

New Planting Procedure - Summary of Assessments

RSPO

Roundtable on Sustainable Palm Oil



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Country of the NPP submission:	Indonesia
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Section 1: General Information

1. Introduction

In this report it is intended that Koperasi Pematang Batarung (KPB) located in Pematang Village, Mentaya Hulu District, East Kotawaringin Regency, Central Kalimantan Province, Indonesia with partnership areas (scheme smallholder areas) of ± 449,68 Ha (refer to location permit) will carry out New Planting Procedure (NPP) activities in the remaining undeveloped areas (abandoned more than three years) with the propose of NPP areas is ± 40.45 Ha. Koperasi Pematang Batarung is one of scheme smallholders under PT Karya Makmur Abadi (PT KMA). Whereas, PT KMA is a member of the RSPO under its parent company, Kuala Lumpur Kepong Berhad (KLK Bhd). In its plantation operations, KPB have a Plantation Business Permit (Izin Usaha Perkebunan, IUP), Location Permit (zin Lokasi), and has carried out the Environmental Impact Assessment (EIA/UKL-UPL).

Koperasi Pematang Batarung (KPB) has carried out the High Conservation Value (HCV) assesment, Social Impact Assessment (SIA), Land Use Change Analysis (LUCA), Soil and Topography Study, Carbon Stock and Greenhouse Gas Assessment (GHG) for new plantings. The result of each assessment will be displayed in this NPP summary of assessment report.

HCV and HCS assessments conducted in 2017 remain unchanged. However, the Land Use Change (LUCA) study and Carbon Stock Assessment carried out in the same year were updated in 2024 according to current conditions and situations to reflect the area of interest. They are presented in section 7 and section 8 of this summary, respectively.

Koperasi Pematang Batarung is RSPO P&C certified since 16 February 2024 as a supply base PT KMA POM.

2. Timeplan Land Clearing

Table 1. Time Plan Land Clearing

Section		Total
Phase 1 (October 2024 – November 2024)	Phase 2 (June 2025 -December 2025)	
20,00 Ha	20,45 Ha	40,45 Ha

Section 2 : Maps

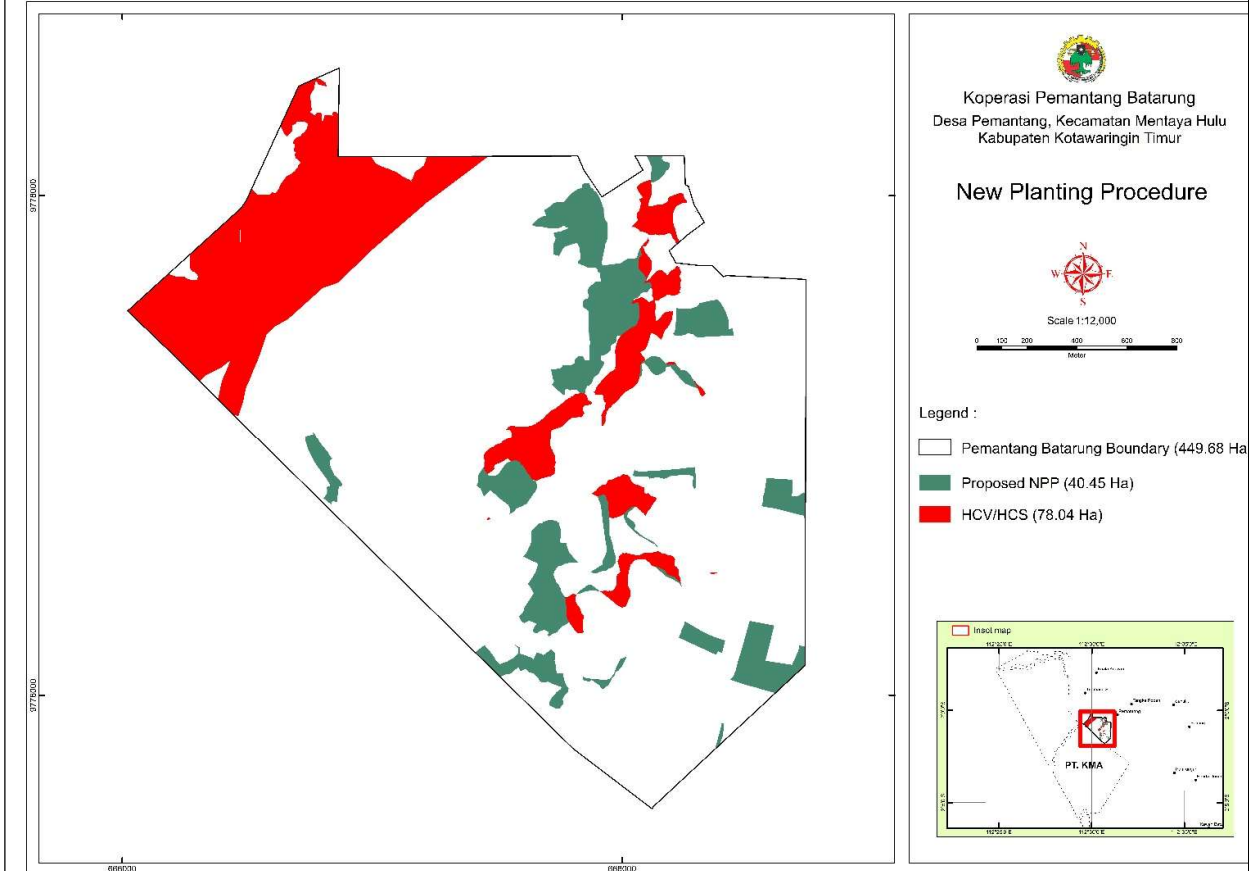


Figure 1. Overlay HCV-HCS & NPP Proposed of Koperasi Pematang Batarung (KPB)

Section 3: SEIA

Environmental Impact Assessment (EIA)

1. Timeline and Parties Involved

Environmental Impact Assessment (EIA) of Koperasi Pematang Batarung was carried out by expert team on December 2016 in-form of Environmental Management & Monitoring Effort (UKL-UPL). The expert team have competency certificate which was approved by The National Association of Profesional Consultants of Indonesia. The list of expert team as below :

Name	Function	Competence Certificate	Expertise
Dr. Ir. Hj. Kembarawati, M.Si	Leader	No.001368/SKPA-P1/LSK-INTAKINDO/V/2015	Environmental science (basic of the analysis of environmental, writing and assesing environmental document)
Dr. Ir. H. Abdul Mukti, MP	Member	No.001439/SKPA-P1/LSK-INTAKINDO/IX/2015	Social, economic & culture (basic of the analysis of environmental and writing environmental document)

Dr. Zafrullah Damanik, SP. M.Si	Member	Not available	Agriculture/soil science
Bayu Saputra, ST. M.Sc	Member	Not available but he has attended/participated on writing environmental document course dated on 31 August to 19 September 2015 and basic of the analysis of environmental course dated on 24-29 August 2015	Technic (basic of the analysis of environmental and writing environmental document)

2. Method

The Environmental Management and Environmental Monitoring Effort Document has been prepared in accordance with the prevailing laws and regulations of the Indonesian government. The data collection process was strongly associated with the type of data that were collected. Generally, studies will be conducted based on primary data and secondary data. Primary data were obtained through observation, measurements and field interviews, while secondary data were obtained from the literature collected, either from the company, or directly from related institutions in the study of this area. The methods that were used to collect the data were adjusted with the components that can be studied. The data must be accurate and reliable so that it could be used to analyse, measure, and observe the environmental components which were predicted to be affected and components of action plan which were predicted to give significant impacts to the surrounding environment. The collected data were as follow :

- Geo-physical-chemical components (climate, rainfall, temperature & humidity, air quality, noise, manage of land use, topography/slope, hydrology & soil and quality of surface water)
- Biological components (vegetation/flora, animal/fauna and water biota)
- Socio-economic cultural components (demography/population, social, economic and social-cultural)
- Environmental health and public health components (environmental sanitation, public health level, level of public health services)

a. Methods of significant impact estimation

Determination of the significant impact to the environment caused by the development activities of the plantation is only intended as an attempt to estimate the large and important environmental quality changes that are caused by the plantation development activities. The method of significant impact estimation is by differentiating the magnitude of impact and significance of impact.

b. Estimation of the magnitude of impact

Magnitude of impact are measured from the environmental quality changes. The estimation of changes in environmental quality is done by formal and non-formal methods.

- i. Formal methods are used to estimate the impact of parameters whose system characteristics can be identified or estimated by environmental threshold approach at national and regional levels
- ii. Non-formal method is based on the professional judgment of expert(s), logical frame analysis and analogy. This method is used to estimate the environmental parameters whose system characteristics are difficult to identify or estimate by modelling approach such as models and socio-cultural systems

c. Determination of significant impact characteristics

The assessment of the significant impact characteristics was in accordance with relevant regulation. Meanwhile regarding the impact evaluation, significant impacts are classified into two categories : important and less important. Characteristics of impact are divided into two groups, negative impacts and positive

impacts. It will be regarded as negative if the changes/impact estimated gets adverse towards the environment, and it is positive if the changes/ impact estimated gives benefit to the environment.

The study of the important source of impact and hypothetical impact can identify the key issue that needs to be managed. The results of the important impact evaluation are also expected to assist the decision-making process in the selection of a viable alternative plan that considers environmental aspects of the proposed area.

The assessment result has reviewed by assessment team dated on 23 Januari 2017 from representative of local government i.e some agencies in district level, from Mentaya Hulu sub district and from Tumbang Sapiri village (head of village and representative agency in village (BPD) level).

3. Result

Plantation activities were predicted to impact the environment; thus it needs to be explored in depth including the four phases of activities : Pre-Construction Phase, Construction Phase, Operational Phase and Post-Operational Phase .

a. Pre-construction Phase

At this phase, source of impact is the desimination of activities and providing land relate of land acqution and land compensation. Whereas, type of impact is there may be a change in attitudes and perceptions and containing social unrest, due to the socialization and boundary demarcation, also land acquisition.

b. Construction Phase

- Source of impact : employee recruitment and opening and preparing land (land clearing)
- Type of impact : job and bussiness opportunities and decline of biodiversity (flora and fauna), increasing erosion rate & sendimentation load, decline of surface water quality and have potential of land fire.

c. Operational Phase

At this phase the identified activities could be maintenance of oil palm trees (immature & mature), FFB harvesting and transport. It are activities as source of impact. Whereas, type of impact is impact on soil fertility and pest and disease control, job and bussiness opportunities relate of harvesting & FFB transport activities, increasing community income and a change in attitudes and perceptions and containing social unrest.

d. Post-Operational Phase

- Source of impact : the return of land process to government
- Type of impact : a change in attitudes and perceptions and containing social unrest & potential of conflict

Environmental management & monitoring plan, the location of environmental management and monitoring, period of environmental management & monitoring and the institution of environmental management & monitoring will be stated on NPP integrated management plan.

Social Impact Assessment (SIA)

1. Timeline and Parties Involved

SIA (Social Impact Assessment) was carried out in year 2017 (dated on 4-12 April 2017) by Remark Asia with the study area of Koperasi of Pematang Batarung and 2 other cooperative areas under PT KMA. Name of Assessor is Herry Triyana (expert on study of social, culture & community empowerment, community

development / corporate social responsibility and technical facilitation) and Redy Miraz Muslim (expert on social society and technical facilitation) from Remark Asia. This study involved 78 sources and 2 stakeholders.

2. Method

SIA is carried out using several methods involving key stakeholders. The methods applied are as follow :

- a. Literature review
- b. Dialogue, held in 5 informal meetings and 1 formal meeting in the form of FGD (Focus Group Discussion)
- c. Field observation
- d. In-depth Interview
- e. Triangulation
- f. Social-Learning Cycle

3. Result

Development of this oil palm plantations has a positive impact on members and the surrounding community, such as increasing income & individual capacity relate of manage of oil palm plantation, absorption of local workers, the circulation of money in traditional market, encourage the development of business opportunities and open access to surrounding villages. However, the community has concerns about river water pollution, where some people still use the river as a water source and are afraid of the loss of community land for farming. In connection with this, the local community hopes for the development of Smallholder schemes through Koperasi Pematang Batarung and two other koperasi (Koperasi Tunjung Untung & Koperasi Garuda Maju Bersama) which PT KMA collaborates with.

Section 4 : HCV-HCSA Assessment; or ALS HCV and Standalone HCSA assessment

1. Timeline and Parties Involved

The HCV assessment was carried out by PT Remark Asia which located at Ciremai Ujung Street No.17A, RT 02/02, Bantarjati Village, Bogor Utara Sub-District, Bogor District, West Java Province, Indonesia, 16153 and website : www.re-markasia.com. HCV assessment was carried out on 27-28 March 2017 (for desk study, collecting & analyst for secondary data and designing & planning activity plan), 29-31 March 2017 (for scoping study) and 05-11 April 2017 (for field assessment) with the scope of assessment is oil palm partnership areas of PT Karya Makmur Abadi where Koperasi Pematang Batarung is one of oil palm partnership areas. Location of assessment in Kotawaringin Timur District – Central Kalimantan Province.

The list of HCV assessor as below :

Name	Function	Competence Certificate	Expertise
Cecep Saepulloh	Leader	ALS license No. ALS15020CS since 20 January 2015	Forestry, assessor for HCV of environmental service, assessor for HCV 5-6 & assessor for HCS and auditor for RSPO, ISPO, ISCC, FSC, IFCC, ISO 9001 & ISO 14001
Rhama Budhiana	Member	N.A	Forestry, expert of fauna conservation and assessor HCV 1 & 3
Reza Pradipta	Member	N.A	Forestry, GIS & mapping
Hilma Suciandari Lahay	Member	N.A	Agriculture, expert of social and assessor HCV 5-6

Herry Triyana	Member	N.A	Forestry, expert of social and assessor HCV 5-6
Redy Miraz Muslim	Member	N.A	Forestry, expert of social and assessor HCV 5-6

The report of HCV assessment has reviewed by ALS HCV-RN where first submission is 20 September 2017 and the latest of submission is 24 December 2018. The final of feedback is satisfactory dated on 3 January 2019 (link : www.hcvnetwork.org/reports/hcv-smallholder-oil-palm-partnership-pt-karya-makmur-abadi).

The standalone HCS assessment was carried out by PT Remark Asia which located at Ciremai Ujung Street No.17A, RT 02/02, Bantarjati Village, Bogor Utara Sub-District, Bogor District, West Java Province, Indonesia, 16153 and website : www.re-markasia.com. HCS assessment was carried out on April-July 2017 with the scope of assessment is oil palm partnership areas of PT Karya Makmur Abadi where Koperasi Pematang Batarung is one of oil palm partnership areas. Location of assessment in Kotawaringin Timur District – Central Kalimantan Province.

The list of HCS assessor as below :

Name	Function	Competence Certificate	Expertise
Cecep Saepulloh	Leader	License of HCS	Carbon stock assessment, HCV lead assessor, biodiversity, license of HCS & auditor
Hilma Suciandari Lahay	Member	N.A	Assesor for SIA, FPIC and social HCV study
I Putu Indra Divayana	Member	N.A	GIS analysis and remote sensing, certified HCV approach, carbon stock assessment & land cover assessment and tree inventory team
Septiansyah	Member	N.A	Forest/tree inventory team
Armin Agung Mubarak	Member	N.A	Forest/tree inventory team
Burhan Zein K	Member	N.A	Forest/tree inventory team

Note : there are two persons from community as Hip Chain operator and line cutter

The report of HCS assesment has peer reviewed dated on 3 January 2019 and link to HCSA summary report : <https://highcarbonstock-org.red-giraffe.co.uk/wp-content/uploads/2019/05/Laporan-HCSA-KLK-Smallholder-KMA-020519.pdf>

2. Method

In general, the HCV assessment process according to HCVRN guidance is included pre-assessment phase, scoping study, HCV identification/HCV assessment and stakeholder consultation.

The HCV and HCS studies carried out using secondary data analysis and field surveys covering several aspects, including:

Tabel 1. List of Assessments Conducted

No	Assessment
1	Land Use Change Assessment (LUCA)
2	High Conservation Value (HCV)
3	High Carbon Stock (HCS) Identification

4	Carbon Stock Assessment
5	Land and Topography Assessment
6	Social Impact Assessment (SIA)
7	FPIC Verification

3. Result

Table 2. Distribution of HCV-HCS area

No	HCV/HCS	HCV/HCS name	Location	Area (Ha)
1	HCV 1;3;4;5 & HCS	Sungai Bakung	Koperasi Pemantang Batarung	*5.69
2	HCV 1;3;4;5 & HCS	Sungai Sorie	Koperasi Pemantang Batarung	*9.71
3	HCV 4 & HCS	Area Lereng	Koperasi Pemantang Batarung	*48.32
4	HCS	Forest Area	Koperasi Pemantang Batarung	14.32
Total				78.04

- *Including overlapping HCS Area.
- The above figures are based on delination result dated 05-07 Feb 2024, to ascertain the exact boundary on the ground
- The reduction in HCV/HCS hectarage compared to the report is due to a decrease in the permit area since the assessment was conducted.

4. Recommendation

Table 3. Monitoring and management plan

HCV/HCS Description	Potential Threat to HCV/HCS Area	Management Recommendations	Monitoring Recommendations	Timeline
<p>HCV 1,3,4,5/HCS</p> <p>Forest area (secondary swamp forest), river and riparian areas, with flora and fauna habitats</p> <p>- River and Riparian areas: Bakung, Sorie, and Sampiding River</p>	<p>✓ Deforestation, land clearing, and riverbanks opening for production activities and infrastructure i.e. plantation establishment, roads, settlements, etc by communities or cooperation</p>	<p>✓ Inform and communicate with the communities in the surrounding about flora and fauna diversity and its environmental services provided by the areas, e.g: aswater provider and fire break</p> <p>✓ Establish sign boards stating illegal logging and land clearing prohibition across forests and riverbanks in HCV areas.</p> <p>✓ Develop village regulation/customary regulation that prohibit logging and land- opening in the area of HCV for commercialuse.</p>	<p>✓ Conduct participatory survey /patrol to prevent land opening on the forest areas regularly.</p> <p>✓ Enforce village /custom regulations to prevent land opening or illegal logging on HCV areas.</p>	<p>Once at time of land opening</p>

	<ul style="list-style-type: none"> ✓ Illegal logging and wild animal hunting in the forest areas or riverbanks 	<ul style="list-style-type: none"> ✓ Formulate regulations that prohibit illegal logging and animal hunting around PT KMA's smallholder concession. ✓ Socialization to staff and communities about the importance of flora and fauna diversity: rare species, vulnerable or endangered species or endemic species in the HCV areas especially for ecosystem stability. ✓ Establish sign boards stating illegal logging and land clearing prohibition across forests and riverbanks in HCV areas 	<ul style="list-style-type: none"> ✓ Patrolling periodically and consistently, especially in the area that is prone to illegal logging and animal hunting. ✓ Undertake inventarisation of protected, vulnerable, endangered, and endemic flora and fauna in the area of HCV and around plantation at least once a year 	<p>Annual</p> <p>Annual</p>	
	<ul style="list-style-type: none"> ✓ Forest Fire 	<ul style="list-style-type: none"> ✓ Capacity building for community representative and cooperative members at forest fire prevention. ✓ To provide fire extinguishers kit supported by PT KMA (such as water pump, hose, etc). ✓ To provide Standard Operational Procedure as forest fire mitigation. ✓ To provide water ponds (embung) ✓ To install sign boards of forest fire hazard ✓ To install index board of forest fire hazard ✓ Socialisation about forest fire, to PT KMA staff and communities around concession area. ✓ Collaborative act between the company and community in form of Masyarakat Peduli Api (forest fire caretaker organization from local people). ✓ Fire Extinguishers training 	<ul style="list-style-type: none"> ✓ Patrolling periodically and consistently especially during the dry season. ✓ Hotspot monitoring routinely at the dry season ✓ Renewing index board of forest fire hazard, every changing season (rainy or dry season) 	<p>Annual</p> <p>Daily</p> <p>Daily</p>	

Section 5: FPIC

1. Timeline and Parties Involved

The FPIC study was carried out at the Koperasi Pematang Batarung 2017 by Remark Asia with 3 experts.

2. Method

The FPIC process carried out refers to Free, Prior, and Informed Consent (FPIC): Guide for RSPO members (Colchester, Chao, Anderson, & Jonas, 2015) with the following stages:

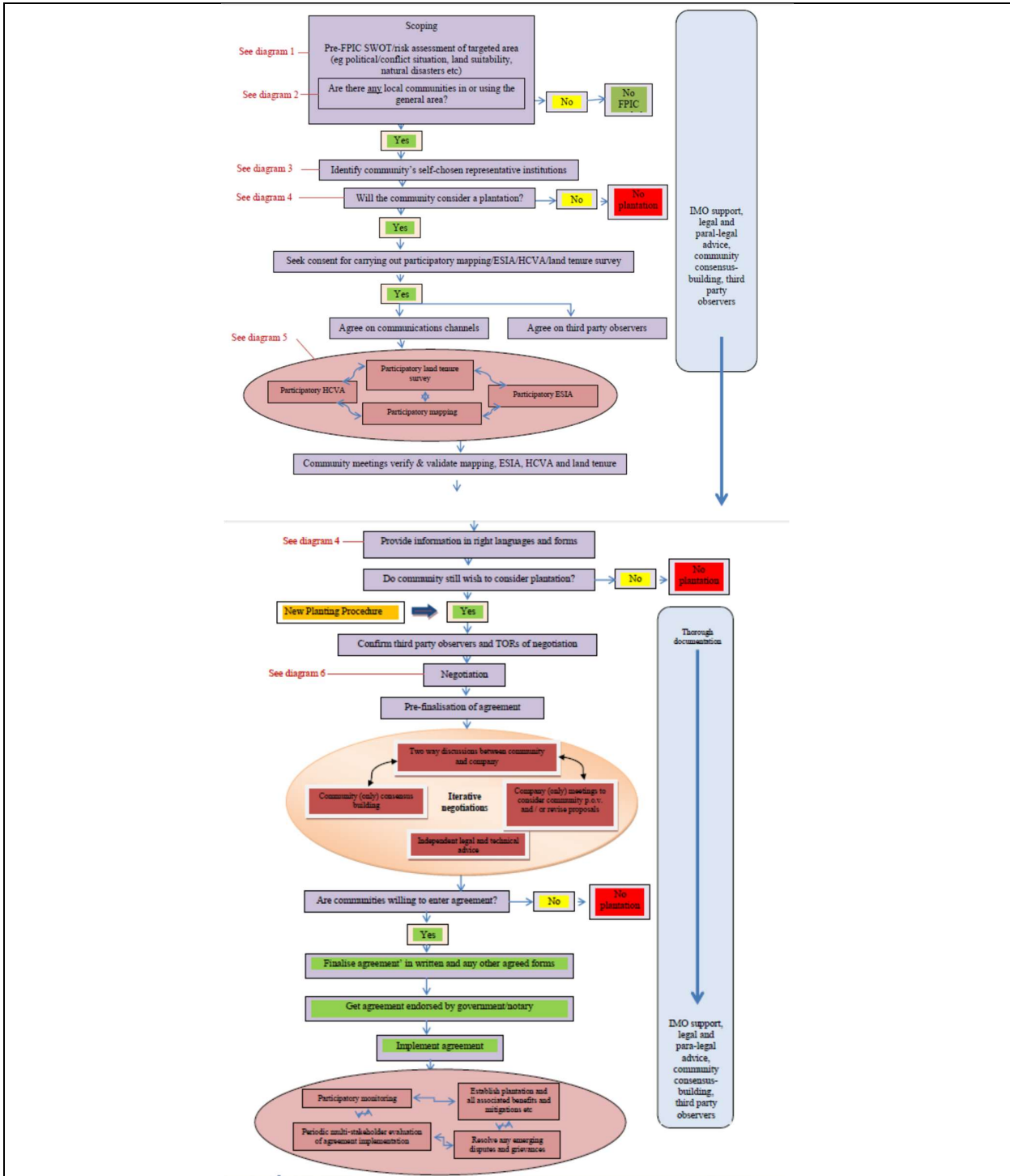


Figure 1. FPIC Process Flow based on RSPO guidelines

3. Stakeholder list of Pematang Village

The following are the stakeholders who were involved in the FPIC process:

No	Position Name
1	Head of Pematang Village

2	Secretary of Village
3	Village Apparatus for Government Affairs
4	Village Apparatus for Development Affairs
5	Village Apparatus for General Affairs
6	Head of Citizen Association I
7	Head of Citizen Association II
8	Head of Citizen Association III
9	Head of Neighborhood Association I
10	Head of Neighborhood Association II
11	Head of Neighborhood Association III
12	Head of Neighborhood Association IV
13	Head of Neighborhood Association V
14	Head of Neighborhood Association VI
15	Head of Village Consultative Institution
16	Vice Head of Village Consultative Institution
17	Secretary of Village Consultative Institution
18	Member of of Village Consultative Institution
19	Head of Traditional Representative (Kaharingan)
20	Head of Traditional Representative (Christian)
21	Head of Traditional Representative (Moslem)
22	Chairman of Cooperative
23	Deputy Chairman of Cooperative
24	Secretary of Cooperative
25	Vice Secretary of Cooperative
26	Treasurer Division of Cooperative
27	Cooperative Supervisory Board
28	Member of Cooperative Supervisory Board
29	Chairman of the Farmer Group Bakung Penatar
30	Chairman of the Farmer Group Bakung Hilir
31	Chairman of the Farmer Group Bakung Hulu
32	Land Owner Representative

4. Result

Based on the FPIC study, it is known that the community agrees on the development of oil palm plantations using a partnership or Smallholder scheme. However, there are still social issues developing in society that need to be followed up as part of mitigating social conflict. These social issues include:

No	Categories	Issue	Village
1	Environment/conservation	-	-

2	economic	Most communities make their main livelihood by working in companies, so they are very dependent on the company's presence. With minimal natural resources remaining, and companies starting to mechanize agricultural equipment, the need for human resources will decrease while the land that can be cultivated will decrease. If this happens without Smallholder land to support people's lives, there will be quite high social disparities and give rise to conflicts and criminal acts.	All
3	Social	There has been no information provided by the company regarding the amount of costs that have been incurred to date.	All
		There are still landowners in the cooperative's licensed area who are not yet willing to participate and support the running of the cooperative	Pemantang
4	Institutional	The Management Unit's priority in running cooperatives is still lacking, there is no special unit that handles this matter	All
		Limited capacity of cooperative management in handling institutions, especially in financial calculations and organizational leadership.	All

5. Summary and Recommendation

Through the entire process carried out by the PT Remark Asia and PT KMA teams at the beginning of the cooperative's founding period, it can be concluded that the community accepted and agreed to the existence of partnership cooperation in the three cooperatives. The agreement obtained states that the company through the cooperative can clear land in the permitted area. In connection with issues developing in society, the following are recommendations for conflict mitigation efforts in the future:

No	Category	Issue	Recommendation
1	Environment/Conservation	Trauma regarding conservation areas	Socialization regarding designated HCV areas accompanied by an understanding of the rights and obligations as part of an RSPO certified company
2	Economy	Community dependence on companies is not balanced with labor needs	Accelerate the realization of Smallholder plantations to increase employment opportunities and increase income for community members. The company must monitor and ensure that all heads of families in the village are accommodated as members of the koperasi.

3	Social	Lack of communication between management and cooperative members	Even though this issue is outside the scope of the company's responsibility, as a partner company it is necessary to accompany and harmonize understanding between the cooperative management and the community. One way is to provide information in the form of infographics regarding data transparency required by the community
		Information about the scheme for Result	The company must immediately agree with the cooperative regarding the profit-sharing scheme that will be implemented before planting takes place
		Land owners who do not want to carry out land acquisition	The company also accompanies cooperatives to create cooperation schemes with potential partner farmers whose oil palm plantations are already established and are not willing to be sold to the koperasi.
4	Institutional	Institutional Priority management units towards cooperatives are still lacking	The management unit needs to provide a special division (generally called the Smallholder Manager) which specifically supervises and handles Smallholder or partnerships. The scope of his responsibilities starts from the initial plantation development process, to planting, as well as mentoring and developing the capacity of cooperative management.
		Limited capacity of cooperative management in handling institutions, especially in financial calculations and organizational leadership	Providing training, especially organizational training and accounting management training to cooperative administrators.

Date of Assessment: April 2017

Name of Assessor: Hilma Suciandari Lahay (*social assessor*), Reza Pradipta (*senior GIS consultant*) & Dwi Budi Siswantonono (*junior GIS consultant*)

Assessor Designation and Company: Remark Asia

Section 6: Soil and topography

Timeline and Parties Involved

Soil and topography studies were carried out in April 2017 by Remark Asia. The study was carried out covering Koperasi Pematang Batarung Smallholder Location Permit area for sampling purposes with a total area of 449.68 Ha.

Method

The study was carried out using secondary data analysis such as:

- a. Land system map (RePPProT, 1987)

b. 12.5 m resolution digital elevation model (DEM) map from SRTM

c. 1:250,000 scale digital geological map published by the Geological Research and Development Center (Puslitbang)

Before conducting field surveys, a soil observation plan map was first made by considering the diversity of land units, observation techniques, accessibility, and time availability. The method of determining sample points is by placing observation points randomly based on the results of the analysis of the land unit map. Soil observations were made by drilling the soil or viewing/making a complete soil profile. Soil borings are made to a depth of 120 cm. Soil profile observations can also be made if there are existing outcrops in the field. The observation sampling point is as follow (Figure 1).

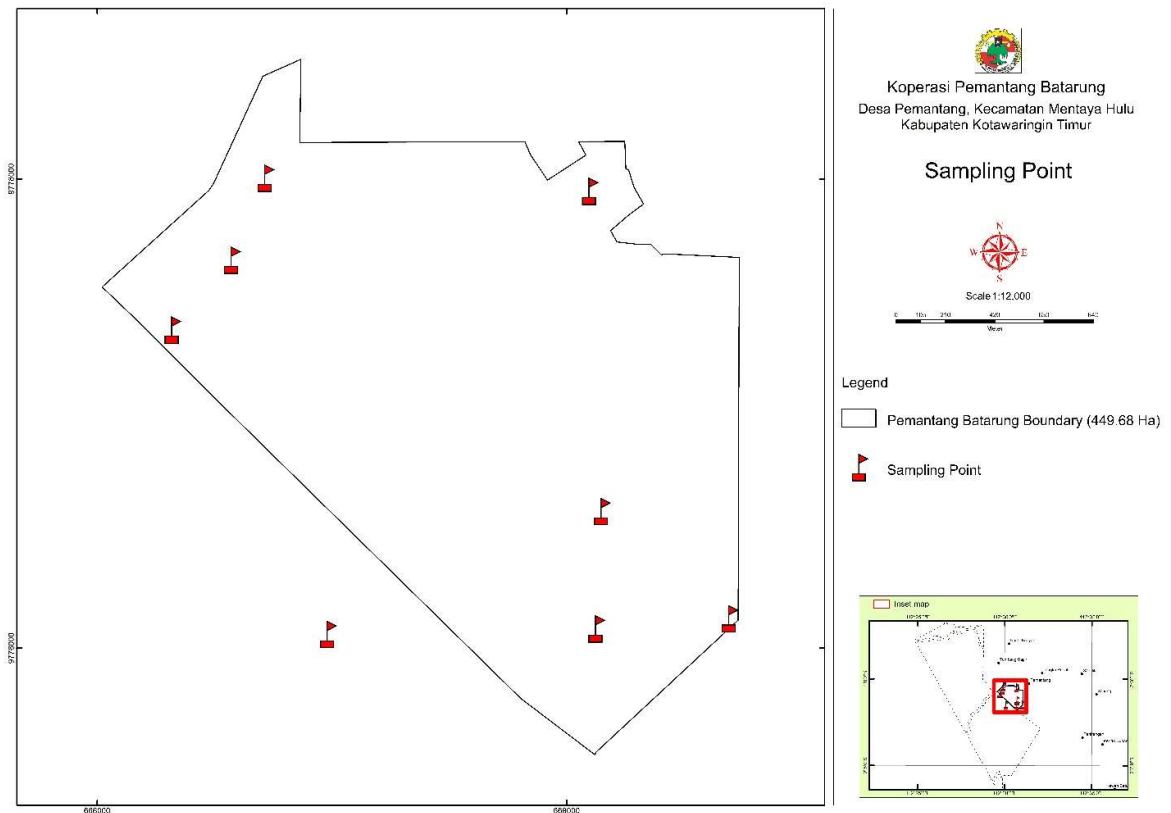


Figure 1. Sampling Point Map

Result

a. Distribution of Soil Types

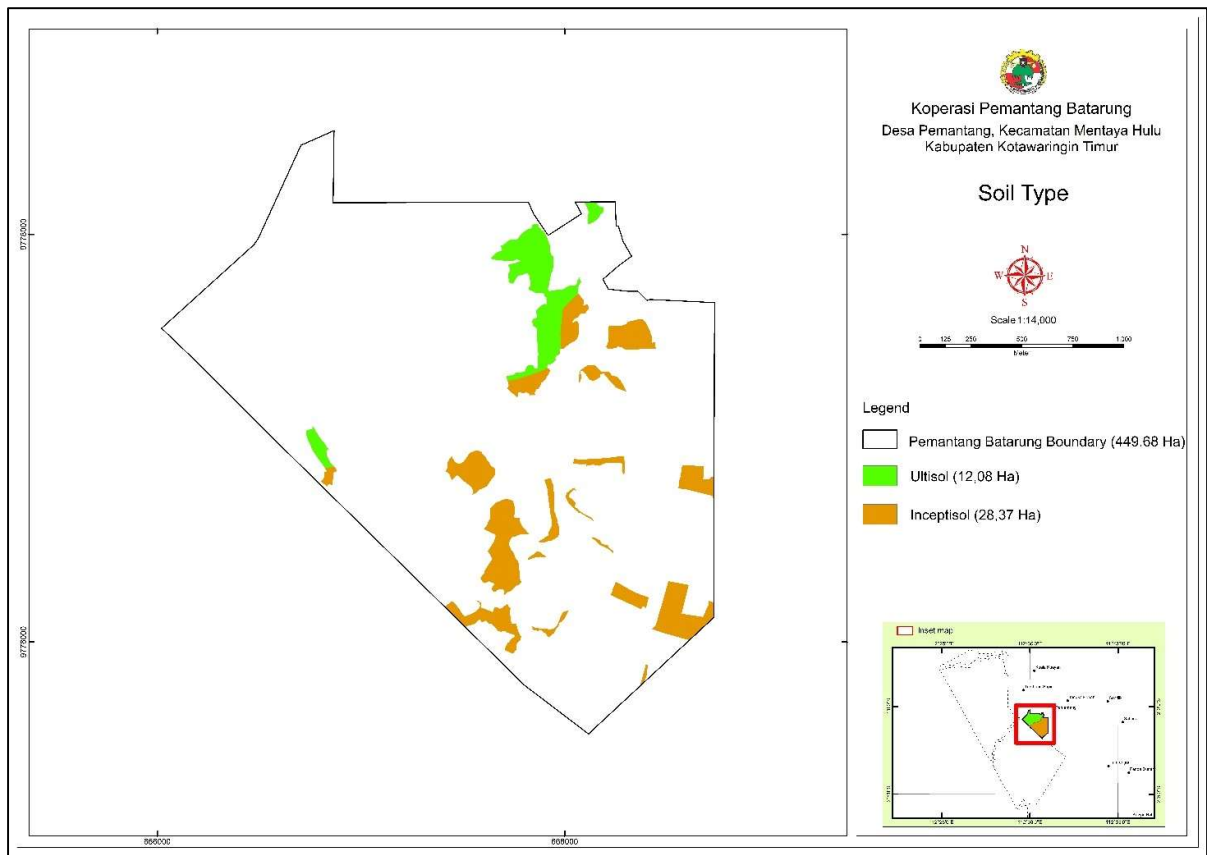
From the results of soil type analysis, only Inceptisol and ultisol was found in Koperasi Pematang Batarung NPP area.

Table 1. Soil Type Distribution

Soil Type	Ha
Inceptisol	28.37
Ultisol	12.08
Grand Total	40.45

Note: The information above refers to the soil type within the current permit area while the report covers a larger landscape, including a potential plasma area.

Figure 1. Distribution Map of Soil Type at NPP Area



b. Slope

Table 2. Distribution Slope Classification

Slope	Classification	Ha
0 – 8 %	Flat	30.56
8 – 15 %	Undulating	7.76
15 - 25 %	Rolling	2.13
Total		40.45

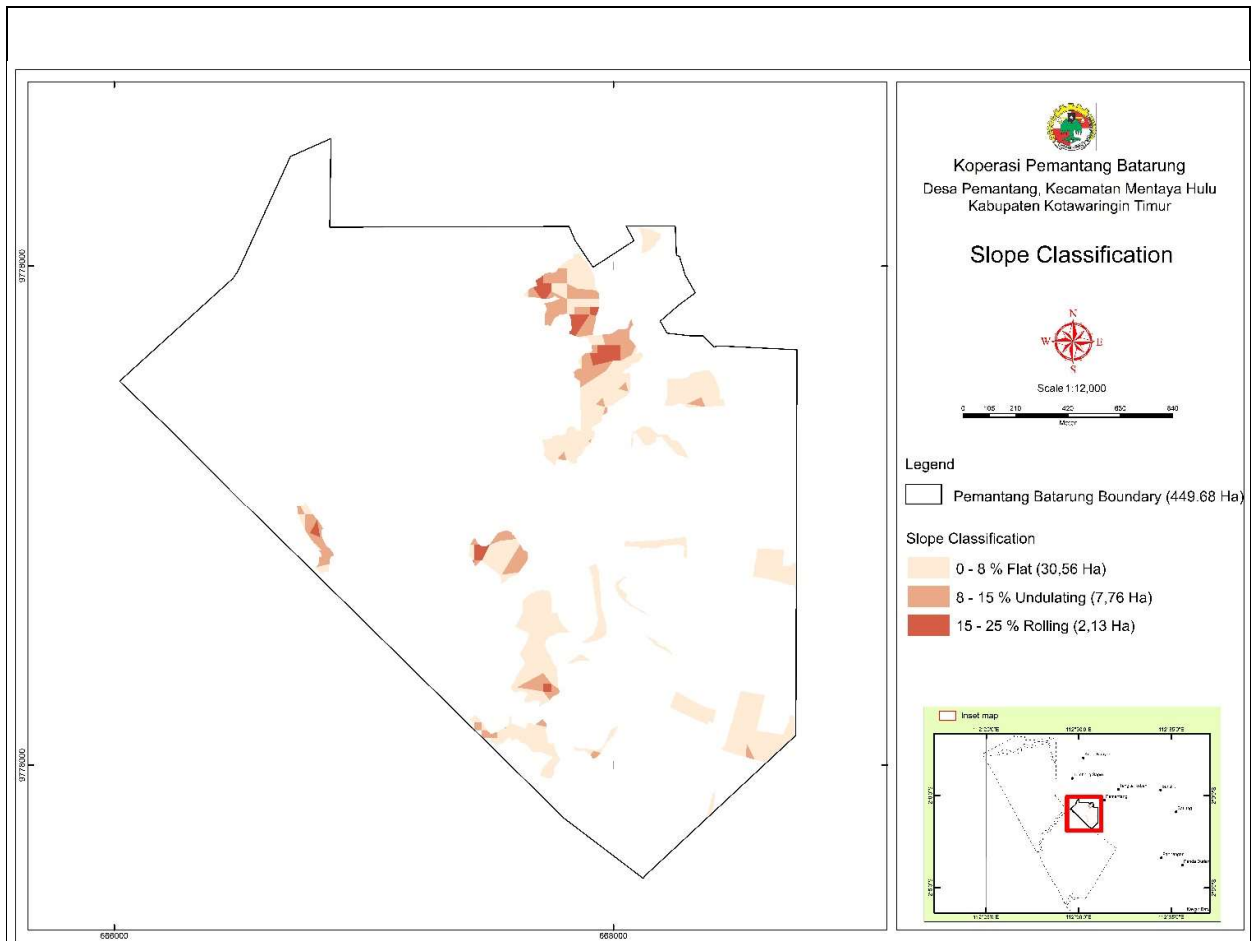


Figure 2. Distribution Map of Slope Classification at NPP Area

c. Erosion Hazard Level

Table 3. Erosion Hazard Level

Erosion Hazard Level	Ha
Very Low	-
Low	14.28
Moderate	26.17
Total	40.45

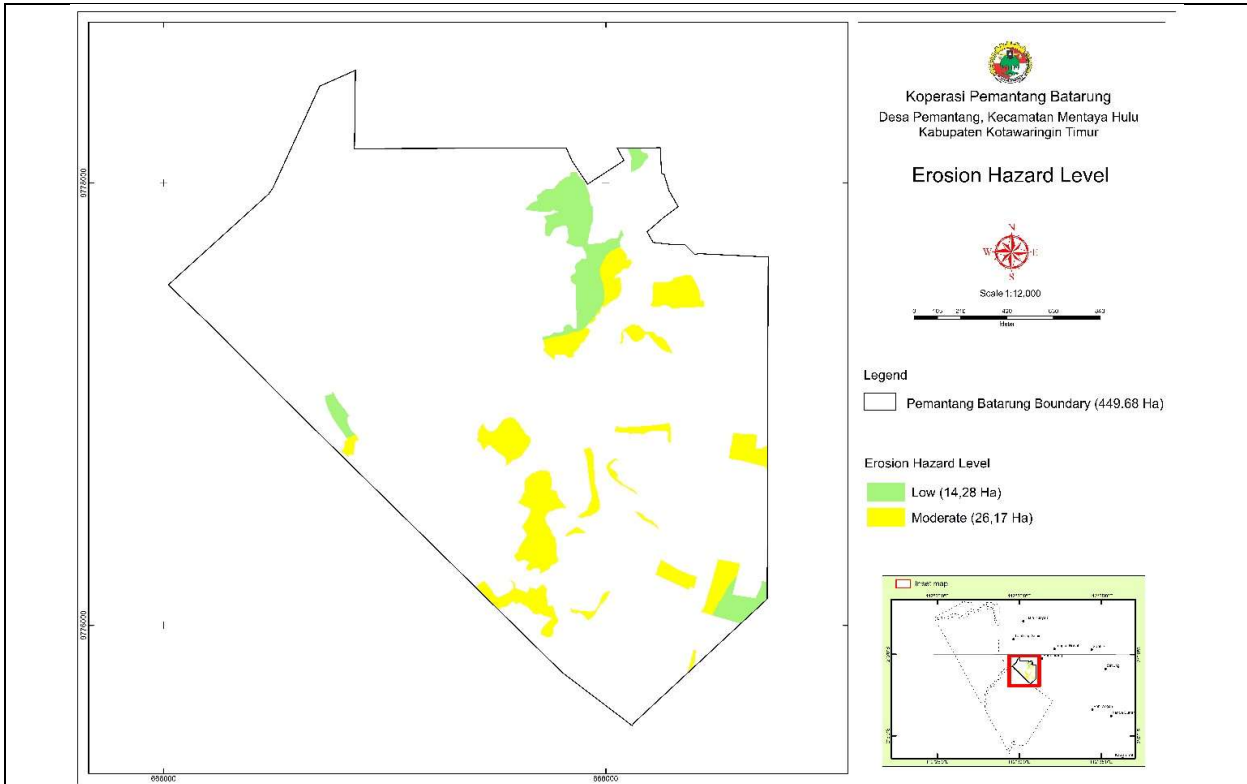


Figure 3. Distribution Map of Erosion Hazard Level at NPP

d. Marginal Soil

Tabel 4. Marginal Soil Distribution

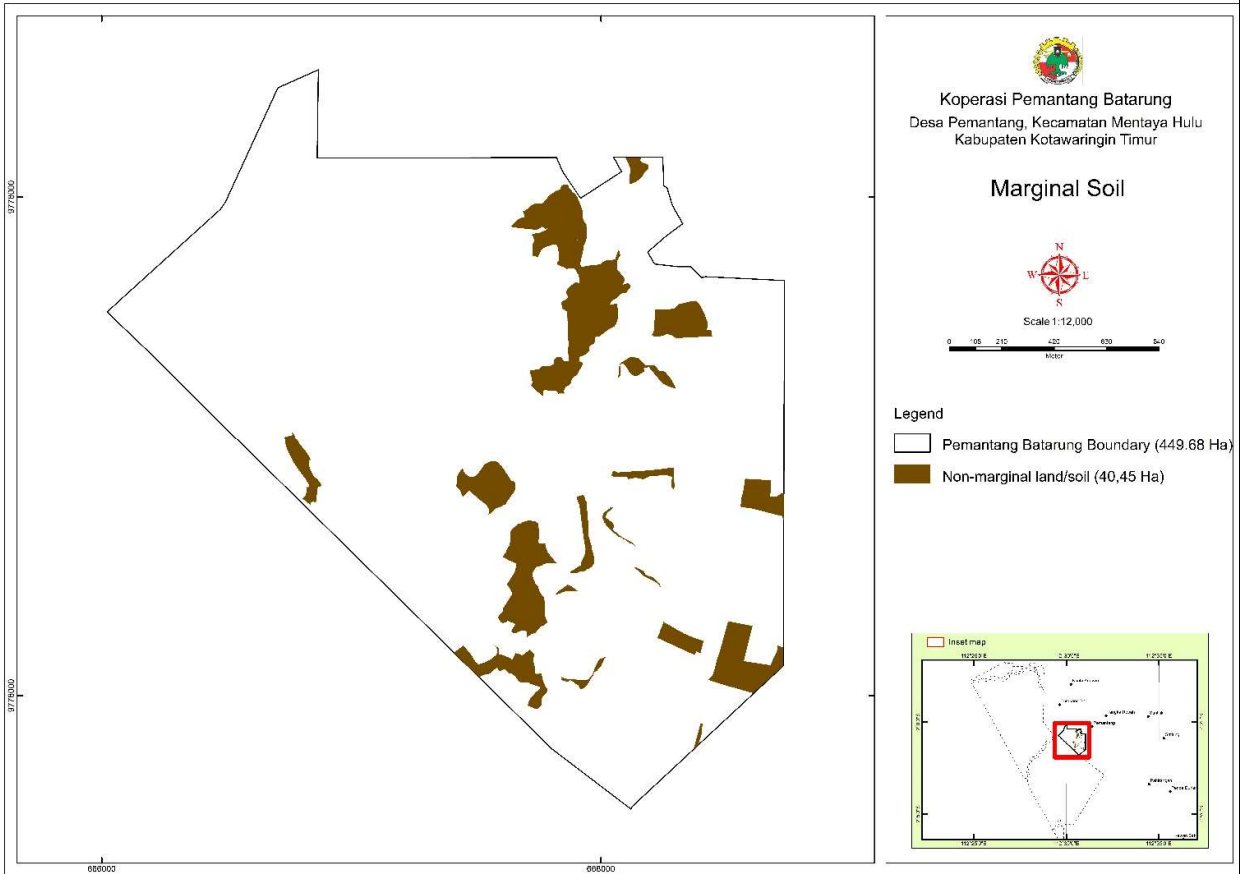
Soil Classification	Ha
Marginal land/soil	-
Non-marginal land/soil	40.45
Total	40.45

Figure 4. Distribution of marginal Soil at NPP Area

Date of Assessment: 5 – 11 April 2017

Name of Assessor: Dede Sulaeman

Assessor Designation and Company: Remark Asia



Section 7: Greenhouse Gas (GHG)

1. Introduction

Koperasi Pematang Batarung with New Planting Procedure (NPP) Area of 40,45 Ha has carried out the following assessments in 2017:

- Carbon Stock assessment and
- LUCA (Land Use Change Analyst) Study (Please refer to section 8).

The former was reassessed and recalculated in 2024 to reflect the current situation of the development area. This activity was carried out with the aim of seeing potential areas that could be developed in the Koperasi Pematang Batarung area in accordance with the New Planting Procedure (NPP), based on the latest image analysis.

2. Goals

This report was prepared with the aim of:

- Determine carbon storage in the remaining development plan area of Koperasi Pematang Batarung based on Sentinel 2A satellite imagery acquired in the latest year (2024).
- Determine the value of greenhouse gas emissions in the development plan area of Koperasi Pematang Batarung.

- Determine areas that have significant carbon deposits as these locations that must be maintained

3. Results

3.1 Proposed development of Greenhouse Gas scenarios

3.1.1. Carbon Stock Scenarios at Koperasi Pematang Batarung

Development scenarios are part of the recommendations provided. This is part of the GHG mitigation plan for Koperasi Pematang Batarung area. The proposed development scenario is based on the results of carbon storage studies and the results of carbon balance calculations through PalmGHG Calculator V4. Several scenarios that can be proposed from the results of the study are divided into 2 proposed scenarios, presented according to the tabulation below:

Tabel 1. Porposed scenario for Development area of Koperasi Pematang Batarung

Scenario 1	<ul style="list-style-type: none"> • Areas with Scrub Land Cover of 60,37 Ha which are HCV & HCS areas are not considered for clearing. • The potential area for oil palm plantation totals 389,32 Ha. • the land cover that will be planted with Oil Palm consists of Polycultures of 30,34 Ha, Farmland of 4.05 Ha, Open Land of 27.25 Ha, Bush of 113,12 Ha and Scrub of 17.18 Ha. • The area already planted with Oil palm plantations (existing area) is 197,38 ha.
Scenario 2	<ul style="list-style-type: none"> • The entire area planted with oil palm totals 446,68 ha. • The land cover that will be planted with oil palm consists of Shurbs 60.37 Ha, Polycultures 30,34 Ha, Farmland 4.05 Ha, BareLand 27.25 Ha, Bush 113,14 Ha and Scrub 17.18 Ha. • The area that has been planted by oil palm plantations (existing area) is 197,38 ha.

Note : these scenarios take into account areas which were developed earlier (as well as HCV HCS areas).

Land Cover	Area (Ha)		Total Carbon Stock (TonC)	
	Scenario 1	Scenario 2	Scenario 1	Scenario 2
Shrubs	60.37	0.00	3452.45	0.00
Polycultures	0.00	0.00	0.00	0.00
Oil Palm	389.32	449.68	22209.96	26659.49
Bareland	0.00	0.00	0.00	0.00
Farmland	0.00	0.00	0.00	0.00
Bush	0.00	0.00	0.00	0.00
Scrub	0.00	0.00	0.00	0.00
Total Area	449,68	449,68	25662.40	26659.49

Based on Table 1, there are two scenarios. Scenario 2 offers a larger new planting area while only keeping the water body intact. This will cause a higher decrease in the value of carbon reserves. Meanwhile, Scenario 1 offers a smaller area for new planting as it maintains the HCV & HCS areas with land cover of shrubs. The resulting carbon reserves in the future is the larger.

3.1.2. Carbon Stock of NPP Proposed Area at Koperasi Pematang Batarung

The best scenario that has the potential for development is obtained. Then, the area of each land cover will be calculated again using the NPP area proposed by the Koperasi Pematang Batarung of 40.45 Ha. This calculation aims to see carbon storage in the area where the NPP will be carried out.

Tabel 2. Recalculated Carbon stock of NPP Proposed Area at Koperasi Pematang Batarung

Land Cover	Area (Ha)	Average Carbon Stock Value (TonC/Ha)	Carbon Stock (TonC)
Shrub	5.99	46.00	275.69
Polycultures	15.93	20.33	323.78
Bareland	3.11	0.00	0
Farmland	0.21	5.81	1
Bush	14.56	5.00	73
Scrub	0.64	5.00	3.22
Total NPP Areas	40.45	Total Carbon Stock	676.74

Based on the information in Table 2, the carbon stock in the Koperasi Pematang Batarung NPP proposed area is currently 676.74 tons C. The largest carbon stock is in the polycultures cover, which is 323.78 tonC while the least is in the farmland cover, which is 1 tons C.

3.2. Projection GHG of Proposed NPP area Koperasi Pematang Batarung

Green House Gas (GHG) emissions in this study were analyzed using the Palm GHG Calculator V4 (the latest version from RSPO). The parameters calculated include parameters that affect GHG emissions in accordance with the provisions of the RSPO which include:

- 1) Land conversion
- 2) Crop Sequestration
- 3) Fertilizer application in plantations.
- 4) The nitrous oxide (N₂O) and carbon dioxide (CO₂) generated from the use of fertilizers and other organic products and sources such as palm waste.
- 5) Operational fuel consumption.
- 6) Carbon dioxide sequestered from conservation areas.

The parameters 1 to 5 are estimates of emissions resulting from oil palm plantation activities, both activities in the field (plantation). Parameter 6 is an emission credit parameter that can balance the emissions generated by the company.

Tabel 3. Projection GHG – NPP area

No	Indicator	tCO ₂ e	tCO ₂ e/ha
1	Land Conversion	110.48	2.73
2	Crop Sequestration	-351.76	-8.70
3	CO ₂ Emissions from Fertiliser	206.99	5.12
4	N ₂ O Emissions from Peat	0	0
5	N ₂ O Emissions from Fertiliser	152.76	3.78
6	Fuel Consumption	0.23	0.01
7	Peat Oxidation	0	0
8	Sequestration in Conservation area/Conservation Credit	-715.26	-17.68
Total		-596.55	-14.75

3.3. Management for increased NPP Area Carbon Stock

Management that can be done as an effort to increase carbon stock in the Koperasi Pematang Batarung area can be done by increasing the total biomass of vegetation and C-organic Efforts. This can be achieved through the following efforts:

Tabel 4. Management and monitoring Plan – NPP area

No.	Objective	Management Activity	Monitoring	Timeline
1	Protection for conservation areas (HCV and HCS areas)	<ul style="list-style-type: none"> a) Safeguard conservation areas from any disturbance (fire, encroachment, etc.). b) Monitor any land clearing activities near conservation areas. c) Disseminate information on conservation areas and their protection to workers, community and land clearing contractors. d) Establish and maintain conservation area physical boundary markers (demarcation) and information boards in the field. e) Safeguard conservation areas from contamination because of maintenance activities in plantation areas 	<ul style="list-style-type: none"> a) Monitor the conservation area boundary markers and information boards. b) Monitor land clearing progress. c) Photograph canopy stand cover in monitoring locations in the conservation areas d) Monitor any threats and disturbances to conservation areas through regular patrol. This can also involve workers and community 	At time of land clearance and once a year
2	Oil palm biomass growth	<ul style="list-style-type: none"> a) Optimal oil palm plant maintenance b) Responsively and effectively avoid and/or deal with pest and disease attacks c) Carry out thinning and/or supply when necessary to optimize oil palm growth 	<ul style="list-style-type: none"> a) Optimal oil palm plant maintenance b) Responsively and effectively avoid and/or deal with pest and disease attacks c) Carry out thinning and/or supply when necessary to optimize oil palm growth 	once a year
3	Plantation area safety from fires	<ul style="list-style-type: none"> a) Deliver training and disseminate information on fire prevention and handling. b) Apply fire prevention action including fire patrol. c) Prepare pools or water sources in distributed locations in the plantation to deal with fire d) Record cases of fire. 	<p>Work with associated plantation to :</p> <ul style="list-style-type: none"> a) Disseminate information on fire prevention and handling. b) Patrol against fire hazard. c) Check water availability in the pools for firefighting d) Organize the fire records 	once a year
4	Fuel consumption in plantation operation	<ul style="list-style-type: none"> a) Manage fuel consumption through fuel rationing. b) Take generic actions for reducing vehicle fuel consumption (eg regular maintenance). 	<ul style="list-style-type: none"> a. Document fuel consumption b. Document operational vehicles' mileage and maintenance. 	once a year
5	Fertilizer application	Optimal application of fertilizer	<ul style="list-style-type: none"> a) Monitor and regulate fertilizer application referring to the planned amount of application. b) On a regular basis, document the dynamics of productivity (as the implication of fertilizer application). 	once a year

1. Summary Conclusions

Based on results of the final carbon stock analysis (CSA) for the Koperasi Pematang Batarung NPP area, it can be concluded:

- Land cover analysis indicated that the area of Koperasi Pematang Batarung (449.68 ha) and its NPP area of 40.45 Ha are entirely located on mineral soil.
- Scenario 1 is chosen because it offers a development which maintains higher carbon stock by not opening the conservation area (HCV and HCV-HCS).
- Land cover classes for the NPP area consist of 7 classes Shrub, Polycultures, Rubber Plantation, Farm Land, Bare Land, Scrub and Bush.
- The Polycultures class recorded the highest carbon stock in the NPP area, at 323.78 tons C with an average carbon stock value of 20.33 tons C/ha.
- GHG emission sources at the NPP area mainly comes from the estimated Land Conversion activity of 110.48 tCO₂e with carbon consumption of 2.73 tCO₂e/Ha.
- The estimated CO₂ and N₂O emissions from the use fertilizer is 206.99 tCO₂e and 152.76 tCo₂e, respectively.
- 1067.02 tCO₂e are estimated to be sequestered from the oil palm and conservation area.
- Total estimated emissions generated from activities in the NPP area amounted to -596.55 tCO₂e with estimated emissions of -14.75 tCO₂e/ha.

Date of Assessment: May 2017, Updated June 2024

Name of Assessor: Tyas Ayu Lestari, Ivan Meydiana Ramdhan, Armin Agung Mubarak.

Updated to 2024 by Jason Foong Huey Yuan

Assessor Designation and Company: Remark Asia (2017), KLK (2024)

Section 8: Land Use Change Analysis (LUCA)

1. Timeline and Parties Involved

The study was conducted in April 2017 by Remark Asia. For the needs of the New Planting Procedure (NPP) of the 40,45 ha Koperasi Pematang Batarung area, the Study was re-evaluated in 2024 to reflect the area. This was done with the aim of looking at recent land cover and land use changes since the last study in 2017 in the Koperasi Pematang Batarung area in accordance with the New Planting Procedure (NPP). The vegetation cover for 2024 is based on Sentinel-2A imagery.

2. Method

The stages and process of land cover and use change analysis (LUCA) refer to the Remediation and Compensation Procedures published by the RSPO on page 27 of the document. Overall, the stages and process of LUCA analysis are presented in Figure 1 with the following details:

- Stage 1: Procurement process, including downloading satellite image data with resolution specifications minimum 30 meters.
- Stage 2: Pre-processing or initial processing, including atmospheric effect correction, geometric correction, and satellite image data processing operations from the period to be used.
- Stage 3: Interpretation, includes the process of interpreting land cover from pre-processed satellite image data, by referring to the vegetation coefficients determined in the remediation and compensation procedures. The process of interpreting land cover from complete image data is carried out in 3 stages which include:

- Detection is an effort to determine visible and invisible data globally. Detection also means determining the existence of an object, what that object is
- Identification is an activity to recognize an object depicted in an image through recording by a sensor. This stage is semi-detailed and we can recognize objects based on three main characteristics (Spectral, Spatial and Temporal)
- Analysis is a learning activity and decomposition of identification data so that can be produced in the form of tables, graphs or thematic maps.
- Stage 4: Ground truthing (field verification), includes verification activities in the field with verification of field conditions based on the results of initial interpretation of satellite imagery of land cover.
- Stage 5: Image validation and re-interpretation, including the process of validating the interpreted satellite images previously by making corrections referring to the results of field checks.
- Stage 6: Create a map of the results of the change analysis, including the process of creating a layout of the results map land cover that has been validated with the results of field checks to be displayed in the report.

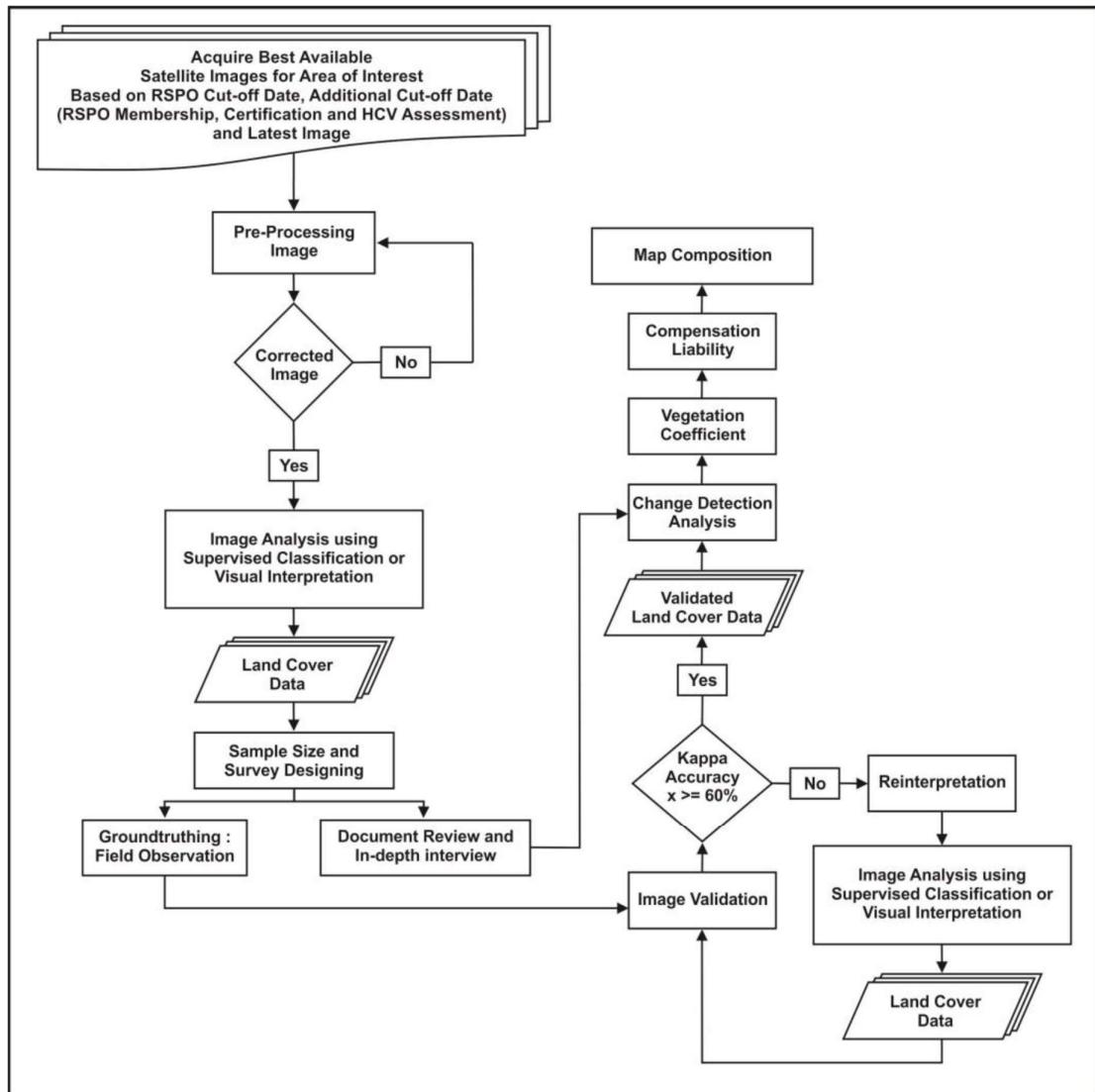


Figure 1. LUCA Process Flowchart

3. Result

3.1 Current land cover conditions

To find out the current (latest/updated) condition of land cover, it is necessary to carry out ground truthing (field verification). This activity includes verification activities in the field by proving field conditions based on the results of initial interpretation of satellite imagery of land cover. Observations in the field aim to see the actual land cover conditions in the field with the results of satellite image interpretation. Based on the results of observations, 10 types of land cover were obtained.

3.2 Land Cover Changes

Changes in land cover that occur in Koperasi Pematang Batarung area tend to occur as a result of activities carried out by humans intentionally in the context of land use. This activity can take the form of land clearing by the community for agricultural land, mixed plantations or illegal logging by irresponsible parties. Until the study was carried out, there had been no land clearing activities carried out by the company, although there was land cover for oil palm plantations in the study area, but these were plantations that were still managed by the community.

Tabel 4. Land Cover Change 2005 - 2024

No	Land Cover	Area (ha)						
		2005	2007	2009	2014	2015	2017	2024
1	Shrubs	7.43	6.33	6.19	5.99	5.99	5.99	2.38
2	Polycultures	18.35	18.35	15.84	15.93	15.93	15.72	3.92
3	Bare Land	1.49	0.99	2.83	3.11	3.11	3.43	5.26
4	Farm Land	-	0.09	0.21	0.21	0.21	0.21	0.21
5	Bush	12.18	13.64	12.19	12.03	14.56	14.44	17.62
6	Scrub	1.00	1.06	3.18	3.18	0.64	0.64	11.05
Total		40.45	40.45	40.45	40.45	40.45	40.45	40.45

3.2.1 Land Cover Change 2005-2007

Tabel 5. Land Cover Change 2005-2007

2005	Land Cover	2007						Grand Total
		Shrubs	Polycultures	Bare Land	Farm Land	Bush	Scrub	
	Shrubs	6.33			0.09	0.93	0.08	7.43
	Polycultures		18.35					18.35
	Bare Land			0.97		0.52		1.49
	Bush					12.18		12.18
	Scrub			0.02			0.98	1.00
Grand Total		6.33	18.35	0.99	0.09	13.64	1.06	40.45

3.2.2 Land Cover Change 2007-2009

Tabel 6. Land Cover Change 2007-2009

2007	Land Cover	2009						Grand Total
		Shrubs	Polycultures	Bare Land	Farm Land	Bush	Scrub	
	Shrubs	6.19			0.13	0.01		6.33
	Polycultures		15.84	1.85			0.66	18.35
	Bare Land			0.97		0.02		0.99
	Farm Land				0.09			0.09
	Bush					12.08	1.56	13.64
	Scrub			0.01		0.08	0.96	1.06
Grand Total		6.19	15.84	2.83	0.21	12.19	3.18	40.45

3.2.3 Land Cover Change 2009-2014

Tabel 7. Land Cover change 2009-2014

2009	Land Cover	2014					Grand Total
		Shrubs	Polycultures	Bare Land	Farm Land	Bush	
	Shrubs	5.99				0.20	6.19
	Polycultures		15.84				15.84
	Bare Land			2.83			2.83
	Farm Land				0.21		0.21
	Bush		0.08	0.28		11.83	12.19
	Scrub						3.18
	Grand Total	5.99	15.93	3.11	0.21	12.03	3.18

3.2.4 Land Cover Change 2014-2015

Tabel 8 Land Cover Change 2014-2015

2014	Land Cover	2015					Grand Total
		Shrubs	Polycultures	Bare Land	Fam Land	Bush	
	Shrubs	5.99					5.99
	Polycultures		15.93				15.93
	Bare Land			3.11			3.11
	Farm Land				0.21		0.21
	Bush					12.03	12.03
	Scrub					2.53	0.64
	Grand Total	5.99	15.93	3.11	0.21	14.56	0.64

3.2.5 Land Cover Change 2015-2017

Tabel 9 Land Cover Change 2015-2017

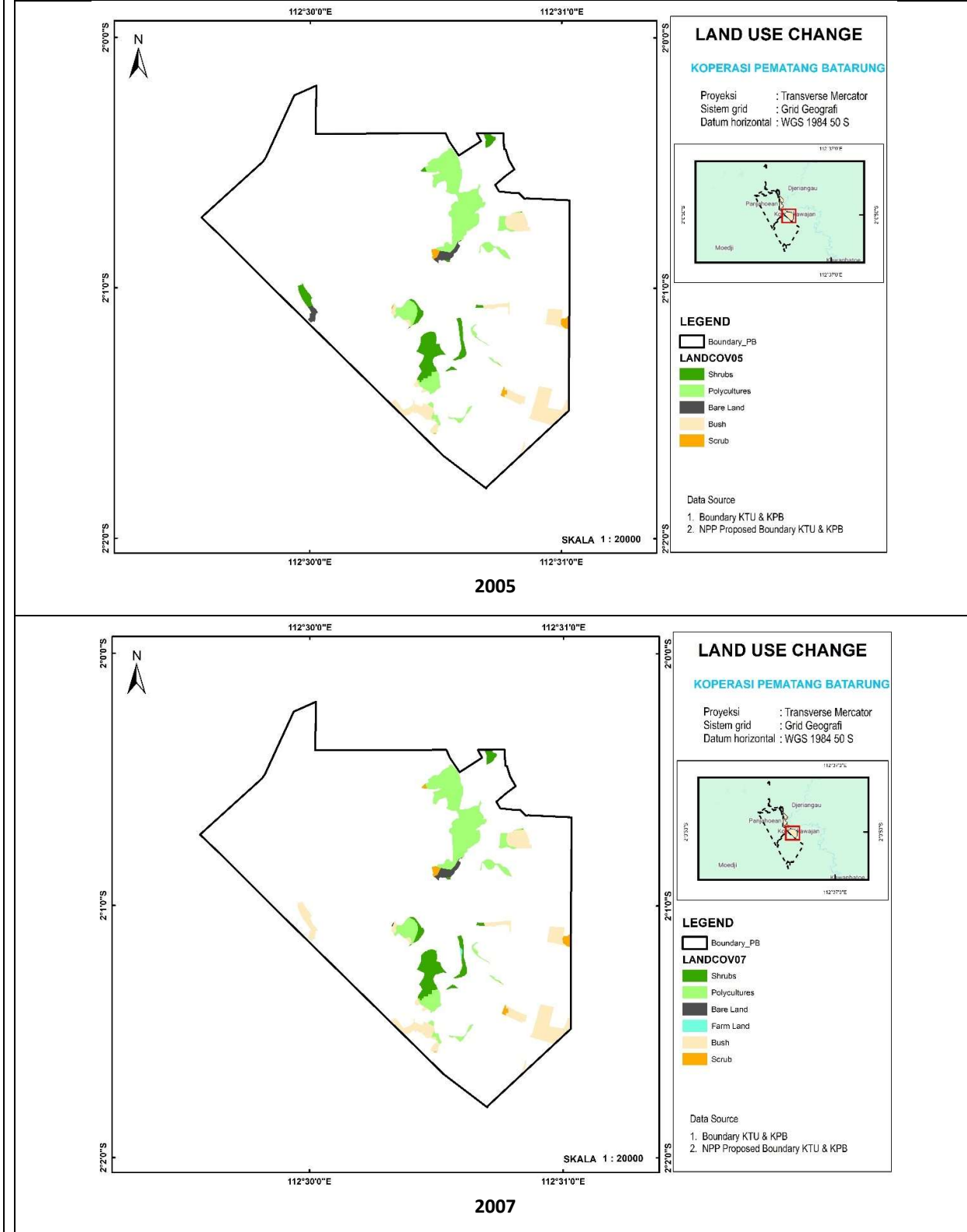
2015	Land Cover	2017					Grand Total
		Shrubs	Polycultures	Bare Land	Farm Land	Bush	
	Shrubs	5.99					5.99
	Polycultures		15.72			0.21	15.93
	Bare Land			3.11			3.11
	Farm Land				0.21		0.21
	Bush			0.33		14.24	14.56
	Scrub						0.64
	Grand Total	5.99	15.72	3.43	0.21	14.44	0.64

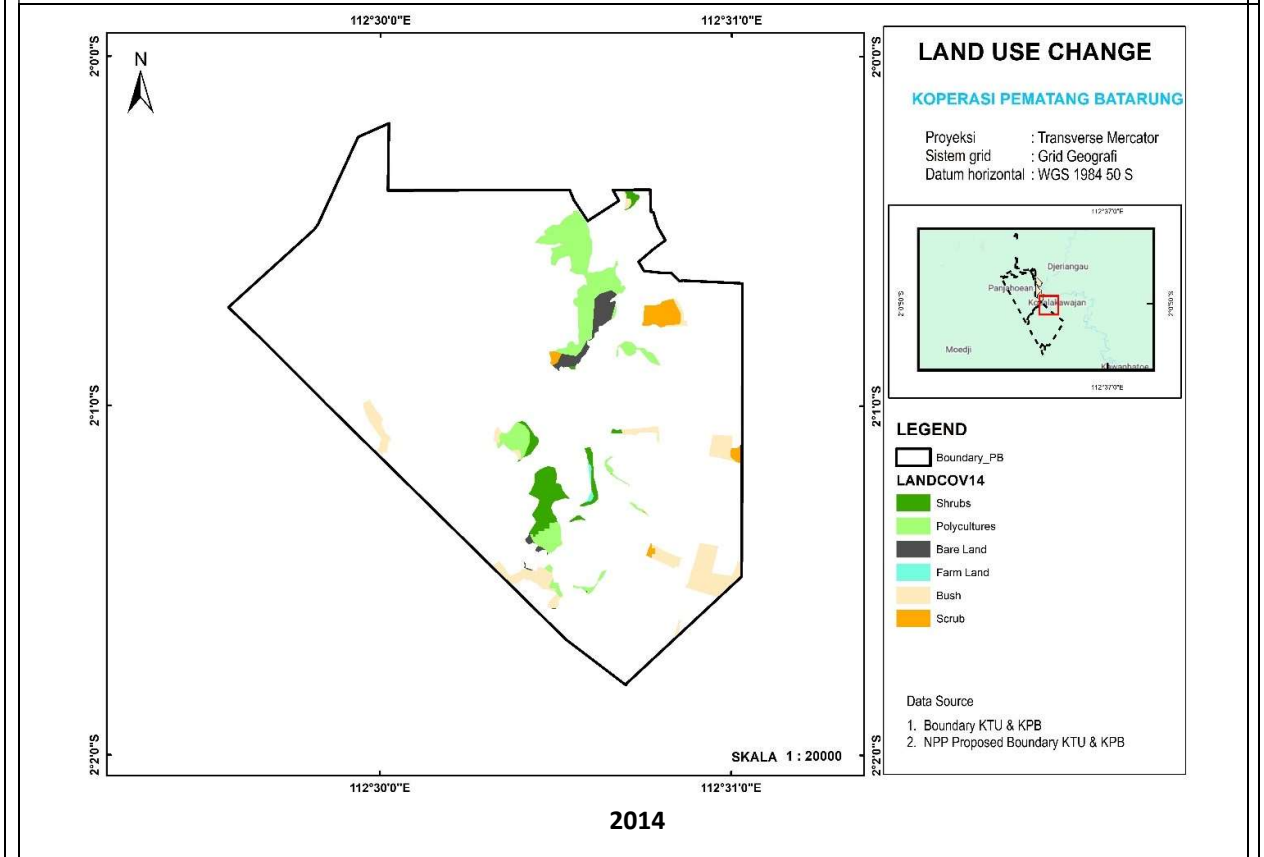
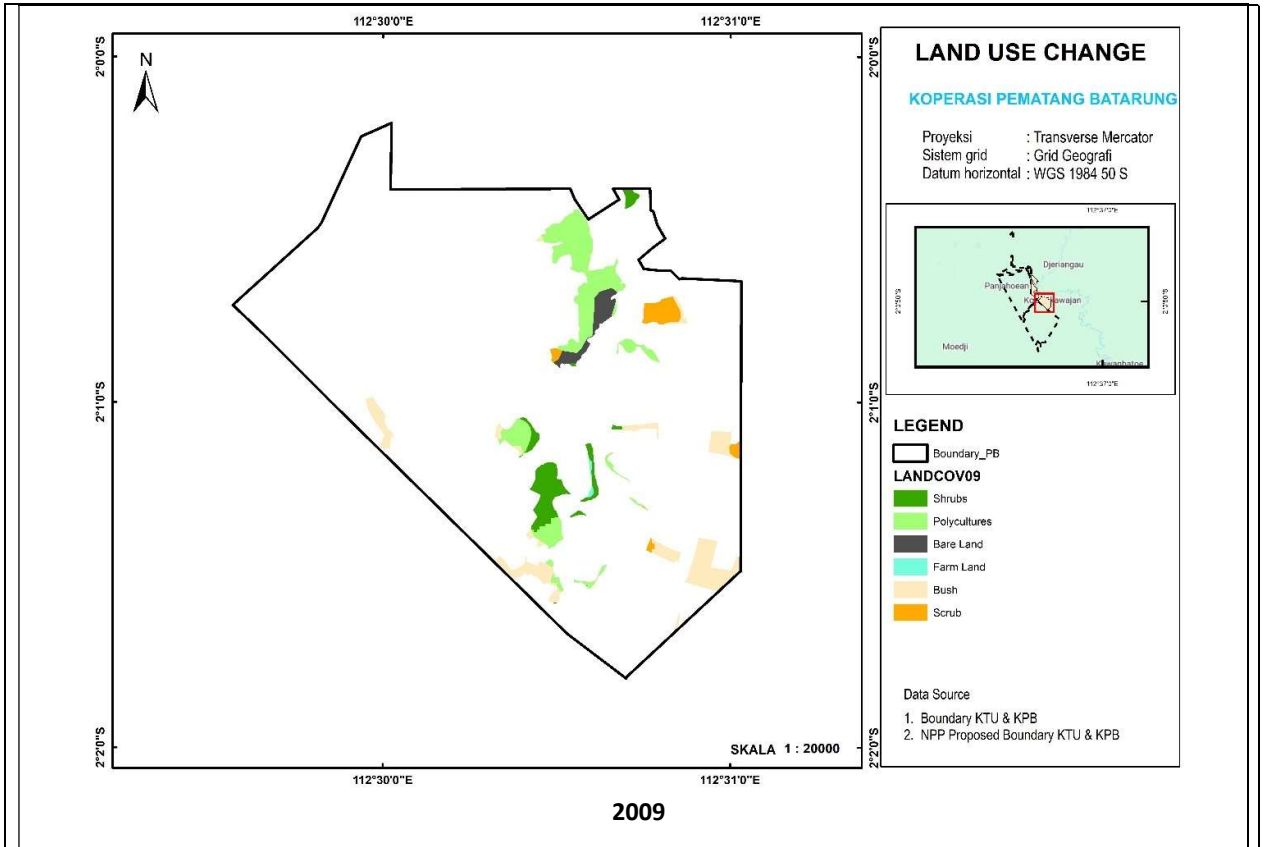
3.2.6 Land Cover Change 2017-2024 (Updated)

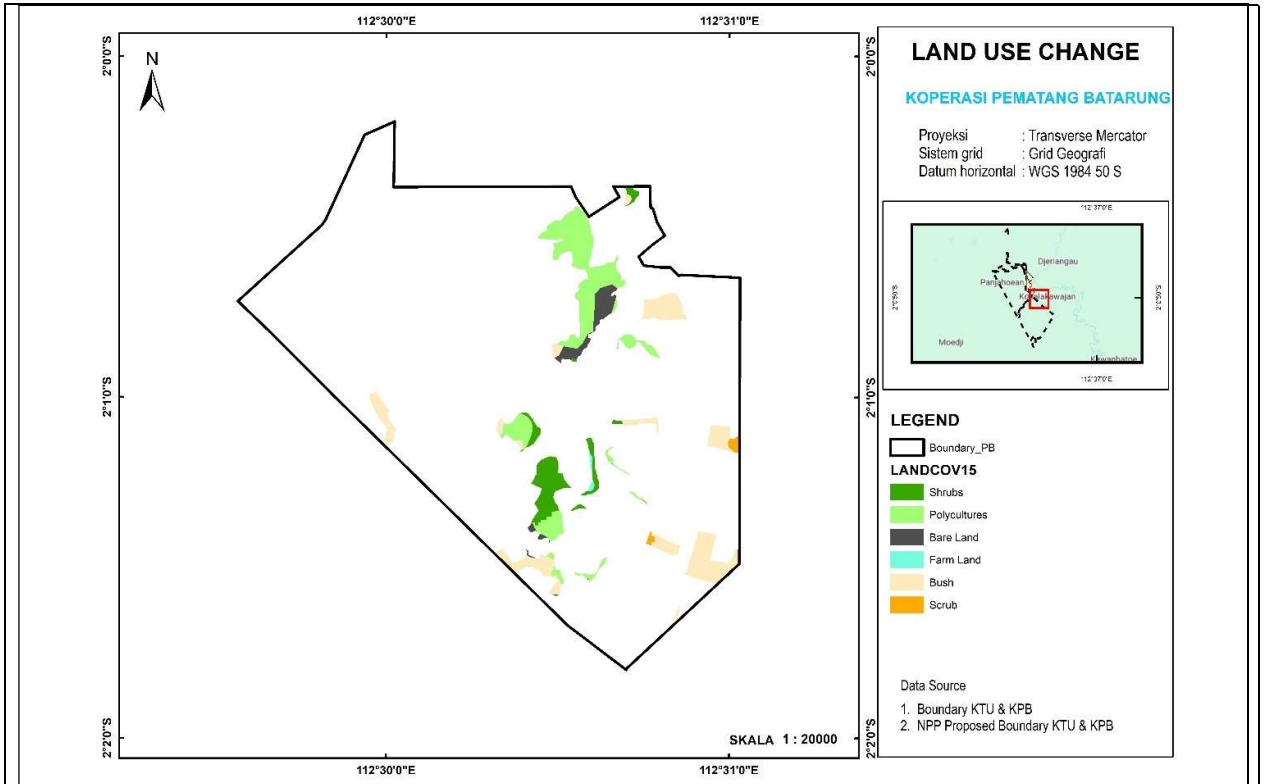
Tabel 10 Land Cover Change 2017-2024

2017	Land Cover	2024					Grand Total
		Shrubs	Polycultures	Bare Land	Farm Land	Bush	
	Shrubs	1.32	0.58			4.09	5.99
	Polycultures	1.06	3.26			2.38	9.01
	Bare Land			1.23		0.57	1.63
	Farm Land				0.21		0.21
	Bush		0.08	4.03		10.13	0.21
	Scrub					0.44	0.20
	Grand Total	2.38	3.92	5.26	0.21	17.62	11.05

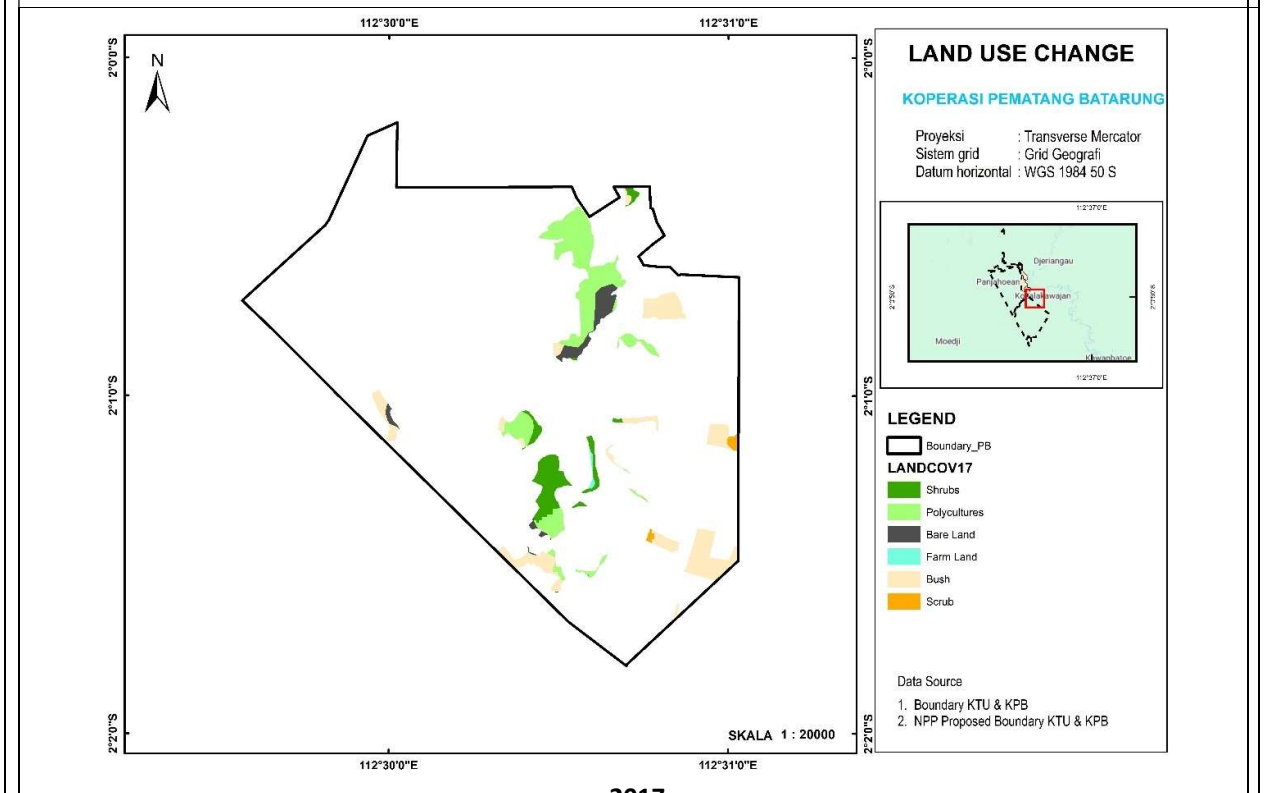
3.3. Raw land cover change NPP area



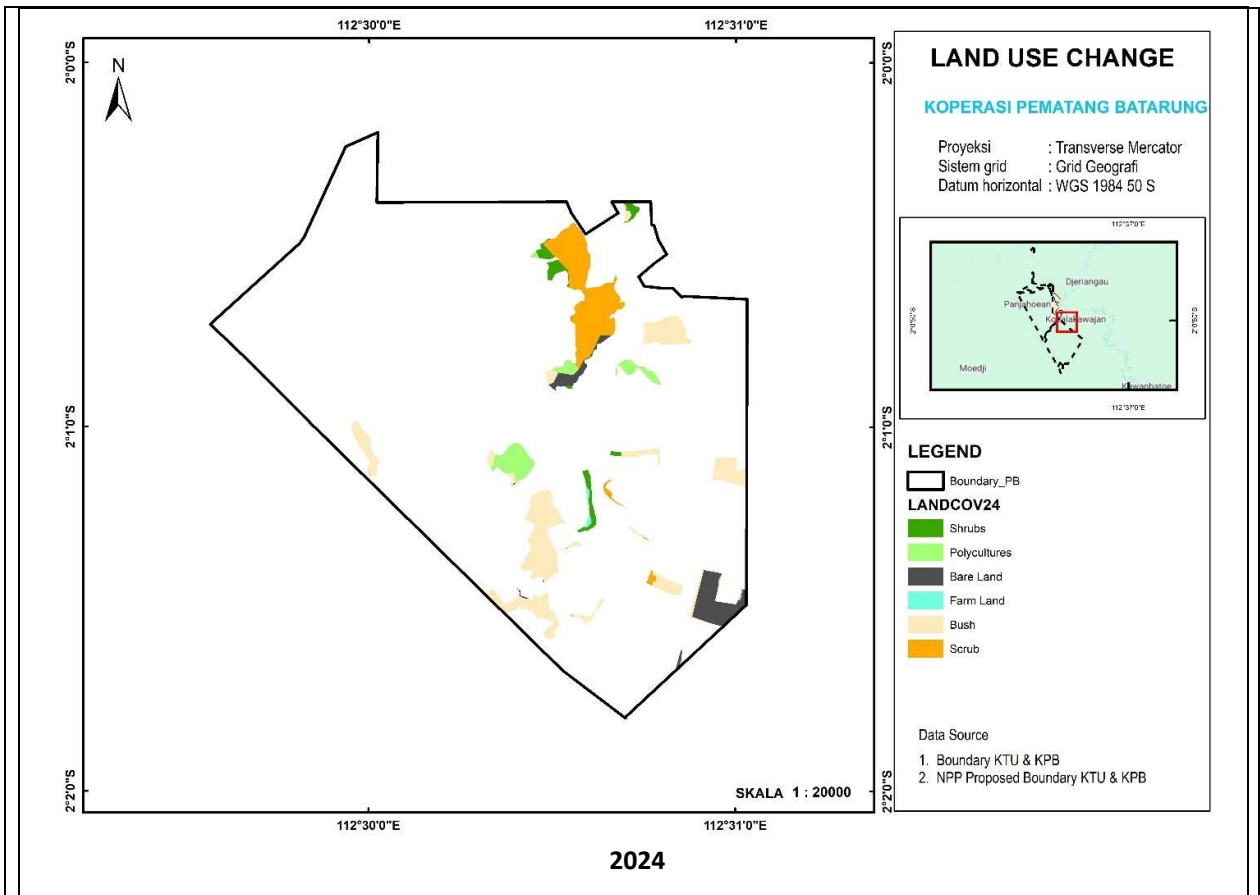




2015



2017



4. Conclusions and recommendations

4.1 Conclusion

- The land cover interpretation from each cut off period of the remaining development area (NPP area) of Koperasi Pematang Batarung indicated no Primary Forest.
- Changes in land cover that occurred from 2005 to 2017 were caused by community activities, which are related to farming, gardening or other activities such as mining. Subsequently, there is no significant land use change except for some minor (6.41 ha) conversion of Bush to Bare land and Polycultures to Bush. Similarly, these conversions were conducted by local community.
- There is no compensation and remediation area for the above-mentioned opening as the study area was still managed entirely by the community.

4.2 Recommendations

When develop the potential remaining development area of Koperasi Pematang Batarung, it is hoped that the high conservation value and high carbon stock areas are avoided.

Date of RSPO approval as satisfactory: 10 Juli 2023

Name of Assessor: Ivan Meidyana Ramdhan & Rhama Budhiana, updated in 2024 by Abimayu

Assessor Designation and Company: Remark Asia (2017), KLK (2024)

Section 9: Conclusions

Koperasi Pematang Batarung is scheme smallholder from PT Karya Makmur Abadi (as a subsidiary of KLK Bhd, which is a member of the RSPO), conducts plantation operations with a commitment to the KLK Policy and adheres to the required sustainability principles.

This study and assessment in the context of Koperasi Pematang Batarung plantation operations has been carried out based on the prevailing laws and regulations in Indonesia, as well as international regulations that have been ratified. The study was conducted using a standard toolkit that has been recognised/endorsed by global institutions and the RSPO.

Issue(s) to be prioritized :

- Land tenure by the community is still high. This requires more concern to be able to achieve company targets, both in developing plantation, other land management and partnering with the community.

For this reason, most of people who owned the land had converted their land into oil palm, both in open areas (potential development area for Koperasi Pematang Batarung) and areas designated as conservation areas by Koperasi Pematang Batarung, especially during the HCV-HCS review period by HCVRN until the NPP filed verification carried out. The community sees new and more promising opportunities in developing oil palm plantations, with increasing income with scheme of partnership with companies. The community (including cooperative member) will have a higher bargaining if they sell their land in the form of oil palm plantations.

Along with that, Koperasi Pematang Batarung (supervision under PT KMA) has endeavoured to realize its commitments and policies in managing HCV areas, conducting socialization, demarcation, and monitoring of conservation areas, as well as conveying its intention to compensate for the land as a form of HCV management. However, by prioritizing the principle of FPIC, Koperasi Pematang Batarung continues to respect the community's decision not to relinquish their area and cultivate their land according to their wishes.


Going forward, as a form of implementation of PT KMA policy that PT KMA' Mill will not receive and process external FFB(s) originating from new land clearings in HCV areas.

The complete HCV management programs refers to NPP Integration Management Plan.

- The quality of local community resources in terms of developing potential alternative livelihoods and meeting the needs of local workers.

Section 10: Confirmation of Report

This document is the summary of assessment result on Environment Impact Assessment (EIA), Social Impact Assessment (SIA), Integrated High Conservation Value (HCV) – High Carbon Stock HCS), Soil and Topography Survey and Land Use Change Analysis (LUCA) in Koperasi Tunjung Untung (one of scheme smallholder from PT KMA) and has been approved by the Management. This Assessment result will be applied as one of the guidelines in managing oil palm plantation

Date of Completion	31 July 2024
Signature	
Name	Kanapathi Rao Al A Natchana
Position	President Director