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Land and tree tenure rights on agroforestry (*parak*) system at communal land in West Sumatra, Indonesia

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Land and forest degradation in Indonesia tends to increase yearly due to lack of society participation in planting and maintaining of trees, especially in communal lands. In West Sumatra, where the land is generally communal, the success of tree planting for this purpose should be considered from land and tree tenure. The incentive system which is uncertain, leads to reluctance in planting trees on communal lands and the state. Therefore, this study aims at creating incentive system based on tree tenure rights in communal and state lands in West Sumatra. The finding indicates that on communal land, the tree rights basically vary according to local rules and the objectives of tree planting. The individual rights are basically high, but limited by the communal rights. Thus, for income purposes, farmers prefer planting a non-timber producing trees. Therefore, as an incentive, the clarity between individual rights and communal needs to be known as it generally happens that the communal interest dominates the individual interest. While on the state land, the clear purpose and usage for individual gets less emphasis, but there is more indirect achievement when usage is communal.

Key words: Agroforestry, communal land, incentives, land tenure, tree tenure, West Sumatera.

INTRODUCTION

Higher population growth raises a wide range of forest interests, including the conversion into agricultural land, timber utilization, as well as other forest products. The high interest in forests causes widespread deforestation all over the world. This case encourages the policy of forest management which is based on local community. Currently, this is much promoted by various institutions in Indonesia such as Agroforestry (*parak*) in West Sumatra.

Agroforestry is generally in the traditional form and does not develop, and one of various causes of its failure is related to land and tree tenure issue (Dorner, 1971; Diaz, 2003). The land and tree tenure systems which are uncertain, unclear and even overlapping, often cause conflicts in the utilization of the land and its sources. This

situation shows less or no incentive that can encourage community, including the state land. Therefore, the success of this program requires a clear arrangement of land and tree tenure. The arrangement of land tenure as a form of property rights, according to Parsons (1956), determines the success of the development, and this is due to the clarity of individual rights in the ownership, access and control of resources. The clarity of these rights shows the ability of individuals to benefit from the land or is a form security rights on future dimensions as a basic incentive for investment in trees. This depends on the clarity of ownership of the person concerned (Unruh, 2004).

Property rights in Indonesia are often in overlapping settings within the formal and informal rules. Communal lands generally do not have the clarity of ownership status because the state recognizes the rights of ownership not only in accordance with BAL system

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(Republic of Indonesian Government, 1960), but also the existence of communal rights (ownership through communal institutions). Land tenure status causes various issues relating to the claims of community rights that can be uncertain and changeable.

Based on the theory of property rights, the individual ownership is considered the best in the resources management (Nicita et al., 2005; FAO, 2002; Otsuka et al., 2001; Bruce, 1998). This is because the individual ownership has a full right without any external intervention, while the communal ownership is considered negative and not supporting investment in the land in the long term, such as planting trees (Bruce, 1998; Place et al., 2004), which reflects a pattern of western property (Benda-Beckman and Benda-Beckman, 2001). But in fact, there is no single form of property right which is really sustainable, and the long-term overuse does not occur. Even, the most clear private ownership does not guarantee the sustainable management; at least they are supported by secure monitoring and strong institutions (Ruitenber and Cartier, 1998).

The theory aforementioned is considered because the incentive system in tree planting is included in the land. The security of land rights is also considered in the tree. In fact, land ownership is not necessarily describing the same ownership of tree. Especially in the cases of communal land ownership, the rules applied are the customary ones. Therefore, to build incentive systems on the tree, it is necessary to see it as something separated from the land. The incentives for tree planting is necessarily seen from the guaranteed rights in using of the tree in the future, or the prediction use that will be obtained on the tree later. As long as there is no incentive system, the tree planting program on the communal or state lands will not have a guarantee for sustainability; it can even become the source of conflict (Bachriadi and Sardjono, 2005; CIFOR, 2003).

This paper reveals empirical experience in West Sumatra on the tree tenure rights which become the basis for the formulation of the incentives concept, especially on the communal and state lands. The weakness of the concept these days is that the communal land is considered unsuitable for planting trees, because private property or individual ownership is considered the best with its various categories of rights. This paper becomes an approach to offer the forest resources management concept where the clarity of the concept of the tree tenure provides incentives for planting trees. If there is the clarity of the incentive system, the damage/ degradation of land and forest resources will be diminished.

STUDY AREA AND METHODOLOGY

Study area

The study was conducted in West Sumatra. The research was in wood land area (*parak*) which constitutes the integration of trees and agricultural crops. The area was purposely selected based on

the categories of land use patterns or in terms of agroforestry systems in West Sumatra as a *parak* which is dominated by annual crops or trees in a landscape.

Based on the aforementioned categories, three villages were determined as locations (*nagari*), namely: 1) Nagari Paru, located in District Sijunjung, Sijunjung. The main characteristic of Paru is that there is prohibited forest 'rimbo larangan' which constitutes conservation area in the communal land as a local initiative policy. The prohibited forest as the local initiative is considered as a successful model in managing forest, while '*parak*' constituted communal lands dominated by rubber and other crops in the vast expanse surrounding Nagari Paru (rubber-based agroforestry) and the state land in Paru constitutes forest area which is considered as communal land in Paru. 2) Nagari Koto Malintang, located in Tanjung Raya District, Agam. *Parak* which is located in the hill above the village is a mixture of vegetation which is dominated by cinnamon, durian, and other annual plants within a compact landscape (multi-purpose tree-based agroforestry). The main characteristic of *parak* here is the policy of a local initiative which has existed in the past. The state land in Nagari Koto Malintang is conservation area and tourism forest which is located on the above part of communal *parak* Nagari Koto Malintang. 3) Nagari Paninggahan is located in District Junjung Sirih, Solok, West Sumatra. The main characteristic of *parak* here is dominated by different kinds of commercial crops such as cloves, cocoa, avocados and others (commercial tree based agroforestry). The management activity of agroforestry in Paninggahan is a local initiative with external support (government programs and non-governmental organizations). While the state land in Paninggahan is reservation forest in Tempurung Hill/Junjung Sirih Hill, constituting the area protected from log exploitation.

Methodology

The research using descriptive method aims at identifying the forms of tree tenure in communal land. The preview of land and tree tenure status will provide incentives for the development of agroforestry (*parak*); this is indicated by the level of the security of rights in the tree. In this study, the approach strategies used are as follows: first, the researchers do an observation to assess and describe patterns of the various land tenures on communal and state lands. Secondly, the researchers evaluate the security of rights on tree tenure with the approach of the rights in the tree.

The observation is done by assessing and describing the patterns of institutional tree tenure on communal land and the dynamics taking place in the land institutional variable, which is tree ownership, access or utilization, and management or control of the tree. This approach refers to 'rapid appraisal for social forestry land and tree tenure' in determining the land and tree tenure (FAO, 2000).

Primary data are obtained from interviews and questionnaires with respondent farmers, as well as in-depth interviews with key informants, namely, village leader, custom leaders, and chairman of the organization, while secondary data covering physical description of the local area are taken from the relevant authorities. The data include the performance of tree tenure, land use practices in agroforestry, socio-economic and demographic characteristics of peasant households.

Descriptive analysis is used to describe and understand the factors affecting the tree and land tenure on the three types of ownership (property). Assessment of the status of land tenure security and tree control were measured by an index obtained in the existing rights at the community level. The security of tenure rights can be approximated from the cumulative rights to do on the land and trees (Braselle et al., 2001; Quisumbing et al., 1999). The index of tenure security is cumulative rights on households. While income is calculated based on total expenditure (output side), the

percent of revenue from agroforestry is the percent of revenue from agroforestry on total income, as follows:

$$I = \frac{\sum H}{n}$$

I = index of tenure rights; H = the number of rights that can be done; n = number of farmers

$$Pr = \frac{\sum Pt}{n}$$

Pr = the average revenue; Pt = total revenue; n = number of farmers

$$Pa = Pr - \frac{\sum Ppa}{n}$$

Pa = earnings of agroforestry; Ppa = total income of farmer from agroforestry - production cost; n = number of farmer

$$\text{Percent Pa} = \sum \frac{Pa}{Pt} \times 100\%$$

$$\text{Pa per hectare} = \sum \frac{Pa}{L}$$

L = total land area of farmer

Quantitative descriptive analysis was carried out to guarantee the rights of the relationship with socioeconomic factor and demographics. Simple statistics of frequency and cross tabulations are used for such purposes. Roles of local institutions in connection with the acquisition of land and trees were explained by descriptive qualitative.

RESULTS

Tree tenure in communal tribe's land (*Ulayat Kaum*)

Pattern of tree tenure varies depending on the species of trees and their functions (Table 1). Trees with a communal function show limitation of individual rights.

Characteristics of the tree rights in the three villages show that in Paru village, cutting down and selling trees in the communal land are more freely and safely performed than those in Koto Malintang and Paninggahan villages. It means that claims of the tree can be made, and are not prohibited or intervened by communal interests. But restriction is made if the purpose of the use is individual. The restriction of this right begins from cutting down trees. Logging restriction is based on communal rules and villages. The restrictions on the

harvest can be seen in Table 2.

The dominance of communal rights in limiting the use of trees by individual is shown as the average of the tree rights (Table 3) that affect the low management of trees done by farmers. Minimal creativity and activity to manage land becomes the guide to the kinds of annual crop management (Table 4). A type of long life perennial trees requires a relatively mild treatment compared with seasonal plants capable of producing in the short term.

The management shows that the kinds of tree crops are generally managed in the traditional one. In commercial crops, management is done more intensively compared to tree crops in Paru and Koto Malintang. Therefore, the option to plant trees is not only for communal interests, but also for minimizing the inputs of the land. Changing the types of trees to fast producing species such as rubber influences the amount of income from agroforestry land (Table 5). Farmers prefer planting with a secure ownership; utilization and controlling of trees (non-wood) ensure their revenues from agroforestry land (*parak*).

DISCUSSION

From the matrix of tree tenure in Paru, rubber (*Havea brasiliensis*), cinnamon (*Cinnamomum burmani*), banio (*Shorea* sp.) and meranti (*Shorea* sp.) at the communal tribe's land of Paru show the rights on trees and tree products which can generally be held by land holders, in which they are planters. But, members of the tribe are also entitled to a tree trunk, which is a heritage tree crop. Besides, the members of the tribe have a right to retrieve the fallen twigs and branches, while the right to sell timber banio (*Shorea* sp.) and meranti (*Shorea* sp.) is owned by the land holder only with permission of house leaders (*mamak*). There are different patterns on the rights of durian trees (*Durio zibethinus*). For instance, the trunk is owned by the land holder, but the fruits belong to all village members. The fruit is harvested only when falling to the ground. Similarly, the rights to cut down tree must be got from the entire communal custom leaders (*ninik – mamak*) (32 people) in Paru village.

In the communal tribe's lands in Koto Malintang, the right to the durian trunk (*Durio zibethinus*) is owned by land holders, but those to the fruit have a wide dimension in which members of the village can take the fallen fruit at a specific time (the time after dawn until the rising of the sun, about two hours). The rest is owned by the land holders and members of the tribe. Likewise, the right to trunk and cutting down requires permission from tribe's leader (*mamak tungganai*) and village leader. If durian in logging on communal tribe's land belongs to the quarter section of land rights holders, a quarter is divided again for the other heirs and half to the remainder for lumberjacks.

While on the other tree species such as bayur

Table 1. Matrix of tree tenure on communal tribe's land (*ulayat kaum*) in the three villages.

Village	Tree species	Types of right
Paru	Rubber (<i>Havea brasiliensis</i>)	Latex is owned by growers, stems and twigs can also be owned by members of the tribe, may be sold even in the form of gardens, tenure in indefinite of time.
	Cinnamon (<i>Cinnamomum burmani</i>)	Bark is owned by the growers for the benefit revenue, stems and twigs can also be owned by members of tribe, tenure in indefinite of time.
	Durian (<i>Durio zibethinus</i>)	Fruit is owned by the member villages, while the wood by the land owners and members of tribe. Cutting down the trees needs permission from all the custom leaders (<i>ninik mamak</i>). Tenure right are unlimited of time
	Banio (<i>Shorea</i> sp.) dan meranti (<i>Shorea</i> sp.)	Wood is essentially owned by the growers, and members of the tribe and the village can take advantage with the permission of the landowners. Cutting down permit is from the clan leaders.
Koto Malintang	Durian (<i>Durio zibethinus</i>)	Fruit is owned by landowners and members of the village in <i>balangge</i> system, while the wood is owned by landowners and members of the tribe. Cutting down is from the tribe's leader (<i>mamak tungganai</i>) and village leader. Tenure rights are unlimited of time.
	Cinnamon (<i>Cinnamomum burmani</i>)	Growers and members of the tribe have right to the bark and stem, as a source of income. The duration of the tenure is for the rest of plant.
	Surian (<i>Toona sureni</i>), meranti (<i>Shorea</i> sp.) dan bayur (<i>Pterospermum javanicum</i>)	Right to wood is for land holders and members of tribes, and so to twigs and branches. Cutting needs permission from the house's leader (<i>mamak</i>) and village leader. Tenure rights are unlimited of time.
Panningahan	Clove (<i>Eugenia aromatica</i>), durian (<i>Durio zibethinus</i>), avocados (<i>Persea americana</i>) and cocoa (<i>Theobroma cacao</i>)	The right to fruit and selling fruit are owned by grower's goals, the purpose is for the source of finance, but the stems, branches and twigs can be owned also by members of the tribe. Tenure rights are unlimited of time as long as the land is managed.
	Mahogany (<i>Swietenia mahagoni</i>), Surian (<i>Toona sureni</i>), teak (<i>Tectona grandis</i>) and pine (<i>Pinus</i> sp.)	Right to wood is for land holders, but for the inheritance tree, the tribe members also have rights. A right to sell is for the growers, twigs and branches can be owned by members of tribe. Tenure rights are unlimited of time

(*Pterospermum javanicum*), surian (*Toona sureni*), meranti (*Shorea* sp.) and cinnamon (*Cinnamomum burmani*), the members of the tribe also have the right to the wood or barks. Even for cinnamon (*C. burmani*), famous 'cinnamon scent' is wafted up to the 'shoreline'. Wood products basically can be taken by the land holder, but for cutting down trees, necessary permission must be taken from house leader (*mamak*) and village leader which are limited for personal consumption. But if the purpose is to sell the timber, permission is needed from the tribe's leader (*mamak suku*).

The trees tenure on communal land tribe in Panningahan can basically be distinguished on the fruit-producing tree species (non-wood), and trees for timber.

The right to the fruits (of clove flower) and selling the fruit can be made by land holders, as well as the indefinite time the land in his/her possession. While for the timber-producing trees, the right to woods is owned by the land holders, but the members of the tribes can use the timber for their interests, particularly on heritage wood planted by the previous parents.

Based on the pattern of tree tenure rights on the communal tribe's land, there are various patterns of rights on the communal lands and the limitation of individual rights to use the trees. Farmers in general have ownership on agricultural crops and on the trees planted on their own land, while for the trees planted by parents, the rights of the other members are found. This situation

Table 2. Some rules of cutting down trees in the communal tribe's land (*ulayat kaum*) in the three villages.

Village	Paru	Koto Malintang	Panninggahan
	Trees planted by self can be cut down without permission from house's leader (<i>mamak</i>)	Trees cut down must get permission from custom leaders (<i>Ninik Mamak</i>) and village leader (<i>walinagari</i>)	Trees cut down must get permission from by house's leader (<i>mamak</i>) and village leader (<i>walinagari</i>)
	Trees cut down for sale must get permission from house's leader (<i>mamak</i>)	Durian tree must not be cut down	Cutting down result can be sold
Criteria	Permission is not required from village leader (<i>walinagari</i>)	Cutting down rules depend on the type of the tree, such as coconut and cinnamon	
	There is no limit to the number of cutting down along with their own needs	Timber harvest can be sold but are limited in the number of felled	
	Cutting down of the durian tree requires special rules.		

Table 3. Average of the tree rights existing in the three villages.

No.	Types of right	Village		
		Paru	Koto Malintang	Panninggahan
1	Planting and planting again	*	*	*
2	Maintenance	*	*	*
3	Cutting down	*	**	**
4	The use of tree	*	**	*
5	Bequeathing	*	*	*
6	Selling	**	**	**
	Average right on tree	5.8	3.45	4.7

* = can be done with notice; ** = can be done with deliberation / specific conditions.

Table 4. Management of *Parak* in three villages.

Activity type	Village		
	Paru	Koto Malintang	Panninggahan
Seeding	80% own nurseries, 20% buy seedlings.	70% own nurseries, 30% buy seedlings.	65% own nurseries and help from the government and NGOs, 35% buy seedlings.
Cultivation	Self planting by and family	planted by parents and families	Planted alone, assistance from others or done by field-workers
Fertilization	90% without fertilizer, 10% with chemical fertilizer	40% without fertilizer, 50% with chemical fertilizer for cocoa, while the non-cocoa generally is not fertilized	50% with manures, 30% in addition to use animal manure with chemical fertilizer as well, the rest does not fertilize.
Blow	100% made an intensity 3-4 times a year	100% carry out with the intensity 3-4 times a year, for cocoa crops blow almost every month	90% carry out with the intensity 2-3 times a year.
Thinning	Thinning is not done	50% carry out thinning in non-cocoa crop	10% carry out thinning

illustrates that on communal ownership, there are interest groups or members of the group that represent the interests of such networks (Meinzen-Dick and Mwangi,

2008). Therefore, the individual rights of land holders and communal rights cannot be separated. Even the communal members can still use the wood in the land to

Table 5. Area of land and income of farmers in three villages.

No.	Information	Village		
		Paru	Koto Malintang	Panninggahan
1	The average of land area (ha)	1.3	1.425	0.8125
2	Income average	IDR.1.328.605	IDR.1.588.300	IDR.1.411.500
3	Revenue per hectare	IDR.1.022.000	IDR.833.200	IDR.587.840
4	Percent income from agroforestry (%)	89.07	74.12	43.69

*IDR = Indonesian Rupiah.

simply meet their needs, but for commercial purposes, it is prohibited.

The variation of tenure rights is due to different local rules between villages. The diversity of these rules describes the inconsistency rights of tree caused by the status of the land. The same status of the land can distinguish the status of the tree rights. This means that the tree rights is not always tied to the land, as in any theory of property, which describes that the rights of the tree is determined by the rights over land (Otsuka et al., 2001).

Therefore, to encourage trees planting, it is necessary to determine the selection of tree species that are consistent with the grower. This has an impact on the security of tenure rights for land holders as a basis for incentive systems. In this case, reinforcing the status of land tenure is not the right choice to encouraging tree planting.

The limitation on individual rights can be seen on the rules dealing with the cutting down of trees and index of security of tree tenure. In the standard 6 rights that are observed, the average level of tree rights reaches 3.45 to 5.8 (Table 3). The differences of average rights in the three villages prove that the rules of tree rights are different from each other. It is observed in these rights that the rights to cut down, use, and sell the trees are generally not freely owned. But in some villages, it is still allowed as long as there is the permission from house leader (*mamak*). The custom-based trees tenure system on communal land in West Sumatra shows that the security status is basically high, but strongly influenced by local communal interests. Therefore, the utilization of the individual requires approval from the communal leaders, and tends to limit the personal rights that do not fit with the communal interests.

The limitation of these individual rights by the communal right become the reason why Otsuka et al. (2001) mentioned that some patterns of land tenure (lineage land) owned together with communal people show a low security status, if it is compared with the rights on private forms. In West Sumatra, this character can be seen from the low level of individual rights, where the land holder is not free to transfer land such as mortgage or sell land, but land can be freely passed through the matrilineal system. Therefore, the rights of

individuals on communal land tenure are guaranteed, because if the collateral value is measured only based on such transfer rights, such as to mortgage and sell, while these rights are prohibited in some villages, then, according to FAO (2002), this assessment is not fair. This mainly shows the characteristics of communal tenure systems generally prevailing in West Sumatra.

It is clear that individual rights do not stand alone on communal land, but it is associated with communal rights as reflected in communal rules. As the result of communal rules may be different from one village to another, the status of tree tenure security may also be different in each village. Tenure security level is higher in Paru than in Koto Malintang and in Panninggahan. It describes more number of existing rights that can be done by the land holder despite a permit. This indicates that an individual's decision is easier to be carried out, so, at the highest level, land ownership may be transferred to another party. The transfer of land ownership on communal land can only be carried out by pawning or selling for the sake of very important and urgent reasons.

The right to use trees by individuals is possible but there is a dichotomy and contradiction with the communal rights. As known, the rights to use trees by individuals are limited to their own needs, both in the number of usage and purposes. The economic objective for selling woods requires a tight permit in the three villages, whereas, if the purpose is for personal use, it is basically not inhibited. It can be seen that more revenue is found in rubber-based agroforestry in Paru village. This contradiction is understandable, because according to Ramli (1995), the basic rights of ownership are on communal rather than on individual. The individual rights are granted precisely because of the duties and functions of a person as a member of the community. The main objective of communal ownership is to maintain sustainability of resources with the conservation efforts in agroforestry activities, whereas individuals basically aim to meet their economic needs of life.

The tree and land tenure aforementioned shows that in the communal land, although the rights are limited, but they are safe (enforceable). As a result, the land status is not a barrier for the land holders to invest into the land. While the tree rights are struck, even almost all these rights do not exist, the high individual rights are limited by

communal rights. As a result, farmers are not free to benefit from the tree. The simple solution is that farmers would avoid planting tree for wood product.

This pattern is caused by the existence of communal rights firmly on the tree in the institutional rules that limit individuals' rights to freely use the tree. The rules of cutting down and using trees are barriers for the individuals by calculating the communal interests, besides their own interests. The limitation of rights to use trees individually is of much use on the one side to meet the communal interests, and on the other side to make agroforestry in Koto Malintang remain sustainable. Here, there is harmony between individual and communal interests which leads to the maintenance of agroforestry. According to Meinzen-Dick and Mwangi (2008), property rights on common property resources are like a network of interests. The interests of a group or groups are associated with those of others so that the resources for sustainable revenue can be maintained.

In the communal land, it is known that land is based on communal ownership, and not a legal classification in the theory of property rights; which does not support sustainable development. The forms of the individual are an ultimate form in which the owner is entitled to a free creation of the land without the interference of others or without the consent of anyone else, including the transfer of land rights. The communal land tenure system is often interpreted as a pattern which does not support sustainable development because totality of rights is not owned (FAO, 2002; Place and Otsuka, 1997).

In West Sumatra, the system of land ownership is lasting, in which the ownership of the land cannot be transferred. The transfer of rights over the land can only be done through inheritance to the children in the female line (matrilineal). It is concluded that in the communal system, the status of land ownership by land holder remains strong despite the existing rights on the individual land is lower than those on the private ownership.

The rules in the communal system guarantee tenure on the land. FAO (2002) stated that the land ownership based on communal tenure still has a strong security, even without the rights to mortgage or sell. This is not fair if the security is only judged by the ability to transfer, like mortgage and selling. Although this right is prohibited in some villages, the more important is how to get recognition communally. This case is due in reality; they still can manage the land in peace and get food source from it. This shows the characteristics of communal tenure systems which are generally prevailing in West Sumatra. In accordance, Mwangi and Dohrn (2008) mention the importance of crafting rules from ground upwards, in addition to a more generic identification of rights to support the management of dry lands in Africa. That is important to wage for multiple users. A similar opinion is mentioned by Cousins (2007) from his research in South Africa that socially legitimate occupation and used rights will improve communal land management.

This figure differs from the meaning of Western land tenure, where the individuals' rights on land is the main picture of land tenure security, while the rights to the trees follow the status of the land. According to Bruce (1998), the security of land ownership is only strong if there is full right on land, that is, if the land can be inherited or sold. The land is not even fully safe even though it can be owned for life, but the two rights aforementioned do not exist. This clearly shows that the security of land ownership is more assessed from the individual rights. The strength of these rights requires that the owners can use those rights freely without any restrictions or other requirements; because the legal concept of ownership is that the rights on resources are freely used and protected from others' interference (Cooter and Ulen, 1988). Therefore, the ownership makes a privacy zone where the owner uses his or her rights without being necessary objected by others (Nicita et al., 2005). Otsuka et al. (2001) clearly state from their research in four different locations in Sumatra that communal land ownership status (lineage land) and joint ownership of a few families have weak security status.

According to Place and Otsuka (1997), if the private ownership is uncertain and unclear, the incentives on land and trees will be hampered. Besides, the tenure security has positive effect on investments that activate more productive and more sustainable land use. This is rather different from West Sumatra. Although the status of land ownership is communal, the access to land is not the same for all the members of the community. Access to the land is given to the members of the community who have been appointed to utilize the land, while the rights of the communal members are limited. Therefore, this condition affects the land management and not the ownership of the land. Consequently the individual's right on the land as a prerequisite for investing in the land is not necessarily needed.

This illustrates that the incentive on wood usage is more focused on tree rights. According to Otsuka and Place (2001), the communal land tenure systems do not often support the development of sustainable agriculture because the ownership does not provide proper incentives for the management of wood and it is suitable only for low value products of non-wood. It happens because the point is just on the land rights. In villages, communal land which entitles the right of utilization to the village residents, the incentive on the tree in terms of tree tenure security is not built only on the basis of land rights, but also on individual and communal interests on trees. It means that the existence of tree is still maintained and preserved under the arrangement of individual and communal rights. Individuals here are part of the communal system that also indirectly benefit from trees. The opinion of Place and Otsuka (1997) is more appropriate in the private ownership, rather than in communal ownership as indigenous villages.

According to Lynch (2002), the system of ownership

that describes community on the basis above is not exactly done in this case. The concept of using ownership, property and leasing system to describe the practice of Western concept is outdated. In West Sumatera communal lands, and in accordance with the concept developed by Teer Har in Syahyuti, (2006) that the legal relation between the people who open the land with the land itself is gradually more powerful, if the land is continually maintained and eventually can become the property of the land opener. However, the rights of indigenous communities still exist despite the weakening of the law. Conversely, if the land which is opened is not maintained or abandoned, the land will go back into the community's communal law. Of the three state land forms aforementioned, their use as conservation and conversion area shows that an incentive for individuals' rights of trees or tree products is not clear. In Paru village, the state land which is considered as indigenous villages, access to a tree in terms of logging and timber transport is prohibited under the formal laws. But the member of villages can convert the land into agricultural land with the permission of indigenous village leader. While in Koto Malintang and Panningahan where state land is recognized as a conservation area, the access to trees is prohibited, but people can still access the non-wood products; although there are legally no rules. It shows that the incentive system is not clear for individuals, except for the incentive for community in ensuring the preservation of their environment.

Conclusion

- i) In the communal tribe's lands, the tree rights vary according to the local rules and objectives of tree planting. Tree rights are actually high portion, but limited by the communal rights as landowners. The dichotomy between individual and communal rights causes less incentive for individuals.
- ii) A limitation on the individual trees rights in the communal tribe's land encourages farmers to select non-timber trees as a reliable source of income, such as rubber, cocoa and clove.
- iii) Communal rights dominate tree rights; this case constitutes the formality of the village rights on the tree, so that individual incentives are not clear on the tree. But the existence of trees is retained as communal interests.
- iv) On the communal land, the individual incentive system is not clear, based on the utilization of trees. The utilization is generally indirect and based on communal. The incentive system needs to be designed based on the communal system from an individual and communal interest, and from the type of benefits that can be done.

POLICY RECOMMENDATIONS

- i) To support the efforts of land and forest conservation,

and agroforestry program on communal land needs to be supported. Tree tenure in local systems needs to be taken into account. In West Sumatera, on communal basis, the communal system is important in regulating the rights of tenure, with emphasis on benefit. This effort is not to reduce any role of the communal or individual right, because the dichotomy of individual and communal is the basis for the communal system.

- ii) Planting trees on communal lands can be done by giving more attention to the tree tenure rights. To encourage trees planting, it is necessary to determine that the tree species selection are consistent with the grower. This has an impact on security of tree tenure rights for land holders as a basis for incentive systems. In this case, reinforcing the status of land tenure is not the right choice to encouraging the tree planting.
- iii) In the scientific context, it is suggested to look further at tree tenure rights in communal land outside West Sumatera (Minangkabau ethnic), as a comparison. It is also important to examine further the degree of interaction of individual and communal right in getting the trees on communal land.

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