

## The Land and Tree Tenure-Based Dalihan Natolu Customs for Tree Management in South Tapanuli, North Sumatra

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**Abstract**— The land and tree resources management needs to involve local communities with a customary basis to preserve it. For that purpose, the research aims are to develop the concept of land and tree tenure-based *Dalihan natolu* customs in trees management of South Tapanuli. Exploratory research method is to describe and develop the concept of land and tree tenure in *Dalihan natolu* society of South Tapanuli, North Sumatra. Results show the pattern of land and tree tenure on Batak Mandailing- Angkola society shows the typical character-based custom *Dalihan Natolu*. Role of *Dalihan natolu* with elements *Mora*, *Kahanggi* and *Anakboru* vary between elements. *Dalihan Natolu* important role related to the transfer of rights to the land, and the rights of the multipurpose trees, especially rubber, coffee and salacca. *Kahanggi* element is the top priority in the transfer of rights over land and trees. While *Mora* plays a bigger role in case of conflicts in land and tree tenure. *Anakboru* play a role in helping *Mora* and *Kahanggi* activity in land and trees use.

**Keywords**— Land and tree tenure; Dalihan natolu; tenure security; local institutions.

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### I. INTRODUCTION

Land and forest degradation in Indonesia which is not accompanied by land protection, in the long term would adversely affect to the land and environment quality. Deforestation was triggered by the government's forest management policies that do not favor the indigenous peoples and forest.

Massive tree planting efforts has been carried out, but often the trees after planted were abandoned. Therefore, the tree planting program should be supported by all parties. But in reality the trees that have been planted are not maintained as it should be, and tend to neglect. Ignorance of tree management caused by a lack of clarity who has the benefit of trees in the long term. Some cases can be seen along the Deli River North Sumatra where after the seeds are planted in a tree planting program was not further treated and no one were responsible for the trees. This proves the property rights obscurity affect tree tree management.

Recent time the tree were always considered to include into the rights of land tenure. Where the rights to the tree following the rights to the land. Reality is the opposite, the clear rights of land that turned out the tree rights are unclear. It is sourced from local institutions (customary). Local rules determine the existence of trees rights even in privately owned lands.

By getting a clear concept of the land and tree tenure, the most doubtful of these rights can be overcome, so that the trees planting and maintenance continuously will be done by the people (farmers). The clarity of these rights will be arranged in the system of local rules, in this study the local customs system is the basis of land and tree tenure arrangement is Dalihan natolu in North Sumatra.

Land and tree tenure were related to the rights of ownership, use and control of the land and trees. Utilization of the rights to use the land and trees as a source of farmers' income. When these rights are not clearly obtained, then the farmer would avoid planting trees. So it can be said tree planting programs without a clear system of tree tenure, then it is only a sporadic act alone or tend to unsustainable in the long term.

Theoretically strong property rights in the rights of the individual, communal systems are often considered a barrier to investment in land in the form of tree planting. Some researchers say even communal ownership under certain conditions are able to manage their own resources (self governance) [1],[2]. This shows that local initiatives can support the management of their resources properly laid out in the institutional system of rules accepted by the community.

In accordance with the above opinion the arrangement of the tenure system can be a system of incentives for farmers to plant trees on their own land. But the order of the rule among indigenous people differs from each other. With a

custom basis Dalihan natolu in South Tapanuli, then the concept of the arrangement of land and tree tenure systems based Dalihan natolu important to develop. This concept may be a basis in the management of land resources and trees by the community by providing clarity of their rights as a basis for establishing an incentive system in the plant and maintain trees.

In this research activity were: 1) exploration of land and tree tenure patterns indigenous-based Dalihan na Tolu. This is how the rules in customs Dalihan natolu regarding the pattern of ownership, use and control of the land and trees. 2) Exploration rights of people who exist on the land and trees. 3) Exploration land and tree tenure security . Security tenure regarding the level and source of land and tree tenure security. The research method used exploration approach to Rapid appraisal based social forestry for land and tree tenure [3].

The study was conducted in South Tapanuli, North Sumatera Province, Indonesia. The location selected purposefully based on the area of primary residence Batak Angkola, there is a system of land use with multipurpose trees on communal lands, and the area is a base customary Dalihan natolu which is still applied in public life [4].

The sample was selected as the 7 District study sites based on their distribution and potential of the region. Purposefully selected sample villages with the provisions contained in the tree planting activity on the public land as a form of trees integration and agricultural crops (agroforestry). Respondents are Dalihan natolu Indigenous peoples, traditional leaders, Government Agencies, and local institutions. There were 196 total respondents.

Data and source data collected in this study were obtained directly in the field or from the respondents are: 1) the rights of land and tree tenure, 2) land use profile, 3) types of vegetation, crops cultivated by the community, 4) the diversity of plant species, and 5) utilization pattern of trees and other plants.

Data collection methods and instruments used in this study were: 1) observations, made before collecting data from respondents. 2) Questionnaire was made to obtain the data in relation to the research topic. 3) Interviews were conducted to deepen the answers on the questionnaire research. 4) Study carried documents as secondary data to complement primary data.

Descriptive analyzes were conducted to establish and explain patterns of land and tree tenure on community land. A descriptive view supported by quantitative data were analyzed based on the status of land and tree tenure shown as tenure security index. Analysis of patterns of land and tree tenure refers to the theory of property rights, including the access, use and management/ control of the land and trees. Assessment of the status of land and tree tenure security was measured by obtaining the exist rights at the community level. Conceptualization land and tree tenure -based Dalihan natolu to encourage the planting of trees on public lands can be drawn based on the concept of tenure over that of ownership, use and control.

## II. LAND TENURE BASED DALIHAN NATOLU

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Definition of land tenure [5] was a set of rights which a person or groups of private or public own land. Tenure as a set of rights, in particular in combination or one group's rights was determined by law and practice in certain communities. Specifically the concept of tenure is defined as anyone who utilize what and how long to resources.

The pattern of land tenure, which includes the ownership, use and control of land in South Tapanuli described in the following table I. Land tenure illustrates that the land rights are strong. In the standard rights index showed high scores (standard 6) .

TABLE I  
THE INDIVIDUALS' RIGHTS OF THAT EXIST ON THE LAND  
IN SOUTH TAPANULI

No.	The kind of right	Notation
1.	Planting and transplanting again	√
2.	Bequeath	√
3.	Renting	√
4.	Giving to others	√
5.	Pawn	√
6.	Sell	√

√ = can be done with notice

Rights that exist describing the status of land tenure security. The important thing is the security of tenure. Tenure is a legal form means that the rights or habits which people in farming to get full access to the land. Strong security status of tenure, which provides the opportunity for farmers to gain access to productive land profits. Land and tree tenure security, may be indicated that the state or other private can not interfere with the land and trees use by the owner [6]. Element in the tree tenure is the kind of rights that exists in the tree, duration, and the totality of the full rights on the tree. Is said to be safe if there are no doubts about the lose their right.

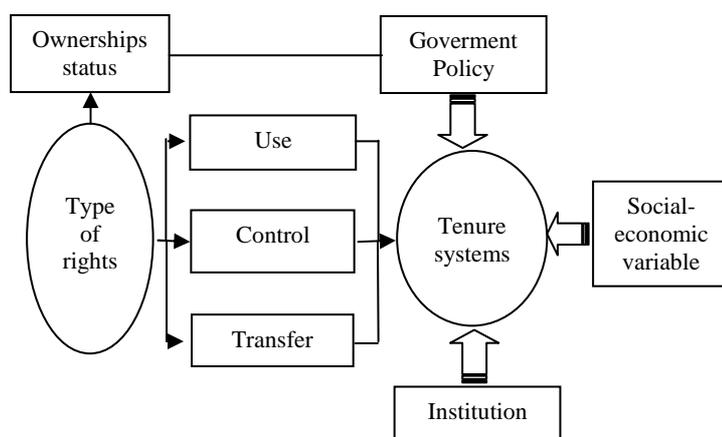


Figure 1. Tenure systems and some dependent variable [7]

The rights to plant and replanting again can be done, although it generally has planted itself or by the parents. This illustrates that strong ownership as a form of reflection the land obtained from inheritance from parents to children, which is the ownership status of the property was private. The land rights generally can be done, but activities such as rent, give to others and pawn rarely done. But the land can be inherited and sold to other parties. Although the security status of the land rights of strong, but the fact that the transfer of rights over land requires the consent of other family members, as illustrated in figure 1 that the tenure status were determined by various factors. A system of tenure actually a set of property rights in a particular community. So the tenure system can differ among different communities. Usually there have been always a wide variety of tenure forms in a tenure system with a variety of system usage or various types of users. This is a coherent matter or complementary to each other. Based on the above, the land tenure and the tree tenure were intended as rules applicable in the system of land tenure and tree.

Furthermore, tenure is determined by the rights of utilization, control and transfer the land. the land inheritance patterns in Mandailing-Angkola as the Batak community that includes strong patrilineal which puts the control property to the boys. Matrix control of land in South Tapanuli society can be seen in table II.

Land tenure status personally, although have a strong standard stand, but the land can still be used by other family members since getting permission from the landowner. But generally only be done by close relatives such as brothers and sisters. This is in accordance with the opinion, that the strong rights to land management will encourage a more efficient and sustainable [8].

Land control is generally only done by the family itself without the involvement of other agencies. This occurs due because of tenure in the form of private property and has a strong security status. Land control is also related to the status of the land. Generally, the land is a legacy in the form of parents, so the other family is also involved in the control of the land, especially when there is a conflict over land.

The involvement of other agencies generally do not occur in the security or control of the land. The role is mostly done by the owner of the land itself, coupled with *Dalihan Natolu* elements. The *Dalihan Natolu* particular role in monitoring the transfer or the transfer of rights to the land, because during this time the land is not in conflict with other community members. Local institutions play a bigger role when facing conflicts among fellow members of the community. Conflict resolution generally relies more preferably kinship or with the involvement of traditional institutions based locally to the *Dalihan Natolu* elements.

*Dalihan natolu* means "three-legged stoves", which is used as the basis or foundation of cooking pot. The meaning of *Dalihan natolu* was a customary social institution which is a unity of the whole community that has its own custom rules to regulate various aspects of life that can be used as a tool to overcome various conflicts of rights and obligations [9]. *Dalihan natolu* is the joint most basic of life of the Batak [10]. By arrangement Batak society, this has three elements of *Dalihan natolu* working together in various ways, including in managing land resources.

TABLE II  
THE MATRIX CHARACTERISTICS OF LAND TENURE ON PUBLIC LANDS  
IN SOUTH TAPANULI

Type of rights	Dimension		
	Man (Who)	Use (What for)	Time (How long)
Ownership	<ul style="list-style-type: none"> <li>▪ Land Holder</li> <li>▪ Ownership of land acquired as an inheritance from parents to children and own purchased or giving from <i>Mora</i>.</li> <li>▪ The division of inheritance is also based on the religion of Islam.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Agriculture with mixed crops (agro-forestry)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Unlimited of time</li> </ul>
Use rights	<ul style="list-style-type: none"> <li>▪ Land holder and family</li> </ul>	<ul style="list-style-type: none"> <li>▪ Mix Gardens, between the multipurpose plants such as salak, rubber, coconut, and agricultural crops (simple Agro-forestry)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Unlimited of time</li> </ul>
Control rights	<ul style="list-style-type: none"> <li>▪ Land holder / owner of the land</li> <li>▪ Control by other parties rarely done</li> <li>▪ Local agencies play a role when there is a land conflict</li> <li>▪ <i>Mora</i> advises when land conflicts, especially if the arable land was given by <i>mora</i></li> <li>▪ The controls were also carried out by <i>Naposo bulung</i>: a group of young men/ women in the community .</li> </ul>	<ul style="list-style-type: none"> <li>▪ Control by the land owner in terms of the land use for agricultural business interests in meeting the needs of the household</li> <li>▪ Settlement family level conflict, if not complete then brought to <i>Sopo Godang</i> (venue/ indigenous) by <i>Mora</i>.</li> </ul>	<ul style="list-style-type: none"> <li>▪ As long as land use</li> </ul>
Transfer rights	<ul style="list-style-type: none"> <li>▪ Landlord with or without approval of other family members.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Inherited, given or sold to other parties</li> <li>▪ If sold, the priorities for the clan members (<i>Kahanggi</i>).</li> </ul>	<ul style="list-style-type: none"> <li>▪ As long as land tenure rights.</li> </ul>

Indigenous *Dalihan natolu* widely known in North Sumatra, namely in the community of Batak Toba and Batak Mandailing-Angkola (*bona bulu*). *Dalihan natolu* elements in *bona bulu* as the object of this study are: *Kahanggi* (group of relatives within a clan), *Anak Boru* (group of relatives who took a wife from relatives *mora*), and *Mora* (group of relatives who gave *Boru* to be the wife by *Anak boru*). While *hatobangon* are intellectuals indigenous people have of understanding the customs of Batak [4].

### III. TREE TENURE BASE *DALIHAN NATOLU*

The pattern of tree tenure described the rights of ownership to the trees, utilization, control and transfer of rights to the tree. In the South Tapanuli land area generally dominated by rubber, *salak*, palm, coconut and cocoa-based agroforestry systems. Matrix of the tree tenure were in table III.

TABLE III  
MATRIX OF TREE TENURE CHARACTERISTICS ON PUBLIC LAND  
IN SOUTH TAPANULI

Type of Rights	(Who) Usage	Use (For what)	Time (How long)
Rights of planting and transplanting again	Land Holder	Agroforestry land-based rubber, <i>salak</i> , palm, coconut and cocoa	Unlimited
Right to tree product	growers	Revenue	During the productive
Right to stem	growers and family members	Consumption and sold	No restrictions
The right to sell timber	growers	income	Not limited, can also be in the form of crops
Rights of control (management)	growers and family members	Agroforestry management	During the life of plants
Rights to land inherit	Land Holder	inherited	Throughout Tenure time

Tree management regarding tree planting, maintenance and utilization aspects. The main problem faced by the community planting trees is unclear who take the harvest (benefit) later ([11], [12], [13]). This raises doubts in the tree ownership, thus making people reluctant to plant trees on the farm. Obscurity of this right affects the weak maintenance of trees in community forestry projects. Even the trees that have been planted tend to be left alone. Overview of tree tenure rights as a tree tenure security reflection in South Tapanuli shown in table IV.

TABLE IV  
THE INDIVIDUALS RIGHTS THAT EXIST IN TREES IN SOUTH TAPANULI

No.	Right Type	Notation	Description
1.	Planting and transplanting again	√	If necessary replanted
2.	Maintenance	√	Mostly done land clearing without fertilization
3.	Cutting	√	Rarely done due to meet their own needs
4.	Using the tree	√	For own needs
5.	Bequeth	√	Can be done
6.	Sell	√	If necessary

Remarks: √ = can be done with notice

The table illustrates that the level of tree tenure security is high. However, cutting down a tree and using were rarely performed, because the use of trees was generally performed in meeting their own needs. Tree tenure security in the long term means to convince the farmers to collect the results later. This became the main requirement of adoption and investment in land. In other words, farmers will invest a tree

if there is a predictable secure for harvest later. Conversely, if the status is less secure than the tendency of farmers will avoid investing tree in the long term.

Recent time, tree tenure was considered to the land tenure. According to [14] the rights to plant, harvest and benefit of tree associated with the rights to the land. Insecurity tenure actually triggers the planting of trees in the early stages. Even explains the existence of an unsafe land make farmers will not plant trees that grow in the long term, because there is no clarity who harvest it later [12]. Likewise the rights of individuals under the communal land are very weak, so it does not support investment in the form of a tree planting to the land [15].

Reality when the land tenure were strong, not necessarily followed by the strong tree tenure as reflected in the tree rights [16]. Land tenure on the land was not always followed by strong tree tenure ([5], [17]). One can access the land and planting trees when the tree rights were strong without been owned the land. Research in West Sumatra prove in the communal land where the individual rights are weak, there are strong tree tenure along the regulation of local institutions that underlie the tree tenure systems [18].

*Dalihan Natolu* plays role in the tree tenure are shown in table V. The role was apparent in perennial crops such as durian, coconut, trees and other multi-functional plants. *Dalihan Natolu* has a role in maintaining, felling trees and using trees. Nourish the tree as forms of engagement such as cleaning the garden. More involvement of the co-operation to help and used plant products (wood). Wood has a communal function rather than for the land owners benefit.

TABLE V  
ROLE OF *DALIHAN NATOLU* IN ACTIVITIES ON PUBLIC LAND

Type of Activity	<i>Mora</i>	<i>Kahanggi</i>	<i>Anakboru</i>
Planting and transplanting again?			√
Maintaining of trees?			√
Cutting down trees?			√
Using the tree?	√	√	
Bequeth trees?	√	√	
Sell trees?	√	√	

*Dalihan Natolu* involvement cannot be separated in the tree control on the transfer of rights related to the conflict, such as the timber theft or other tree products. Basically, any conflict related to property rights claimed by others parties. The approach of this conflict within the Batak kinships preferably by custom approach as an alternative rather than through formal law. As mentioned, that the Batak people prefer outside the court in solving the dispute. The *Dalihan Natolu* plays a very important role to solve the conflicts over tenure claims on resources including trees [19]. Batak society cannot be separated from the traditional system based on the *Dalihan Natolu*. The *Dalihan Natolu* customs system is the identity of the Batak people and they cannot be separated from the traditional system wherever located [16].

While in the non-timber plant products, such as coffee, *salak*, rubber, then land owners use the product for the family needs rather than involve his relatives in *Dalihan*

*Natolu*. *Mora* plays a larger role in directing the farming activities in plant selection and form of their farm. In maintaining activity and cutting down trees *mora* basically act more as advisors, but also may be involved in the use of wood products. *Mora* can be involved helping to sell timber to consumers.

While *Kahanggi* also act to help the owner to manage their farm and also maintenance and utilization of tree. In the case of tree utilizing *Kahanggi* may borrow a wood for his own needs, while *Anak boru* can use the tree utilization along the permission of the owner.

According J.C. Vergowen *Dalihan Natolu* is an element of Batak kinship [16]. It was connecting each sub-ethnic groups to become a great bond between each other. *Dalihan Natolu* meaning literally as a three-legged stove mutually support each other. The characteristics of Batak community mandailing-Angkola consists of *Mora*, *Kahanggi* and *Anak Boru* as *Dalihan natolu* system. In Batak philosophy *Somba marhulu -hula*, *manat Mardongan tobu* and *elek marboru* have different pressure on every ethnicity in daily activities, but in general have similarities in relation to each other on each element of the *Dalihan Natolu*. As known in North Sumatra there are approximately six ethnic of Batak. Specifically with different characteristics, but have the common principle of universal patterns.

In Southern Tapanuli as a place of domicile Batak Mandailing-Angkola, Islamic rules become an integral part in daily life. Islam and indigenous *Dalihan natolu* generally be joints in their lives. Islam was the majority religion of Batak Mandailing-Angkola [20]. The rules of the Islamic religion and kinship *Dalihan Natolu* become an integral part of public life in South Tapanuli. The rules are also related to resource management, including trees. Utilization, control and transfer of rights on the land and tree also influenced by the relationship between the *Dalihan Natolu* elements. In fact, to solve the conflict between the residents, the Batak people tend to choose an alternative approach or involve the *Dalihan Natolu* elements [19].

The problems that often arise in the tree management were who controls the tree. Control trees in South Tapanuli determined by among other things: (1) The type of tree. For multipurpose woody plants with non-wood products, distinguished by timber species. For those types of tree fruit products and non-wood, it is not required in the permit to cut down trees. Likewise for other uses, the owner can freely exploit its product. While the building of timber species, it is necessary permitted to cut down trees. Permission mainly of *Kahanggi* elements, if necessary with *Anak Boru*, usually quite *Kahanggi* only. The permitting process of the *Dalihan Natolu* elements was an unwritten rule. Permit more as a form of deliberation, with *Anak Boru* as witnesses. (2) The role of *Dalihan Natolu* elements. *Mora* elements, mainly an advisory role in the tree management, either type selection, and utilization. *Kahanggi* necessary plays a role to control of the tree management. Or in other words *Kahanggi* are those who manage trees. While the *Anak Boru* act more as helping to *Kahanggi* in managing trees. Trees can be sold as durian, *Ingul*, i.e. trees that can be processed. (3) The purpose of cutting down trees. Tree control also depends on the purpose in cutting down the tree. Felling trees for its own purposes does not need a license, permit only for lumber sold. Above

institutions involved in licensing and supervision of timber traffic were the head of the village. For sold wood that only need permission/ supervision of village head alone. Institutions involved in supervision/ permit felling of trees was the village head administration. If the fellen timber in the form of processed wood must be a written permission from the village head. The village rules implemented in a regulatory filing in the community. If the rule violated village, then reprimanded or pay a fine of Rp.5000- 10,000/ cubic.

#### IV. CONCLUSIONS

The land and tree tenure based indigenous *Dalihan Natolu* on the Batak-Angkola mandailing shows that there are role of the *Dalihan Natolu* elements specifically in resource management and utilization of land and trees. The rights to land and trees in the form of access and utilization as well as the rights to transfer to another person associated with the elements in *Dalihan Natolu*. The role of the *Dalihan Natolu* elements more as an agreement of kinship than as a standard rule system. That role is limited to the transfer of rights to timber trees, especially commercial trees.

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