deterring acts of illegal deforestation for farming and exploitation [47].

Coastal forests, mangroves, or inland sand forests are considered shields that protect local communities from extreme weather. This was confirmed not only by local people in the two studied communes but also in other communes in the coastal area of central Vietnam [41,48]. Regarding biodiversity conservation, numerous studies have shown that in many places, forests with high biodiversity have disappeared or are being degraded, especially in impoverished populations [16]. The maintenance of the sand forests at the study sites is not only meaningful for environmental protection but also in maintaining and developing the biodiversity of the population living in sand forests in the area.

Moreover, when Vietnam applies the mechanism of payment for forest environment services (PFES) on a large scale, the land use right certificate can help the community to benefit from PFES and also receive the proceeds from the mechanism of Reducing Emissions from Deforestation and Forest Degradation (REDD+) in the future [49]. Therefore, based on the adjusted criteria for natural forests on sandy land [33], it is necessary to promote the allocation of sand forests to local communities so that they have the legal rights to actively manage and protect their forests and to obtain these potential benefits in the future.

Some research has found that for common resources, communities can effectively and sustainably manage resources themselves with their institutions. Although the convention is old and has been adapted to the new era, the resource users are traditionally the ones with the most complete knowledge of and experience managing their resources efficiently [4,50,51]. They have developed their regulations or rules to manage their natural resources [52]. From the same view, the results of the FGDs showed that the majority of the people who participated in the discussion about the community convention understood the provision of the community forest management regulations well. This is also a positive point found in this study as previous studies on community forest management in Vietnam have shown that local people were mostly involved in the implementation of forest management regulations but did not attend the regulation development process [53]. This means that in many cases, forests were allocated to local communities for management, but the regulations for managing allocated forests were created by FPU officials, with vry low levels of participation of local people and the communities, which meants the regulations did not work [53].

In the current context, along with the government's reform efforts at the macro level, grassroots governance reform has played a very important role in poverty alleviation and natural resource management. In addition to allocating forests to communities to increase community rights regarding effective forest management, Ostrom (1990), McKean (2020), and Agrawal and Ostrom (2008) emphasized that it is necessary to create a network of and connections between stakeholders or stakeholders need to have a common opinion about the values of the allocated forests to create unity [51]. Some studies on the management of common resources in this inland sand forest area found that collective action has helped

local people in negotiating with stakeholders to obtain compensation for encroachment on the dunes from silicate companies and asserted the voices of local people [41,54].

Judicially, the FPU is responsible for checking and inspecting the implementation of forest protection and management legislation; CPC is responsible for organizing the management and protection of forest areas that have not yet been allocated [12,13]. In legality, external stakeholders perform their functions properly. However, local people perceive that these agencies still have power and a decisive role in all activities related to sand forest management even though they are not directly involved in sand forest management activities. With this perception, villagers rate the role of CPC relatively high while the role of FPU is underestimated. In addition, the roles of the village council and the clan heads are also gradually overlooked. On the other hand, all responsibilities are placed on the shoulders of the village head and the forest protection team. Therefore, it is necessary to enhance the role of the village council and the clan heads in implementing the village convention in sand forest management as the village council has played a role in the administration of village conventions for many generations, and in mediating conflicts between clans and households in the village when there was a dispute related to the use of the sand forest. Moreover, the operation of forest protection teams is quite simple, especially as it does not cost a lot of money, and the apparatus is not cumbersome to implement. All villages in this study site agree with the method in which the whole community manages the sand forest, and pays forest protection teams to patrol the forest. This is considered a collective action of local people in sand forest management. Simultaneously with this management method, local people are willing to pay for forest management activities.

From the above findings, the legal recognition of forest ownership is very important. This is because without ownership, while the convention is only valid within the community, people outside the community often do not comply with the convention. If the district government allocates sand forests to the communities, the village convention for forest management will be institutionalized and legally valid for all stakeholders, so the management of sand forests will be more effective. In addition, with ownership, the communities will have more rights to make decisions and will be proactive at consulting stakeholders and implementing sand forest development activities when external support is received.

4. Conclusions

The sand forest is a typical forest ecosystem of inland sandy areas and plays an important role in the lives of people in north central coast Vietnam, from providing materials, such as timber, firewood, and medicinal plants, for local uses to protecting the living environment, including houses, gardens, and paddies, from the effects of harsh climates. In this study, we focused on exploring the determinants and challenges of community sand forest management in coastal north central Vietnam. Based on the above, we assessed policy implications for sustainable sand forest management.

The main finding of the present study demonstrated that changes in the sand forest roles have occurred, especially the shifting of the sand forest roles from the provision of economic values to the protection of environmental and spiritual values. On the other hand, this study also indicated that there have been many changes in the role of stakeholders in sand forest management, in which the roles of district authorities, CPC, FPU, and village heads have increased while the roles of traditional organizations have gradually been neglected. Consequently, the community's resources have not been fully mobilized for sand forest management activities. In addition, local people have faced several challenges, such as conflict between villages without sand forest and villages with sand forest (study sites) that belong to the same commune, and the changes in the stakeholder roles in resolving conflict regarding the use of the sand forest. Moreover, the lack of recognition of the community's legal rights to such forests has led to a decrease in the effectiveness of sand forest management, especially in resolving conflict over the use of sand forest resources. Based on the findings of this study and the recently adjusted criteria for natural forests

on sandy land [49], it is suggested that promotion of the allocation of sand forests to local communities is necessary to provide legal rights to effectively manage existing sand forests and obtain potential benefits in the future.

Author Contributions: All authors contributed extensively to the work. H.H.T., N.V.M. and N.T.H.M. performed the processing and wrote the manuscript. H.H.T., N.V.M., N.T.H.M. and T.T.T.H. conducted the field survey. S.I. reviewed the manuscript, and provided comments and suggestions to improve the manuscript. All authors have read and agreed to the published version of the manuscript.

Funding: This work was financially supported by Vietnam Ministry of Education and Training Grant Numbers B2019-DHH-07.

Data Availability Statement: Not applicable.

Acknowledgments: We would like to extend our sincere thanks to all the interviewees in Phong Dien district, Thua Thien Hue province.

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

References

- Sikor, T.; Gritten, D.; Atkinson, J.; Huy, B.; Dahal, G.R.; Duangsathaporn, K.; Hurahura, F.; Phanvilay, K.; Maryudi, A.; Pulhin, J.; et al. *Community Forestry in Asia and the Pacific: Pathway to Inclusive Development*; The Centre for People and Forests—RECOFTC: Bankok, Thailand, 2013.
- Mol, P.W.; Wiersum, K.F. Asia. In Common Forest Resource Management Annotated Bibliography of Asia, Africa and Latin America; Messerschmidt, D.A., Ed.; Community Forestry Note 11; FAO: Rome, Italy, 1993. Available online: https://www.fao.org/3/u904 0e/u9040e00.htm (accessed on 12 June 2021).
- 3. Foundation for Ecological Security. An Introduction to Forest Commons in Common Voice; Gujarat, India. 2011, pp. 5–7. Available online: http://iasc2011.fes.org.in/common-voices-3.pdf (accessed on 20 July 2021).
- 4. McKean, M.A. Common property: What is it, what is it good for, and what makes it work? In *People and Forests: Communities, Institutions and Governance;* Gibson, C.C., McKean, M.A., Ostrom, E., Eds.; MIT Press: Cambridge, MA, USA, 2020; pp. 27–55.
- 5. Andersson, K.P. Understanding decentralized forest governance: An application of the institutional analysis and development framework. *Sustain. Sci. Pract. Policy* **2006**, *2*, 25–35. [CrossRef]
- 6. Sunderlin, W.; Dewi, S.; Puntodewo, A. *Poverty and Forests: Multi-Country Analysis of Spatial Association and Proposed Policy Solutions*; Centre for International Forestry Research: Bogor, Indonesia, 2007.
- Hajjar, R. Are Forest-Dependent Communities Securing Legitimate Management Authority over Their Forests? Case Studies from Brazil and Mexico. In Proceedings of the XIII IUFRO World Congress, Seoul, Korea, 23–28 August 2010.
- IUCN; RECOFTC. Community Forest Management in Vietnam: Summary of Initial Analysis of Progress and Impact. 2011. Available online: https://www.iucn.org/downloads/iucn_recoftc_cfm_impacts_study_june_2011_en.pdf (accessed on 20 July 2021).
- RECOFTC. Community Forestry Management in Vietnam. 2021. Available online: https://archive.recoftc.org/country/vietnam/ basic-page/community-forestry-management-vietnam (accessed on 10 February 2022).
- 10. Wong, G.Y.; Moeliono, M.; Bong, I.W.; Pham, T.T.; Sahide, M.A.; Naito, D.; Brockhaus, M. Social forestry in Southeast Asia: Evolving interests, discourses and the many notions of equity. *Geoforum* **2020**, *117*, 246–258. [CrossRef]
- 11. Hardin, G. The Tragedy of the Commons. J. Nat. Resour. Policy Res. 2009, 1, 243–253. [CrossRef]
- 12. Vietnam National Assembly. Law of Forest Protection and Development. 2004. Available online: https://data.vietnam. opendevelopmentmekong.net/laws_record/lu-t-b-o-v-va-phat-tri-n-r-ng-nam-2004 (accessed on 10 July 2021).
- Vietnam National Assembly. Law on Forestry. 2017. Available online: https://data.opendevelopmentmekong.net/laws_record/ vietnam-law-on-forestry-2017 (accessed on 10 May 2021).
- 14. Tiet, L.D. About Village Convention and Rules; National Political Publishing House: Hanoi, Vietnam, 1998.
- 15. Dinh, B.X. Village Conventions and Management; Social Science Publishing House: Hanoi, Vietnam, 1998.
- 16. Tuan, H.H.; Cam, N.Q. Assessing the status and proposing solutions for sustainable sandy forest management in Hai Lang district, Quang Tri province. *J. Agric. Rural Dev.* **2019**, *362*, 131–140.
- 17. Tuan, H.H.; Hang, T.T.T. Analysing factors that influence on community forest management: Case study in Pho Trach village, Phong Binh commune, Phong Dien district, Thua Thien Hue province. *Hue Univ. J. Sci. Agric. Dev.* **2014**, *94*. [CrossRef]
- 18. Vietnam General Statistics Office. *Completed Results of the 2019 Vietnam Population and Housing Census;* Statistical Publishing House: Hanoi, Vietnam, 2020.
- Phong Dien DPC. Geography Book of Phong Dien. 2015. Available online: https://phongdien.thuathienhue.gov.vn/?gd=60 &cn=1075&cd=110 (accessed on 15 July 2021).
- Phong Dien DPC (District People's Committee). Geographical Location, Topography, Land, Fields. 2013. Available online: https://phongdien.thuathienhue.gov.vn/?gd=91&cn=1&id=78&cd=1 (accessed on 15 July 2021).

- Thao, T.T.H.; Lan, N.K.; Hoang, H.D.T. Characteristics of Plant Communities at Inner Sandy Areas in Thua Thien Hue Province. J. Sci. Hue Univ. 2015, 108. Available online: http://jos.hueuni.edu.vn/index.php/TCKHDHH/article/view/2079 (accessed on 25 July 2021).
- Phong Dien DPC (District People's Committee). Decision 38/QD-UBND dated 16/01/2020 on Forest Status of Phong Dien district in 2019. 2020.
- Asaduzzaman, M.; Salma, U.; Ali, H.S.; Hamid, M.A.; Miah, A.G. Problems and prospects of turkey (Meleagris gallopavo) production in Bangladesh. *Res. Agric. Livest. Fish.* 2017, *4*, 77–90. [CrossRef]
- Likert, R.A. Technique for the Measurement of Attitudes. Arch. Psychol. 1932, 140, 1–55. Available online: https://legacy.voteview. com/pdf/Likert_1932.pdf (accessed on 10 May 2021).
- 25. Wittmann, N.; Hoang, H.D.T.; Hung, L.T.; Pistorius, T.; Roth, M. Silvicultural Study Project: Coastal Restoration in Vietnam "Ecosystem-based Adaptation in the North Central Coast of Vietnam: Restoration and Co-management of Degraded Dunes and Mangroves"; UNIQUE Forestry and Land Use GmbH: Freiburg, Germany, 2019. Available online: https://www.international-climate-initiative. com/fileadmin/Dokumente/2019/20190527_Silvicultural_study_NCC-VN.pdf (accessed on 10 May 2021).
- Thua Thien Hue Geography—Nature. General Characteristics of the Natural Lakes and Reservoirs. (Đặc điểm chung về hình thái trằm, bàu). 2005. Available online: https://thuathienhue.gov.vn/vi-vn/Thong-tin-du-dia-chi/tid/Dac-diem-chung-ve-hinh-thai-thai-tram-bau/newsid/9FBCC64D-6514-415C-A9C8-E9E7E7D1A087/cid/DAE5D05B-D9CF-4165-B374-7ED2098A21D7 (accessed on 10 June 2021).
- 27. Tan Viet. One Hundred Things to Know about Vietnamese Customs; National Culture Publishing House: Hanoi, Vietnam, 2001.
- Chung, T.V. Rural Sociology (In Vietnamese: Xã hội học Nông thôn); Hanoi National University Publishing House: Hanoi, Vietnam, 2001.
- Sikor, T.; Thanh, T. Exclusive versus inclusive devolution in forest management: Insights from forest land allocation in Vietnam's Central Highlands. *Land Use Policy* 2007, 24, 644–653. [CrossRef]
- Mai, N.T.H. Forest and forestland use-rights: An institutional and economic analysis of forest devolution in upland-Central Vietnam. In *Farming&Rural Systems Economi*; Doppler, W., Bauer, S., Birner, R., Eds.; Margraf Publishers GmbH: Weikersheim, Germany, 2016.
- Thang, T.N.; Shivakoti, G.P.; Inoue, M. Changes in Property Rights, Forest Use and Forest Dependency of Katu Communities in Nam Dong District, Thua Thien Hue Province. *Int. For. Rev.* 2010, 12, 307–319. [CrossRef]
- MARD (Ministry of Agriculture and Rural Development). Circular No. 34/2009/TT-BNNPTNT on the Criteria for Determining and Classifying Forests. 2009; pp. 30–35. Available online: https://data.vietnam.opendevelopmentmekong.net/laws_record/ thong-tu-s-34-2009-tt-bnnptnt-quy-d-nh-cac-tieu-chi-xac-d-nh-va-phan-lo-i-r-ng (accessed on 10 June 2021).
- Vietnamese Government. Decree No. 156/2018/ND-CP dated November 16, 2018 of the Government Detailing a Number of Articles of the Law on Forestry. 2018. Available online: https://english.luatvietnam.vn/decree-no-156-2018-nd-cp-datednovember-16-2018-of-the-government-detailing-a-number-of-articles-of-the-law-on-forestry-169023-Doc1.html (accessed on 17 March 2021).
- Heenehana, H.; Basurtoa, X.; Bejderb, L.; Tyneb, J.; Highamcy, J.E.S.; Johnston, D.W. Using Ostrom's common-pool resource theory to build toward an integrated ecosystem-based sustainable cetacean tourism system in Hawaii. *J. Sustain. Tour.* 2015, 23, 536–556. [CrossRef]
- McKean, M.A. Common Property: What Is It, What Is It Good For, and What Makes It Work? In *Forest Resource and Institutions: Forests, Trees and People Programme*; Gibson, C., McKean, M.A., Ostrom, E., Eds.; Forestry Department Working Paper 3; FAO: Rome, Italy, 1998.
- 36. Ostrom, E. Self-Governance and Forest Resources; Occasional Paper; CIFOR: Bogor, Indonesia, 1999; Volume 20/1999.
- 37. Price, M.F. Temperate Mountain Forests: Common-Pool Resources with Changing, Multiple Outputs for Changing Communities. *Nat. Resour. J.* **1990**, *30*, 685–707.
- Kumsap, K.; Indanon, R. Integration of community forest management and development activities: Lessons learned from Ubon Ratchathani province. *Kasetsart J. Soc. Sci.* 2016, 37, 132–137. [CrossRef]
- Vietnam Government. Decision No 22/2018/QD-TTg, dated May 8, 2018, of the Prime Minister on the Formulation and Implementation of the Convention. 2018. Available online: https://vbpl.vn/botuphap/Pages/vbpq-van-ban-goc.aspx?ItemID= 129492 (accessed on 10 July 2021).
- 40. Huy, B. Community Forest Management (CFM) in Vietnam: Sustainable Forest Management and Benefit Sharing. In Proceedings of the International Conference on Managing Forest for Poor Reduction: Capturing Opportunities in Harvesting and Wood Processing for the benefit of the Poor, Ho Chi Minh City, Vietnam, 3–6 October 2006.
- 41. Mai, N.T.H. Conflict in Natural Resource Management in Central Vietnam: The Role of Collective Action in Protecting Community Benefits. In International Research on Food Security, Natural Resource Management and Rural Development; 2013; pp. 1–5. Available online: https://www.researchgate.net/publication/340630010_Conflict_in_Natural_resource_management_in_Central_ Vietnam_The_role_of_collective_action_in_protecting_community_benefits (accessed on 10 May 2021).
- Vietnam National Assembly. Land Law 2003. 2003. Available online: https://data.vietnam.opendevelopmentmekong.net/laws_ record/lu-t-d-t-dai-2003. (accessed on 10 May 2021).
- 43. Kusters, K.; de Graaf, M. Formalizing Community Rights to Forests: Expectations, Outcomes, and Conditions for Success; Tropenbos International: Wageningen, The Netherlands, 2019.

- Porter-Bolland, L.; Ellis, E.A.; Guariguata, M.R.; Ruiz-Mallén, I.; Negrete-Yankelevich, S.; Reyes-García, V. Community managed forests and forest protected areas: An assessment of their conservation effectiveness across the tropics. *For. Ecol. Manag.* 2012, 268, 6–17. [CrossRef]
- 45. Martin, E.; Suharjito, D.; Darusman, D.; Sunito, S.; Winarno, B. Traditional Institution for Forest Conservation within a Changing Community: Insight from the Case of Upland South Sumatra. *Komunita Int. J. Indones. Soc. Cult.* **2016**, *8*, 236. [CrossRef]
- 46. Stevens, C.; Winterbottom, R.; Springer, J.; Reytar, K. Securing Rights, Combating Climate Change. How Strengthening Community Forest Rights Mitigates Climate Change; World Resources Institute: Washington, DC, USA, 2014.
- 47. Ngai, N.B. Research results on community forest management of ethnic minorities in the northern mountainous areas of. *J. Agric. Food Ind.* **2006**, *9*, 78–80.
- Mai, N.T.H.; Hoang, D.T. Gender role in mangrove resource management: Case study in Trieu Phong district of Quang Tri province, Vietnam. *J. Vietnam. Environ.* 2018, 9, 92–98.
- Tan, N.Q.; Thanh, T.N.; Tuan, H.H. Community forestry in the process of development: Lessons learned from the Vietnam Forest Governance Learning Project. In Proceedings of the National Conference on Community Forest Management, Hanoi, Vietnam, 5 June 2009.
- Agrawal, A.; Ostrom, E. Decentralization and community-based Forestry: Learning from Experience. In *Decentralization, Forest* and Rural Communities- Policy Outcomes in South and Southeast Asia; Webb, E.L., Shivakoti, G.P., Eds.; Sage Publication: Los Angeles, CA, USA, 2008.
- Gibson, C.; McKean, M.A.; Ostrom, E. People and Forests-Communities, Institutions, and Governance; Massachusetts Institute of Technology: Cambridge, MA, USA, 2000.
- 52. Ostrom, E. *Governing the Commons: The Evolution of Institutions for Collective Action;* Cambridge University Press: New York, NY, USA, 1990.
- 53. Mai, N.T.H.; Hoang, T.Q.; Hung, P.V.; Tam, T.H. Evaluation of building and implementing the convention on forest management, protection and development in Thua Thien-Hue province. *J. Agric. Rural Dev.* **2020**, *383*, 127–134.
- Yasmi, Y.; Kelley, L.; Enters, T. Forest Conflict in Asia and the Role of Collective Action in Its Management; CAPRi Working Paper; IFPRI. 102; IFPRI: Washington, DC, USA, 2011; pp. 1–25. Available online: https://www.recoftc.org/sites/default/files/publications/ resources/recoftc-0000185-0001-en.pdf (accessed on 15 May 2021).