



# IMPACTS AND IMPLICATIONS OF THE FOREST LAND USE CHANGES ON THE CUSTOMARY LAND TENURE AND LIVELIHOOD SOURCES OF THE LOCAL PEOPLE A Case Study in Tering Customary Land Area, Kutai Barat District, East Kalimantan, Indonesia

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## Abstract

*Changes in land use, including within or near forest lands, always have impacts on people's livelihood. Whether the impacts be environmental or socio-economic, they are of similar importance from the perspective of forest governance and policies. This case study explored the impacts and implications of the forest land use changes on the customary land tenure and livelihood sources of the local people in Tering Customary Land Area. The results of the study show that since 1955 there have been quite a lot of forest land use changes, with most rooted in the government policies and development programs. The changes have increased complexity in the socio-structure of the tenure rights over the forest lands, and decreased the livelihood sources of the local people. Further impacts and implications of the increasing complexity in the socio-structure of the tenure rights and decreasing livelihood sources of the local people are succinctly elaborated in this article. Taking into account the negative impacts and implications of the forest land use changes on the customary land tenure and livelihood sources of the local people, this study recommends a critical review on prevailing government policies, rules and regulations concerning forest land use and tenure system so as to mitigate and avoid further negative impacts of the forest land use changes on the local people.*

**Keywords :** *forest land use changes, customary land tenure, livelihood sources.*

## Introduction

In the past few decades there have been quite a lot of changes in the use of forest lands in Indonesia, particularly in the forest rich province of East Kalimantan. Changes in land use always have certain impacts on people's livelihood, whether in the form of environmental impacts or socio-economic impacts (Briassoulis 2000). Pitifully, however, the impacts of the land use

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changes, in particular those of the forest lands, have been unconsciously neglected, seen from its history of easy conversions from one to other types of use.

Subsequently, despite both environmental as well as socio-economic (livelihood) impacts being of equal importance, assessment of the impacts of forest land use changes have been frequently focused more on the former and rarely on the latter. A number of studies had noted the changes in the forest land use in some places in Kutai Barat, as well as their impacts on the socio-economic aspects of the local communities (Gonner 2001, Maunati 2005, Haug 2007); however, none specifically focused on the impacts of the changes on land tenure rights and livelihood sources of the local people.

Some researchers have also noticed that in certain development centers in Kutai Barat there appeared to be at least seven factors that so far account for the forest land use changes in those areas:

- 1) logging concessions
- 2) mining
- 3) transmigration and resettlement programs
- 4) industrial tree and oil palm plantations
- 5) non timber forest products exploitation
- 6) infra structures development ; and
- 7) the establishment of new district and sub-district government centers (Gunawan et al. 1999, Joshi et al. 2004).

This article describes findings of a study concerning forest land use changes in Tering Sub-district of Kutai Barat, and the impacts of the changes on the customary land tenure and livelihood sources of the local people.

## **Study Site and Methods**

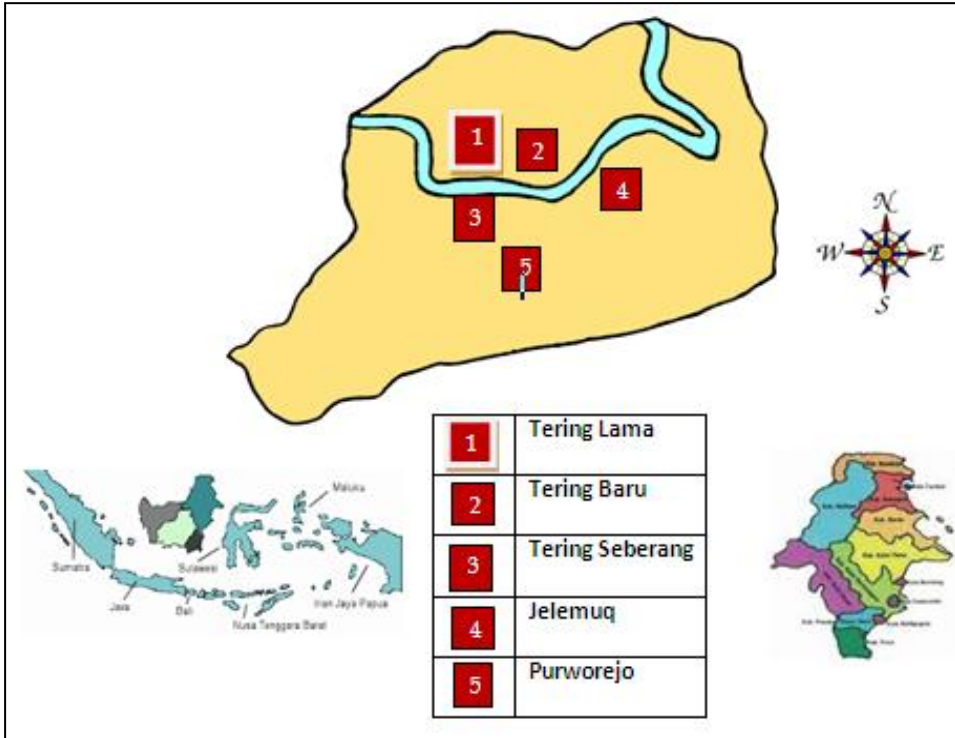
### ***Study Site***

The study was conducted in Tering Customary Land Area (*Wilayah Adat Tering*) which was historically the Village Territory of the *Huang Tring* people who have settled there since mid-18<sup>th</sup> century (Devung et al. 1986, Devung, 2011). The *Huang Tring* people are part of the *Bahau Dayak* sub-ethnic groups which, according to ethnohistoric studies, belong to the *Kayan* Ethnic (Kayanic Peoples) (Okushima 2006).

Until 1955 there was only one Administrative Village (*Desa Administratif*) in the Tering Customary Land area, called *Kampung Tering* (the Tering Village). Today there are five Administrative Villages: *Tering Lama*, *Tering Baru*, *Tering Seberang*, *Jelemuq* and *Purworejo*, as seen in Figure 1. *Tering Lama* is the new name for what was previously known as *Kampung Tering*, the original village of the *Huang Tring* community. At the time of the study, the village had a population of 1,445 people, comprising 442 families (*Kepala Keluarga*)

living in 316 family houses (*luwang amin*) originated from 57 kinsmen stem houses (*amin pu'un*) of the previous *Kampung Tering*.

Figure 1. Sketch of Tering Customary Land Area



Source : Devung, 2011; Inset Maps: Google Image

### Methods

The data were gathered using a combination of techniques including in-depth interviews with a number of key informants, focus group discussions, field observations and transects. The in-depth interviews and focus group discussions were conducted with representatives of the 316 family houses (*luwang amin*) and the 57 kinsmen stem houses (*amin pu'un*) of the *Huang Tring* people at *Tering Lama* village.

### Customary Forest Land Classification and Use

Traditionally, the *Huang Tring* people classify forest lands (*Tu'an*) into three categories: the *Tu'an Bekan* (Old Secondary Forests), *Tu'an Aya'* (Old Growth Forests) and *Tu'an Megan* (Primary/Virgin Forests). Brief descriptions of each forest land category follow.

The *Tu'an Bekan* are regenerated from fallowed cultivated lands: *Tana' Uma'* (Dry Rice Fields), or *Tana' Lida'* (Gardens/Orchards). The term "*Bekan*"

denotes that the forest lands used to be farmed or cultivated, and the owners or the heirs of the lands are still alive and known by the community members in the village. The regeneration age range is usually around 30 – 70 years, and the trees size has reached the diameter of 30–40 cm (DBH). The *Tu'an Bekan* are treated by the households (*luvang amin*) owning or inheriting the lands as their agricultural land reserve, to clear for *Tana' Uma'*, or *Tana' Lida'* as needed. The *Tu'an Bekan* are commonly used as well for hunting, collecting building materials and minor commercial forest products (Devung 2011).

The *Tu'an Aya'* are mature forests, regenerated from fallowed cultivated lands, but the owners or heirs of the forests are not known any more by the local community members. The regeneration age range is normally a bit older than that of the *Tu'an Bekan*, usually reaching 70 – 100 years. The trees size is also generally bigger, more than 60 cm in average, as the vegetation structures have reached their climax growth. The vegetation and tree characteristics in the *Tu'an Aya'* are very similar to those of the *Tu'an Megan*. Therefore, the *Tu'an Aya'* are used by the local community members as their forest resources pool, in addition to their *Tu'an Megan*, treated as *Tana' Megan* (Natural Communal Lands) for hunting, harvesting of wild and semi-wild plants, picking building materials and for collecting commercial forest products (Devung 2011).

The *Tu'an Megan* are natural forests that have never been farmed or cultivated by anyone amongst the local community members. As natural forests, the *Tu'an Megan* are treated by the local community members as *Tana' Megan* (Natural Communal Lands) used as forest resources pool, for various purposes: either for hunting, harvesting of wild and semi-wild plants, picking building materials or for collecting commercial forest products, depending on the resources available on those lands. People also use small rivers and lakes within the *Tu'an Megan* for fishing, especially during the long dry seasons (Devung 2011). The physical description of those three forest categories is as depicted in Table 1 and their uses by the *Huang Tring* Community can be seen in Table 2.

Table 1. Customary Forest Land Classification According to the *Huang Tring* Community in Kutai Barat

No	Forest Category		Trees Size in Local Measure	Trees Diameter In Cm (DBH)	Trees (Re) Generation Age Range
	In Local Vernacular	In Forestry Terminology			
1	<i>Tu'an Bekan</i>	Old Secondary Forest	<i>Dekayan Keliham</i>	40 – 50 cm	30 – 70 years

2	<i>Tu'an Aya'</i>	Old Growth Forest	<i>Lekang Keliham</i>	50 – 60 cm	70 – 100 years
3	<i>Tu'an Megan</i>	Primary / Virgin Forest	<i>Tapah Keliham</i>	60 cm +	more than 100 years

Source: Devung, 2011

The above customary forest land classification shows that emicly the Young Secondary Forest in Forestry classification and terminology, is not classified as forest yet by the *Huang Tring* people. Instead, they still classify the Young Secondary Forest as *Tarah*, either *Tarah Du'uk* or *Tarah Aya'*, depending on the trees size and height.

Table 2. Customary Forest Land Uses by the *Huang Tring* Community in Kutai Barat

No	Forest Category		Forest Land Status	Forest Land Uses
	In Local Vernacular	In Forestry Terminology		
1	<i>Tu'an Bekan</i>	Old Secondary Forest	Household Agricultural Lands	<ul style="list-style-type: none"> <li>• As agricultural land reserve</li> <li>• Also used for hunting, collecting building and minor commercial forest products</li> </ul>
2	<i>Tu'an Aya'</i>	Old Growth Forest	Natural Communal Lands	<ul style="list-style-type: none"> <li>• As forest resources pool</li> <li>• Commonly used for hunting, harvesting wild and semi-wild plants, collecting building materials commercial forest products</li> </ul>
3	<i>Tu'an Megan</i>	Primary / Virgin Forest	Natural Communal Lands	<ul style="list-style-type: none"> <li>• As forest resources pool</li> <li>• Used for hunting, harvesting wild and semi-wild plants,</li> </ul>

				collecting building and commercial forest products, and also for seasonal fishing
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Source: Devung 2011.

### Customary Forest Land Tenure

#### *Rights over the Tu'an Bekan (Old Secondary Forests)*

The rights over the *Tu'an Bekan* are **collective**, held by all the kinsmen of the stem houses (*huang ji' amin pu'un*) owning or inheriting the forest lands. Some of the kinsmen might have moved from the stem houses to their own houses but still share the rights over the *Tu'an Bekan*. Any households belonging to the stem houses can clear the *Tu'an Bekan* for their *Tana' Uma'* (Dry Rice Fields), or *Tana' Lida'* (Gardens/Orchards), as needed, by common consent from other fellow stem house members. All stem house members can go hunting, collecting building and minor commercial forest products in the *Tu'an Bekan*, provided that other kinsmen are notified. Other parties outside the stem house members, in particular the local village community members, can also take and use a limited number of trees or other forest products in the *Tu'an Bekan*, with prior consent from the stem house elders (Devung 2011).

#### *Rights over the Tu'an Aya' (Old Growth Forests)*

As the *Tu'an Aya'* regenerated from fallowed cultivated lands whose owners or heirs are not known any more, they are not under exclusive rights of any kinship groups. The rights over the *Tu'an Aya'* are therefore automatically **communal**, held back by the *Huang Tring* people as a community (*huang ji' ukung*). Local household members collectively and all community members as individuals, can go hunting, harvesting wild and semi-wild plants, picking building materials, and collecting commercial forest products in the *Tu'an Aya'*, which function as their forest resources pool, like the *Tu'an Megan'* and treated as the *Tana' Megan* (Natural Communal Lands). Other parties outside the local community members, normally the relatives living in the neighboring villages, can take and use a limited number of the forest products available in the *Tu'an Aya'*, as long as they notify and have permission from the *Tering Lama* Village Authority (Devung 2011).

#### *Rights over the Tu'an Megan (Primary / Virgin Forests)*

The rights over the *Tu'an Megan* are **communal**, embedded in the rights of the local people as a community (*huang ji' ukung*) to manage and use their customary territory that they have occupied and controlled for generations. The customary territory includes the *Tana' Megan* (Natural Communal Lands) with the *Tu'an Megan* therein, which are used as a forest resources pool by the

local community. Local household members collectively and all community members as individuals can go hunting, take wood for building materials, gather forest fruits and vegetables, and collect marketable forest products and other life necessities in the *Tu'an Megan* --as in the *Tu'an Aya'*. Other parties outside the community members, including relatives and non relatives from other villages can also utilize the *Tu'an Megan* with limited rights, and with prior permission from the *Tering Lama* Village Authority (Devung 2011).

The main feature of the Customary Rights over the Forest Lands is that the prime control over the uses of the Forest Lands is in the hands of the local community authorities. The control over the uses of the *Tu'an Bekan* is in the hands of the kinsmen of the stem houses (*huang ji' amin pu'un*) owning or inheriting the forest lands; while control over the uses of the *Tu'an Aya'* and the *Tu'an Megan* is in the hands of the local Village Authority.

Another feature is that the rights over the Forest Lands are apparently "bundles of rights" depicting "multiple rights" over the lands and the resources borne by certain individuals or groups of different people (Schlager & Ostrom, 1992, Munro-Faure et al. 2002, Ostrom 2003, Coleman 2010). Brief description of the "bundles of rights" over the *Tu'an Bekan* as well as over the *Tu'an Aya'* and the *Tu'an Megan* is given in Table 3 and Table 4.

Table 3. Bundle of Rights over the *Tu'an Bekan* (Old Secondary Forest Lands)

Objects of the Rights	Subjects Holding the Rights	Nature of the Rights	Types of the Rights	Authority Regulating the Rights
<i>Tu'an Bekan</i> (Old Secondary Forest Lands)	Kinsmen of the Stem House owning or inheriting the Forest Lands	Collective	Control rights	Stem House Elders
	Households belonging to the Stem House	Collective	Use rights	Stem House Elders
	All Stem House members	Individual	Use rights	Stem House Elders
	Other Parties outside the Stem House members			
	• Local village community members	Individual	Limited use rights	Stem House Elders

Source: Devung 2011.

Table 4. Bundle of Rights over the *Tu'an Aya'* (Old Growth Forest Lands) and the *Tu'an Megan* (Primary/Virgin Forest Lands)

Objects of the Rights	Subjects Holding the Rights	Nature of the Rights	Types of the Rights	Authority Regulating the Rights
<i>Tu'an Aya'</i> (Old Growth Forest Lands) and <i>Tu'an Megan</i> (Primary/Virgin Forest Lands)	Local People as a Community	Communal	Control rights	Local Village Authority
	Local Household Members Collectively	Collective	Use rights	Local Village Authority
	Local Community Members as Individuals	Individual	Use rights	Local Village Authority
	Other Parties outside the Community Members			
	• Relatives living in the neighboring villages	Individual	Limited Use rights	Local Village Authority
	• Relatives and non relatives from other villages	Individual	Limited Use rights	Local Village Authority

Source: Devung 2011.

With such bundles of rights, the socio-structures of the rights over the *Tu'an Bekan*, *Tu'an Aya'* and the *Tu'an Megan* are as seen in Table 5 and Table 6.

 Table 5. The Socio-Structure of the Rights over the *Tu'an Bekan* (Old Secondary Forest Lands)

No	Socio-Structure of the Rights over the <i>Tu'an Bekan</i>						
	Subjects holding the rights	Nature and Types of Rights					Total
		Collective Control Rights	Collective Use Rights	Individual Use Rights	Individual Limited Use Rights	Regulating Rights	
1	Kinsmen of the Stem House	1	0	0	0	0	1



2	Households belonging to the Stem House	0	1	0	0	0	1
3	All Stem House members	0	0	1	0	0	1
4	Other Parties Outside the Stem House members						
	Local Village Community Members	0	0	0	1	0	1
5	Stem House Elders	0	0	0	0	1	1
Total		1	1	1	1	1	5

Table 6. The Socio-Structure of the Rights over the *Tu'an Aya'* (Old Growth Forests) and *Tu'an Megan* (Primary Forests)

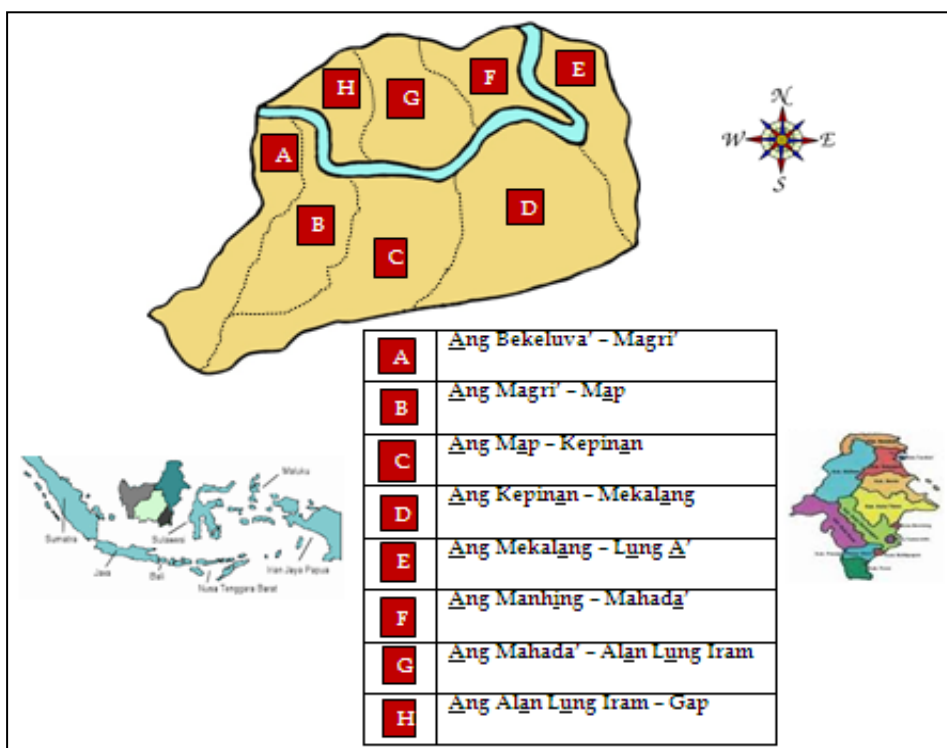
No	Socio-Structure of the Rights over the <i>Tu'an Aya'</i>						Total
	Subjects holding the Rights	Nature and Types of Rights					
		Communal Control Rights	Collective Use Rights	Individual Use Rights	Individual Limited Use Rights	Regulating Rights	
1	Local People as a Community	1	0	0	0	0	1
2	Local Household Members Collectively	0	1	0	0	0	1
3	Local Community Members as Individuals	0	0	1	0	0	1
4	Other Parties outside the Community Members						
	Relatives living in neighboring village	0	0	0	1	0	1
	Relatives and non relatives						

	from other villages	0	0	0	1	0	1
5	Local Village Authority	0	0	0	0	1	1
	Total	1	1	1	2	1	6

### Forest Categories Composition

Traditionally, the Tering Customary Land Area (*Wilayah Adat Tering*) were divided into eight sub-areas by the *Huang Tring* community, based on the sub-areas geographical position, as seen in Figure 2: 1) Ang Bekeluva' - Magri' (Code A) ; 2) Ang Magri' - Map (Code B) ; 3) Ang Map - Kepinan (Code C) ; 4) Ang Kepinan - Mekalang (Code D) ; 5) Ang Mekalang - Lung A' (Code E) ; 6) Ang Manhing - Mahada' (Code F) ; 7) Ang Mahada' - Alan Lung Iram (Code G) ; and 8) Ang Alan Lung Iram - Gap (Code H).

Figure 2. Sketch of Tering Customary Land Sub - Areas



Source: Devung 2011; Inset Maps: Google Image

According to the *Huang Tring* community Elders, in the 1950s the *Tu'an Bekan*, *Tu'an Aya'* and *Tu'an Megan* were still in abundance in each sub-area.

Traditionally, the *Huang Tring* people identify the number of existing *Tu'an Aya'* and *Tu'an Megan* using names of the forest locations (*aran tana' kayan tu'an*) and the number of *Tu'an Bekan* using the fallowed land plots (*irang tana' uma'*). The number of *Tu'an Bekan*, *Tu'an Aya'* and *Tu'an Megan* in the eight sub-areas in 1950s recalled by the *Huang Tring* community Elders was as the following:

Table 7. The Composition of the Forest Land Categories in Tering Customary Land Area in 1950s

Sub-Area Code	Sub-Area Name	<i>Tu'an Bekan</i>	<i>Tu'an Aya'</i> and <i>Tu'an Megan</i>
		Number of Plots	Number of Locations
A	<u>Ang</u> Bekel <u>u</u> va' - Magri'	31	5
B	<u>Ang</u> Magri' - Map	13	6
C	<u>Ang</u> Map - Kepinan	52	7
D	<u>Ang</u> Kepinan - Mekal <u>ang</u>	108	15
E	<u>Ang</u> Mekal <u>ang</u> - Lung <u>A'</u>	56	6
F	<u>Ang</u> Man <u>h</u> ing - Mahada'	94	11
G	<u>Ang</u> Mahada' - Alan Lung Iram	56	9
H	<u>Ang</u> Alan Lung Iram - Gap	43	5
Total		453	64

### Forest Land Use Changes

According to the *Huang Tring* community Elders, until 1954 the use of the *Tu'an Bekan* or the *Tu'an Aya'* and *Tu'an Megan* in Tering forest lands were still limited as mentioned in Table 2. The forest lands and resources were used for internal community subsistence needs and minor commercial forest products collection. Changes notably began in 1955 with the rearrangement of the government system following the General Election (*Pemilu '55*) results . Since that time, there have been substantial forest land use changes in the area. The factors causing the changes were mostly external factors rooted in government policies, particularly:

- 1) the development of new villages within the Tering Customary Land Area
- 2) the placement of transmigration settlements
- 3) logging concession operation
- 4) mining concession activities
- 5) new Sub-district center development , and

- 6) shift of eastern part of Tering Customary Land Area as parts of the two new neighbouring Administrative Village Areas by the District Government.

There were also internal factors causing the changes in the use of Forest Lands by the Tering people. First is the tendency to convert the *Tu'an Bekan* to Rubber Gardens (*Lida' Karet*) or Fruit Gardens (*Lepu'un Buq'*) to increase their economic benefits. Second, to plant Rattan (*Wai*) in the *Tu'an Aya'* and *Tu'an Megan* along the Village Boundry (*Batas Kampung*) to secure the Forest Lands status as the Village Asset. Chronological information of the changes since 1955 is seen in the following Table.

Table 8. Changes in the Forest Lands Use in Tering Customary Land Area since 1955

No	Time Period	The Changes in Forest Land Use	Antecedents / Causes
1	1955-1965	Conversion of <i>Tu'an Megan</i> to be the Dry Rice Fields and Orchards in <u>Ang Mahada'</u> - <u>Alan Lung Iram</u> and in <u>Ang Map</u> - <u>Kepinan</u> by the Tering Baru and Tering Seberang people	Development of new Villages and increasing number of in-migrants in Tering Customary Land Area, following the District Government policy to form trade and growth centers in the interior of Middle Mahakam Area
		Conversion of Forest Lands ( <i>Tu'an Bekan</i> , <i>Tu'an Aya'</i> and <i>Tu'an Megan</i> ) in <u>Ang Map</u> - <u>Kepinan</u> for Banjar Rejo and Purworejo transmigrant settlements.	The placement of Transmigration Settlements ( <i>SP Trans</i> ), in Tering Customary Land Area, following the implementation of the new Basic Agrarian Law (UUPA No.5/60)
2	1965-1980	Commercial timber cutting by Small Scale Logging Concessions in the <i>Tu'an Aya'</i> and <i>Tu'an Megan</i> along the river flood plains within the Tering Customary Land Area.	The enactment of Basic Forest Law (UUPK No.5/67) and the issuance of Timber Cutting Permit to the Small Scale Logging Concessions to log in Tering Customary Land

			Area
		Conversion of Forest Lands ( <i>Tu'an Bekan and Tu'an Aya'</i> ) in <u>Ang Kepinan</u> - <u>Mekalang</u> for <u>Jelemuq</u> Village new settlement area	Development of new Village and increasing number of in-migrants in the new village settlement area
		Conversion of Forest Lands ( <i>Tu'an Bekan and Tu'an Aya'</i> ) in <u>Ang Map</u> - <u>Kepinan</u> for PT. Jayanti Jaya logging road	The operation of PT. Jayanti Jaya, a Large Scale Logging Concession (HPH) following the new Government Regulation concerning commercial timber cutting (PP No.21 /70). PT. Jayanti Jaya built its Base Camp, Log Yard and Log Pond at <u>Kepinan</u>
3	1980-1990	Commercial timber cutting by Large Scale Logging Concessions (HPH) in the <i>Tu'an Aya'</i> and <i>Tu'an Megan</i> within the Tering Customary Land Area based on the new Indonesian Forest Land Use Consensus (TGHK)	The delineation of Forest Lands as Permanent Production Forest (HP) and Convertible Production Forest (HPK) according to the new Indonesian Forest Land Use Consensus (TGHK) and the allocation of the Production Forests for the Large Scale Logging Concession (HPH) Holders
		Conversion of Forest Lands ( <i>Tu'an Bekan and Tu'an Aya'</i> ) in <u>Ang Map</u> - <u>Kepinan</u> for PT KEM hauling road	The license for PT KEM, an Indonesian-Australian Joint Venture Gold Mining Company, to locate its Supply Base Camp and Pier in <u>Jelemuq</u> Village and to build the hauling road from the Supply Base Camp to its Mining Site.
4	1990-2000	Conversion of Forest Lands ( <i>Tu'an Bekan and Tu'an Aya'</i> ) at <u>Apau Kelampung</u>	The placement of PT KEM Laborers settlement and accompanying in-migrants

		for PT KEM Laborers settlement and accompanying facilities	in Apau Kelapung area
		Conversion of Forest Lands ( <i>Tu'an Bekan</i> , <i>Tu'an Aya'</i> and <i>Tu'an Megan</i> ) to be Fruit Gardens ( <i>Lepu'un Buq'</i> ), Rubber Gardens ( <i>Lida' Karet</i> ) or Rattan Gardens ( <i>Lida' Wai</i> ) by Huang Tring community members	The issuance of Land Use Plan Law (UU No.24/92 Tata Ruang), by which most parts of the Tering Customary Land Area were assigned as the Non Forestry Cultivation Zone (KBNK)
5	After 2000	Conversion of Old Secondary Forest Lands ( <i>Tu'an Bekan</i> ) at Apau Kelapung for new Sub-district center buildings and settlement areas	The issuance of Kutai Barat District Regulation (Perda Kubar No.13/2003) concerning the formation of Tering Sub-District and assignment of Tering as the Sub-District capital
		Conversion of <i>Tu'an Aya'</i> and <i>Tu'an Megan</i> to be the Dry Rice Fields and Orchards in <u>Ang Mekalang - Lung A'</u> by the Gabung Baru and Muyub Ulu people	Based on the Kutai Barat District Regulation (Perda Kubar No.13/2003) concerning the formation of Tering Sub-District, Gabung Baru and Muyub Ulu villages belong to Tering Sub-District, and each village get an additional Administrative Village Area in the eastern part of Tering Customary Land Area

### Impacts of the Forest Land Use Changes on Customary Land Tenure and Livelihood Sources for the Local People

Changes in the forest land use substantially change the socio-structure of the customary land tenure and decrease the livelihood sources for the local people. The socio-structure of the tenure rights over the forest lands become more complex by the intervention and existence of new subjects and actors playing roles in the control and use of the forest lands and the resources therein. As a consequence, traditional livelihood sources for the local people

also decrease substantially by the forest use changes, especially in their times of need.

### *Increasing Complexity of the Socio-structure of the Tenure Rights*

As almost all forest land use changes mentioned in Table 8 were, rooted in the government policies, in the new socio-structure of the rights over the forest lands, government authorities began to play their roles as regulating authorities, besides the customary entities. New actors who got the permits from the government to use the forest lands or the resources available in the forest lands, become other subjects holding the rights over the forest lands. As a consequence, the number of elements in the bundle of rights over the forest lands also increases, by the involvement of the new actors. The bundle of rights after the forest land use changes for *Tu'an Bekan*, *Tu'an Aya'* and *Tu'an Megan* are summarized in Table 9 and Table 10.

Table 9. Bundle of Rights over the *Tu'an Bekan* (Old Secondary Forest Lands) after the Forest Land Use Changes

Objects of the Rights	Subjects Holding the Rights	Nature of the Rights	Types of the Rights	Authority Regulating the Rights	
				Customary	Statutory
<i>Tu'an Bekan</i> (Old Secondary Forest Lands)	Kinsmen of the Stem House owning or inheriting the Forest Lands	Collective	Control rights	Stem House Elders	
	Households belonging to the Stem House	Collective	Use rights	Stem House Elders	
	All Stem House Members	Individual	Use rights	Stem House Elders	
	Other Parties Outside the Stem House Members				
	• Local Village Community Members	Individual	Limited use rights	Stem House Elders	
	• New Village Community Members	Individual	Limited use rights	Stem House Elders	Government Authorities
	• Transmigrants	Individual	Limited use rights	Stem House Elders	Government Authorities
	• Logging Concession	Corporate	Limited use	Stem House Elders	Government Authorities

	Holders • Gold Mining Company	Corporate	rights Limited use rights	Stem House Elders	Government Authorities
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Source: Devung 2011.

Table 10. Bundle of Rights over the *Tu'an Aya'* (Old Growth Forest Lands) and the *Tu'an Megan* (Primary/Virgin Forest Lands) after the Forest Land Use Changes

Objects of the Rights	Subjects Holding the Rights	Nature of the Rights	Types of the Rights	Authority Regulating the Rights	
				Customary	Statutory
<i>Tu'an Aya'</i> (Old Growth Forest Lands) and <i>Tu'an Megan</i> (Primary / Virgin Forest Lands)	Local People as a Community	Communal	Control rights	Local Village Authority	
	Local Household Members Collectively	Collective	Use rights	Local Village Authority	
	Local Community Members as Individuals	Individual	Use rights	Local Village Authority	
	Other Parties outside the Local Community Members				
	• Relatives living in the neighboring villages	Individual	Limited use rights	Local Village Authority	
	• Relatives and non relatives from other villages	Individual	Limited use rights	Local Village Authority	
	• New Village Community members	Individual	Limited use rights	Local Village Authority	Government Authorities
	• Transmigrants	Individual	Limited use rights	Local Village Authority	Government Authorities
	• Logging Concession Holders	Corporate	Limited use rights	Local Village Authority	Government Authorities
	• Gold Mining Company	Corporate	Limited use rights	Local Village Authority	Government Authorities

Source: Devung 2011.



With such new setting of the bundle of rights, the socio-structures of the rights over the *Tu'an Bekan*, *Tu'an Aya'* and the *Tu'an Megan* become more complex, as shown in Table 11 and Table 12.

Table 11. The Socio-Structure of the Rights over the *Tu'an Bekan* (Old Secondary Forest Lands) after the Forest Land Use Changes

No	Socio-Structure of the Rights over the <i>Tu'an Bekan</i>								
	Subjects holding the rights	Nature and Types of Rights							Total
		Collective Control Rights	Collective Use Rights	Individual Use Rights	Individual Limited Use Rights	Corporate Limited Use Rights	Regulating Rights		
						Customary	Statutory		
1	Kinsmen of the Stem House	1	0	0	0	0	0	0	1
2	Households belonging to the Stem House	0	1	0	0	0	0	0	1
3	All Stem House Members	0	0	1	0	0	0	0	1
4	Other Parties outside the Stem House Members								
	Local Village Community Members	0	0	0	1	0	0	0	1
	New Village Community Members	0	0	0	1	0	0	0	1
	Transmigrants	0	0	0	1	0	0	0	1
	Logging Concession Holders	0	0	0	0	1	0	0	1
	Gold Mining Company	0	0	0	0	1	0	0	1
5	Stem House Elders	0	0	0	0	0	1	0	1
6	Government Authorities	0	0	0	0	0	0	1	1
Total		1	1	1	3	2	1	1	10

Table 12. The Socio-Structure of the Rights over the *Tu'an Aya'* (Old Growth Forests) and *Tu'an Megan* (Primary Forests) after the Forest Land Use Changes

No	Socio-Structure of the Rights over the <i>Tu'an Aya'</i> and <i>Tu'an Megan</i>								
	Subjects holding the rights	Nature and Types of Rights							Total
		Communal Control Rights	Collective Use Rights	Individual Use Rights	Individual Limited Use Rights	Corporate Limited Use Rights	Regulating Rights		
						Customary	Statutory		
1	Local People as a Community	1	0	0	0	0	0	0	1
2	Local Household Members Collectively	0	1	0	0	0	0	0	1
3	Local Community Members as Individuals	0	0	1	0	0	0	0	1
4	Other Parties outside the Local Community Members								
	Relatives living in the neighboring villages	0	0	0	1	0	0	0	1
	Relatives and non relatives from other villages	0	0	0	1	0	0	0	1
	New Village Community Members	0	0	0	1	0	0	0	1
	Transmigrants	0	0	0	1	0	0	0	1
	Logging Concession Holders	0	0	0	0	1	0	0	1
	Gold Mining Company	0	0	0	0	1	0	0	1
5	Local Village Authority	0	0	0	0	0	1	0	1
6	Government Authorities	0	0	0	0	0	0	1	1
	<b>Total</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>11</b>

Table 9 up to Table 12 shows that in comparison to Table 5 and Table 6, the number of subjects holding the rights over the forest lands has increased from 5 to 10 for the *Tu'an Bekan* (Old Secondary Forest Lands) and from 6 to 11 for the *Tu'an Aya'* (Old Growth Forests) and *Tu'an Megan* (Primary Forests). The types of rights has increased from 5 to 7 for the *Tu'an Bekan* (Old Secondary Forest Lands) and as well as for the *Tu'an Aya'* (Old Growth Forests) and *Tu'an Megan* (Primary Forests). While number the authorities regulating the rights has also increased from 1 to 2 for all forest land categories, adding the complexity in both the bundle of rights and in the socio-structure of the rights over the forest lands.

### *Decrease of the Livelihood Sources for the Local People*

In the land use changes, as seen in Table 8, there were both conversions of the forest lands to other types of land use, and modifications of the forest products use to other types of forest product use. Those two changes have caused considerable decrease in traditional livelihood sources for the local people. The conversions of the forest lands, have caused the decrease in the number of the *Tu'an Bekan*, *Tu'an Aya'* and the *Tu'an Megan* as shown in Table 13 and Table 14.

Table 13. Decrease in the number of *Tu'an Bekan* (Old Secondary Forest Lands) Plots in Tering Customary Land Area since 1955

Sub-Area Code	Sub-Area Name	<i>Tu'an Bekan</i> (Old Secondary Forest Lands)		
		Number of Plots		
		In 1950s	In 2010	Decrease
A	<u>Ang</u> Bekeluva' - Magri'	31	0	31
B	<u>Ang</u> Magri' - Map	13	6	7
C	<u>Ang</u> Map - Kepinan	52	1	51
D	<u>Ang</u> Kepinan - Mekalang	108	16	92
E	<u>Ang</u> Mekalang - Lung A'	56	56	0
F	<u>Ang</u> Manhing - Mahada'	94	94	0
G	<u>Ang</u> Mahada' - Alan Lung Iram	56	56	0
H	<u>Ang</u> Alan Lung Iram - Gap	43	43	0
TOTAL NUMBER OF PLOTS		453	272	181
Percentage Decrease in Number of Plots				39.56
Number of Households		57	316	
Percentage Increase in Number of Households				554.39
Average Number of Plots per Household		7.95	0.86	

Table 14. Decrease in the number of the *Tu'an Aya'* (Old Growth Forest Lands) and *Tu'an Megan* (Primary/Virgin Forest Lands) in Tering Customary Land Area since 1955

Sub-Area Code	Sub-Area Name	<i>Tu'an Aya'</i> (Old Growth Forest Lands) and <i>Tu'an Megan</i> (Primary / Virgin Forest Lands)		
		Number of Forest Lands		
		In 1950s	In 2010	Decrease
A	<u>Ang</u> Bekeluva' - Magri'	5	0	5
B	<u>Ang</u> Magri' - Map	6	0	6
C	<u>Ang</u> Map - Kepinan	7	0	7
D	<u>Ang</u> Kepinan - Mekalang	15	0	15
E	<u>Ang</u> Mekalang - Lung A'	6	0	6
F	<u>Ang</u> Manhing - Mahada'	11	5	6
G	<u>Ang</u> Mahada' - Alan Lung Iram	9	1	8
H	<u>Ang</u> Alan Lung Iram - Gap	5	1	4
TOTAL NUMBER OF FOREST LANDS		64	7	57
Percentage Decrease in Number of Forest Lands				89.06
Number of Households		57	316	
Percentage Increase in Number of Households				554.39
Average Number of Forest Lands per Household		1.12	0.02	

The decrease in the number of the *Tu'an Bekan*, *Tu'an Aya'* and the *Tu'an Megan* in turn had caused the decrease in the traditional livelihood sources for the local people. *Tu'an Bekan* besides their function as agricultural land reserve, they are normally used by the local people for hunting, picking building materials, and collecting minor commercial forest products. By the decrease in the number of *Tu'an Bekan* (Old Secondary Forest Lands) plots as described in Table 14, the agricultural land reserve also decreases and so limits the ability of the Stem House Members to allocate available agricultural lands to their new members who may need to start up their own rice fields, garden or orchards. As shown in Table 13 the number of households has increased from 57 in 1950s to 316 in 2010. While the number of *Tu'an Bekan* plots has decreased from 453 in 1950s to 272 in 2010. So, both the decrease of 39.56% in the number of the *Tu'an Bekan* plots and the increase of 554.39% in the number

of households have both nominally and intrinsically decreased the potentials of the *Tu'an Bekan* as traditional livelihood sources for the local people.

Similar condition also applies in the decrease of the number of *Tu'an Aya'* and *Tu'an Megan* forest lands. *Tu'an Aya'* and *Tu'an Megan* are generally used by the local people as their forest resources pool for hunting, harvesting wild and semi-wild plants, collecting building materials and commercial forest products and, in the case of the *Tu'an Megan*, also for seasonal fishing. The decrease in the number of *Tu'an Aya'* and *Tu'an Megan* forest lands by 89.06% and the increase in the number of households by 554.39% as described in Table 14, have also nominally and intrinsically decreased the potentials of the *Tu'an Aya'* and *Tu'an Megan* to be used by the local people as their stand-by traditional livelihood sources.

### **Implications of the Impacts of Forest Land Use Changes on the Customary Land Tenure and Livelihood Sources for the Local People**

The implication of the increasing complexity in the bundle of rights and in the socio-structure of the rights over the forest lands, is the insecurity of the customary tenure rights. By the existence of new subjects and actors playing roles in the control and use of the forest lands, the customary tenure rights become more susceptible to external interventions, in particular interventions which are rooted in the government policies. Insecurity of customary tenure rights and their susceptibility to external interventions would in turn cause the insecurity and susceptibility of the livelihood sources for the local people.

Such condition worsens with the land use changes, having caused a substantially decreased availability of forest lands for use at times of need. In 2010, the Average Number of the *Tu'an Bekan* (Old Secondary Forest Lands) per Household remains 0.86 which means that not all households in Tering Lama now have the *Tu'an Bekan* (Old Secondary Forest Lands) for their agricultural land reserve, and for hunting, picking building materials, or collecting minor commercial forest products when they are in need. In the 1950s, every household had 7 to 8 *Tu'an Bekan* (Old Secondary Forest Lands) as shown by the Average Number of Plots per Household of 7.95.

For the *Tu'an Aya'* and *Tu'an Megan*, the Average Number of the Forest Lands per Household in 2010 also remains only 0.02, which shows that 1 *Tu'an Aya'* and *Tu'an Megan* forest land area is now used by 45 to 46 households, as their forest resources pool for hunting, harvesting wild and semi-wild plants, picking building materials, collecting commercial forest products, and also for seasonal fishing. In 1950s, every household could use 1 to 2 *Tu'an Aya'* and *Tu'an Megan* forest land areas for the purpose, as shown by the Average Number of Forest Lands per Household of 1.12.

As a result of the insecurity and susceptibility of the customary tenure rights, local people are prone to divide the *Tu'an Bekan* (Old Secondary Forest

Lands) amongst the households and convert the forest lands into other types of land use, in particular to rubber and rattan gardens. The implication of this arrangement is the shift of ownership and control over the *Tu'an Bekan* (Old Secondary Forest Lands) from the Stem House to the Households with the consequence of change in the structure of the tenure rights over the *Tu'an Bekan* (Old Secondary Forest Lands). There is also a tendency of converting the *Tu'an Aya'* and *Tu'an Megan* (Primary/Virgin Forest Lands) to rubber and rattan gardens or to other types of agricultural lands. As the clearance and conversion of the forest lands are done by the Household members, there is also a shift of the ownership and control over the *Tu'an Aya'* and *Tu'an Megan* (Primary/Virgin Forest Lands) from the Local People as a Community to individual Household, causing a change in the socio-structure of the tenure rights over the forest lands. The ownership and control over the forest lands, shift from the Community's communal rights to the Households' collective rights. The new subjects and actors playing roles in the control and use of the forest lands, as well increase the complexity of the tenure rights.

Further, as the traditional livelihood sources have also become more insecure and susceptible, local people began to develop commercial farming and actively involve in local trading. The implication of such practices is the conversion of more forest lands and intensive use of the converted lands to meet the market demand, with the consequence of diminishing yields and returns of the lands as sources of livelihood.

## Conclusion

Forest lands play important roles in the livelihood of traditional local community at Tering Lama Village in Kutai Barat District of East Kalimantan. Traditionally they have developed a system of forest land use for each forest land category and have socially developed a nest of graduated rights over the forest lands forming the local customary land tenure system.

Since 1955, however, there have been quite a lot of changes in the use of forest lands in *Tering* Customary Land Area, generated by the national government policies and regional development programs. Besides the local people, there have arisen a considerable number of new subjects and actors playing roles in the control and use of the forest lands and resources; these have increased complexity in the socio-structure of the tenure rights over the forest lands, and decreased the livelihood sources of the local people.

Increasing complexity in the socio-structure of the rights has put the customary tenure rights in a more insecure and susceptible position facing external pressures. Local people's efforts to secure their tenure rights by dividing the *Tu'an Bekan* (Old Secondary Forest Lands) amongst the households, converting the *Tu'an Bekan* (Old Secondary Forest Lands) as well as the *Tu'an Aya'* and *Tu'an Megan* (Primary/Virgin Forest Lands) to other

types of land use, have caused the shifts of ownership and control over those forest lands and changed the structure of the customary tenure rights.

Meanwhile, the decrease in the livelihood sources has --to a certain extent-- caused the sources to be more insecure and susceptible vis á vis the increase of local community's subsistence needs and cash income requirements. Local people's efforts to cope with the problems by developing commercial farming and involving actively in local trading have triggered extensive conversion of more forest lands and intensive use of the converted lands which, in the end, diminish yields and returns of the lands as their livelihood sources.

Considering that forest land use changes have been triggered mostly by the national government policies and regional development programs, this study suggests that it would be worthwhile to have a critical review of prevailing government policies, rules and regulations concerning forest land uses and tenure system, so as to mitigate the negative impacts and implications of the forest land use changes on customary land tenure and livelihood sources of the local people. For this purpose, there needs to be sufficient understanding of the forest land uses by the local people and their tenure arrangements, as seen in the examples revealed by this study.

### **Acknowledgement**

The study was part of my Doctorate Dissertation research, funded by the Ford Foundation through the Institute of International Education Inc (IIE). I therefore would like to take the opportunity to express my sincere gratitude to those two Institutions for their valuable support.

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