

Forest Land Use Development and its Benefits to Indigenous Peoples

(Pembangunan Guna Tanah Hutan dan Faedahnya kepada Orang Asli)

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Abstract

The Malaysian Criteria and Indicators (MC&I) for Forest Management Certification is the standard used for assessing forest management practices for the purpose of certification. The MC&I (2002) is a result of the collaboration between the Malaysian Timber Certification Council (MTCC) and the Forest Stewardship Council (FSC) which was initiated in 1999. This criteria was formulated to ensure forest management and development shall not threaten or diminish, either directly or indirectly, the resources or tenure rights, an existing ecosystem and indigenous peoples, where forest harvesting commenced area appropriate to the scale and intensity of forest management operations. Among of the principle of the MC&I related to forest land and indigenous are stated in principle number three and number five, where the legal and customary rights of indigenous peoples to own, use and manage their lands, territories, and resources shall be recognized and respected, and forest management operations shall encourage the efficient use of the forest's multiple products and services to ensure economic viability and a wide range of environmental and social benefit. Mutual understanding among indigenous people and forest developer or other stakeholders offer substantial promise as a way of dealing with natural resource benefits in equitable manner. This paper analyse timber harvesting operations and its benefit to the community of indigenous peoples in Ulu Jelai Forest Reserve (F.R). Through global positioning system (GPS) techniques and geographical information system (GIS) compatible format, the areal extent of forest area opening can be analyzed and interpreted in a quick way. Results indicated that from 4,592 ha of study area about 3.7 percent was logged in 2007 and 2009, respectively. Meanwhile 3.5 percent in compartment 472 and 484 is still under operations with reduced impact logging (RIL) practices. In that area about 34 percent was resided by indigenous peoples namely Simoi's village since 1990. Serious efforts are undertaken on timber harvesting activity to ensure sustainable forest management (SFM), Multi Criteria and Indicator (MC&I) standards compliance and protection to indigenous peoples. Proper constructed forest road and mechanized harvesting used are awareness undertaking by forest concessionaire to avoid sedimentation into stream and effect to water quality. The benefit from the best management practices by concessionaires providing services to improve their socio-economic status are discussed.

Key words *Forest Land Use, Sustainable Forest Management, Reduced Impact Logging, Indigenous People*

Abstrak

Multi-kriteria dan Petunjuk Malaysia (MC&I) bagi Pensijilan Pengurusan Hutan merupakan standard yang digunakan untuk menilai amalan pengurusan hutan untuk tujuan pensijilan. MC & I (2002) adalah hasil kerjasama antara Majlis Pensijilan Kayu Malaysia (MTCC) dan Forest Stewardship Council (FSC) yang telah dimulakan pada kriteria 1999. Kriteria ini telah digubal untuk memastikan pengurusan hutan dan pembangunan tidak boleh mengancam atau mengurangkan, sama ada secara langsung atau tidak langsung, sumber atau hak pemegangan, ekosistem yang sedia ada dan masyarakat pribumi, di mana penuaian hutan memulakan kawasan bersesuaian dengan skala dan intensiti operasi pengurusan hutan. Antara prinsip MC&I berkaitan tanah hutan dan pribumi yang dinyatakan dalam prinsip bilangan 3 dan bilangan 5, di mana undang-undang dan adat orang asli sendiri mempunyai, mengguna dan mengurus tanah dan wilayah mereka, serta sumber hendaklah akan diiktiraf dan dihormati manakala operasi pengurusan hutan perlu kepada penggalakan penggunaan secara berkesan terhadap pelbagai produk dan perkhidmatan hutan bagi menjamin keupayaan ekonomi serta pelbagai faedah alam sekitar dan sosial. Persefahaman di kalangan orang asli dan pemaju perhutanan atau pihak yang berkepentingan yang lain yang menawarkan janji yang besar sebagai satu cara berurusan ke arah memanfaatkan sumber asli secara saksama. Kertas kerja ini menganalisis operasi pembalakan dan manfaat kepada masyarakat orang asli di Ulu Jelai Forest Reserve (FR). Melalui Teknik Sistem Penentu Kedudukan Global (GPS) dan format sistem maklumat geografi (GIS) yang serasi, pembukaan kawasan hutan boleh dianalisis dan ditafsirkan dengan cara yang cepat. Keputusan menunjukkan bahawa daripada kawasan kajian berkeluasan 4,592 hektar atau kira-kira 3.7% telah dibalok pada tahun 2007 dan 2009. Sementara sejumlah 3.5% di petak 472 dan 484 sedang dikendalikan dengan Amalan Kesan Pembalakan Dikurangkan (RIL). Sekitar 34% kawasan ini telah didiami oleh masyarakat orang asli iaitu Kampung Simoi sejak tahun 1990. Usaha serius dijalankan terhadap aktiviti pembalakan bagi memastikan Pengurusan Hutan Mapan (SFM). Multi-kriteria dan Petunjuk Malaysia (MC&I), piawaian dan perlindungan kepada orang-orang asli dipatuhi. Jalan-jalan hutan yang dibina serta penuaian hasil hutan menggunakan jentera oleh pemilik konsesi hutan perlu mengelakkan pendedapan sedimen ke dalam sungai serta memberi kesan kepada kualiti air. Manfaat dari Amalan Pengurusan Terbaik (BMP) oleh syarikat konsesi dengan menyediakan perkhidmatan bagi meningkatkan status sosio-ekonomi mereka dibincangkan.

Kata kunci *Guna Tanah Hutan, Pengurusan Hutan Mapan, Pengurangan Impak Pembalakan, Orang Asli*

INTRODUCTION

Forests hold many economic, social and environmental values. They supply natural resources and are important for biodiversity conservation, water purification, soil protection, carbon storage and they provide a landscape for recreational activities. Forests also play an important social and cultural role for many indigenous communities in Malaysia. Forest land use developments are concern about wise use management and this not only to natural resources but apply to the forest dependence communities.

Timbers harvesting caused immediate forest cover changes and degrade mature natural forest (IUCN 2008). According to Kline et al. (2009), the behavioural changes of forested area over time can influence the characteristic of forest, such as density, age class species composition and succession. Peninsular Malaysia has witnessed substantial changes in forest management and timber harvesting system over the past few decades. Since the initiations of *gutta percha* era on 1900's, forest management have through several improvements due to current requirements over forest functions. Historically, wide forest canopy opening occur from forest exploitation begin in 1922-1935 for firewood harvesting and increasing in timber supply demands. In 1942-1945, Japanese era have transform the forested area to the food growth purpose (FDPM 2001). Timber harvesting today drastically occur with the main purpose to meets the human needs such social and economic. The harvest activities caused the declines of forest cover thus, most important intervention factor in forest operations and management practices on the environment (Elias 1999). Statistics recorded by FDPM in 1999, the total of forested area is about 19.01 million hectares (60%) of which about 14.33 million hectares is the Permanent Reserved Forest (PRF). However, great deforestation occurred to Peninsular Malaysia forest within ten year as in 2009, total of forested area declined to 5.89 million hectares (45 %) while 4.9 million ha is under PRF. The PRF is classified into two basic management namely production forest and protection forest. Production forest is about 10.84 million hectares in 1999 decreased to 2.84 million hectares in 2009, while protection forest is about 3.49 million hectares and only 2.09 million hectares, respectively in 1999 and 2009. Indigenous peoples are the minority peoples of Peninsular Malaysia. They were spread out around Peninsular Malaysia except in state of Perlis and Pulau Pinang (Md Akbal et al. 2003). The number of population is the 141, 239 in 2006 (Pakhriazad et al., 2010). There are three main tribal groups namely Negrito, Senoi and the Melayu Asli or Proto Malay (Pakhriazad et al. 2010) and further divided into 18 sub-ethnic groups according to their different language and customs. The largest sub-ethnic groups are the Semai, Temiar, Jakun and Temuan. The Semai sub-ethnic groups represent the biggest tribe among the indigenous people, numbering 80, 972 (54.2 %) of the total indigenous people population (Mohd Fauzi & Nor Aini 2009). Roughly, about 40 percent of indigenous people reside in, or near forested areas (Nicholas 1997; Howell et al. 2010). They engage in forest products and forest related activities for their livelihood. Reports from FAO (2005) as cited by Howell et al. (2010), about 60 million indigenous peoples depends on non-timber forest products such as fruits, legumes, construction materials and medicinal plants to meet their subsistence and supplemental income. According to Pakhriazad et al. (2010), the development of forest land use for timber harvesting give an accessibility to their population and has a huge impact for physical live-hoods and other factors related to their socio-cultural status and identity. Indigenous people considered forest is a gift from Mother Earth. The ways of indigenous people diversify forest values are by build initiatives and adding value through economic activity with loggers and forestry department. The agreements between both parties are promise for the pathway to sustainable forest management and support/improve their livelihoods. A lesson learnt from the worse forest land use development in 1960's. An effort has made by government through Department of Orang Asli Affairs (DOAA) by gazetting

the indigenous people land since 1960's (Nicholas 1997). This includes safeguarding their legal and customary rights. Established in 1953, DOAA attempt at legislation to protect the indigenous people with the publication of the Aboriginal Peoples Ordinance in 1954 (later amended in 1967 and 1974 to conform to changing conditions) (Nicholas 1997; DOAA 2010). This body is under the Malaysian Ministry of Rural Development. This department aims to protect indigenous people rights and their lifestyle from rapid civilisation development, beside improving their health, promoting education, and improving their general livelihood (DOAA 2010).

Conflicts however arise from the timber harvesting operations. This happen when they claim harvest operation has disturbing their lands, territories and resources. Omar (2004) state that indigenous people is recognised as primitive community who are not accepts any types of development to their social life. While Juli (1990) as cited by Omar (2004) added that the traditional culture principal who inherits from their ancients also influence the indigenous people thought to development. For example, this development would cost the other indigenous people population whose their livelihoods depend on the ability to freely collects the appropriate non-timber forest products (Howell et al. 2010). In 1980's, the DOAA have made an effort by Regroupment Scheme to established permanent residence in a particular location concerning indigenous people subsistence activities (Nicholas 1997) under Fourth Malaysia Plan (DOAA 2010). This initiation continued as indigenous people communities have realise the benefits derived from the development programmes (Omar 2004). This scheme initially introduces to eliminate the communist threat that made a good relationship with indigenous people at inland area. A total of 17 locations of Regroupment Scheme have established; six in state of Perak, seven in state of Pahang, three in state of Kelantan and one in state of Johor. Among the initiatives and facilities provided from this scheme is construction of new dwelling house, infrastructure development in integrated manner and commercial crop programming such oil palm and rubber plantation.

Currently sustainable forest management (SFM) practices by the Forestry Department in Peninsular Malaysia (FDPM) have considered the indigenous people's right in Multi Criteria and Indicator (MC&I) standards certification under principle number 3 and the safeguarding of the resources from forest management operations listed under principle number 5. This principle encouraging the efficient use of the forest's multiple products and services to ensure economic viability and a wide range of environmental and social benefit. In the broader sense, SFM has been thought of as identifying the optimal balance of trade-offs between economic value and social need considered of the ecological function and limitation of forest ecosystem. However, the flexible aspects of the approach to forest management are evident by the multiple meaning of "sustainability". It embrace more diverse not just to sustained timber yield, but has come to include other materials such as non-timber product, equity benefit derived from forest land, equality in decision making and planning as well as the protection of all forest value for the future generations.

The MC&I in Malaysia practiced since 1998 for sustainability purpose of forestry for forest management certification. The assessment is conducted to Permanent Forest Estate (PFE) at forest management unit (FMU) level. Since the implementation, MC&I was based on International Timber Trade Organization (ITTO) which the

document published on 1999 (known as MC&I) and upgraded for further sustainability requirement and later on was based on Forest Stewardship Certification (FSC) which implemented since 2005 (known as MC&I 2002). MC&I 2002 have nine principles covers all activities and standard of performance relating to forest harvesting, development, administration and enforcement at all level of operation (Pakhriazad et al. 2010). An assessment on forest resource and management plan surveying through EIA are required in order to avoid adverse impact to the forest ecosystem (Ciaran et al. 2003) as balancing environment sensitivity and sustainability (Ian 1996) and economic mainly in forest base products industries (Mohd Hasmadi 2005) during the forest engineering activity and operation. EIA was firstly implemented in 1987 in forest oriented activities in order to mitigate the potential impact raised according to Environmental Quality Act 1974. FDPM has also outlined the regulations and guidelines known as *Forest Harvesting Guideline* and *Standard Road Specification*, and strengthened by Guideline to RIL in Peninsular Malaysia to achieve the SFM; in addition with the Quality Management System (QMS) implementation namely MS ISO 9000: 1994 (Wan Mohd & Mohd Paiz 2003a; 2003b). In the interest of SFM on forest land and its benefit to indigenous people the study was carried out to analyze the timber harvesting operations and its benefit to the community of indigenous peoples in Ulu Jelai Forest Reserve (F.R). Through GPS techniques and GIS compatible format, the areal extent of forest area opening can be analyzed and interpreted in a quick way. Best management practice undertaken by forest concessionaire for environmentally timber harvesting operation such mitigation measure in forest road construction have also been assessed by GIS and GPS techniques.

METHODOLOGY

Study Area

Study was carried out in the sub-compartments of Ulu Jelai Forest Reserve (UJFR), Kuala Lipis, Pahang (compartments 447,471-474, 483-487, 504-508, 543 and 544). These compartments cover an area of Simoi village about 1,565 ha from the total of 4,592 ha study area. The UJFR are predominantly composed of dipterocarp species, classified as Virgin Jungle Forest and firstly harvested in 1970. This forest located at latitude 4° 20' 30" – 4° 18' 13" N and longitude at 101° 36' 16" – 101° 38' 19" E and elevation ranging from 140 – 1,060 m above sea level. Figure 1 illustrates the study area and Simoi village location. Simoi village are resided by indigenous peoples from Semoi groups comprising 16 families of 349 residents. The indigenous people lives along the Sungai Jelai. Generally, most of them depend on non-timber forest product, livestock and river resources to meet subsistence and supplemental income needs. As their territories opened for timber harvesting purposes, more jobs opportunity exist offered by the forest concessionaire and forestry department and benefited to their daily life. The forest land surrounding indigenous communities is under the MC &I, and RIL implementation. Rimbaka timber harvester used for RIL practices where optimal forest canopy opening occur with non-skid trail's construction for timber skidding.

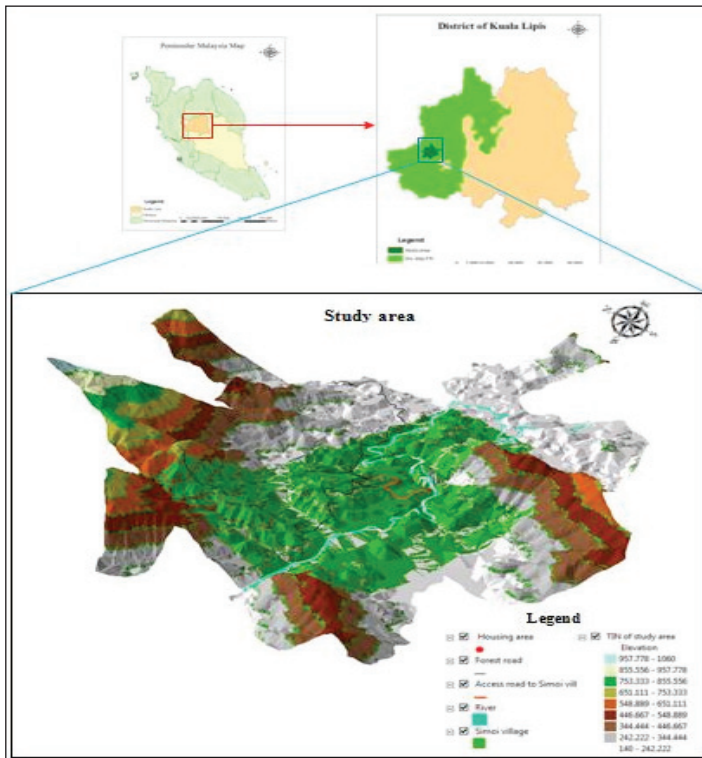


Figure 1 Location of study area in Ulu Jelai FR district of Kuala Lipis, Pahang. Simoi village is located at the centroid of study area (bottom)

Methods

The procedure of this study involves personal interviews, data collection and several steps of GIS processing such as spatial data editing and spatial analysis. Benefit derives from opening up forest area for timber harvesting operation data were collected by means of oral interviews. The head of indigenous people known as *Tok Batin* and forester of Betau Ranger Office staff were interviewed. The headmen have described their daily routines for survive with cash-crop agriculture around their residential. Besides, they also estimates the income derived from non timber forest product collection sold by indigenous people to wholesaler. According to Howel et al. (2010), the non-timber forest product includes all types of leaves, fruits, flower, seeds, nuts, legumes, reptiles, frogs and mammals. Meanwhile the forester describe about facilities provided by state government through DOAA to the indigenous people and education status for their children. In addition, forestry department have appointed several indigenous people for compartment boundary tagging works. Obviously, this job derives income to the indigenous people as well as work opportunities provided by concessionaire. Interviews was also addressed the forest concessionaire as additional data for such facilities provided to the indigenous people. Forest concessionaire was asked to identify the numbers of indigenous people who works in timber harvesting operation and their wages earned.

In GIS phase, digital data in vector and hardcopy map scales 1:50,000 were procured from Kuala Lipis District Office. Vector data comprised layers of forest area and compartment, license area, river, forest road, main road, indigenous people village area, contour and district of Pahang state. All features attribute of acquired layer is shown in Table 1. Alignments of feeder road and harvest area were displayed in hardcopy map. For MC&I standards and RIL practices compliance, ground validation using GPS was conducted by tracking the forest routes network. As the harvesting area was applying Rimbaka for RIL practices and MC&I standards compliance towards SFM certification, the analysis of soil disturbance using two mechanised harvester namely Rimbaka and crawler tractor are presented by Mohd Hasmadi and Norizah (2010).

Table 1 The database structure

No.	Layers feature	Attributes
1	Forest area	Name, Compartment ID, Area, Forest status
2	License area	License no., Commenced date
3	River	Name, Length
4	Forest road	Name, Length
5	Main road	Name, Length
6	Indigenous people area	Name, Area, Family no., Residents no.
7	Contour	Topo sheet no., Elevation
8	District	Name, Area

The spatial analyst in ArcMap was performed to identify the areal extent from forest opening. ArcMap provides tools for creating visual data, querying, and creating presentation quality maps. Output digital maps of study area demonstrated in ArcMap document (*.mxd) comprising layer in shapefile (*.shp) format and database stored in attribute table of each layer presented (Figure 2). Data collected using GPS tracking inserted to ArcMap by converting the features to line using ArcToolbox and projected with Rectified Skew Ortomophic (RSO) using *Kertau RSO Malaya Meter*. Forest road density was identified to comply with forest road standard specification by Forestry Department Peninsular Malaysia for RIL practices. Besides, the legal and customary rights of indigenous peoples such their lands, territories and resources area recognised and depicted in line with Indigenous People Act, 1954 and principles of number 3 in MC&I standard document. **Figure 3** shows the general steps in GIS processing for this study.

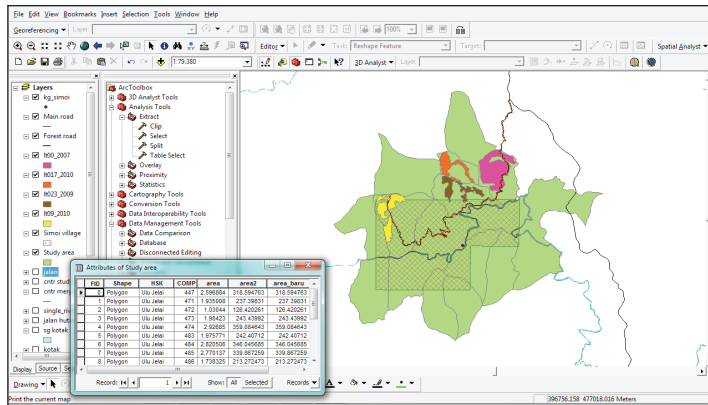


Figure 2 Interface of ArcMap showing the spatial features of selected layer and attribute of study area

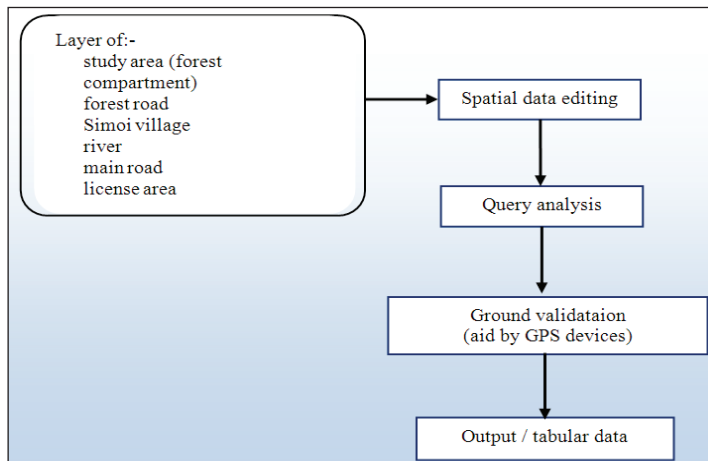


Figure 3 General steps queries in ArcMap identifying the areal extent of forest opening in timber harvesting operations and answered the SFM towards indigenous people’s rights and legal

RESULTS AND DISCUSSION

Forest Land Use, Roads and Environmental Consideration

Forest land use is close related to forest roads, where road is an important infrastructure in timber harvesting operation. The availability of timber products rely on access provide to the operation area (Hay 1994). In Peninsular Malaysia, forest road was specified into four classes namely primary road, secondary road, feeder road and skid trail (FDPM 1999). The licensee for forest harvest operation is awarded to Syarikat Pembalakan Ulu Jelai. The harvest operation is commenced in 2007 and 2009 cover an area about 169.7 ha in compartment 471 and 473. Of this about 18 percent feeder road is intersected within compartment 471. Secondary road firstly constructed in year 2003 and expanded to current harvest area at compartment 484. In total, 14 km

access road was constructed until October 2010 since the operation begins in Feb 2010. GPS device was used to trace the length of constructed forest road/access road. The harvesting operation will end in Feb 2011, and the expected harvestable area using RIL is about 114.6 ha in both compartment 484 and 472. For indigenous people's facilities, the concessionaire has constructed a one km connecting road from secondary road to the residential area of Simoi village. This access provided as to ensure the customary rights of indigenous peoples safeguarded as required in MC&I standards. Figure 4 shows the access road constructed in the operation areas. In compartment 484, roughly 2.4 km feeder road has been constructed in production forest. The length and density of the constructed road is comply to the guideline from *Forest Road Specification for Peninsular Malaysia 1999* by FDPM, which stated that feeder road should be constructed not more than 40 m ha-. In fact the skid trails are not use to skid log because timber operation is carried out by using RIL technique. The harvest operation in production forest reveals the mitigation action toward environmental concern. Forest road with cut and fill work for slope consideration are keeps minimum and fitted with spatial topographical features (Figure 5). Stream crossing are properly constructed with appropriate wooden bridge allocation with log abutment and earth cover decks. A mitigation measure towards soil erosion on road surface was shielded by grass (*Desmodium sp.*) planting along road shoulder. Obviously, concessionaire has made an approach to replant the opened area as SFM requirement with climax timber species such as *Hopea odorata* (Merawan siput jantan), banana tree as well as food source to indigenous people and bamboo.

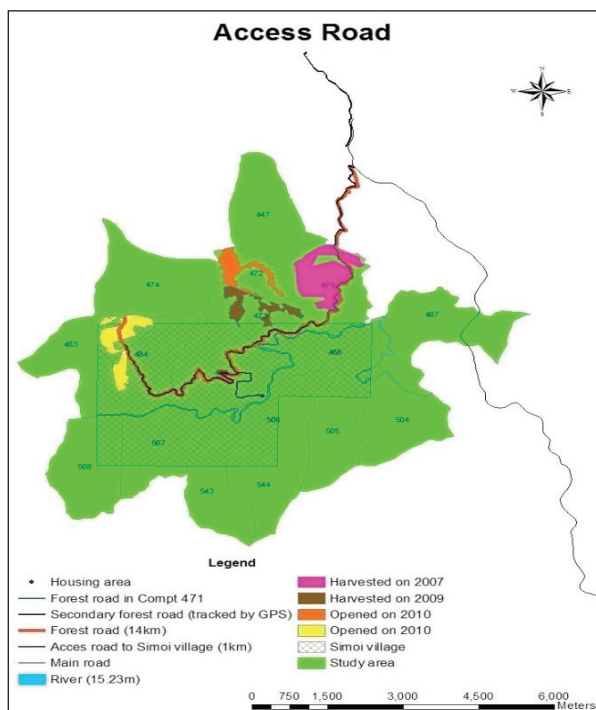


Figure 4 The access road is constructed as major road to the current harvest operation area in compartment 484 and to Simoi village by concessionaire

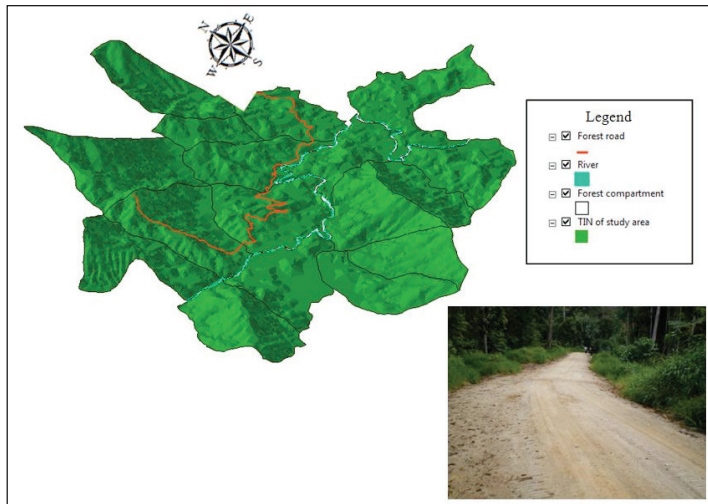


Figure 5 The 3-D of the forest road network and a photograph showing the mitigation measures for soil erosion along road shoulder

Concessionaire have used Rimbaka Timber Harvester for RIL practice and MC&I standard specification purpose for SFM in timber extraction and this resulted to the less canopy opening and reduce the amount of soil disturbance along its tracked path. Moreover, Rimbaka application minimise the amount of residual damages during extraction process. Technically, Rimbaka operates with one operator and assisted by one assistant who determines the path of log hauling from felling site at down slope area and placed at feeder road for further process such log cutting. This is in lines with EIA policy which one of its objectives suggests to provide the options and mitigating the measures to eliminate or reduce the potential environment impact on soil compaction and fertility, and limitation of machinery numbers use on the harvesting area at any one time. According to Wan Mohd and Mohd Paiz (2003a), the single purpose use of mechanised harvesting give minimal soil disturbance as Rimbaka do timber extraction activity with log sorting and placing at temporary log landing without interference from other machineries which do forest road construction such as conventional ground base machinery. However, Rimbaka requires high investment cost for initial capital in harvesting operation by its single purpose use (Wang & Harlaa 2002). In regard to environmental consideration such as soil disturbances in the area, Mohd Hasmadi and Norizah (2010) were carried out a study on machine use using Rimbaka R2020-A and crawler tractor Komatsu D60-A (Figure 6). The study revealed that by using Rimbaka Timber Harvester the density of road opening can be minimised by attached wire rope with length up to 300 m. The wire hauls the log from felling site like “logfisher” system even at stream slope more than 300 (Mohamad 2010). Table 2 presents the means value and standard deviations revealed from the study. Despite reducing of road opening Rimbaka system showed an increase effects on soil disturbance due to it physical design and specification. The Rimbaka weight is 25,956 kg, body width is 3.5 m and have more shoe size blade; 80 cm than crawler tractor. However, Rimbaka still better alternative because the main reason is it not requires skid trail, which can reduce

the opening of forest canopy and road density. On the other hand, use of Rimbaka R2020-A for the harvesting operation is encourage to sustain tropical forest which soil displacement in hilly area is highly sensitive worth steeper terrain and variety topographic condition.



Figure 6 Crawler tractor KOMATSU D60-A (left) and Rimbaka Harvester System R2020-A (right)

Table 2 Mean values and standard deviations for selected parameters

Machine	Value	Cone index (kPa)			Moisture content (%)			Bulk density (g/cc)			Total pore space (g/cm ³)		
		1	4	8	1	4	8	1	4	8	1	4	8
RIMBAKA R2020-A	Means	1.94	2.04	3.45	27.8	17.8	15.8	1.14	1.39	1.43	57.09	47.69	45.99
	SD	0.8	0.83	0.54	17.21	3.11	6.06	0.26	0.18	0.18	9.68	6.73	7
KOMATSU D60-A	Means	1.24	1.75	1.94	27	26.4	24	1.43	1.3	1.2	54.43	51.57	50.93
	SD	0.25	0.61	0.3	3.39	1.52	0.71	0.18	0.07	0.16	5.89	3.22	2.6

Best Management Practices on Forest Land Use: The Benefit of RIL to the Community of Indigenous People

A total of 34 percent in the area is inhabited by indigenous people from Semoi sub-ethnic group. Semoi village is one of Betau Regroupment Scheme which established since 1980's. The population consist of 349 villagers with 16 families. Of that, 187 are male and 162 are female. This community lead by a headman known as *Tok Batin* named Salleh a/l Kechut aged 59 years old. Figure 7 presents the community of indigenous people in Semoi village. The socio-economic activities of the Semoi community are largely dependence to the forest. The forest and non wood product is identified as main collection for own subsistence and family. They live with cash-crop agriculture within their remote rural settlements for example swidden (hill rice cultivation), banana, lemon grass and tapioca. These entire crops are source of their daily food. The swidden and banana is planted at open area prepared by concessionaire and through wildfire around their settlements. Meanwhile lemon grass and tapioca is planted along the river shore. According to Tok Batin, there are buyer comes to their

settlement to buy their crops with cash earning or butter system. Buyers bring daily goods to be used in butter system, for example sugar, salt, rice and milk. In addition, the indigenous people will find their food source such fish from river Jelai, located behind their settlements. The river is a main source of water supply for their daily life for cooking, bathing and washing. River Jelai also play a role as transportation between communities beside land routes (Figure 8).



Figure 7 The indigenous people-Simoi community in village



Figure 8 A clear water of River Jelai located close to community residential is an important source for daily consumption, daily life and water transportation

About 80 percent from Simoi community are engage in non-timber forest product collection, for example rattans, bamboo, resins, fruits, frogs and mammals. The source of these non-timber forest products can be found around forest area and indigenous people is freely moved in the radius of 5.6 km distance from their housing area (Nicholas 1997). Bamboos can be easily found along the road shoulder as bamboo grows at opens area. Rattans and bamboo usually sold in bulk to the head of Betau Regroupment Scheme named Amat bin Selalu. He is the only one of indigenous people within Betau Regroupment Scheme has the wholesaling license for rattan and bamboo. Generally, an indigenous people will earn about RM 45 – RM 60 a month from rattan and bamboo sales and sometimes rely on the amounts of their collection. Fruits such as *petai* are collected for own use and also sell to the buyer which price about RM 30 for ones collection. Frog generally collected as requested by buyers. The price of frogs is RM 2-RM 4 according to its size. Beside that they also have a livestock such as goat and chicken. According to the forester of Betau Renj Office, Badarridin (2010), a goat that sold priced about RM 50. Individuals from nearby areas always coming to this village to seek for the quality goat with reasonable price compared to market price.

There are a number of the indigenous people engage in wage earning labour work with Forestry Department and forest concessionaire. When an area was being released by District Forest Office to harvest, staff of Forestry Department will start to make boundary demarcation. They will hire the indigenous people to work with them as they familiar with the forest condition and it is their territories. Moreover, the indigenous people have to identify their special cultural, ecological, economic or religious site

to ensure there are no conflicts and grievances occur once the harvesting operation begins. Those special sites will be listed and mapped, and certified as sensitive area and harvesting is prohibited on this area. There are two or four indigenous people are hired for one period. They are paid about RM 30 - RM 50 for one day work from 9 a.m to 5 p.m. The job opportunities also comes from timber harvesting operation such as chainsaw man assistant, machinery operator assistant, and tree and grass planting for silviculture/rehabilitation program. As a chainsaw man and machinery operator assistant, they will be paid about RM 7 per tonnes of timber extracted. Meanwhile the tree and grass planting workers will be paid RM 15 for one day works. In addition, the concessionaire provides free meals to their worker for lunch and dinner. There is also an indigenous family lives at the main entrance of harvesting area hired by concessionaire as security guards paid about RM 500 for a month.

The Malaysian Ministry of Rural Development through DOAA have provides several facilities and infrastructure by balancing the development forest land with infrastructure and social needs. A total of 12 units concrete house, comprising 2 bedrooms and 1 bathroom with water and electricity supplies are developed. The DOAA have provided 16 solar transmitters to supply electricity source to each house in Simoi village. The construction of new road from Sungai Koyan to Cameron Highlands provides an access to indigenous people to sell their forest goods to, therefore increase their income (Utusan Malaysia 2010). The facilities provided by DOAA are anticipated to change the indigenous people's belief towards developments today (Malaysian Ministry of Rural Development 2010). Omar (2004) have stated that indigenous people today already realize on the importance of development to their community. The best management practice by adopting RIL toward SFM is observed elevated the socio-economic of indigenous people without destruct the forest for forest dependence community.

CONCLUSION

Understanding the relationship between indigenous people right and SFM has proved to be challenging. The debate on the right or protected area and SFM is that protected area generally refers to a specifically-delineated site, while SFM is more commonly perceived as a way of doing right things, and not tied to a specific area. A major challenge with the definition is that it does not allow for commentary on management effectiveness of protected area and SFM. The use of forest land for harvesting in the study area is complying with several rule and guideline such as RIL and MC&I. This guideline is practiced by forest concessionaire in timber harvest operation to ensure the sustainable of forest management, customary right and legal of indigenous people are safeguarded. From this study, forest concessionaire has taken serious effort to minimise the impact towards SFM considering the construction of proper forest road and mechanised harvesting used. Application of Rimbaka is the best management practices by concessionaire as skid trail are not requiring for skidding. Therefore, it reduced the density of road and canopy opening; subsequently avoid the sedimentation into stream. Through forest land development the Simoi communities have opportunity to get jobs from the concessionaires and also to sell their forest goods to outsiders.

Beside the socio-economic prospect, we observed that the development of land is transforming the mindset of the indigenous people into new world. They have shown their efforts to success as other people and grab the opportunities exist. Through forest development, directly or indirectly the socio economic of the indigenous people is increased. They also realise the important of education and health. Glasby (2002) describe the critical objectives for achieving sustainable development as reviving growth, changing the quality of growth, meeting essential needs for jobs, food, energy, water and sanitation, ensuring a sustainable level of population, conserving and enhancing the resource base, reorientation technology and managing risk and merging environment and economic in decision making. The holistic framework for conceptualizing the forested land use in large spatial scales should be developed. Thus, the availability of geospatial tools should be considered in managing forest resources for economic return as well as keep the needs of forest dependence communities.

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