



Developing Concept of Custumary based tree tenure in North Sumatera Indonesia

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Abstract— The research aims to develop the concept of tree tenure-based *Dalihan na tolu* custom in the management of trees on public land in South Tapanuli. This study became the basis to develop the management systems to encourage people planting and maintaining trees as a clarity of tree tenure systems. Tree tenure systems relating to the local rules, which is influenced by customary rules. In the long term it is important to address the environmental damage caused by the trees felling. The concept of land and tree tenure systems based *Dalihan na tolu* custom, which can be the basis of tree management policy on public land. Results illustrate that the role of local communities in the *Dalihan na Natolu* customary system decrease in land and trees management. The development of the tenure concept-based of indigenous peoples need a clearly structuring in variety of roles. Differentiation of the indigenous peoples role in managing land and tree resources required in a well-established institution that aims to strengthen claims the rights of the common interest.

Keywords: Land and tree tenure, *Dalihan na tolu*, security of tenure, local institutions

INTRODUCTION

Land and forest degeneration encourage a massive tree planting program by the various parties. These activities are carried out both at national lands or public lands. Unfortunately the program as incidental activities only and not sustainable in preservation. In fact, tree planting programs often neglected after planting. This is due to unclearly on who will benefit from the trees later. Some cases in North Sumatra can be seen along the Deli river where after trees planting programs are not treated further for maintenance and no one's responsible for the trees. This proves obscurity rights of tree tenure and reflects the poorly management.

Land and tree tenure is related to the rights of ownership, use and control of the land and trees. The utilization means the rights to use land and trees as a source of farmers' income. When these rights are not clearly obtained then the farmer will avoid planting trees. So it can be said tree planting programs without clarity tree tenure system, then its only a sporadic act and not sustainable in the long term.

Theoretically strong property rights on individual rights, communal systems are often

regarded as obstacles in the form of land investments as tree planting. Some researchers say even communal ownership under certain circumstances are able to manage their own resources (self-governance) (Agrawal, 2001; Ostrom, 1999). This suggests that local initiatives can support the management of their resources properly laid out in the rules of the institutional system that is accepted by the community.

According with the opinion above the arrangement of appropriate tree tenure systems can be an incentives system for farmers to plant trees on their own land. But the order of the rules among indigenous people differ from each other. With the custom base *Dalihan na tolu* in South Tapanuli, then the concept of the land and tree tenure arrangement based *Dalihan na tolu* important to be developed. This concept can be the basis for resource management of land and trees by the community which providing clarity of their rights as a basis for building a system of incentives to plant and maintain trees.

MATERIAL AND METHOD

The reserch includes: 1) the exploration of patterns of customary *Dalihan na Tolu* -based land

and tree tenure. This is how the rules of customary *Dalihan na Tolu* regarding to the patterns of ownership, use and control of the land and trees. 2) Exploration of the people's rights who exist on the land and trees. 3) Exploration of land and tree tenure security. Tenure security Regarding to the level and sources of land and trees tenure security. 4) social and economic status, which include: the level of total household income, income from farm land, age and education of head of family, and number of family members. Method of research used exploration research based to the *Rapid appraisal social forestry for land and tree tenure* (FAO, 2000).

A. Research Study Area

The study was conducted in South Tapanuli, North Sumatra Province. Location selected purposively based on the main residential areas *Batak Angkola* society, there is a land use system with multipurpose trees on public lands, and the area is a custom base *Dalihan na tolu* are still applied in society (Persadaan Highways Harahap, 1993).

The study be conducted in the period April to July 2014, a preliminary survey conducted about the area situation under study concerns the geographical conditions, land use and the types of plants / trees are cultivated. It aims to determine the location and the study sample.

B. Sample Selection

Of a total of 14 sub-districts in South Tapanuli selected as 7 sub-district study sites based on distribution and potential regions. Purposively selected sample villages with the provisions contained in the tree planting in public land as a form of integration of trees and agricultural crops (agroforestry).

According to the purpose of the study to observe *Dalihan na tolu*-based tree tenure, then the selection of the sample is determined by the elements of *Dalihan na tolu*, namely *kahanggi*, *anak boru*, *mora* and *hatobangon*. Thus the respondent is determined based by those involved in the management of trees, namely indigenous *Dalihan na Tolu*, traditional leaders, religious leaders, government dann elements of the relevant agencies in the research area.

C. Data and Data Sources

The data and sources of data collected in this study are as follows:

1. Primary data obtained directly in the field or from the respondents are: 1) the rights of land tenure and tree, 2) land use profile, 3) the types of vegetation crops cultivated by the community, 4) the diversity of plant

species, and 5) utilization patterns of trees and other plants.

2. Secondary data were obtained from the village institutions and related agencies, namely: 1) the physical condition of the study area, state and physiographic land, topography and elevation, land use, local climate and forest area, 2) the demographic structure of the region concerning the community, ie population, employment, education, etc., and 3) socio-economic conditions of communities in the study area.

D. Data Collection Methods and Instruments

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

E. Data analysis

Descriptive analyzes performed to establish and explain the patterns of land and trees tenure on community lands. Descriptive method supported by quantitative data were analyzed based on the status of security of land and tree tenure security shown as security index. Analysis of land and tree tenure patterns refers to the theory of property rights (property rights regime) including the access, use and management/ control of the land and trees.

Assessment of the status of land and tree tenure security is measured by the index obtained on the rights that exist at the community level:

$$S = \frac{\sum s}{n}$$

S = Security Indeks

$\sum s$ = total number of scores

n = total of respondents

RESULTS AND DISCUSSION

A. Characteristics of Research Site

Studies conducted in South Tapanuli. Location selected purposively based because there is agroforestry areas occur as a whole landscape of integration of annual crops (trees) and agricultural crops. Agroforestry basis on this location generally cacao plant, so named as cocoa agroforestry. In addition, this region is the indigenous people are the traditional order *Dalihan na Tolu*.

South Tapanuli located on the line 0°58'35"-2°07'33" north latitude and 98°42'50 "- 99°34'16" east longitude. North is bordered by Central

Tapanuli and North Tapanuli. East borders the district of Padang Lawas and North Padang Lawas regency. While the south by Mandailing Natal. West border with Mandailing Natal and also Indonesia Ocean (BPS, 2012).

The total area of the South Tapanuli is 4,367.05 km². While the altitude ranges from 0 to 1925.3 m above sea level. When viewed from the wide of region, South Tapanuli area approximately 4,367.05 (Km²) (BPS, 2012).

Approximately 81.60% of the labor force in South Tapanuli working in the field of Agriculture, Horticulture, Forestry, Hunting, and Fishing (BPS, 2012).

Rainfall in South Tapanuli tend to be irregular throughout the year. In March occurred highest rainfall (1,508 mm). While the rainy day most occur in that is 22 days in November.

B. Land tenure pattern

Definition of land tenure by Bruce (1998) is a set of rights to which a person or group has a private or public land. Tree tenure is developed of the land tenure concept. Tenure as a set of combination particular rights or one group of rights prescribed by law and custom in a particular society. The concept of tenure is specifically defined as who are utilizes of what and how long to the resource

A tenure system actually a set of property rights in a particular community. So the control system can differ among different communities. Normally there is always a wide variety of forms of tenure in a tenure system with a variety of systems or the use of various types of users. This is something that coherent or complement each other. Based on the above, land tenure institution intended as the applicable rules in the land.

Land tenure which include ownership, use and control of land and trees are described in the following table. In South Tapanuli Illustrates that land tenure rights on land performed strongly. In standard rights index showed high values. (standard 6) (Table 1).

The rights for the planting and replanting can be done, although already planted themselves or by parents. This illustrates that strong ownership of land as a reflection of land inheritance obtained from parent to children, which is ownership status is own proprietary. The rights on land can generally be done, but activities such as rent, give to others and pawn rarely done.

But land can be inherited and sold to another party. Although the security status of land rights are strong, but the fact that the transfer of rights over the land requires the consent of other family members, as illustrated in Figure 1 that the status of tenure is determined by various factors.

Furthermore, this tenure is determined by use rights, control and transfer of land. As known

patterns of inheritance of land in Mandailing-Angkola as a community that includes strong patrilineal Batak which puts the control of property to a boy. Matrix of land tenure in South Tapanuli can be seen in Table 2.

Status of land tenure although personally have strong standards, but the land can still be used by other family members throughout the permission of the land owner. But generally only be done by close relatives such as brothers and sisters. This is in accordance with the opinion of Rahman et al, (2002) with strong rights to land management will encourage a more efficient and sustainable.

Land control generally done by the family themselves without the involvement of other institution. This occurs due to tenure status are entirely private and has a strong security. Land control related to the status of the land. Generally, land is a inheritance of parents, and therefore the other family involved to control of land, especially when there is a conflict over land.

Tenure is a form of legal system means bundle of rights or customs tenure which people in farming gain access to earning profits on land and trees. The important thing in the tree tenure is security of tenure. Land tenure security according to Bruce (1998) may be indicated that the state or another person can not interfere to the land use by the owner. The element of tenure are a type of exist rights, the length of tenure time (duration), and totality rights to the land. It can be safe if there are no doubts about the lose their rights. Land tenure can be viewed also as a system of rules in the right of ownership, use and management/ control of the land.

C. Role of local Institution on Tenure

Institutional as a system of rules and organization strengthen the natural resource claims. Local institutional reflect local power relations that affect the arrangements of ownership rights (property right) including institutional system of land tenure (Meinzen-Dick et al, (2004).

The involvement of other institutions generally do not occur in a security or land control. The role is mostly done by the land owner itself coupled with elements *Dalihan Natolu*. The *Dalihan Natolu* particular role in monitoring the transfer or assignment of the land rights. So far the land not in conflict with other community members. Local institutions play a bigger role when facing conflicts among members of the community. Resolution of conflict generally rely more preferably by family deliberation way with the involvement of local traditional institutions based on the elements *Dalihan na tolu*.

Dalihan na tolu meaning "three-legged stove", to be used as a platform or focus pot for cooking. What is meant by a *dalihan na tolu* is a

social custom board which as a union of the whole of society has its own customary rules in organizing various even of life can be used as a tool in addressing the conflict of rights and obligations (Lubis, 1997). *Dalihan na tolu* is the way of life of the Batak peoples (Sitohang and Sibarani, 1981). By order of Batak society, which has three elements as *dalihan na tolu* that work together in various ways, including in managing land resources.

Indigenous *Dalihan tolu* widely known in the North Sumatra, namely Batak Toba and Batak Mandailing-Angkola community (*bona bulu*). The elements of *Dalihan na tolu* in the *bona bulu* as the object of this study is: *kahanggi* (kin group in the clan), the *anak boru* (group of relatives who took wives from relatives *mora*), and *mora* (a group of relatives who gave *Boru* to be wife by *anak boru*). While the *hatobangon* are the scholar of indigenous peoples who have understanding of the Batak customs (Parsadaan Marga Harahap, 1993).

So far, the existence of indigenous *Dalihan na tolu* more seen as a custom activity alone. However, the role of indigenous structures in natural resource management, especially on land directly included in a customary rule *Dalihan na tolu*. This is related to the land distribution (inheritance) and use of land and tree, which are very important in maintaining sustainability.

Kind of public institutions that follow by people in South Tapanuli are following Table 3. The type of institutions that follow by local community intended as a collective action. Collective action institutions serves as a forum that unites members for the activities of non-profit or social activities. Form of institution that aims to profit interest forum is private institutions. While public institutions are government formal agencies as the representative of government in organizing community.

Public institutions has a greater role in village administration functions as representative of government and less oriented in an effort to improve the local economy directly. The lack of institutional incentives in the natural resources management for more effective and efficient management, or in other words less reward and punishment. Yet according to Hasan (2000) reward and punishment is an important action that institutional rules can be implemented.

According to Abdullah (2001) society members in a social organization which aims to encourage to overcome the difficulties in his life, and vice versa without the support of the institution or organization assume someone will have difficulty in gaining access to use the various resources, including the land and trees. Therefore, institutions can be a source of information for its members in bridging interests with outside parties.

Or in other words there is a dependence of a person connected with another in an institution or organization.

The rights on land basically can be fully done by the land owner. However, the implementation of the transferring ownership decision to another party need approved by other family members. In the use of such planting and replanting again can be done freely without having approval from the other party.

C. Pattern of Tree Tenure

The tree tenure pattern describes the rights associated with tree ownership, use, control and transfer of tree rights. The types of trees that dominate in the study site are rubber, coffee, palm oil, *salak* and durian.

The plant selection describe economic objectives as the main motivation in farm activities. Rights to land are strong according to Otsuka et al (2001) as the main reason for someone to plant trees on the land, because there is a guarantee in utilizing harvest later. But in fact, due to the economic needs pressure, then the choice of trees planting quickly replaced with plant produces.

The strength of individual rights in a communal society impact reduced communal role in the natural resources management. This is consistent with the results of the study Martial (2011) conducted in West Sumatra. The role of the communal and the individual can not be separated from the management of natural resources. In a communal society there is always a duality role in the management, because there is always communal rights in individual ownership. Or it can be said of individual rights has a communal dimension, which is actually individual a constituent of communal society itself. Communal rights associated with the custom system *Dalihan tolu*. So the types of activities that can be done or not determined by the customs system.

Role of *Dalihan Natolu* appear on perennial crops such as durian, coconut, trees and other multifunctional plants. *Dalihan Natolu* has a role in maintaining, cutting down trees and using tree. Maintain trees as a form of engagement such as cleaning the garden. Involvement of the co-operation to assist and utilize plant products (timber) (Table 4). So the wood has a communal function in addition to its landowners own interests.

Dalihan na tolu involvement can not be separated with tree control on the rights transfer associated with the conflict, such as the theft of timber or other tree products. Basically any conflicts related to property rights claimed by the others parties. The approach of this conflict in the Batak community preferred kinship or custom

deliberation as an alternative approach rather than through formal legal. As mentioned by Manalu (2009), the Batak community that preferred ways outside of court to resolving the dispute. That is very important role of *Dalihan na tolu* to solve conflicts of resources use including trees. According Toruan (2013) Batak society can not be separated from the *Dalihan na tolu* customary system based. The custom systems of *Dalihan na tolu* in Batak society is their identity wherever they lived.

While the non-timber plant products, such as coffee, bark, gum, then land owners utilize the results to the family needs without involving relatives in *Dalihan na tolu*.

Mora has a greater role in directing the farming activities in the selection of plants and form their farm. In maintaining activity and cutting down trees *mora* basically acting as adviser, but also may be involved in the use of wood products. *Mora* can be involved to sell timber to consumers.

While the role of *kahanggi* play to help the land owner to manage his farming operation and also in tree maintenance and utilization. In terms of utilizing the tree, *kahanggi* may borrow wood for his own benefit, while *anak boru* can utilize trees along the permission of the tree owner.

According J.C. Vergowen *Dalihan Natolu* is the element of kinship in the Batak community (Toruan, 2013). It is a liaison of each sub-ethnic groups to become a great bond between each other. *Natolu Dalihan* meaning literally as three-legged stove mutually support each other. Characteristics of Batak Mandailaing-Angkola society in its detainees consists of *Mora*, *kahanggi* and *anak boru* as *dalihan na tolu* system. In Batak society the philosophy *somba marhulu-hula*, *manat mardongan tobu* and *elek marboru* have differences pressure on the day-to-day activities in any ethnic, but in general have equality in relation to each other in every element of the *Dalihan na tolu*. As known in North Sumatra there are approximately six ethnic Batak. With characteristics specifically different, but have common principle of universal patterns

South Tapanuli as the domicile of Batak Mandailaing-Angkola society, Islamic rules become an integral part of everyday life. According to Lubis (2005) Islam and the indigenous *Dalihan na tolu* generally be rules of their lives. Islam is the majority religion of Batak Mandailaing-Angkola society. Islamic religious rules and kinship *Dalihan na tolu* become an integral part of public life in South Tapanuli. The rules are also related to resource management including tree. Utilization, control and transfer of rights to land and trees is also influenced by the relationship between the elements *Dalihan na tolu*. In fact, according Manalu (2009) to solve the

conflict between residents, Batak society tends to select a resolution conflict with alternative approaches or involving indigenous elements *Dalihan na tolu*.

Tree management regarding to aspects of planting, preservation and utilization. The main problems encountered by the community in planting trees is poor clarity who picking harvest (benefit) later (Dias, 2003; Mwakubo, 2002 and Gebremedhin *et al*, 2003). This has led doubts in the trees ownership, and making people refused planting trees on agricultural land. Obscurity of rights have an impact on the weak preservation of trees in community forestry projects. Even the trees that had been planted tend to neglected.

Tree tenure security in the long term can assure farmers to pick the results later, became the main requirements of adoption and investments into land. In other words, farmers will invest a tree if there is a predictable security for harvest later. Conversely, if the status is less secure then the tendency of farmers to avoid tree investments which as a long term plant.

All the time tree tenure perceived as shipped with land tenure. According to Otsuka *et al* (1997) on the rights of crops, harvesting trees and the benefits associated with the rights to the land. tenure insecurity actually trigger trees planting in early stages. Even Mwakubo (2002) describes the existence of insecure land, farmers will not plant trees that grow in the long term, because there is no clarity who will harvest it later. Likewise Otsuka *et al* (2001) mention individual rights under communal land is very weak, so it does not support planting tree investment to the land.

But the fact in a strong of land tenure even though not necessarily followed by a strong tree tenure also which reflected in the tree rights (Otsuka *et al*, 2001). FAO (2002) and Talwar and Ghate (2004) mentions land tenure is not always followed by strong status on tree tenure. Ones can access the land and planting trees when the tree rights that he/she believed to be strong without being the land owner. Research Martial *et al* (2012) in West Sumatra prove on communal land although the individually rights are weak there were strong tree tenure as long as there is a local institutional arrangements underlying tree tenure systems.

Thus its important to look at the tree as a system of tenure itself which not always shipped with land tenure status. In this study emphasized the central point on the tree tenure rights which can support the efforts of the planting, maintenance and utilization of trees on public land.

CONCLUSION

A. Conclusion:

1. The pattern of land and tree tenure -based custom *Dalihan na tolu* in Batak Mandailing-Angkola society shows that there are specific characteristics as a form of resource management and utilization of land and trees
2. The rights to the land and trees in the form of access and utilization as well as the transfer rights to others associated with the elements in *Dalihan na tolu*.
3. The importance to develop a model of local institutions in trees management on indigenous peoples in South Tapanuli based to *Dalihan na tolu*.

B. Suggestion:

1. The development of the concept of tree tenure for tree management in South Tapanuli need to be associated with the role of *Dalihan na tolu* elements.
2. It is important for further research specifically related to policy and institutional control of resources affecting tree management pattern on public lands.

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Table 1. The individuals rights that exist on the land in South Tapanuli

No.	Type of Rights	
1.	Planting and replanting	√
2.	Descends	√
3.	Renting	√
4.	Giving to others	√
5.	Pawn	√
6.	Sell	√

Table 3. Type of the local institutional followed by *dalihan na tolu* society

No.	Type of Institution	Name Institution	Remarks
1.	Public institution	Village Government, Consultative Body (BPD), Institute for Village Empowerment (LPMD), Empowerment Family Welfare (PKK).	Implementation, supervision and empowerment of rural communities
2.	Central institution	Recitals <i>kasih ibu</i> , Helping Union (STM) Pargarutan Tonga, Mosque Management (BKM), Youth (Naposo Bulung), STM Gunung Manaon, STM Panggulangan, STM Pargarutan Tonga	Role to accommodate social life to joint activities (collective action)
3.	Private institution	Farmers Institution (Gapoktan)	Which aimed to facilitating economic interests

Description: √ = can be done with notice

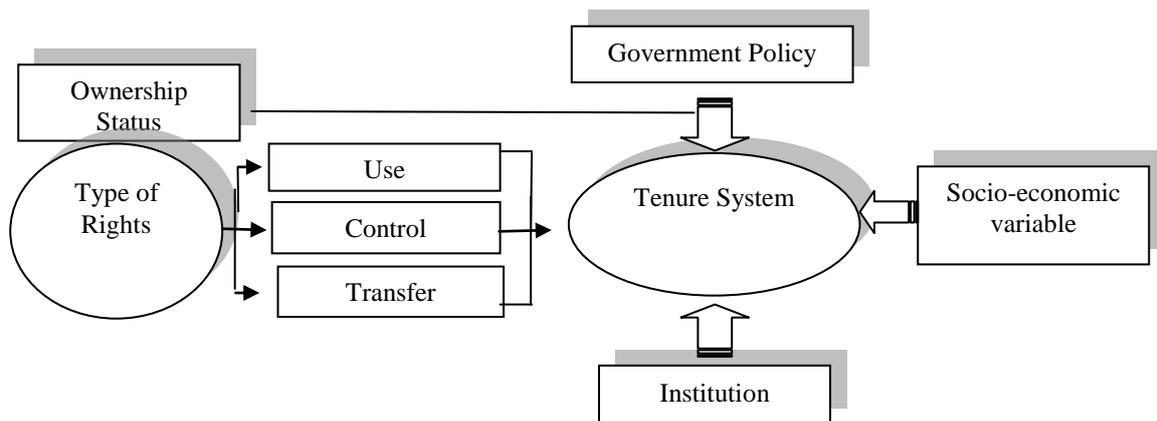


Figure 1 Overview of tenure systems and some of determinant variables

Table 4. Role of *dalihan na tolu* on trees management at public land

Jenis Kegiatan	<i>Mora</i>	<i>Kahanggi</i>	<i>Anakboru</i>	Remark
Planting and planting again?			√	Helping for planting
Maintaining the tree?			√	Farm cleaning
Cutting down a tree?			√	Helping for cutting
Using the tree?	√	√		With permission
Bequeath the tree?	√	√		Control
Sell trees?	√	√		Helping for sell

Description: √ = can be done with notice

Table 2. The matrix of land tenure characteristics on public lands in south tapanuli

Type the Rights	Dimension		
	Man (Who)	Use (what for)	Time
Ownership	<ul style="list-style-type: none"> ▪ Land holder ▪ Ownership of land acquired as a legacy from parents to children and purchased alone or giving by <i>Mora</i>. ▪ Distribution of land treasure is also based on the Islam religion. 	<ul style="list-style-type: none"> ▪ Agriculture with mixed crops (agroforestry) 	<ul style="list-style-type: none"> ▪ Unlimited of time
	<ul style="list-style-type: none"> ▪ Land holders and Family 	<ul style="list-style-type: none"> ▪ Mix Gardens, between the various multipurpose perennial crops such as rubber, coconut, rambutan and agricultural crops or in the form of a simple Agroforestry 	<ul style="list-style-type: none"> ▪ Unlimited of time
Use right	<ul style="list-style-type: none"> ▪ Land holder / land owner ▪ Control by others is rarely done ▪ Parties / local agencies play a role when there is a conflict over land ▪ <i>Mora</i> gives advice when it conflicts ground, especially when cultivated land is given by <i>mora</i> ▪ Controls also performed by <i>Naposo bulung</i>: a group of young men/ young women in the community who have not married yet. 	<ul style="list-style-type: none"> ▪ Controls carried out by the land owner in terms of land use farming for the benefit to meet the household needs ▪ Resolution conflict in family level, if not completed then <i>mora</i> brought to <i>sopo godang</i> (indigenous venue). Participants of workshop in <i>sopo godang</i> is: <i>hatobangun</i>, <i>orang kaya</i>, religious leaders, scholars and <i>Raja</i>. 	<ul style="list-style-type: none"> ▪ During the land use
Control right	<ul style="list-style-type: none"> ▪ Landlord without approval and or other family members 	<ul style="list-style-type: none"> ▪ Inherited, given, or sold to other parties ▪ If land were saled preferred clan members (<i>kahanggi</i>) 	<ul style="list-style-type: none"> ▪ Throughout the tenure
Transfer right			