New Planting Procedure - Summary of Assessments

RSPO Roundtable on Sustainable Palm Oil	**KLK**	**GGO**

NPP Reference Number:	RSPO-PC-A31-NPP-AUDRPFIN-ms-RB for RSPO New Planting Procedure (NPP) 2021
Country of the NPP submission:	Indonesia
RSPO Membership Number:	1-0014-04-000-00

Section 1: General Information

1. Intoduction

In this report, it is outlined that Koperasi Garuda Maju Bersama (GMB), located across three villages—Tangkarobah, Pemantang, and Pahirangan in Mentaya Hulu District, East Kotawaringin Regency, Central Kalimantan Province, Indonesia with Business Permit No: 8120312141891 —plans to undertake New Planting Procedure (NPP) activities. The cooperative operates within a partnership area (smallholder scheme) covering approximately ± 657.59 hectares, as stipulated in the partnership agreement and within the designated location permit. The proposed NPP activities will focus on the remaining undeveloped areas, totalling approximately ± **500.25** hectares.

GMB is one of the 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 relation to its plantation operations/bussiness, GMB holds a Plantation Bussiness Permit (Izin Usaha Perkebunan, IUP), Location Permit (Izin Lokasi), and has carried out the Environmental Impact Assessment (EIA/UKL-UPL).

Koperasi Garuda Maju Bersama (GMB) 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 results of each assessment will be presented in this NPP summary of assessment report.

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

2. Time Plan - Land Clearing

Table 1. Time Plan – Land Clearing

Koperasi	Tahap I (Jul - Sept 2025)	Tahap II (Oct - Des 2025)	Tahap III (Jan - Mar 2026)	Tahap IV (Apr - Dec 2026)	Total
Garuda Maju Bersama	185.5 Ha	75.7 Ha	61.7 Ha	177.35 Ha	**500.25 Ha**
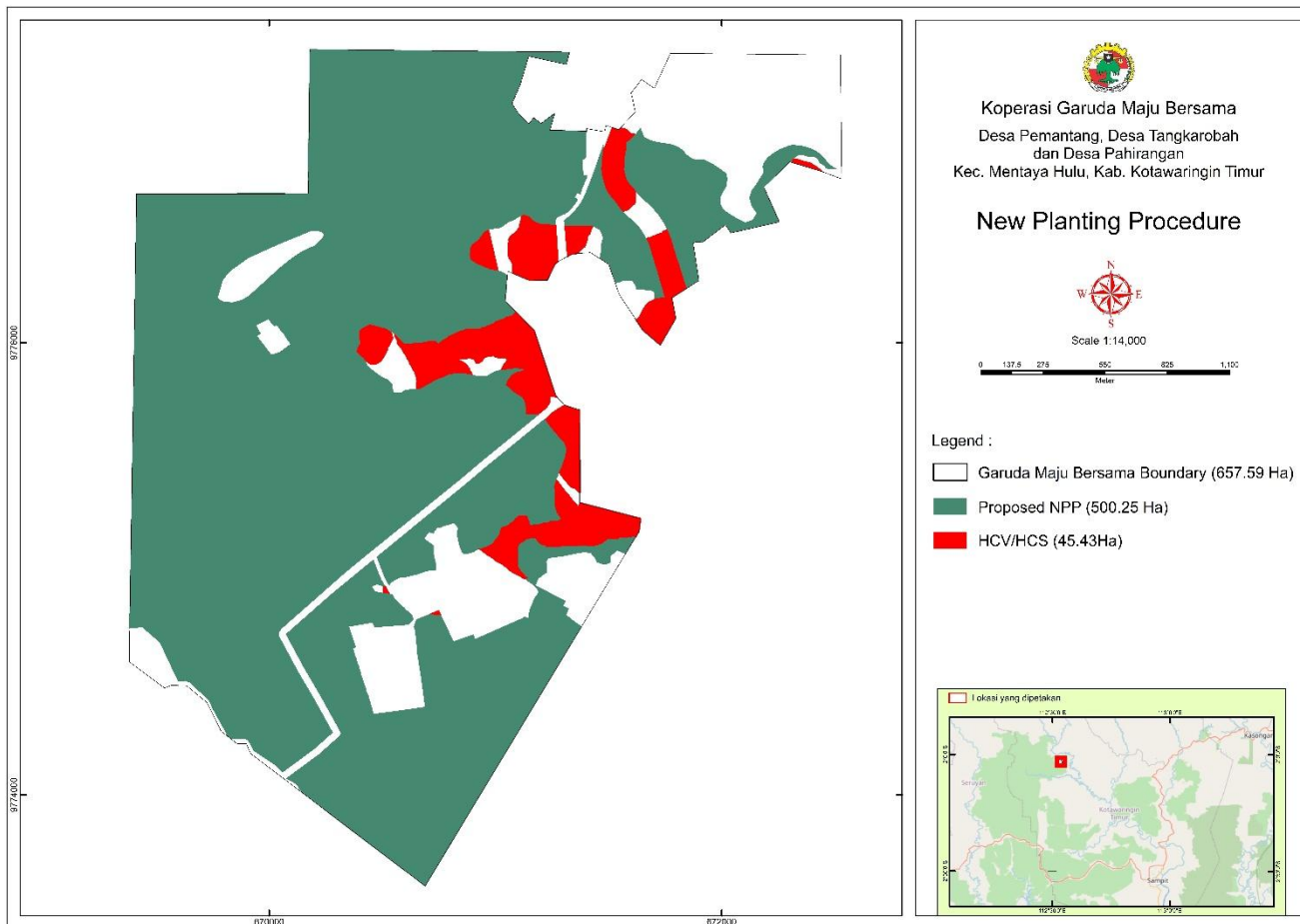
Note: The total HCV-HCS areas is based on delination result dated 08 December 2024

Figure 1. Overlay HCV-HCS & NPP Proposed of Koperasi Garuda Maju Bersama

Section 3: SEIA

Environmental Impact Assessment (EIA)

1. Timeline and Parties Involved

Environmental Impact Assessment (EIA) of Koperasi Garuda Maju Bersama 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	Competency 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 was reviewed by assessment team on 23 Januari 2017 from representative of local government i.e some agencies in district level, from Mentaya Hulu sub district and from head of villages and representative agency in villages (BPD) level.

The assessment result were reviewed by assessment team on 23 Januari 2017 with participation from representatives of the local government, including agencies at the district level, the Mentaya Hulu Sub-District, and village heads. It includes representatives from village-level agencies *Badan Permusyawaratan Desa* (BPD) as well

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 acquition 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

The Environmental Management and Monitoring Plan, including the location, duration, and responsible institutions for environmental management and monitoring, will be outlined in the 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 external consultant, Remark Asia with the study area of Koperasi Garuda Maju Bersama 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 that also involve key stakeholders. The method 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 hope for the development of scheme Smallholder through Koperasi Garuda Maju Bersama and two other koperasi (Koperasi Tunjung Untung & Koperasi Pematang Batarung) which collaborate with PT KMA.

Date of assessment: 4-12 April 2017

Name of Assessor: Remark Asia (Herry Triyana, Redy Miraz Muslim)

Assessor Designation and Company: Ahli Sosial Budaya dan Pemberdayaan Masyarakat

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 (website: www.re-markasia.com), located at Ciremai Ujung Street No.17A, RT 02/02, Bantarjati Village, Bogor Utara Sub-District, Bogor District, West Java Province, Indonesia, 16153. The assessment was carried out in three phases :
a) 27-28 March 2017 (desk study, collecting & analysis for secondary data and designing & planning activity plan),
b) 29-31 March 2017 (scoping study), and
c) 05-11 April 2017 (field assessment)

The scope of assessment covered the oil palm partnership areas of PT Karya Makmur Abadi, with Koperasi Garuda Maju Bersama being one of the partnership areas. The assessment location is in Kotawaringin Timur District, Central Kalimantan Province.

The list of HCV assessor as below :

Name	Function	Competency Certificate	Expertise
Cecep Saepulloh	Leader	ALS license No. ALS15020CS since 20 Jan 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 also carried out by PT Remark Asia. This 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 Garuda Maju Bersama is one of oil palm partnership areas. Location of assessment in Kotawaringin Timur District – Central Kalimantan Province.

The list of HCS assessors are as below :

Name	Function	Competency 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 Mubarok	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 been peer reviewed dated on 3 January 2019. The link to the HCSA summary report is as follow : *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 guidancee is included pre-assessment phase, scoping study, HCV identification/HCV assessment and stakeholder consultation.

Whereas, The HCS studies was 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

<div align="center">Table 2. Distibution of HCV-HCS area</div>

No.	HCV/HCS	HCV/HCS name	Location	Area (Ha)*
1	HCV 1.1;3;4.1;5	Riparian Area S.Sampiding	Koperasi Garuda Maju Bersama	5.51
2	HCV 1.3;3;4.3;5	Secondary Swamp Forest	Koperasi Garuda Maju Bersama	5.64
3	HCV 1.3;3;4.3;5 & HCS	Secondary Swamp Forest	Koperasi Garuda Maju Bersama	7.74
4	HCS	Forest Area	Koperasi Garuda Maju Bersama	26.54
Total				**45.43**

a) *The figures provided above are based on the delineation exercise dated 08 December 2024. The exercise is intended to ascertain the exact boundary on the ground

b) *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

<div align="center">Table 3. Monitoring and management plan</div>

HCV/HCS Description	Potential Threat to HCV/HCS Area	Management Recommendations	Monitoring Recommendations	Timeline
HCV 1,3,4,5/HCS Forest area (secondary swamp forest), river and riparian areas, with flora and fauna habitats - River and Riparian areas: Sg Sampiding.	✓ Deforestation, land clearing, and riverbanks opening for production activities and infrastructure i.e. plantation establishment, roads, settlements, etc by communities or cooperation	✓ Inform and communicate with the communities in the surrounding about flora and fauna diversity and its environmental services provided by the areas, e.g: as water provider and fire break ✓ Establish sign boards stating illegal logging and land clearing prohibition across forests and riverbanks in HCV areas. ✓ Develop village regulation/customary regulation that prohibit logging and land- opening in the area of HCV for commercial use.	✓ Conduct participatory survey /patrol to prevent land opening on the forest areas regularly. ✓ Enforce village /custom regulations to prevent land opening or illegal logging on HCV areas.	Once at time of land opening
	✓ Illegal logging and wild animal hunting in the forest areas or riverbanks	✓ 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	✓ Patrolling periodically and consistently, especially in the area that is prone to illegal logging and animal hunting. ✓ Undertake inventory of protected, vulnerable, endangered, and endemic flora and fauna in the area of HCV and around plantation at least once a year	Annual Annual

	✓ Forest Fire	✓ Capacity building for community representative and cooperative members at forest fire prevention. ✓ To provide fire extinguisher 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 ✓ Socialization 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	✓ 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)	Annual Daily Daily	

ALS Satisfactory Date Obtained (ALS HCV & HCV-HCSA assessment): January 3, 2019

HCSA peer review completion date and link to HCSA summary report (HCSA website): 3 May 2019

https://highcarbonstock-org.red-giraffe.co.uk/wp-content/uploads/2019/05/Laporan-HCSA-KLK-Smallholder-KMA-020519.pdf

Name of Assessor: Remark Asia

ALS Number: ALS15020CS

Section 5: FPIC

1. Timeline and Parties Involved

The FPIC study was carried out at the Koperasi Garuda Maju Bersama in 4-20 April 2017 by PT Remark Asia (website: www.re-markasia.com), located at Ciremai Ujung Street No.17A, RT 02/02, Bantarjati Village, Bogor Utara Sub-District, Bogor District, West Java Province, Indonesia, 16153.

The list of the experts are as below :

No	Nama	Posisi	Bidang
1.	Hilma Suciandari Lahay	Ketua Tim	Sosial ekonomi dan budaya, *social assessor.*
2.	Reza Pradipta	Anggota Tim	Ahli analisa data spasial dan interpretasi citra, *senior GIS consultant.*
3.	Dwi Bayu Siswantono	Anggota Tim	Analisa data spasial dan interpretasi citra, *junior GIS consultant.*

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:
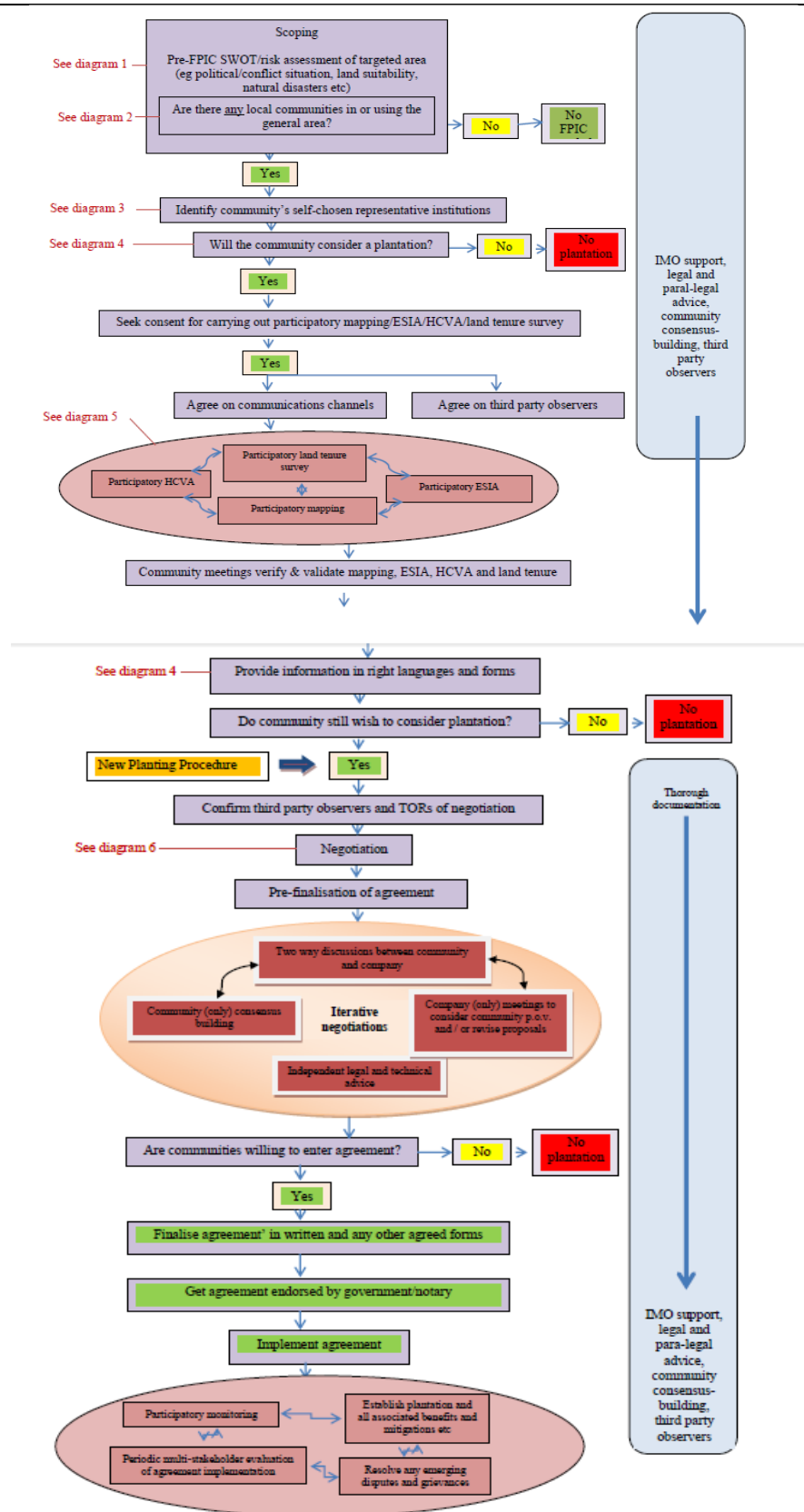
Figure 1. FPIC Process Flow based on RSPO guidelines

3. Stakeholder list of Koperasi Garuda Maju Bersama

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

No	Position Name	No	Position Name
1	Head of Tangkarobah Village	11	Head of Traditional Representative
2	Head of Pemantang Village	12	Head vice of Traditional Representative
3	Head of Pahirangan Village	13	Member of Traditional Institution
4	Head of Citizen Association	14	Chairman of Koperasi
5	Head of Neighborhood Association I	15	Deputy Chairman of Koperasi
6	Head of Neighborhood Association II	16	Secretary of Koperasi
7	Head of Village Consultative Institution	17	Treasurer Division of Koperasi
8	Head vice of Village Consultative Institution	18	Koperasi Supervisory Board
9	Secretary of Village Consultative Institution	19	Member of Cooperative Supervisory Board
10	Member of Village Consultative Institution	20	Land Owner Representative

4. Result

Based on this 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	It is still unclear who the compensation for the HPK (Convertible Production Forest) land will be handed over to.	All
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 is public jealousy towards the Koperasi management because it only involves people closest to them.	All
4	Institutional	The Management Unit's priority in running cooperatives is still lacking, there is no special unit that handles cooperatives	All
		Limited capacity of cooperative management in handling institutions, especially in financial calculations and organizational leadership.	All

5. Summary and Recomendation

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	Area that still has HPK status	Conduct investigations into land management in the HPK area and continue to monitor the progress of the process of transferring status area from HPK (Convertible Production Forest) to APL (Non-forested Landbank). Note: The land status has changed from HPK to APL as per *SK Pelepasan Kawasan Hutan No*. SK.40/MENLHK/SETJEN/PLA.2/1/2022 dated 20 January 2022 by Ministry of Forestry.

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 cooperative.
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 cooperative.
		Each village does not have the same understanding regarding koperasi management	The company should hold regular meetings for all cooperative administrators from the three villages to jointly discuss and agree on *koperasi* management. This includes addressing key issues such as the distribution of dividends among all members for future results.
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 Siswantono *(junior GIS consultant)*

Assessor Designation and Company: Remark Asia

Section 6: Soil and topography

1. Timeline and Parties Involved

Soil and topography studies were carried out in 5-11 April 2017 by Remark Asia, then updated on March 2024 by PT AARI (Applied Agricultural Resources Indonesia). The study was carried out covering Koperasi Garuda Maju Bersama Location Permit area.

2. **Method**
- The survey was conducted at Semi-Detail level with a grid interval of 300 x 300 meters, the selection of points was determined based on topography (source: DEMNAS) with some additional points still based on topography low areas only and on areas previously mapped as Histosols soils by Remark Asia.
- Soil drilling with a peat drill was carried out at 24 points, and then described every 25 cm. Drilling reached the mineral soil layer (substratum) below the peat. The description of each drilling point can be seen in the Appendix data.
- Next, soil samples from 6 representative points were selected (based on an even distribution of points) and sent to the KLK Plantation Central Laboratory to be analyzed for Loss on Ignition (LOI) values at every 15 cm depth.
- Soil classification was done at the Malaysian Soil Taxonomy Series (S. Paramananthan) level, subgroups based on USDA (United States Department of Agriculture), dan Klasifikasi Tanah Nasional (KTN).
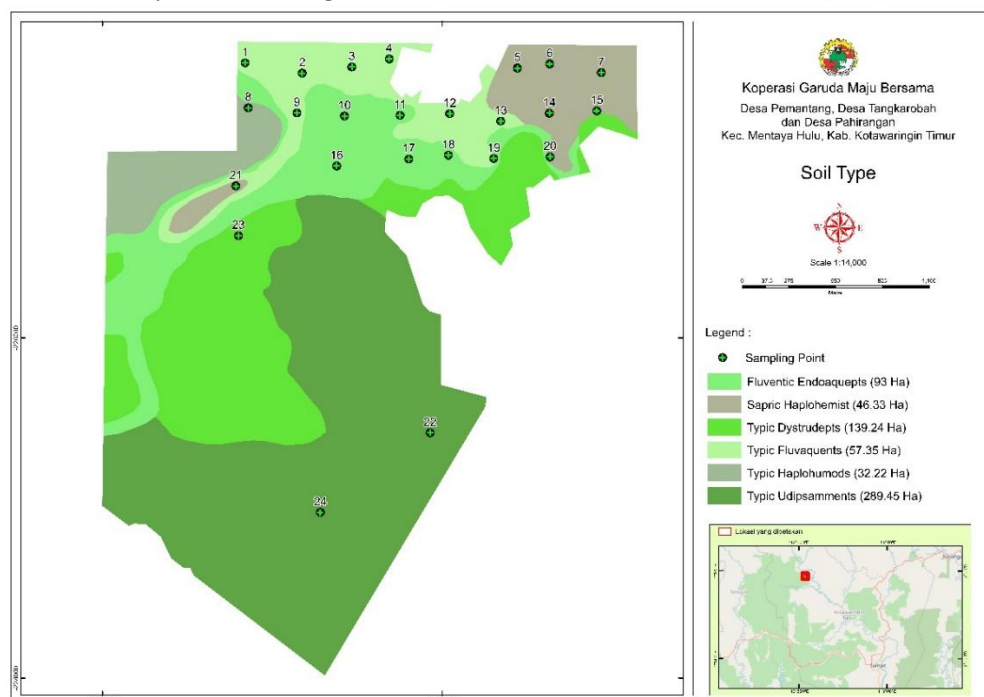

Figure 1. Sampling Point Map

3. **Result**
   a. Distribution of Soil Types

   Tabel 1. Soil Type Distribution

Soil Type	Ha
Fluventic Endoaquepts	87.36
Typic Dystrudepts	120.76
Typic Fluvaquents	49.70
Typic Haplohumods	32.96
Typic Udipsamments	209.47
Grand Total	**500.25**
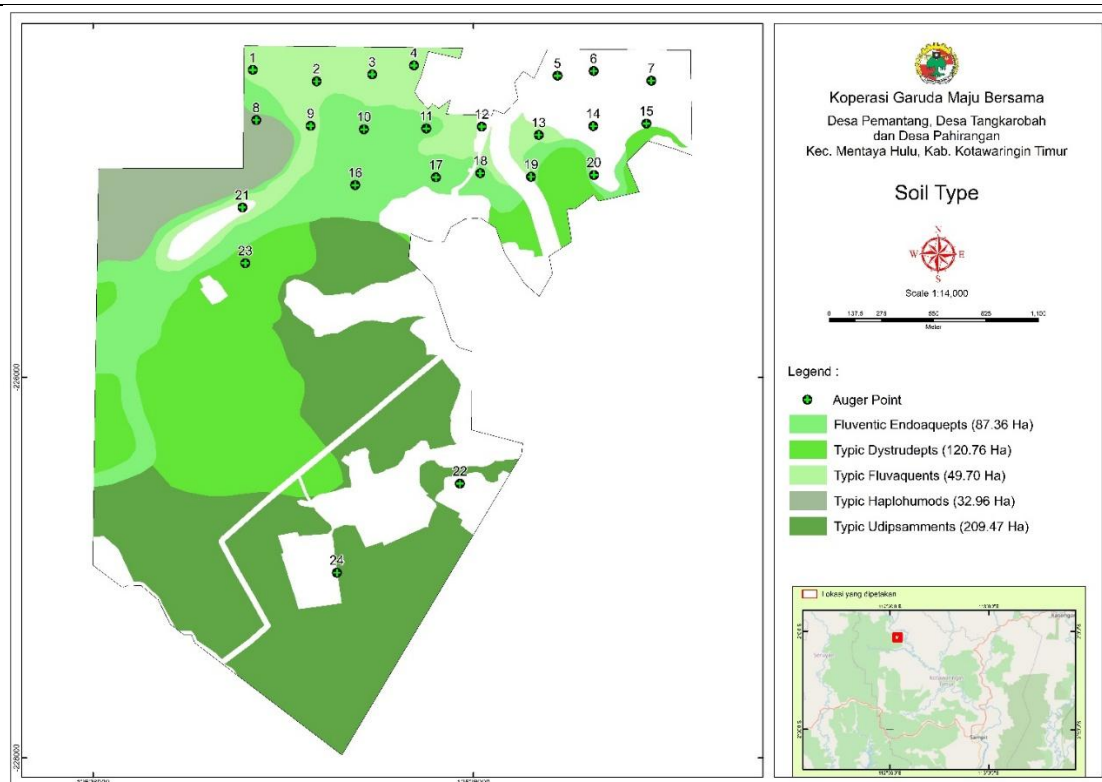
Figure 1. Soil Type Distribution Map

b. Slope

Tabel 2. Distribution Slope Classification

Slope	Slope Classification	Ha
0 – 8 %	Flat	451.81
8 – 15 %	Undulating	43.23
15 – 25 %	Rolling	5.21
Total		**500.25**
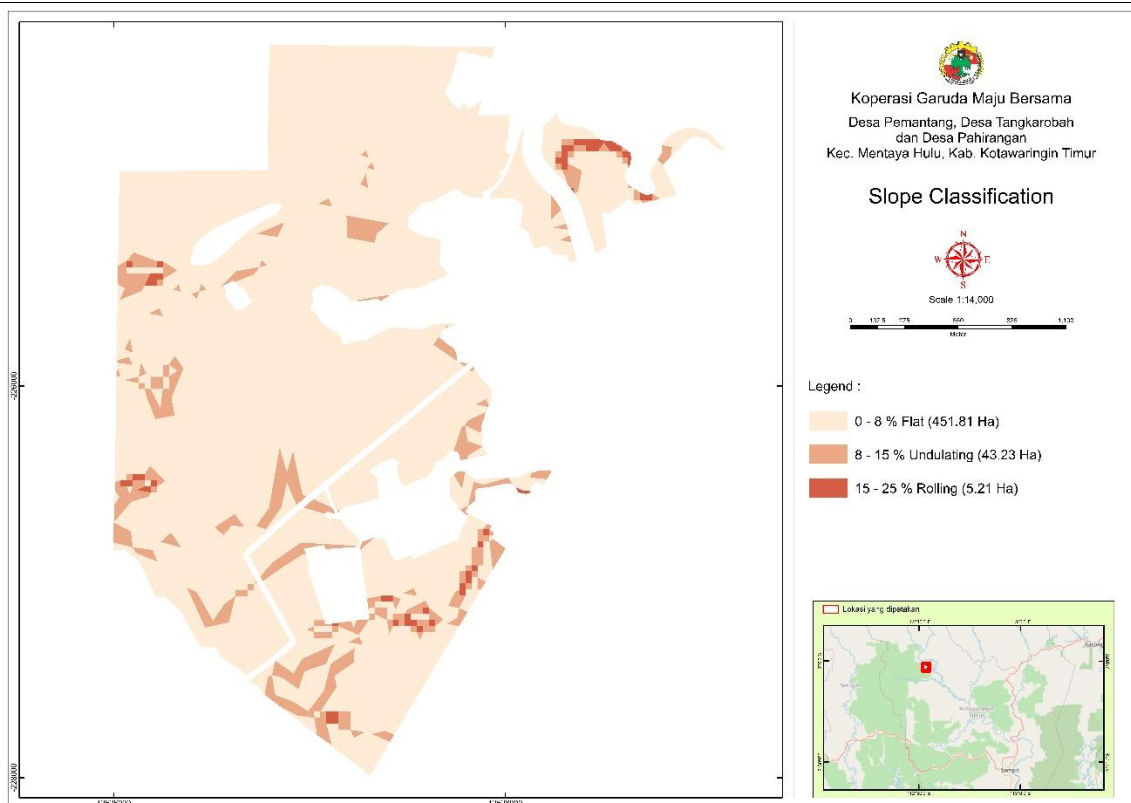
Figure 2. Distribution Slope Classification Map

c. Erosion Hazard Level

Tabel 3. Erosion Hazard Level

Erosion Hazard Level	Ha
Very Low	73.42
Low	426.83
Total	**500.25**

Figure 3. Distribution Map of Erosion Hazard level at NPP Area

d. Marginal Soil

Tabel 4. Marginal Soil Distribution

Soil Classification	Ha
Marginal Land/Soil	361.86
Non Marginal land/soil	138.39
Total	**500.25**

Figure 5. Distribution map of marginal soil at NPP Area
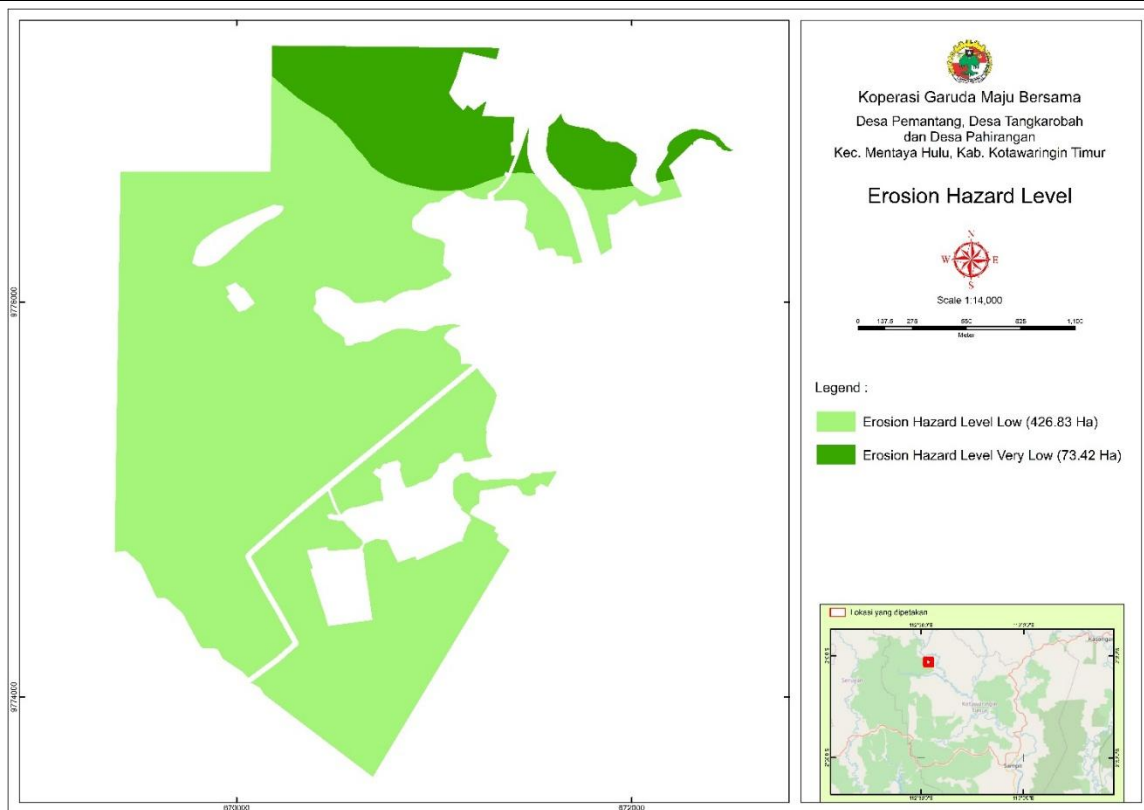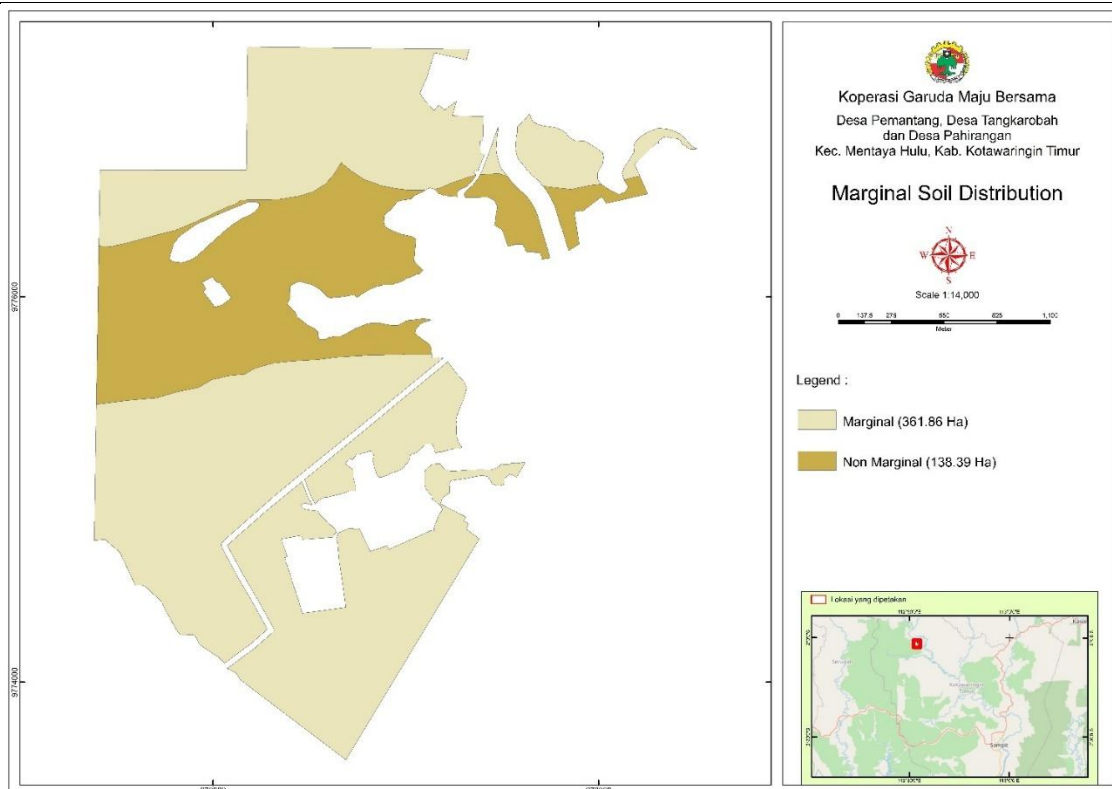
Date of Assessment: 5-11 April 2017 by Remark Asia, Maret 2024 by AARI

Name of Assessor: Dede Sulaeman (Remark Asia), Karjono (Soil & Land Evaluation Section Head AARI) and Totok Suswanto (Agronomic Service Division Head AARI)

Assessor Designation and Company: PT Remark Asia, PT Applied Agricultural Resources Indonesia

Section 7: Greenhouse Gas (GHG)

1. **Introduction**

   Koperasi Garuda Maju Bersama with New Planting Procedure (NPP) Proposed Area 500.25 ha carried out the following assessments in 2017:
   a. Carbon Stock assessment, and
   b. 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 Garuda Maju Bersama 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 Garuda Maju Bersama based on Sentinel 2B satellite imagery acquired in the latest year (2024).
   - Determine the value of greenhouse gas emissions in the development plan area of Koperasi Garuda Maju Bersama.
   - Determine areas that have significant carbon deposits as these locations that must be maintained

   Tabel 1. Land Cover Information of Koperasi Garuda Maju Bersama

Land Cover 2024	Soil Type (Ha)		Grand Total (Ha)
	Mineral	Peat	
Shrubs	100.14	3.35	103.49
Shrubs (HCV-HCS)	26.18	0.00	26.18
Secondary Swamp Forest (HCV-HCS)	0.71	0.00	0.71
Polycultures	2.36	0.00	2.36
Bare Land	195.92	0.00	195.92
Scrub	245.29	42.75	288.04
Scrub (HCV-HCS)	14.67	0.00	14.67
Bush	22.36	0.00	22.36
Bush (HCV-HCS)	3.87	0.00	3.87
Total	**611.49**	**46.10**	**657.59**

3. Results

3.1 Carbon Stock at Koperasi Garuda Maju Bersama

Carbon stock on mineral soil was identified according to the previously identified land cover types which include secondary swamp forest, shurbs, Polycultures, Bare Land, Farm Land, scrub and bush. Total carbon storage on mineral land was 7,323.98 tons C. The largest carbon storage is found in the land cover of shrubs, which is 4,184.50 tons C while the least is in the land cover of Bare land, which are respectively 0.00 tons C.

Tabel 2. Carbon storage in mineral soil of Garuda Maju Bersama

Land Cover 2024	Area (Ha)	Average Carbon Stock Value (TonC/Ha)	Carbon Stock (TonC/Ha)
Shrubs	100.14	46	4,606.44
Shrubs (HCV-HCS)	26.18	46	1,204.28
Secondary Swamp Forest (HCV-HCS)	0.71	128	90.88
Polycultures	2.36	20.33	47.98
Bare Land	195.92	0	0.00
Scrub	245.29	5	1,226.45
Scrub (HCV-HCS)	14.67	5	73.35
Bush	22.36	5	111.80
Bush (HCV-HCS)	3.87	5	19.35
Total Luas	**611.49**	**Total Carbon Stock**	**7,380.53**

Next, the carbon stock in peatland cover is analysed. The total carbon stock in the peatlands of Koperasi Garuda Maju Bersama is 31,577.30 tons C, which comes from vegetation of 687.75 tons C and soil carbon of 30,889.55 tons C. The average carbon stored in peatlands in the vegetation section is 14.92 tons C/ha, while the amount of soil carbon stored is 684.82 tons C/ha. Scrub cover in carbon storage due to their largest area compared to other land covers in peatlands.

Tabel 3. Carbon storage in Peat soil of Garuda Maju Bersama

Landcover	Peat Type	Area (Ha)	Standar C (ton C/ha)		Stock C (ton C)		Total
			Vegetation	Soil	Vegetation	Soil	
Shrubs	Deep Peat	3.35	55.19	669.91	185.44	2,250.90	2,436.34
Scrub	Deep Peat	42.75	11.75	669.91	502.31	28,638.65	29,140.96
Total (ton C)		**46.10**			**687.75**	**30,889.55**	**31,577.30**
Average (ton C/Ha)					**14.92**	**670.06**	**684.97**

After separately analyzing the calculation of carbon storage on mineral land and peatland, further information on overall carbon storage for each land cover type are provided in Table 4. Based on the information in Table 4, it is evident that the total carbon storage on peatland is significantly greater than of mineral land. Overall, the carbon stored in Koperasi Garuda Maju Bersama is 38,938.48 tons of C, comprising 7,380.53 tons C from

mineral soil and 31,577.30 tons C from peatland. The average carbon storage is 59.21 tons C/ha. This is made up of average carbon storage of mineral land (12.07 tons C/ha) and peatland (684.97 tons C/ha).

Tabel 4. Total Carbon stock of Koperasi Garuda Maju Bersama

Land Cover	Area (Ha)		Total (Ha)	Carbon Stock (Ton C)		Total (TonC)
	Mineral	Peat		Mineral	Peat	
Shrubs	100.14	3.35	103.49	4,606.44	2,436.34	7,042.78
Shrubs (HCV-HCS)	26.18	0.00	26.18	1,204.28	0.00	1,204.28
Secondary Swamp Forest (HCV-HCS)	0.71	0.00	0.71	90.88	0.00	90.88
Polycultures	2.36	0.00	2.36	47.98	0.00	47.98
Bare Land	195.92	0.00	195.92	0.00	0.00	0.00
Scrub	245.29	42.75	288.04	1,226.45	29,140.96	30,367.41
Scrub (HCV-HCS)	14.67	0.00	14.67	73.35	0.00	73.35
Bush	22.36	0.00	22.36	111.80	0.00	111.80
Bush (HCV-HCS)	3.87	0.00	3.87	19.35	0.00	19.35
Total	611.49	46.10	657.60	7,380.53	31,577.30	38,938.48
Average				12.07	684.97	59.21

3.2 Proposed development area of Greenhouse Gas Scenarios

Development scenarios are integral to the recommendations for the GHG (Greenhouse Gas) mitigation plan in the Koperasi Garuda Maju Bersama area. The proposed scenarios are based on the results of carbon storage studies and the results of carbon balance calculations using PalmGHG Calculator V4. Based on the findings, two development scenarios are proposed, as outlined in the tabulation below:

Scenario 1	- Area with Shrubs Cover of 26.18 Ha, Secondary Swamp Forest Cover of 0.71 Ha, Scrub Cover of 14.67 Ha which are HCV & HCS areas are not considered for clearance. - The above includes Shrubs Cover of 3.35 Ha and Scrub Cover of 42.75 Ha on peatland. - The total area with potential for oil palm plantation is 566.07 Ha (NPP area and existing masyarakat farms). - Land cover outside HCS, HCV and Peatland areas will be planted with oil palm consists of Shrubs of 100.14 Ha, Polycultures of 2.36 Ha, Bare Land of 195.92 Ha, Scrub of 245.29 Ha and Bush of 22.36 ha.
Scenario 2	- Areas with Shrub Cover of 129.67 Ha (including HCV, HCS and peatland area), Secondary Swamp Forest Cover of 0.71 Ha (including HCV and HCS area), Polycultures cover 2.36 ha, Shrub Cover of 302.71 Ha (including HCV and HCS area) and Bush Cover of 26.23 Ha (including HCV and HCS area) will be cleared. - The total area with potential for oil palm plantation is 657.59 Ha.

Tabel 5. Proposed scenario for Development area of Koperasi Garuda Maju Bersama

Land Cover	Area (Ha)		Carbon Stock (TonC)	
	Scenario 1	Scenario 2	Scenario 1	Scenario 2
Shrubs	3.35	0.00	2590.44	0

Shrubs (HCV-HCS)	26.18	0.00	1204.28	0
Secondary Swamp Forest (HCV-HCS)	0.71	0.00	90.88	0
Polycultures	0.00	0.00	0	0
Bare Land	0.00	0.00	0	0
Scrub	42.75	0.00	29354.71	0
Scrub (HCV-HCS)	14.67	0.00	73.35	0
Bush	0.00	0.00	0	0
Bush (HCV-HCS)	3.87	0.00	19.35	0
Oil Palm	566.07	657.59	36132.25	41974.61
Total	**657.59**	**657.59**	**69,465.26**	41,974.61

Based on **Table 5**, two scenarios are presented. **Scenario 2** proposes a larger area for new planting, which results in a more significant reduction in carbon reserves. In contrast, **Scenario 1** suggests a smaller area for new planting by preserving HCV, HCS, and peatland areas with existing land cover, such as shrubs, secondary swamp forest, and scrub. As a result, **Scenario 1** ensures higher carbon reserves in the future compared to **Scenario 2**.

3.3 Recalculate Carbon stock of NPP Proposed Area at Koperasi Garuda Maju Bersama

Scenario 1 is the best by not clearing HCV-HCS areas and peatland to maintain carbon stocks in the future. Then, the area of each land cover will be calculated again using the NPP area proposed by the Koperasi Garuda Maju Bersama of 500.25 Ha. This calculation aims to see carbon storage in the area where the NPP will be carried out.

Scenario 1 is the optimal choice, as it avoids clearing HCV, HCS and peatland areas, thereby preserving future carbon stocks. To assess carbon storage in the proposed NPP (New Planting Plan) area of ± **500.25 ha**, the area of each land cover type will be recalculated. This calculation aims to evaluate the carbon storage within the designated NPP area.

Tabel 6. Recalculated Carbon stock of NPP Proposed Area at Koperasi Garuda Maju Bersama

Land Cover	Area (Ha)	Average Carbon Stock Value (TonC/Ha)	Carbon Stock (TonC)
Shrub	83.87	46	3,858.02
Polycultures	0.00	20.33	0
Bare Land	173.81	0	0
Farm Land	0.00	5.81	0
Bush	21.05	5	105.25
Scrub	221.52	5	1,107.60
Total NPP Areas	**500.25**	**Total Carbon Stock**	**5,070.87**

According to Table 6, the proposed NPP area in Koperasi Garuda Maju Bersama currently holds a carbon stock of 5,070.87 tons C. The shrub land cover accounts for the largest share at 3,858.02 tons C, while the bare land cover contributes 0 tons C.

3.4 Projection GHG of proposed NPP area Koperasi Garuda Maju Bersama

Green House Gas (GHG) emissions in this study were analysed 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 (N_2O) and carbon dioxide (CO_2) 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 6. Projection GHG – NPP Area

No	Indicator	tCO2e	tCO2e/ha
1	Land Conversion	743.73	1.49
2	Crop Sequestration	-4,349.74	-8.70
3	CO_2 Emission from Fertilizer	166.85	0.33
4	N_2O Emissions from Fertilizer	152.42	0.30
5	Fuel Consumption	29.67	0.06
6	Sequestration in Conservation area/Conservation Credit	0	0
Total		-3,257.07	- 6.52

3.5 Management for increased NPP Area Carbon Stock

To enhance carbon stock in the Koperasi Garuda Maju Bersama area, management efforts can focus on increasing the total biomass of vegetation and organic carbon (C-organic) content. This can be achieved through the following strategies:

Tabel 7. Management and monitoring Plan – NPP area

No.	Objective	Management Activity	Monitoring	Timeline
1	Protection for conservation areas (HCV and HCS areas)	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	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	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	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	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.	Work with associated plantation to : 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	a) Manage fuel consumption through fuel rationing. b) Take generic actions for reducing vehicle fuel consumption (eg regular maintenance).	a. Document fuel consumption b. Document operational vehicles' mileage and maintenance.	once a year
5	Fertilizer application	Optimal application of fertilizer	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

4. Summary Conclusions

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

- Land cover analysis : The total area is 657.59 ha, with 500.25 ha designated as NPP area located on mineral soil.
- Land cover classes : The NPP area comprises 500.25 ha and is categorized into six vegetative types, ie. Shrub, Polycultures, Bare Land, Scrub, and Bush.
- Carbon stock : The Shrub area has the highest carbon stock in the NPP area, at 3,858.02 tons C with an average carbon stock value of 46 tons C/ha.
- GHG emission :

o The primary source of GHG at the NPP area is estimated to come from Land Conversion activity (743.73 tCO2e) with carbon consumption of 1.49 tCO2e/Ha.

o The estimated CO_2 and N_2O emissions from fertilizer use is 166.85 tCO2e & 152.42 tCO2e, respectively.

- Carbon Sequestration : An estimated 4,349.74 tCO2e will be sequestered in the oil palm plantation area.
- Net emissions : Total estimated emissions generated from activities amounted to -3,257.07 tCO2e with estimated emissions of -6.52 tCO2e/ha.

Date of Assessment: May 2017, Updated June 2024

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

Updated to 2024 by Jason Foong Huey Yuan

Assessor Designation and Company: PT 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 New Planting Procedure (NPP) of the 332,90 ha Koperasi Garuda Maju Bersama area, the Study was re-evaluated in 2024 to reflect the current situation of 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 accordance with the New Planting Procedure (NPP). The vegetation cover for 2024 is based on Sentinel-2A imagery (8 December 2024).

2. Method

The stages and process of land cover and use change analysis (LUCA) make reference 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.
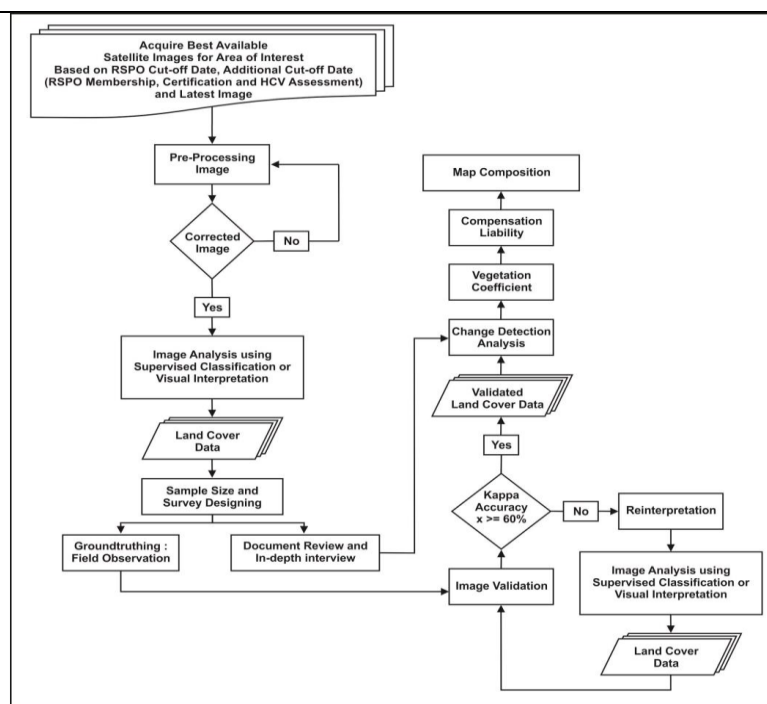
Figure 1. LUCA Process Flowchart

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 Garuda Maju Bersama 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 (non-corporate).

Table 1. Historical Land Use 2005 - 2024

No	Land Cover	Area (ha)					
		Before Nov 05	1 Nov 05 – 31 Nov 07	1 Dec 07- 31 Dec 09	1 Jan 10 – 9 May 14	9 May 14 – Apr 17 (HCV)	Apr 17 (HCV) – Dec 24
1	**Shrubs**	140.96	134.45	133.40	109.40	75.07	83.35
2	**Secondary Swamp Forest**	5.92	5.92	0.00	0.00	0.00	0.00
3	**Polycultures**	47.17	47.17	47.17	43.82	43.80	0.00
5	**Bare Land**	54.99	25.45	36.18	47.56	76.60	174.39
6	**Farm Land**	53.52	53.52	53.52	55.27	55.28	0.00
7	**Bush**	40.81	58.67	55.88	221.68	228.44	221.45
8	**Scrub**	156.88	175.07	174.11	22.53	21.06	21.06
	Total	**500,25**	**500.25**	**500.25**	**500.25**	**500.25**	**500.25**

3.2.1 Land Cover Change 2005-2007

Table 2. Land Use Change 2005-2007

Land Cover		Nov 07							Total Nov 05
		Shrub	Secondary Swamp Forest	Polycultures	Bareland	Farmland	Scrub	Bush	
Nov 05	Shrub	134.45	0.00	0.00	0.00	0.00	0.00	6.51	**140.96**
	Secondary Swamp Forest	0.00	5.92	0.00	0.00	0.00	0.00	0.00	**5.92**
	Polycultures	0.00	0.00	47.17	0.00	0.00	0.00	0.00	**47.17**
	Bareland	0.00	0.00	0.00	19.80	0.00	17.87	17.33	**54.99**
	Farmland	0.00	0.00	0.00	0.00	53.52	0.00	0.00	**53.52**
	Scrub	0.00	0.00	0.00	0.00	0.00	40.81	0.00	**40.81**
	Bush	0.00	0.00	0.00	5.65	0.00	0.00	151.24	**156.88**
Total Nov 07		**134,45**	**5.92**	**47.17**	**25.45**	**53.52**	**58.67**	**175.07**	**500.25**

3.2.2 Land Use Change 2007-2009

Table 3. Land Use Change 2007-2009

Land Cover		Dec 09						Total Dec 07
		Shrub	Polycultures	Bareland	Farmland	Scrub	Bush	
Dec 07	Shrub	127.48	0.00	0.00	0.00	5.74	1.23	**134.45**
	Secondary Swamp Forest	5.92	0.00	0.00	0.00	0.00	0.00	**5.92**
	Polycultures	0.00	47.17	0.00	0.00	0.00	0.00	**47.17**
	Bareland	0.00	0.00	25.45	0.00	0.00	0.00	**25.45**
	Farmland	0.00	0.00	0.00	53.52	0.00	0.00	**53.52**
	Scrub	0.00	0.00	0.00	0.00	45.95	12.72	**58.67**
	Bush	0.00	0.00	10.73	0.00	4.18	160.16	**175.07**
Total Dec 09		**133,40**	**47.17**	**36.18**	**53.52**	**55.88**	**174.11**	**500.25**

3.2.3 Land Use Change 2009-2014

Table 4. Land Use Change 2009-2014

Land Cover		May 14						Total Jan 10
		Shrub	Polycultures	Bareland	Farmland	Scrub	Bush	
Jan 10	Shrub	102.58	0.25	0.15	1.74	17.68	10.99	**133.40**
	Polycultures	0.00	43.48	0.00	0.00	3.69	0.00	**47.17**
	Bareland	0.00	0.00	32.72	0.00	0.00	3.46	**36.18**
	Farmland	0.00	0.00	0.00	53.52	0.00	0.00	**53.52**
	Scrub	0.00	0.00	0.00	0.00	55.88	0.00	**55.88**
	Bush	6.82	0.08	14.70	0.00	144.42	8.08	**174.11**
Total May 14		**109,40**	**43.82**	**47.56**	**55.27**	**221.68**	**22.53**	**500.25**

3.2.4 Land Use Change 2014-2017

Table 5. Land Use Change 2014-2017

Land Cover		Apr 17						Total May 14
		Shrub	Polycultures	Bareland	Farmland	Scrub	Bush	
May 14	Shrub	74.95	0.00	3.43	0.00	27.80	3.22	**109.40**
	Polycultures	0.00	43.80	0.00	0.01	0.01	0.00	**43.82**

Bareland	0.12	0.00	47.44	0.00	0.00	0.00	**47.56**
Farmland	0.00	0.00	0.00	55.27	0.00	0.00	**55.27**
Scrub	0.00	0.00	25.73	0.00	192.56	3.38	**221.68**
Bush	0.00	0.00	0.00	0.00	8.08	14.45	**22.53**
Total Apr 17	**75,07**	**43.80**	**76.60**	**55.28**	**228.44**	**21.06**	**500.25**

3.2.5 Land Use Change 2017-2024 (Updated)

Table 6. Land Use Change 2017-2024

Land Cover		2024				Total 2017
		Shrub	**Bareland**	**Scrub**	**Bush**	
Apr 17	**Shrub**	73.45	1.62	0.00	0.00	**75.07**
	Polycultures	0.00	0.41	43.39	0.00	**43.80**
	Bareland	0.00	76.60	0.00	0.00	**76.60**
	Farmland	0.00	0.00	55.28	0.00	**55.28**
	Scrub	9.90	95.77	122.78	0.00	**228.44**
	Bush	0.00	0.00	0.00	21.06	**21.06**
Total 2024		**83,35**	**174.39**	**221.45**	**21.06**	**500.25**

3.3. Raw land cover change NPP area
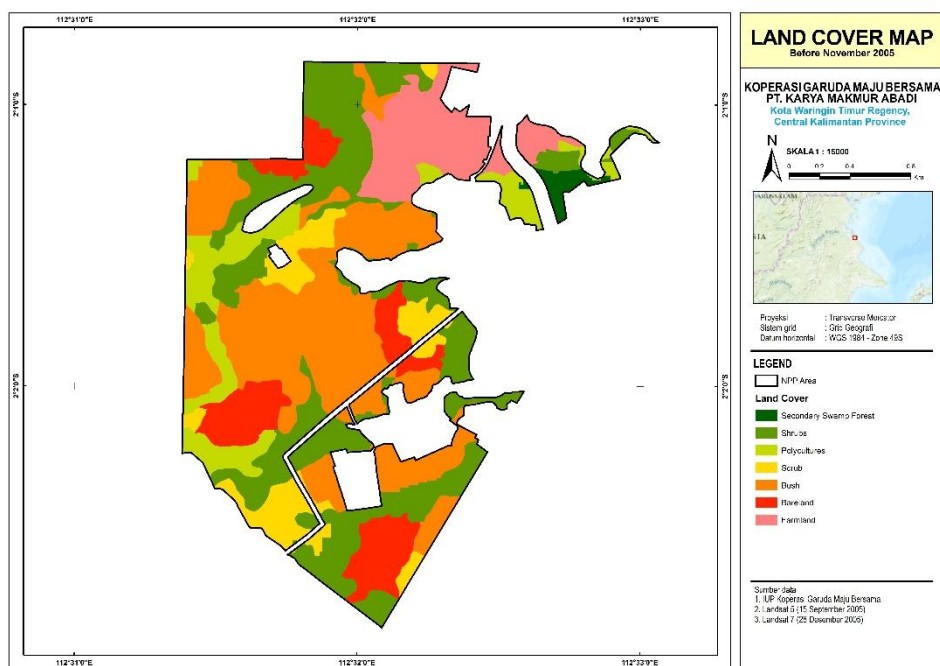
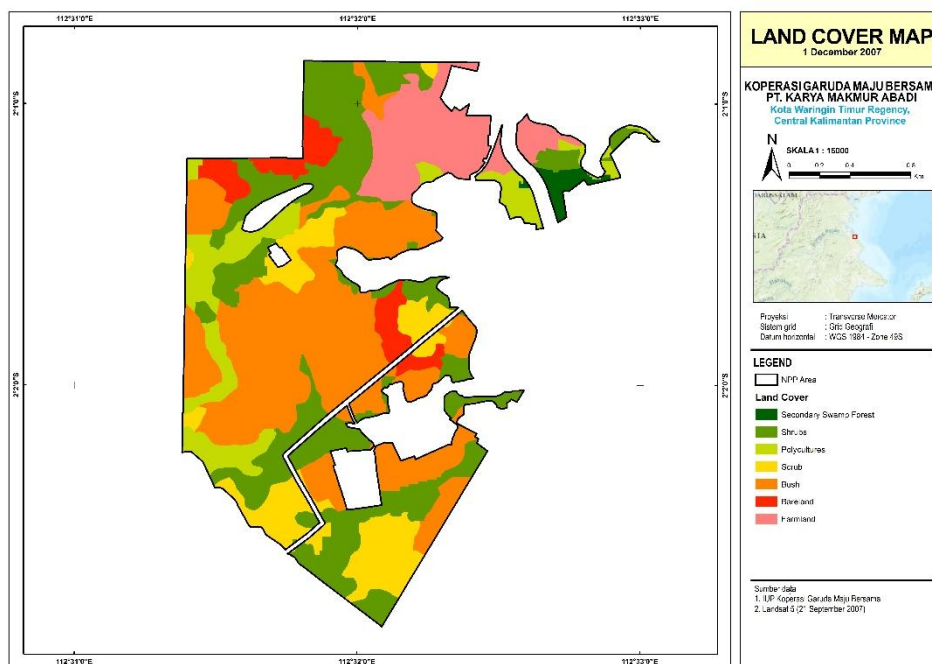**Figure 2**. Land Cover Map Before Nov 2005 (Landsat 5 – 15 September 2005)

Figure 3. Land Cover Map 1 Nov 2005 – 31 Nov 2007 (Landsat 5 – 21 September 2007)
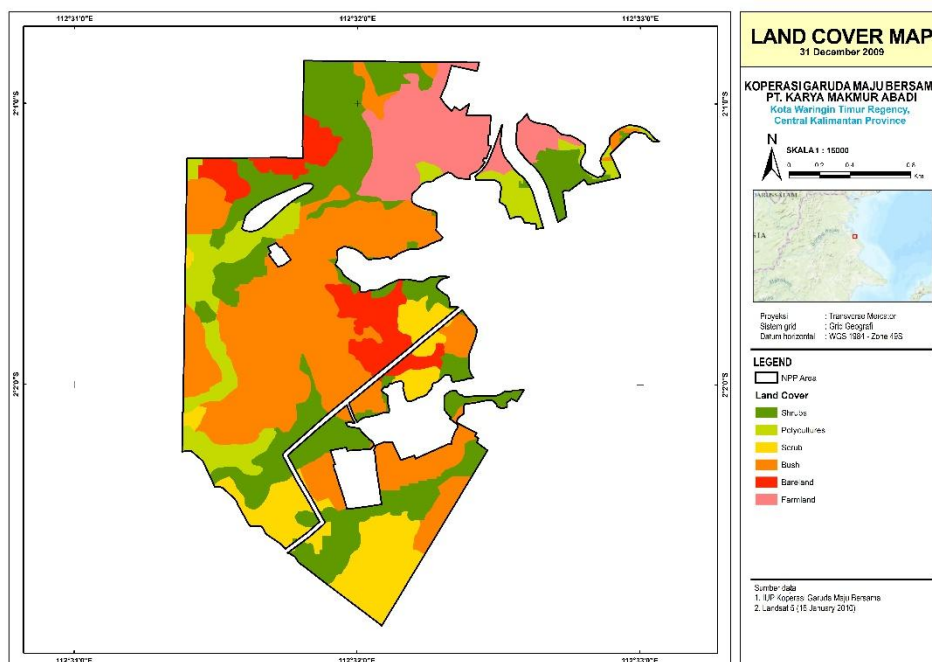

Figure 4. Land Cover Map 1 Dec 2007 – 31 Dec 2009 (Landsat 5 – 16 January 2010)
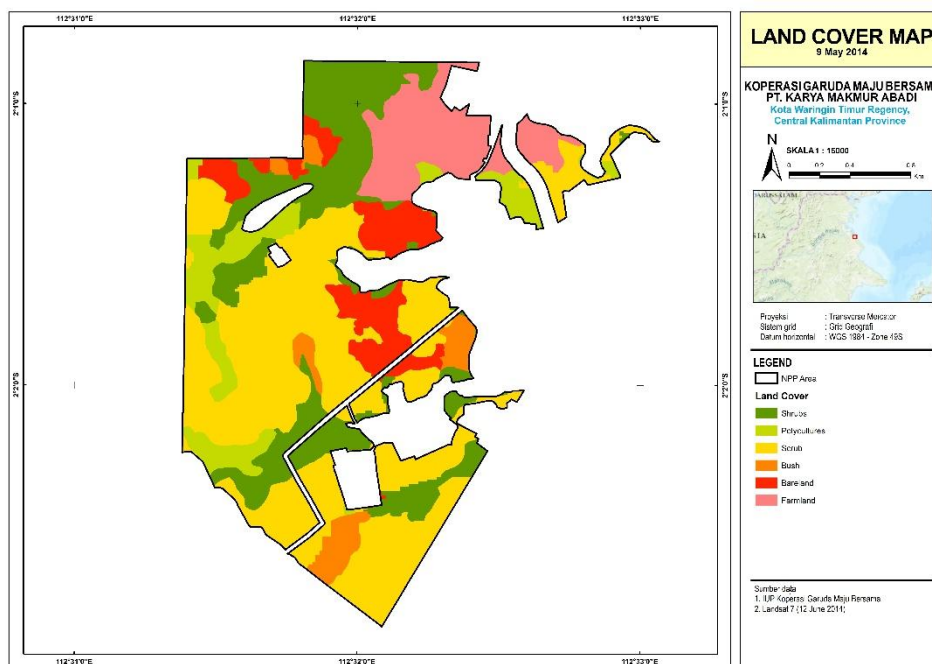
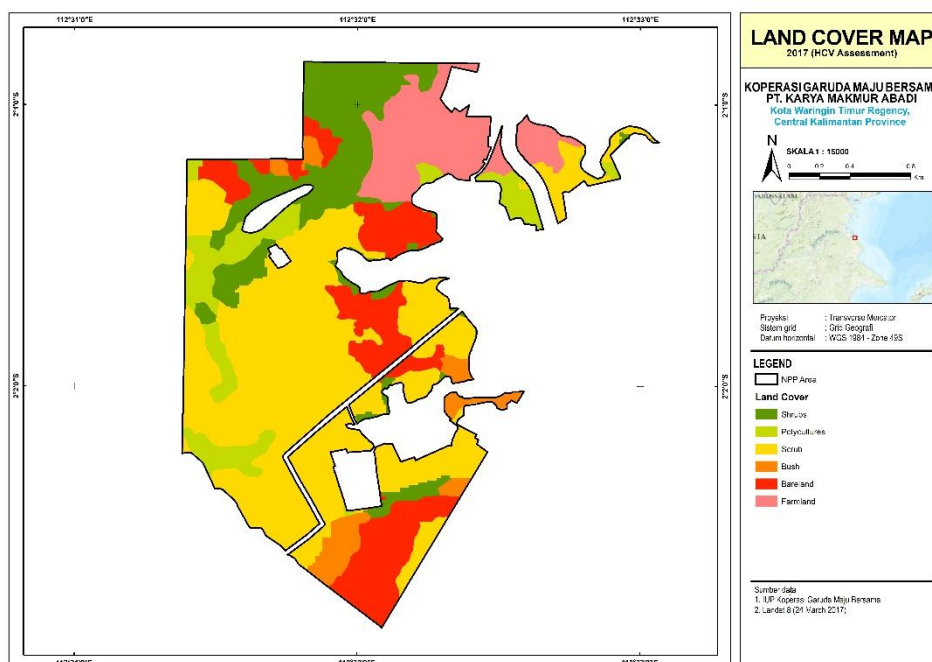**Figure 5**. Land Cover Map 1 Jan 2010 – 9 May 2014 (Landsat 7 – 12 June 2014)

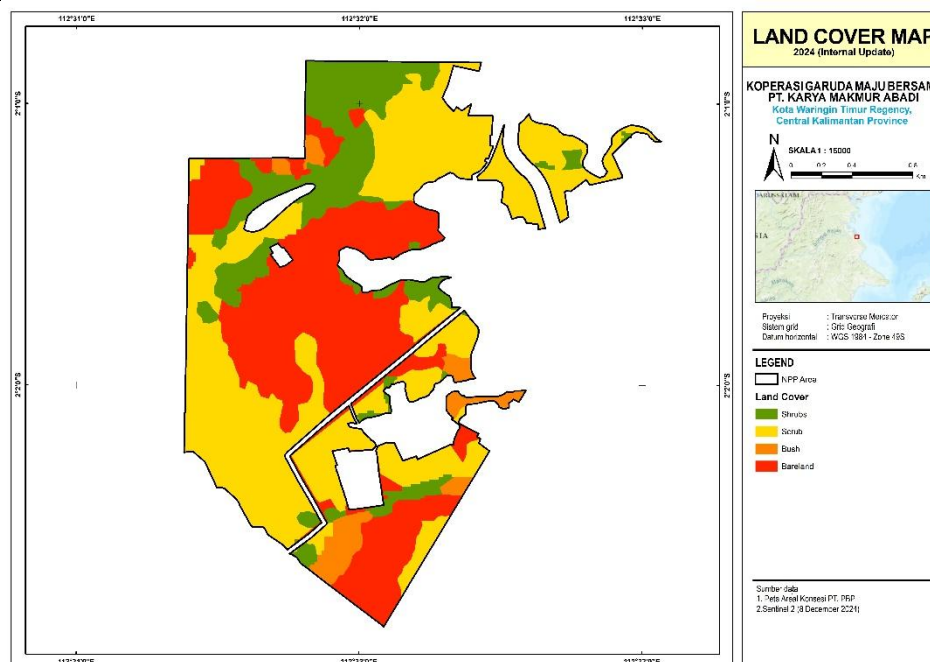**Figure 6**. Land Cover Map 10 May 2014 – April 2017 HCV (Landsat 8 – 24 March 2017)

Figure 7. Land Cover Map April 2017 HCV - 2024 Internal Update (Sentinel 2A – 8 December 2024)

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 Garuda Maju Sejahtera indicated no Primary Forest.
- Land cover change that occurred from 2005 to 2024 were caused by community activities, which are related to farming, gardening or other activities such as mining (bareland). Subsequently, there is no significant land use change except for conversion of Scrub to Bareland. Similarly, these conversions were conducted by local community.
- There is no compensation and remediation area for the above-mentioned opening as the opened area in the study area is still managed entirely by the community.

4.2 Recommendations

When developed the potential remaining development area (NPP area) of Koperasi Garuda Maju Bersama, it is hoped that the high conservation value, high carbon stock and peatland areas are avoided.

Date of RSPO approval as satisfactory: 10 Juli 2023

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

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

Section 9: Conclusions
Koperasi Garuda Maju Bersama 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 Sustainability Policy and adheres to the required sustainability principles.

This study and assessment in the context of Koperasi Garuda Maju Bersama 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 :

- High Land tenure by the community : Land ownership by the local community remains a significant concern, impacting the company's ability to achieve its targets in plantation development, land management, and community partnerships. A considerable portion of community-owned land has already been converted into oil palm plantations, both in open areas (potential development zones for Koperasi Garuda Maju Bersama) and areas designated as conservation zones by Koperasi Tunjung Untung. This trend intensified during the HCV-HCS review period by HCVRN and continued until the NPP field verification. The community perceives oil palm cultivation as a more promising opportunity, offering increased income through partnership schemes with companies. As a result, landowners (including cooperative members) gain stronger bargaining power when selling their land as oil palm plantations.
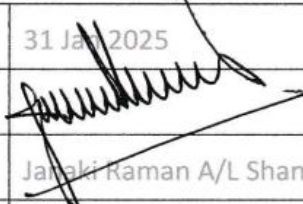
  Koperasi Garuda Maju Bersama (under the supervision of PT KMA) has made efforts to fulfill its commitments and policies in managing High Conservation Value (HCV) areas. These efforts include conducting socialization, demarcation, and monitoring of conservation areas, as well as proposing compensation for land as part of HCV management. However, adhering to the Free, Prior, and Informed Consent (FPIC) principle, Koperasi Garuda Maju Bersama respects the community's decision to retain their land and cultivate it according to their preferences.

  Moving forward, in alignment with PT KMA's policy, PT KMA's mill will not accept or process Fresh Fruit Bunches (FFB) sourced from new land clearings in HCV areas. Comprehensive HCV management programs are detailed in the NPP Integrated Management Plan.

- Quality of Local Community Resources: The capacity of local community resources needs improvement, particularly in developing alternative livelihood opportunities and meeting the demand for skilled local workers. Enhancing these aspects will support sustainable development and strengthen community engagement.

- The LUCA has been done in 2017 by Remark Asia, then updated in 2024 (Internal). Based on the analysis, the land use change from 2005 – 2024 was done by the community (non-corporate).

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), Greenhouse Gas (GHG) in Koperasi Garuda Maju Bersama (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 Jan 2025
Signature	
Name	Janaki Raman A/L Shanmugam
Position	President Director