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| 6th Meeting of<br>RSPO Compensation Task Force (CTF) | | | |
|---|---|---|---|
| **Date** | 28 Nov 2012 | | |
| **Venue** | Hotel Istana, Kuala Lumpur | | |
| | Henry Barlow (HB) | SimeDaby | Co-chair |
| | Anders Lindhe (AL) | WWF International | Member |
| | Norazam Hameed (NH) | Felda | Member |
| | Calley Beamish (CB) | MPOA | Member (alternate) |
| | Catherine Cassagne (CC) | IFC | Member |
| | Michal Zurst (MZ) | ZSL | Member |
| | Sophia Gnych (SG) | ZSL | Member (alternate) |
| | Oliver Tichit (OT) | Sipef Group | Member |
| | Alexandra Booth (AB) | OLAM | Member (via tele-conference) |
| | Surin Suksuwan (SS) | Consultant | Invited |
| | Glen Reynolds (GR) | Royal Society SEARRP | Invited |
| | John Payne (JP) | BORA | Invited |
| | Peter Heng (PH) | GAR | Invited |
| | Richard Kan (RK) | GAR | Invited |
| | Tang Men Kon (TMK) | Sime Darby | Invited |
| | Lee Swee Yin (LSY) | Sime Darby | Invited |
| | Anne Rosenbarger (AR) | WRI | Invited |
| | AndikaPutraditama (AP) | WRI | Invited |
| | Darrel Webber (DW) | RSPO | Secretariat |
| | Salahudin Yaacob (SY) | RSPO | Secretariat |
| | Melissa Chin (MC) | RSPO | Secretariat |
| | Audrey Lee Mei Fong (ALMF) | RSPO | Secretariat |
| **Agenda** | 1. Welcoming remarks from chairperson<br>2. Review previous minutes<br>3. Simplified carbon audit<br>4. Guidance for remote sensing application in Compensation Proxy Approach<br>5. Compensation Working Guidance<br>- Question on compensation action requests for non-member after implementation of compensation mechanism<br>6. Compensation Working Guidance (continue)<br>- Suggested text for revised P&C 7.3.2<br>7. Unresolved puzzle 1<br>- Cost of compensation & fund management<br>8. Unresolved puzzle 1<br>- Monitoring mechanism on compensation cases<br>- BMPs on restoration | | |

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| | |
|---|---|
| | 9. AOB<br>- Workshop by Forest Trend and paid facilitator |

**1. Welcoming remarks from co-chair**

OT welcomed all participants. He highlighted the importance to finalise the compensation guidance and focus on the mechanism of the compensation.

**2. Review on previous minutes**

TMK would like to amend the attendance sheet. Norazam Hameed is not from Sime Darby Plantations (SDP) and he was absent at the last meeting. Mohamed Pirabaharan from SDP attended that meeting instead.

PH said that technical writer shall not change the text for definition. He also suggested making a minor amendment on the definition of remediation. He explained that stating HCVs have been cleared is clearer than HCVs have been lost.

Action: ALMF will amend the meeting note.

**3. Simplified Carbon Audit**

Presentation is attached as Annex 2. SS explained on the methodology, outcome from stakeholders' interview, flow chart of assessing carbon for new plantations, alignment of CTF co-efficient classification with GHG WG2 land classification and follow up action.

JP asked on the composition of the Science Panel and the process used to derive the 22 land classification. SY explained that the Science Panel is established as part of the GHG WG2. SS further added that land classification of the Science Panel is based on canopy cover using Normalized Difference Vegetation Index (NDVI) methodology.

OT and AL further confirmed that remote sensing technology could be used as a proxy to determine land cover.

MZ sought clarification on the methodology including ground truthing. OT explained that it is relevant to the carbon assessment but CTF does not consider carbon assessment, both groups *(i.e. CTF and group who are establishing simplified carbon assessment methodology)* are establishing methodology for land classifications and there are similarities which can be harmonized.

The group noted on the development of this simplified carbon audit but will focus on other issues related to compensation.

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SS presented on the alignment of the co-efficient with the 22 land classification by the Science Panel. GR highlighted that carbon stock for co-efficient 0.7 or secondary forest is low (40-60 tC/ha). CC also asked on the wide range of carbon value for co-efficient 1.0 (60-399tC/ha). AL explained that the discussion should not attempt to define the carbon values of the primary and good secondary forest but focus on the interpretation of the satellite image as a proxy to determine land classification.

**4. Guidance for remote sensing application in Compensation Proxy Approach**

Presentation is attached as Annex 3. Samples of Landsat image for four co-efficient classifications were presented. SS concluded on behalf of Tropenbos that Landsat images are capable of differentiating the 22 land classifications.

CB asked for information on rubber and other plantation under co-efficient 0.4. Does other plantation under co-efficient 0.4 refer to oil palm plantation. SS could not provide a certain answer; need to seek clarification from Tropenbos.

OT would like to request members of CTF to review the remote sensing guidance and provide feedback. CB suggested that ToR for Tropenbos should be separated from simplified carbon audit and to give priority to the compensation work.

TMK requested a review on the four co-efficient categories and develop an optimal number of land classes based on remote sensing technology. OT explained that it is the responsibility of the CTF is to decide on the co-efficient but Tropenbos could conduct research on the application of remote sensing technology to differentiate the four co-efficient categories.

Action: WRI will conduct quick analysis (feedback & practicality) of the four co-efficient categories and review the remote sensing guidance.

**5. Compensation Working Guidance**

OT thanked AL for preparing the fifth draft of this working guidance.

Section 1: Introduction

CC suggested including an over-arching objective and principles on HCV compensation for RSPO. OT and CB further clarified that RSPO does not aim to achieve no nett loss, but address the issue of compensation and remediation which is referred to in the Malaysian and Indonesian national interpretations (NIs). AL agreed to restructure this document to better reflect the principles of compensation. AB suggested moving page 12 and 13 to introduction.

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Section 2: The RSPO's rules about HCV assessments and land clearance

HB suggested clarifying on the term "new plantings" and referring new planting to land clearance. OT said this point should be taken up by the P&C Review Task Force.

Section 3: The need for compensation:

Based on the lesson learnt from SDP's remediation case, TMK suggested for practical reasons to consider the cut-off date as January 2006 rather than end Nov 2005. TMK and PH will develop a note to justify this proposal to the CTF's co-chairs.

Section 4: RSPO Compensation guidance

AL said this section is proposing changes on the P&C language. Members agreed to submit comments to the P&C Review Task Force and provide specific guidance for indicator 7.3.2. AB pointed out that the current P&C said HCV assessment should be conducted since Nov 2005 and it implies that historical HCV assessment shall be conducted. The group agreed to propose a modification on this indicator. This shall include an assessment to determine the status of HCV since Nov 2005.

Action: AB and OT will submit the proposed specific guidance to the P&C Review TaskfForce before the end of the public consultation period (30 Nov). The specific guidance shall explain on the acceptable methodology and exceptional situations where compensation applies.

Section 5: Steps in the compensation process

AL explained that the compensation process will start through either voluntary declaration or the complaints process.

AB proposed to establish a compensation panel with four working group members and one secretariat representative within 15 calendar days after a complaint has been screened by the RSPO complaint coordinator. AB will double check on the timeline for grievance procedures.

The Land Use Change Analysis report must be submitted to the RSPO within 60 days. The report can be conducted by an RSPO approved HCV assessor at the expense of the member or by a peer reviewed report from the member itself by an RSPO approved HCV assessor or HCV RN.

For certified members, the RSPO will appoint, at the expense of the member, an approved CB and HCV assessor to monitor the implementation of the compensation plan during the annual surveillance which is conducted as the first audit during that year, and report to the member and the RSPO annually.

For non-certified members, RSPO will appoint an approved CB at the expense of the member to conduct verification audit. DW mentioned it is currently the practice of the Complaint Panel and

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might become a trend for future complaint cases. This is to maintain the credibility of the verification audit.

Action: AB, TMK and MZ will refine the appointment of CB for certification and non-certified members.

The RSPO can re-suspend the member and re-open the case as it sees fit in response to an inadequate assessment of the compensation plan and/or how it is being implemented by the CB

Action: Incorporate comments above into draft six. Develop a flow chart to align complaints procedure with the compensation process.

Section 6: The scale of compensation required

On the compensation matrix, members agreed to introduce a multiple of two for future clearance (after adoption of compensation guidance) by certified members. The SOP shall be changed to ensure all development comply with New Planting Procedures and requirement 7.3.2.

PH and CB asked if there were incentives for growers to step forward to declare and enter compensation. OT explained that growers will be more prepared to enter a self-declaration. Certified members will continue to enjoy certification of other certified units.

For non-members, membership will not be accepted until the case is resolved. Compensation liability is “Commercially cleared area X a coefficient based on forest category in 2005” and change of SOP. There is a possibility to consider a ‘discount’ system (light compensation) for land clearance that happened between Jan 2006 and Dec 2009. It will show a different level of commitment to RSPO.

DW added that these companies will not be able to be certified if there is *no compensation for land cleared without HCV assessment.* It is in conflict with the P&C.

Action: CC, JP and PH will review the compensation matrix.

CC highlighted issue on conflict of interest when Compensation Panel starts to make decision on compensation cases. She suggested RSPO’s EB as the highest decision making body for compensation cases. DW explained on the role of Complaint Panel and it can be replicated to Compensation Panel.

Action: Secretariat will check on the ToR of the BHCV WG and CTF and highlight if there is any limitation.

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CTF needs to review the action request to restore cleared area with local and appropriate species.

Action:In terms of monetary value of compensation, a discussion group including HB, PH, MZ, GR, CC, OT, NH, and AB will develop a draft figure per hectare of land.

Section 7: What is adequate compensation for clearance without HCV assessments?
Some of the content will be explained in section one. PH suggested including a review and evaluation of the compensation guidance after implementation of a few cases.

**6. AOB**

Workshop by Forest Trend
OT and RSPO will communicate with Forest Trend on developing a workshop.

**End of Meeting**

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**Annex 1**

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**6th Meeting of Compensation Task Force**

**Hotel Istana, Kuala Lumpur**

| No. | Name | Organization | Signature |
|---|---|---|---|
| 1. | Caley Ocamin | Wilmar / MPOA | |
| 2. | Marissa Chin | RSPO Secretariat | |
| 3. | Rhelal Zaad | ZSL | |
| 4. | Sophia Gaych | ZSL | |
| 5. | Tang Men Kon | Sime Darby Plantation | |
| 6. | Lee Swee Yin | Sime Darby Plantation | |
| 7. | ANDERS LINDKE | WWF INT | |
| 8. | Richard Kan | GAR | |
| 9. | PEEK HENG | GAR | |
| 10. | Catherine Cuvellier Cassagne | IFC | |
| 11. | GLEN REYNOLDS | ROYAL SOCIETY SEERAD | |
| 12. | Henry BARLOW | Sime Darby | |
| 13. | Salahuddin Yaacob | RSPO | |
| 14. | Chivian Tiew | SIRIM | |

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| | | | |
|---|---|---|---|
| 15. | John Payne | BOPA | |
| 16. | Anne Rosenbarger | WRI | |
| 17. | Andika Putraditama | WRI | |
| 18. | Norazam Abdul Hameed | Felda Global Venture | |
| 19. | | | |
| 20. | | | |
| 21. | | | |
| 22. | | | |
| 23. | | | |
| 24. | | | |
| 25. | | | |

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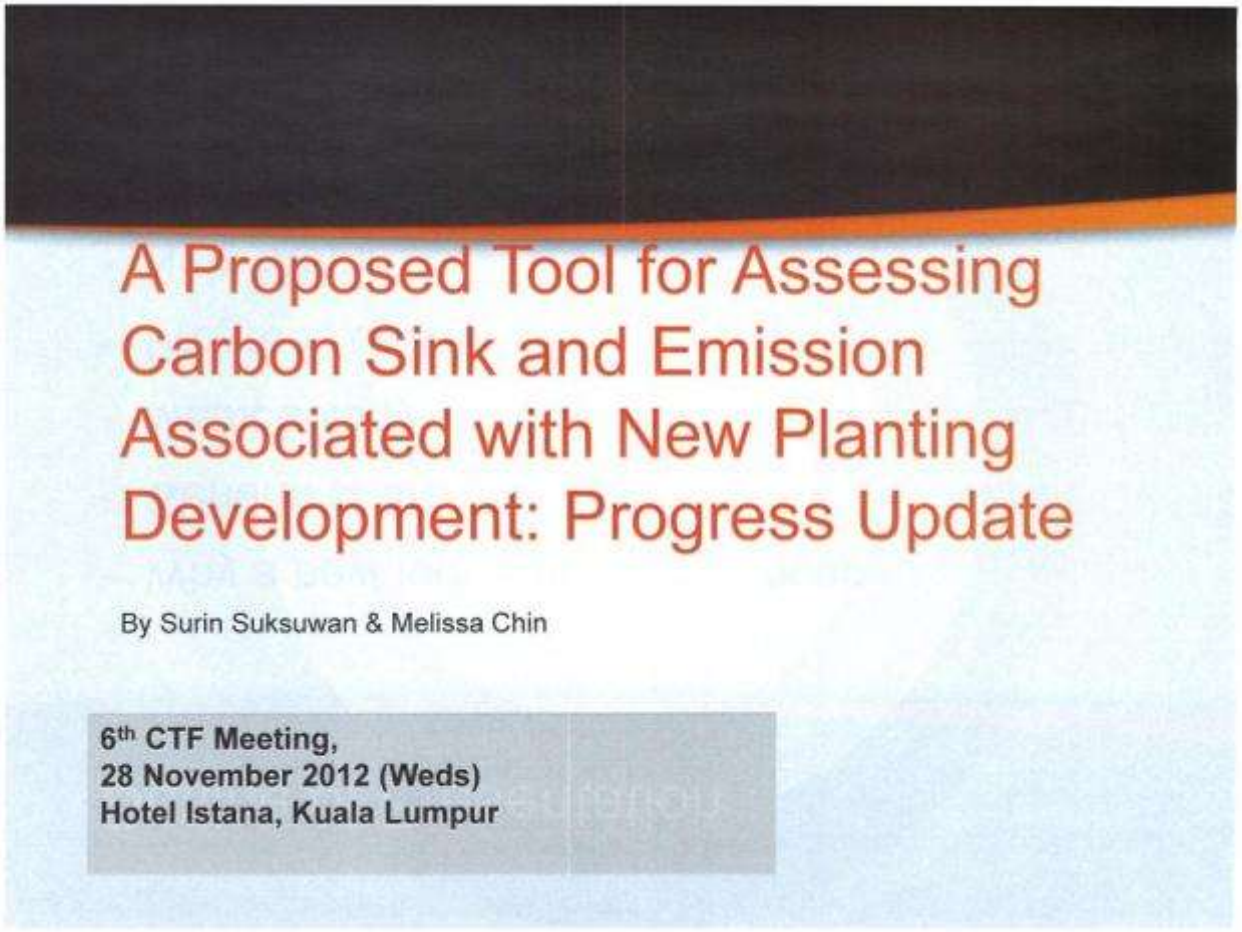
**ANNEX 2**



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# Outline of Presentation

- Why a new tool is needed – recap
- General characteristics
- Methodology
- Progress update
- Next Steps

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# Why a New Tool is Needed

- RSPO P&C review taskforce has proposed a new criterion – requiring the identification and estimation of potential sources of emission and sinks of carbon associated with new planting developments.
- New developments should be designed to minimise emissions and maximise sequestration, carbon stock conservation and emission avoidance.

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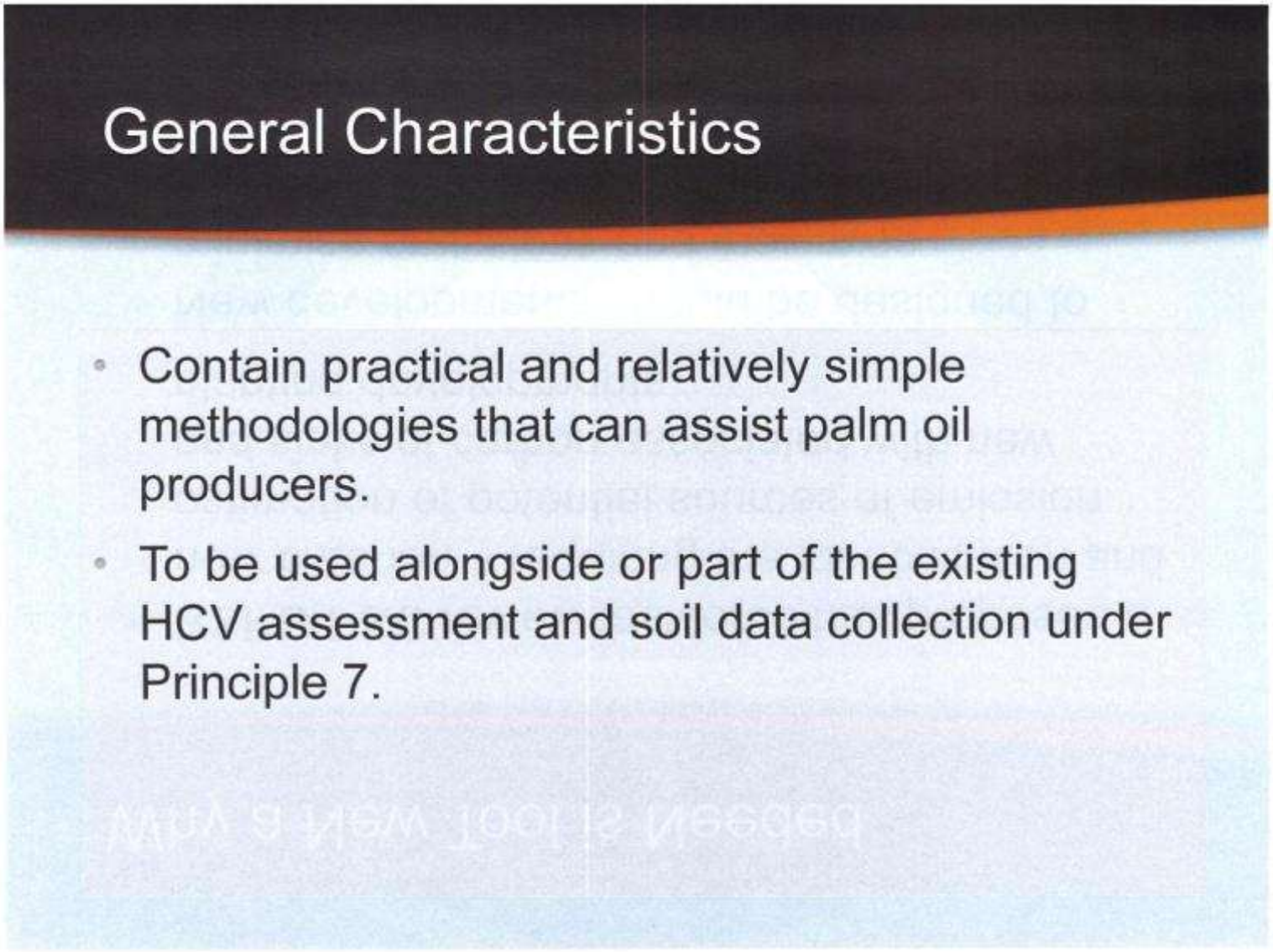

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# Characteristics of the Tool (Cont.)

- Compatible with other tools and guidance developed by the RSPO, e.g.:
  - ✓ Palm GHG tool
  - ✓ Land use classifications and emissions factors being developed by the GHG WG2
  - ✓ Oil Palm Plantation Carbon Stock Calculator developed by RSPO, World Agroforestry Centre and Indonesian Soil Research Institute

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# Methodology in Developing the Tool

- Literature review of existing methodologies in carbon stock and GHG emission relevant to new oil palm planting development.
- Interviews with relevant parties to gather experience in carbon stock and GHG emission assessments – producers, consultants, academic institutions, NGOs.
- Seek input from remote sensing experts in Indonesia and Malaysia on how to use readily available imagery to estimate carbon stocks.

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# Progress Update - Interviews

| No. | Organisation | Type of Assessment | Year of Assessment | Location of Assessment | Purpose of Assessment | Main methods |
|---|---|---|---|---|---|---|
| 1. | WWF-Indonesia | C stock at a landscape level for the whole of Kalimantan | 2012 | Kalimantan (Indonesia) | REDD+ | Remote sensing (MODIS) and sample plots of above-ground biomass and below-ground biomass. |
| 2. | Forest Research Centre (FRC), Sandakan | C stock in lowland dipterocarp forest on mineral soils | 2001-2007 | Sabah (Malaysia) – Deramakot FR and Tangkulap FR | Comparison of C stock in 2 different parcels of production forest under reduced impact logging and conventional logging; REDD+ | Remote sensing (Landsat, SPOT) and sample plots of above-ground biomass. |
| 3. | World Resources Institute (WRI) | Landscape level forest cover assessment for Kalimantan (Forest Cover Analyser & Suitability Mapper) | Forest Cover Analyser: 2001-2005, 2004-2008, 2008-2010 Suitability Mapper: different years for different datasets. | Kalimantan (Indonesia) | Multi-purpose – mainly intended to assess forest resources and suitability for different land use options (e.g. oilpalm) | Forest cover change data using Landsat and MODIS (60m). Land cover data for 2010 from Sarvision using radar. |

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# Progress Update – Interviews (cont.)

| No. | Organisation | Type of Assessment | Year of Assessment | Location of Assessment | Purpose of Assessment | Main methods |
|---|---|---|---|---|---|---|
| 4. | New Britain Palm Oil Limited (NBPOL) | Plantation-specific covering C stock and GHG emission for the whole lifecycle of an oil palm plantation. | 2009 | PNG - West New Britain plantations and mills, covering 55,976ha | To assess the carbon footprint of NBPOL's operations, towards delivering its "zero net carbon emissions" commitment. | Sample plot studies with above-ground biomass values derived from model developed by Chase & Hansen (2010) and reference C sequestration values from published sources. |
| 5. | Centre for International Forestry Research (CIFOR) | Plantation-specific covering C stock and GHG emission for the whole lifecycle of an oil palm plantation. | 2012-to date, with another 9 months to go. | Tg Puting in Kalimantan (shallow peat) and Jambi Barat in Sumatra (deep peat). | To assess carbon footprint of oil palm plantations on peat. | Direct measurement of carbon flux using chamber method. |

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# Progress Update – Interviews (cont.)

| No. | Organisation | Type of Assessment | Year of Assessment | Location of Assessment | Purpose of Assessment | Main methods |
|---|---|---|---|---|---|---|
| 6. | ICRAF | Plantation-specific looking at C stock. | 2010 | Sample plots in 25 plantations located in all provinces in Sumatra except Bengkahulu, all in Kalimantan and one in Sulawesi. | To address the issue of palm oil as feedstock of biofuel in response to EU regulation. | Sample plots to investigate 3 factors: soil type (mineral/peat), vegetation (forest/non-forest) and management type (Plasma, Nukleus & independent). |
| 7. | Olam International | Plantation specific C assessment covering C stock and GHG emission. | 2011 and 2012 | Gabon – two sites just outside of Libreville (total 38,000ha) and another site assessed in Moulia (35,000ha) | To comply with requirements for new planting by the government of Gabon. | Forest inventory and LIDAR. |

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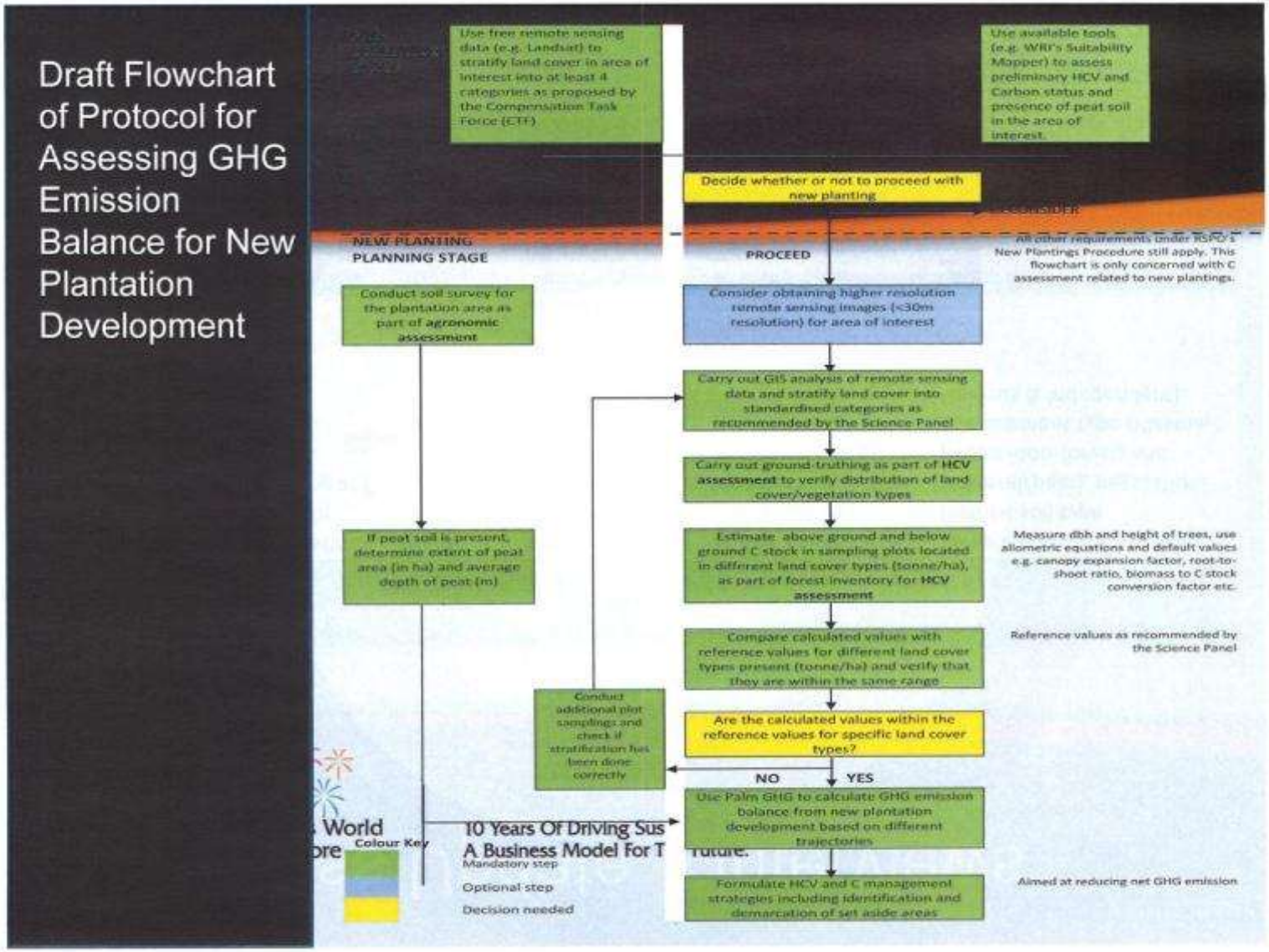

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# Alignment of CTF Classification with C Stock Stratification

| Co-efficient | Compensation Task Force Classification | GHG WG2 Science Panel | GAR (Kalimantan) | FRC (Sabah) | ICRAF (RED study) | Palm GHG | CIFOR (Hergoualc'h & Verchot, 2011) | NBPOL |
|---|---|---|---|---|---|---|---|---|
| 1.0 | a) Legally required set aside areas of riparian and other native vegetation<br>b) Multi-layered old growth forest, affected by (at most) low-intensity selective logging (<5 trees/ha?) and/or by long rotation shifting agriculture (>25 years);<br>c) Well-developed secondary, closed canopy forest regenerated after logging, fire or other large scale disturbance before (or in) 1980(?). | Undisturbed forest upland – 93-399 tC/ha<br><br>Disturbed forest upland – 74-250 tC/ha<br><br>Undisturbed swamp forest – 90-200 tC/ha<br><br>Undisturbed mangrove – 85-200 tC/ha<br><br>Disturbed swamp forest – 64-155 tC/ha<br><br>Disturbed mangrove – 77-120 tC/ha | HK3 – 192 tC/ha<br><br>HK2 – 166 tC/ha<br><br>HK1 – 107 tC/ha | High Stratum (≥16 trees ≥60 cm dbh per ha) – 427±11 tC/ha<br><br>Mid-high Stratum (9-15 trees ≥60 cm dbh per ha) – 325±45 tC/ha<br><br>Mid-low Stratum (5-8 trees ≥60 cm dbh per ha) – 270±55 tC/ha<br><br>Low Stratum (0-4 trees ≥60 cm dbh per ha) – 156±36 tC/ha | Forests – 150-250 tC/ha) | Primary forest – 225 tC/ha<br><br>Logged forest – 87 tC/ha | Virgin peat swamp forest – 181.9±25.6 tC/ha (AGB), 13.0±3.4 tC/ha (necromass), 24.8±12 tC/ha (BGB)<br><br>Logged peat swamp forest – 85.1±23.5 tC/ha (AGB), 6.1±2.2 tC/ha (necromass), 11.6±.3 tC/ha (BGB)<br><br>Fire-damaged forest – 56.4±17.4 tC/ha (AGB), 4.0±1.5 tC/ha, 7.7±4.3 tC/ha (BGB) | Heavily logged forest – 90.20 tC/ha |

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# Alignment of CTF Classification with C Stock Stratification (Cont.)

| Co-efficient | Compensation Task Force Classification | GHG WG2 Science Panel | GAR (Kalimantan) | FRC (Sabah) | ICRAF (RED study) | Palm GHG | CIFOR (Hergoualc'h & Verchot, 2011) | NBPOL |
|---|---|---|---|---|---|---|---|---|
| 0.7 | Secondary closed canopy forest regenerated after logging, fire, other large scale disturbances, and/or short rotation shifting agriculture after 1980. | | BT – 60 tC/ha | | | Secondary regrowth – 48 tC/ha | | |
| 0.4 | Other areas with trees that meet FAO's forest definition (>10% canopy, >5m tall trees). | Rubber plantation – 31-89 tC/ha<br><br>Timber plantation – 29-70 tC/ha<br><br>Mixed tree crops – 30-77 tC/ha | BM – 27 tC/ha | | Tree-based systems – 50-150 t C/ha | Cocoa under shade – 70 tC/ha<br><br>Rubber – 62 tC/ha | | |

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# Alignment of CTF Classification with C Stock Stratification (Cont.)

| Co-efficient | Compensation Task Force Classification | GHG WG2 Science Panel | GAR (Kalimantan) | FRC (Sabah) | ICRAF (RED study) | Palm GHG | CIFOR (Hergoualc'h & Verchot, 2011) | NBPOL |
|---|---|---|---|---|---|---|---|---|
| 0 | Areas that do not meet any of the above definitions. | Oil palm plantation – 12-47 tC/ha<br><br>Shrub – 27-30 tC/ha<br><br>Swamp shrub – 18-30 tC/ha<br><br>Annual upland cultivation – 8-12.5 tC/ha<br><br>Settlements – 4-10 tC/ha<br><br>Grass – 2-4 tC/ha<br><br>Swamp grass – 2 tC/ha<br><br>Rice field – 2 tC/ha<br><br>Coastal fish pond – 0tC/ha<br><br>Bareland – 0-3 tC/ha<br><br>Mining – 0 tC/ha | LT – 17 tC/ha | Non-forest (0 trees ≥60 cm dbh per ha) | Non-tree based systems – <50 tC/ha<br><br>Oil palm – 35-45 tC/ha (40 tC/ha) | Coconut – 75 tC/ha<br><br>Oil palm – 57 tC/ha<br><br>Shrub – 26 tC/ha<br><br>Food crops – 9 tC/ha<br><br>Grassland – 5 tC/ha | Oil palm – 24.2±8.1 tC/ha (AGB), 1.2±0.5 tC/ha (necromass), 3.3±0.1 tC/ha (BGB)<br><br>Mixed croplans & shrublands 12.4±2.4 tC/ha (AGB), 3.3±1.3 tC/ha (BGB)<br><br>Rice field – 4.8±0.3 tC/ha (AGB) | Oil palm – 80.31 tC/ha<br><br>Coconut – 75 tC/ha<br><br>Gardens/slash & burn – 8.50tC/ha |

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# Key Points from Comparison of CTF and Published C Values

- There appears to be reasonably good alignment overall although there are some overlap in C values:
  - Co-efficient 1.0: ~60-399 tC/ha
  - Co-efficient 0.7: 40-60 tC/ha
  - Co-efficient 0.4: 30-80 tC/ha
  - Co-efficient 0: 0-80 tC/ha
- Confusion over terms used (secondary forest, upland forest etc.) may contribute to differing C values.
- For Co-efficient 0.4, “trees” are understood to exclude coconut and oil palm but C stock for palm plantations can be relatively high resulting in large range for Co-efficient 0.

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# Comparison of Satellite Data Sources

## – courtesy of Tropenbos

| Satelite Data Sources | Sensor | Spatial Resolution | Number Of Channels | Availability | Cost (per scene unless otherwise stated) | Scale Output | Application | Notes |
|---|---|---|---|---|---|---|---|---|
| Landsat TM (4,5) | Thematic Mapper | 30 m | 6 | available worldwide | free | < 1: 100,000 (medium scale) | Land Cover | Last Acquisition Data - 2011 |
| Landsat 7 ETM | Enhanced Thematic Mapper | 15 and 30 m | 8 | available worldwide | free | < 1: 100,000 (medium scale) | Land Cover, Environment Change | After April 2003 - stripping. Suitable for HCV and Carbon Counting Model (Moderate) |
| Modis | - | 50.250 km and 1 km | 36 | available worldwide | free | < 250,000 (Small Scale) | Land Cover (Forest Non Frest Cover) | Not suitable for Oil Palm |
| SPOT 4 | HRV | 15 m | 4 | available for most of the world | USD 500-750 | < 1: 75,000 | Land Cover ( more detail) | Suitable for HCV and Carbon Counting Model (Moderate) |
| ALOS | PRISM | 2.5 m | 1 | depend on request | Y 31,000 | | Land Cover, disaster monitoring etc. | |
| | VNIR | 10 m | 3 | depend on request | Y 31,000 | | Land Cover, disaster monitoring etc. | |
| | PALSAR | 50 m, 10 m | 1 | available for most of the world | free, Y31,000 | | Land Cover, disaster monitoring etc. | |

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# Comparison of Satellite Data Sources

## – courtesy of Tropenbos (cont.)

| Satelite Data Sources | Sensor | Spatial Resolution | Number Of Channels | Availability | Cost (per scene unless otherwise stated) | Scale Output | Application | Notes |
|---|---|---|---|---|---|---|---|---|
| SPOT 5 | HRV | 2.5 m, 5 m , 10 m | 3 | depend on request | USD 10.000 | < 1: 10,000 | Land Cover Use analysis, Environment Change, Land Use Planning | Suitable for HCV and Carbon Counting Model (Moderate) |
| SPOT 6 | HRV | 1.5 meter | 4 ( Red, Green, Blue, NIR) | depend on request | - | > 1 : 10,000 | Defense, Agriculture, Land Cover , deforestation, environment change, Landuse Planning | (DETAILED) Suitable for Oil Palm Plantation monitoring, each tree will be presented clearly, HCV and Carbon Counting |
| Ikonos | | 0.82 m (Pan), 3.25 m (Colour) | 4 | depend on request | USD 31 / km2 | > 1: 10,000 | road planning, defense, agriculture, Land Cover, HCV assesment, Environment Change, Land use Planning and Monitoring | (DETAILED) Suitable for Oil Palm Plantation monitoring, each tree will be presented clearly, HCV and Carbon Counting |
| World view 1 | | 0.42 m | Pan-chromatic (1) | depend on request | USD 37 / km2 | > 1: 10,000 | road planning, defense, agriculture, Land Cover, HCV assesment, Environment Change, Land use Planning and Monitoring | (DETAILED) Suitable for Oil Palm Plantation monitoring, each tree will be presented clearly, HCV and Carbon Counting |
| World View 2 | | | 8 multi-spectral | depend on request | USD 37 / km2 | > 1: 10,000 | road planning, defense, agriculture, Land Cover, HCV assesment, Environment Change, Land use Planning and Monitoring | (DETAILED) Suitable for Oil Palm Plantation monitoring, each tree will be presented clearly, HCV and Carbon Counting |

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# Next Steps

- Preparation of draft report and framework for reporting for projected emissions/sequestration of a new development arising from the use of this tool.
- Internal review and finalisation of report – Dec 2012
- Submission to P&C Review Taskforce – Jan 2013

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# Suggested outline of report

- Background – why the tool is needed, main target audience, key characteristics of the tool.
- Introduction to HCV and HCS and their assessment methods.
- Case studies of C assessments.
- Comparison of C assessment methodologies and their results.
- General framework of the tool (summarised in flowchart).
- Description of each step in the flowchart.
- Appendices:
- i. Basic reporting framework
- ii. Limitations, gaps and further work needed

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**ANNEX 3**

# RSPO - GUIDANCE ON REMOTE SENSING APPLICATION

# FOR SIMPLIFIED CARBON COUNTING AND RSPO COMPENSATION PROXY APPROACH

TROPENBOS INTERNATIONAL
Indonesia

*Making Knowledge Work for Forests and People*

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## Compensation Proxy Approach

| Compensation Coefficient | Description |
|---|---|
| 1.0 | a) Legally required set aside areas of riparian and other native vegetation;<br>b) Multi-layered old growth forest, affected by (at most) low-intensity selective logging (<5 trees/ha?) and/or by long rotation shifting agriculture (>25 years);<br>c) Well-developed secondary, closed canopy forest regenerated after logging, fire or other large scale disturbance before (or in) 1980(?). |
| 0.7 | Secondary closed canopy forest regenerated after logging, fire, other large scale disturbances, and/or short rotation shifting agriculture after 1980. |
| 0.4 | Other areas with trees that meet FAO's forest definition (>10% canopy, >5m tall trees). |
| 0.0 | Areas that do not meet any of the above definitions. |

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# The 22 Land Cover Classification and Carbon Stock ( WS3)

| No. | LAND COVER CLASSES | CODE | Carbon Stock (AGB) ton /Ha |
|---|---|---|---|
| 1 | UNDISTURBED FOREST | UDF | 252 |
| 2 | DISTURBED FOREST | DIF | 203 |
| 3 | UNDISTURBED SWAMP FOREST | USF | 196 |
| 4 | UNDISTURBED MANGROVE | UDM | 170 |
| 5 | DISTURBED SWAMP FOREST | DSF | 155 |
| 6 | DISTURBED MANGROVE | DIM | 145 |
| 7 | CROP PLANTATION (Rubber, Cocoa, Coconut) | CPL | 46 |
| 8 | OIL PALM PLANTATION | OPL | 40 |
| 9 | TIMBER PLANTATION | TPL | 37.5 |
| 10 | MIXED TREE CROPS | MTC | 30 |
| 11 | SHRUB | SCR | 30 |
| 12 | SWAMP SHRUBS | SSC | 30 |
| 13 | DRY CULTIVATION LAND | DCL | 10 |
| 14 | SETTLEMENTS | SET | 5 |
| 15 | GRASS | GRS | 2 |
| 16 | SWAMP GRASS | SGR | 2 |
| 17 | RICE FIELD | RCF | 2 |
| 18 | COASTAL FISH POND | CFP | 0 |
| 19 | BARELAND | BRL | 0 |
| 20 | MINING | MIN | 0 |
| 21 | WATER BODIES | WAB | 0 |
| 22 | UNCLASSIFIED | NCL | 0 |

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# C Stock Information

| Type LC | Carbon Content (ton/ha) | Sources | Note |
|---|---|---|---|
| Dipterocarpaceae Primary Upland Forest | 204.92 -264.70 | Dharmawan and Siregar(2009) | Destructive Sampling, H A Sarpatim and Malinau Forest Reseach |
| Secondary Forest Mangroves | 54,1-182,5 | Dharmawan dan Siregar | Destructive sampling |
| Primary Upland Forest ( alluvial) | 230,1 – 264,7 | | |
| Secondary Forest ( High Land) | 113,2 | Dharmawan | Agathis age 40 year and mixed plan |
| Secondary Peatland Forest | 83,49 | | |
| Primary Peatland Forest | 200 | Agus | |

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## Land Cover Classification for Compensation Proxy Approach and also Carbon Counting 2

### 2. With Coefficient 0.7

2.1 **Young disturbed Forest**

2.1.1 Young disturbed Dryland Forest **carbon content**

2.1.2 Young disturbed Swamp Forest **carbon content**

2.1.3 Young disturbed Mangroves **carbon content**

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# Land Cover Classification for Compensation Proxy Approach and also Carbon Counting

## 1. With Coefficient 1.0

1.1 **Primary Forest ( Undisturbed Forest )**

1.1.1 Undisturbed Dryland Forest **carbon content 207 – 264.7 ton/Ha**

1.1.2 Undisturbed Swamp Forest **carbon content 196 ton/Ha**

1.1.3 Undisturbed Mangroves **carbon content 170 ton/Ha**

1.2 **Old Disturbed Forest**

1.2.1 Old Disturbed Upland Forest more than 25 year **carbon content 171.8 – 249,1**

1.2.2 Old Disturbed Swamp Forest **carbon content 155 ton /Ha**

1.2.3 Old Disturbed Mangroves **carbon content 145 ton /Ha**

Note : All forested area in riparian ( aside of river ) including in this compensation

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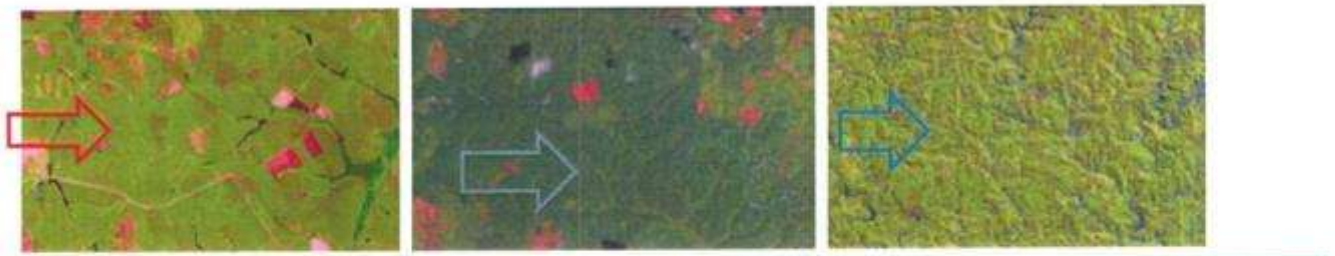
## Land Cover Classification for Compensation Proxy Approach and also Carbon Counting (3)

### 3. With Coefficient 0.4

3.1 Rubber Plantation or Others Plantation **carbon content 46 ton/Ha**

3.2 Timber Plantation **carbon content 37,5 ton/Ha**

3.3 Mixed Tree Crop **carbon content 30 ton/Ha**



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# Land Cover Classification for Compensation Proxy Approach and also Carbon Counting (4)

## 4. With Coefficient 0

4.1 Shrub
4.2 Swamp Shrub
4.3 Annual Upland Cultivation
4.4 Grass
4.5 Rice Field
4.6 Bare Land
4.7 Settlement
4.8 Coastal Fish Pond
4.8 Mining





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# DRAFT OUTLINE OF THE GUIDANCE ON INTERPRETATION OF LANDCOVER

1. Image Data Collection
2. IMAGE Pre Processing
   - 2.1 Radiometric Correction
     - Histogram Adjustment
   - 2.2 Geometric Correction
     - Image To image Correction
     - Resampling Nearest Neighborhood
   - 2.3 Image Enhancement
     - Image Composite
3. Image Interpretation
   - 3.1 Object Identification
     - Guidance On Progress
   - 3.2 Delineation
     - On Screen Digitizing
   - 3.3 Labeling
4. Layout ( Map Of Land Cover Tentative)
5. Ground Check
6. Reinterpretation (Refining Interpretation Result)

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# GUIDANCE FOR GROUND CHECK (IN PROGRESS)

1. Sampling Methods
   - Purposive Sampling
2. Sample identification
3. Survey Preparation
   - Preparing Map (Hardcopy)
     *Landsat Image Map*
     *Base map including Road, River, Toponami,*
     *Administration Boundary*
     *Sample Location*
     *Route Planning to sample locations*
   - Preparing survey toolkit
     GPS, Compass, Altimeter, Clinometers, Roll Meter etc
     Tally sheet --- Information about location of the sample
4. Ground Survey Implementation
5. Results and mapping
   - etc

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# Discussion

- Issues on disturbed forest
  - Old growth
  - Recently logged/ young growth
- Data availability
  - < 1980 – not widely available
  - > 1987 onward – available landsat data
- The way forward: meetings, consultation, etc.

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# INDONESIA SPATIAL PLAN 2008

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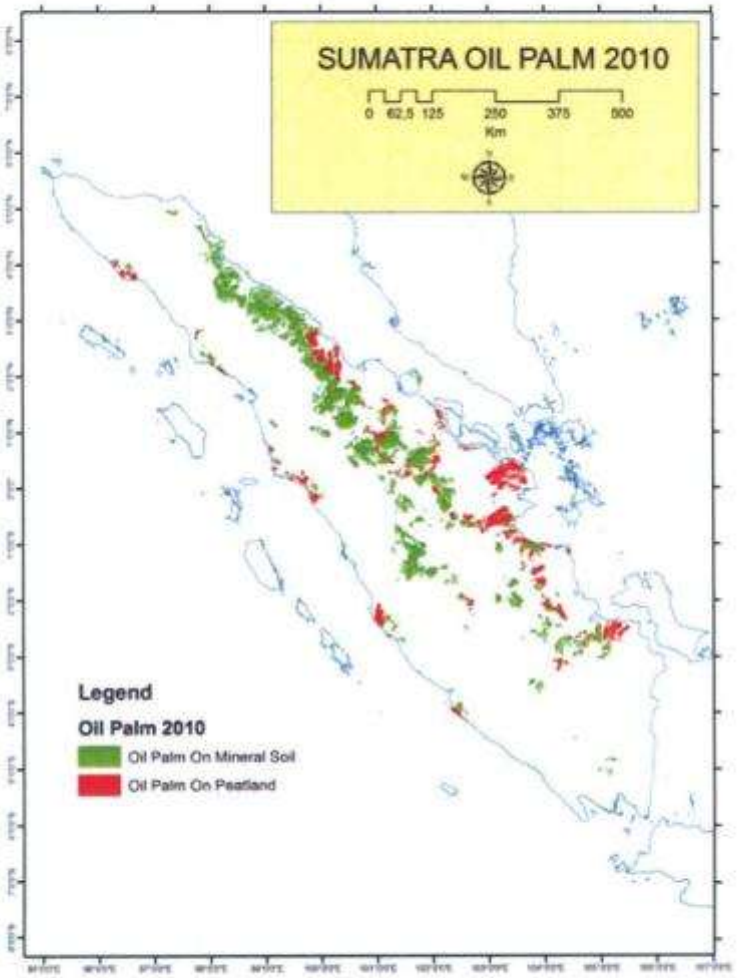
# Sumatra Oil Palm Development 1990 -2010




Total Oil Palm :

| | |
|---|---|
| 1990 | 958,000 ha |
| 2000 | 2,893,000 ha |
| 2005 | 3,990,000 ha |
| 2010 | 4,743,000 ha |

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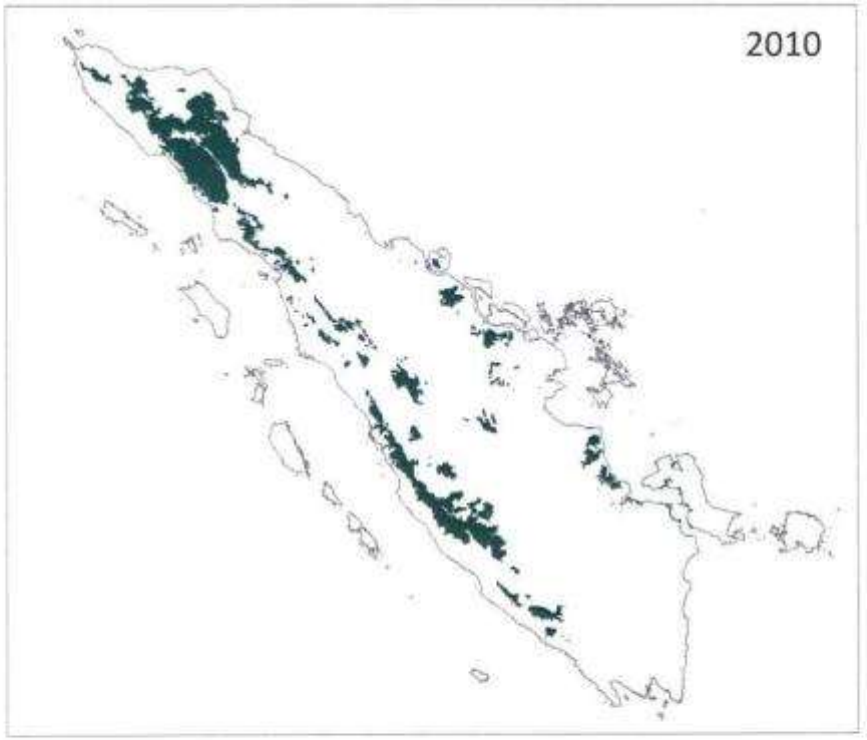
# Undisturbed Forest In Sumatra 2000-2010




**2000 - 6.507.495 Ha**

**2005 - 6.034.364 Ha**

**2010 - 5.489.412 Ha**

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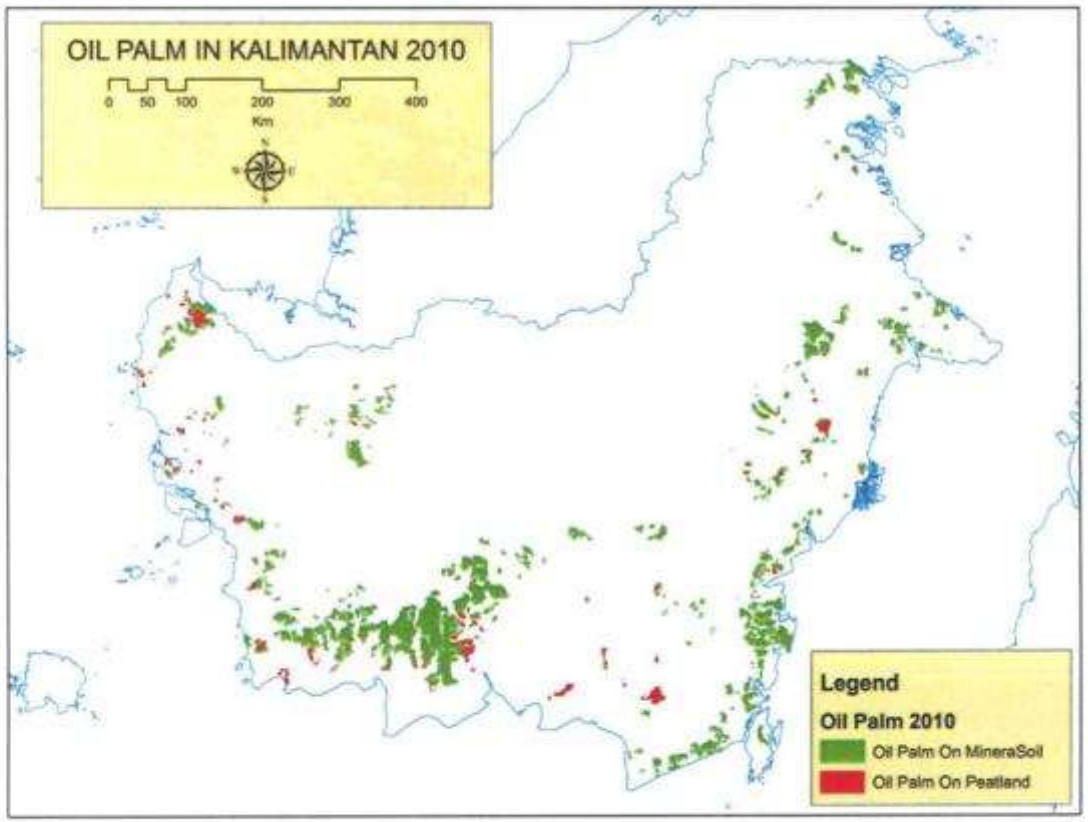
# Kalimantan Oil Palm Development 1990 -2010




Total Oil Palm :

| | |
|---|---|
| 1990 | 85,000 ha |
| 2000 | 737,000 ha |
| 2005 | 1,096,000 ha |
| 2010 | 2,897,000 ha |

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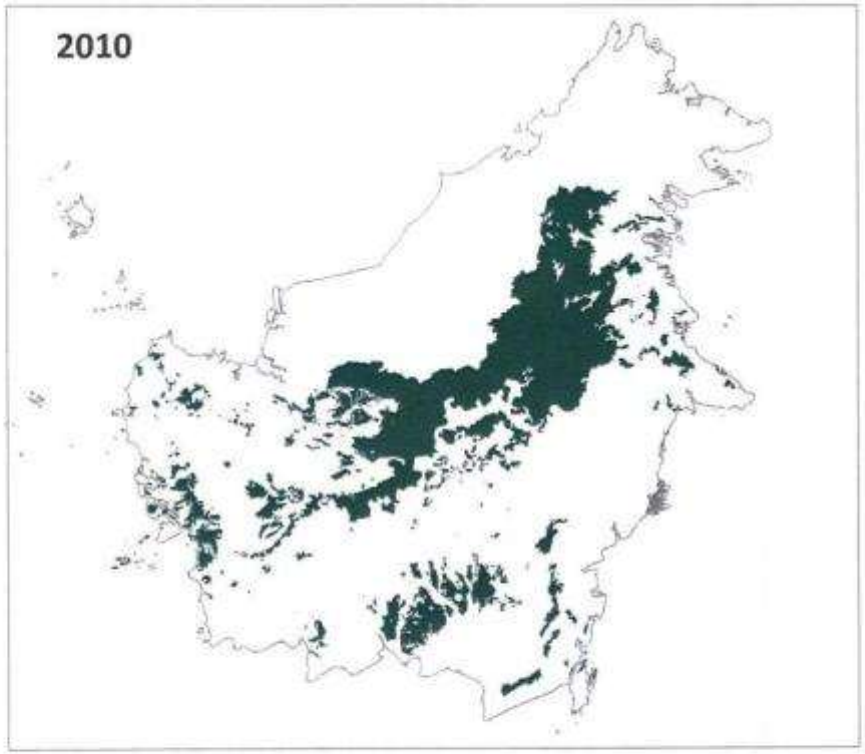
# Undisturbed Forest In Kalimantan 2000-2010




| 2000 |
| --- |
| 16.923.560,44 |
| 2005 |
| 15.575.166,46 |
| 2010 |
| 14.070.935,95 |

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