

**Guidelines on Management and Monitoring
Of High Conservation Value
For Sustainable Palm Oil Production
In Indonesia**

*First Draft Version
September 2009*

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CHAPTER 1 INTRODUCTION

1.1. Background

Oil palm (*Elaeis guineensis*) is not tropical forest palm native to Indonesia. Nevertheless, its introduction has penetrated every part of living sectors. Such condition has been responsible to the increasingly growing oil palm plantation areas throughout the country. In last 50 years oil palm products have been the most profitable plantation commodity at global and their rapid expansion have covered nearly all tropical regions.

In Indonesia, oil palm cultivation extent was only 1.12 million hectares in 1991, but then the number meaningfully multiplied up to 6.78 million hectares in 2007. This figure shows the rate of annual growth of the plantation estate is around 12.3%. To be parallel to the growth rate, CPO production in last decade moved quickly at 12.5% per year. In 1991, Indonesian CPO production volume was 2,658 thousand tons and then increased significantly to 17,374 thousand tons in 2007 (Directorate General of Plantation, 2008). This sharp production enlargement has been driven by higher domestic consumption and international demand. An estimate is a higher demand for palm oil supply in few years, along with its global utilization as one of bio-energy sources. But nevertheless, the growing consumption for palm oil commodity has directly associated with growing extent of oil palm cultivation which significantly has contributed to negative impacts on the living environment.

Forested areas have been converted to farming lands and plantation, including oil palm cultivation. Majority of the converted lands are high conservation value forests (HCVF) as containing high biodiversity and having important ecological and environmental functions. High Conservation Value Forest is forest area contains important values nationally, regionally, and globally and in critical condition. The values that contained in an HCVF are biodiversity, rare and endangered ecosystem, environmental services, and local community's social and culture. HCVF can be an area (i.e. forest, oil palm plantation, and mining estate) that considered important and critical because high environmental, social economic, social cultural, biodiversity, and landscape values included in it. HCVF can serve as buffer for life and climate at local level, as water catching area, as habitat to endangered species, or as settlement area and sacred site for native people dwelling in and around it.

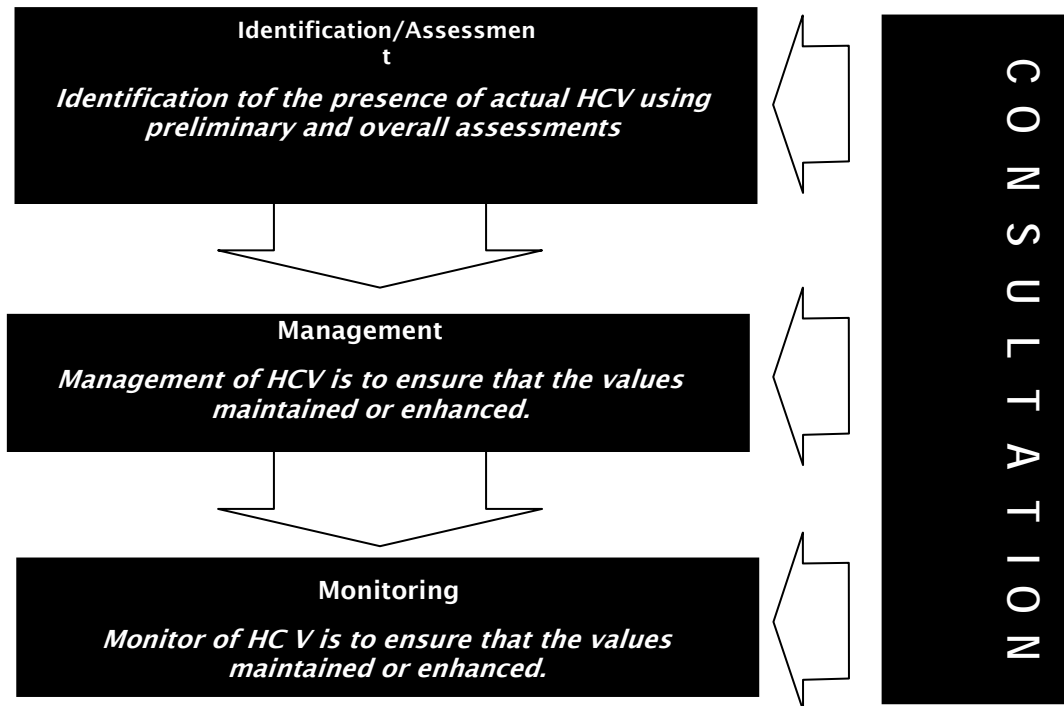
The importance to maintain these values has promoted to the establishment of High Conservation Value Forest (HCVF) Concept that arranged by Forest Stewardship Council.

This concept integrates forest utilization, environmental, social and cultural issues into a management unit. And so, it can be expected that the existence of the development or production within a unit management to be in accordance with other benefits, specifically the maintenance of important values within certain area.

The cultivation of oil palm sub-sector has been mutually consented to sustainability development implementation. This resolution was obtained following a series of RSPO (Roundtable on Sustainable Palm Oil) conferences. And, the RSPO conference on November 2005 in Singapore approved that sustainable each oil palm plantation company is subjected to realization of RSPO Principle and Criteria that contains 8 principles and 39 criteria. In addition, Principle 5 and Principle 7 straighten out protection to HCVs. Other than RSPO Principle and Criteria, Indonesian Law No.18/2004 in Article 2 requires any plantation development to be executed based on principles of benefit all sides, sustainability, integrity, togetherness, transparency, and fairness.

At present, there are a number of initiatives promoted by global markets in recognition of the resolution. These markets have concurred to only purchase green products which are originated from plantation companies implementing Principle and Criteria RSPO. However, in Indonesia the initiative has inspired

some of the national oil palm plantation companies to step by step transform to better management practice. Furthermore, both of initiatives and spirit should be given deep appreciation by associated parties. It is therefore method standardization for identification, management, and monitoring the HCVs is exceptionally required. In general, stages of process involved in the method standardization pursue the next chart:



1.2. Objective of Document

There are at least four rationales underlying the importance of HCVF in oil palm plantation:

- As to '*legal and formal aspect*' the establishment of plantation is directed to convertible forest areas or areas specifically reserved for plantation in Provincial/District Spatial Planning (Provincial/District RTRW); which is in the areas exist forests of high conservation values. Forests can be found in protection areas, production forest areas, or even areas out of non-forest category in RTRW. Although legal formally plantation development is definitely not heading for protection areas and production forests, but still HCVF can exist in convertible areas, other land uses, and areas allocated for plantation expansion. For this reason, identifying HCVF should be performed since the initial process of plantation establishment in order to give appropriate protection to parts of forest areas containing HCV, for instance forest areas near river riparian (HCV 4), forest areas important for local people subsistence (HCV 5), or parts of forests containing important social and cultural values for the local people (HCV 6).
- Interaction between oil palm cultivation and neighboring forest areas--together with species within--is very intense that threatening the preservation of HCV in a long-term period. In view of that, identification, management and monitoring of HCV for plantation should not be restricted to plantation concession that being proposed alone, but be broadened to the immediate areas, and predict potential interactions that could probably happen between practice and management, and the HCV forests. Otherwise, habitats of flora and fauna that full of high conservation values are jeopardize, and in all probability great chances of threat and conflict with wildlife, such as elephant, tiger, and orangutan will be happening. As a result, plantation owners themselves will be definitely suffering from significant losses of both materials (threats toward the oil palm trees) and non materials (people's life).

- Oil palm cultivation has always been replaced on a vast extent (around 5-10 thousand hectares on a spread-out area). This huge extent almost certainly impinges on forests areas in the neighborhood that by local communities essential for the survival of environmental services, and their livelihood and culture. As well, land-tenure conflicts with local people frequently happen due to the massive land clearing (customary-HCV 5-6). It is highly expected through a series of HCV assessment, management, and monitoring land-tenure conflicts as well as other clashes will meaningfully shrink.
- Land clearing process will impinge on environmental services and quality associated to hydrology regions (HCV 4). Through HCV assessment, management, and monitoring, areas potential to environmental quality and hydrology process can be identified and administered using appropriate technology to minimize those negative effects.

Based on the abovementioned rationales, this MANAGEMENT and MONITORING of HCV DOCUMENT is aimed to achieve the following objectives:

1. That the stakeholders obtain similar understanding and standard on HCV management and monitoring for oil palm plantation areas. Both procedure and model of the management and monitoring need some adjustments according to actual local condition. On the other hand, the arrangement of basic standard as guiding principle is necessary for stakeholders who engaged in organizing and practicing oil palm planting activity across Indonesia.
2. To assist practitioners in plantation sector to practically apply concepts of sustainable oil palm plantation cultivation, to become a guidance in preparing SOP (Standard Operational Procedure) on each field activity, and to provide enough direction for activities that call for urgent handlings in the field.
3. The guidelines are expected to be practical, economical, and friendly use. As the procedure is made as clear and quantifiable as possible, and with the use of time, thus its filed implementation is almost certainly easy, brief, and efficient.

1.3. Document Formulating Process

This document is arranged based on a main reference, i.e. *"Panduan Identifikasi Kawasan Bernilai Konservasi Tinggi di Indonesia"* by Konsorsium Revisi HCV Toolkit Indonesia, June 2008, and other supporting documents sourced from *Forest Stewardship Council (FSC)*, such as briefing note 4; *HCVF and Biodiversity: Identification, management and monitoring*, briefing note 5; *Simple monitoring methods*, and *"Good practice guidelines for HCV assessments, A practical guide for practitioners and auditors"*(Proforest, 2008). Additionally, practical experiences and field findings during the identification by the expert team have colored the process making of the document.

This sequence has been started in on 18 July 2008 through the Working Group Introduction that mutually initiated among RSPO Indonesia Liaison Office (RILO), INA_NIWG, and HCV Consortium. Main task of the Working Group is to set up two fundamental guidelines, i.e. Management and Monitoring HCV Guidelines for Oil Palm Sector, and Guidelines of HCV Compensation Mechanism for the Introduction of Oil Palm Plantation in Areas Identified HCV during a period of November 2005 until November 2007.

1.3.1. Team Composition

Chairman : Daud Dharsono
Vice Chairman : Purwo Susanto
Secretary : Ismu Zulfikar
Expert Team Coordinator : Darmawan Liswanto
Expert Team Member :

1. Ir. Jonotono, MSc – specialist of forest ecology aspect

2. Dr. Kunkun J. Gurmaya – specialist of wildlife ecology aspect
3. Ir. Dwi Rahmad Muhtaman, MPA – specialist of social/culture aspect
4. Prof. Dr. Sudirman Yahya, MSc – specialist of oil palm cultivation aspect
5. Dr. Kukuh Murtiaksono – specialist of soil and water conservation aspect
6. Dr. Asril Darussamin – specialist of legality/rules & regulation affairs

The specialists are assisted by volunteers who are practitioners in plantation and HCV assessors in a number of plantation companies throughout the country. The volunteers come from different professions, for instance government official, private employee, NGO, scientist, and consultant. Relation between the expert team and the volunteer is described in the following tabular.

HCV	ASPECTS OF EVALUATION						VOLUNTEER
	FE	WE	SC	OPC	SWC	LA	
1	1+2+3+4	2+3	1+2+3+4	1+2+3+4		1+2+3+4	PS, NS, GP, BD, BA
2	1+2+3	1+2+3	1+2+3	1+2+3	1+2+3	1+2+3	PS, NS, GP, CN, BD, BA
3	3	3	3	3	3	3	PS, BA, GP, YS, WD, BD
4			1+2+3	1+2+3	1+2+3	1+2+3	GP, YS, WD, BD, TH
5			5	5	5	5	NS, RL, SR, AD, BD, NF, AN
6			6	6	6	6	NS, RL, SR, AD, BD, NF, AN

Notes:

Aspects of evaluation by Expert Team:

FE = Forest Ecology Aspect; ES = Wildlife Ecology Aspect; SC = Social/Culture Aspect; OPC = Oil Palm Cultivation Aspect; SWC= Soil and Water Conservation Aspect; LA = Legal Affairs.

Volunteer Team:

PS = Purwo Susanto (WWF Indonesia) , NS = Nogoseno (PT SMART) , WD = Widagdo (PT SMART), NF= Norman Faried (PT SMART), GP = Gary Paoli (Daemeter Consulting) , CN = Cahyo Nugroho (Flora Fauna International), YS = Yana Suryadinata (The Nature Conservancy), BD = Bambang Dwi Laksono (PT. Lonsum), BA = Bonie Adnan (Conservation International), AD = Adrian Suharto (PT Asian Agri), RL = Rudy Lumuru (Sawit Watch), AN = Andiko (Sawit Watch), TH = Tuti Hendrawati (Ministry of Environment), SR = Slamet Riyadi (PT Astra Agro).

1.3.2. Stages of Activity

Plenary Session I to examine both Term of Reference (TOR) and activity planning preceded the expert team member recruitment. The Plenary Session II with agenda to select voluntary team members, decide on document format and its writing systematic, and also further consignment schedule was achieved through the involvement of expert team.

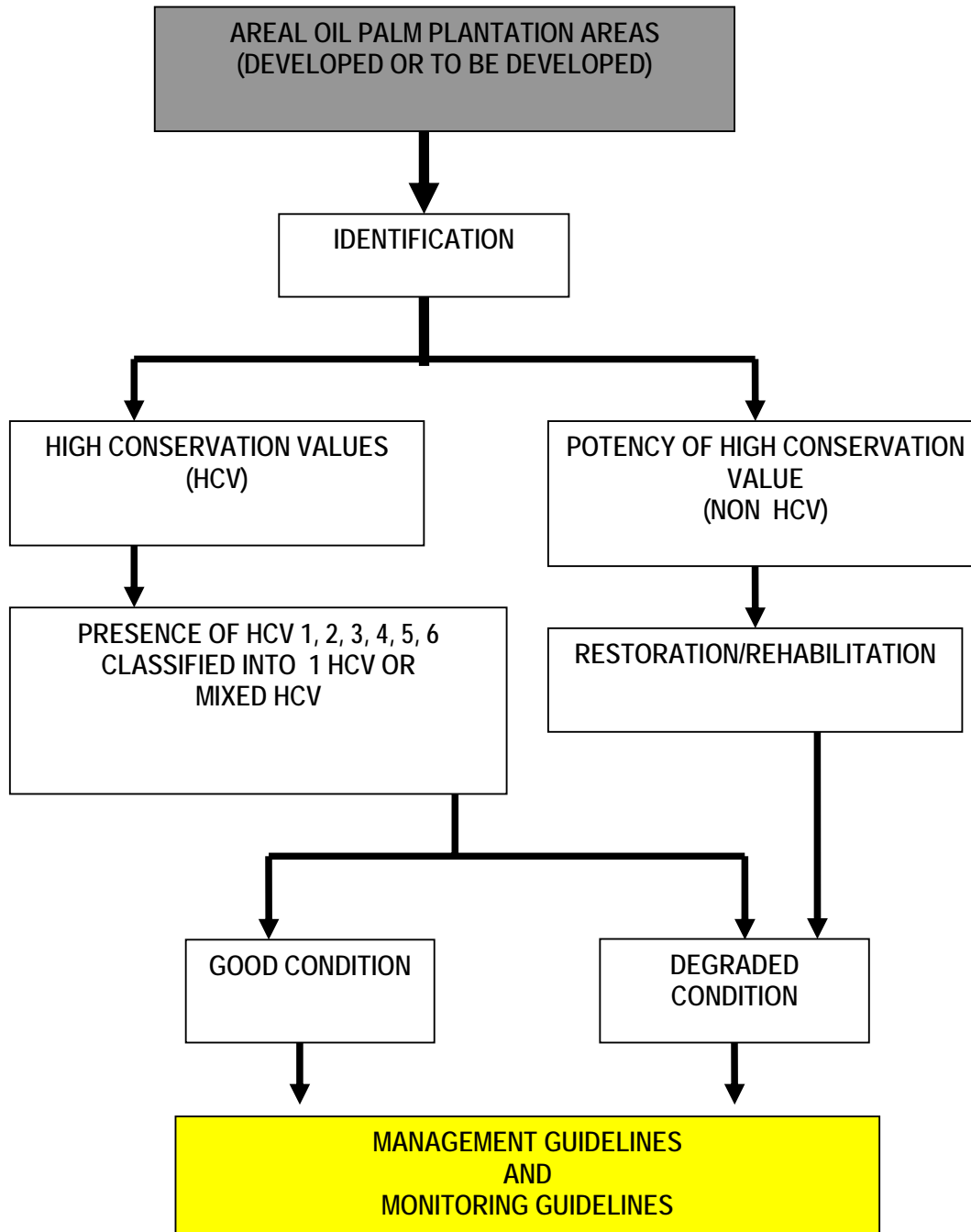
Furthermore, the experts prepared a draft that conforms to the writing systematization decided in advance. The draft was then talked over three times through consignment meetings together with the voluntary member team before draft 1 produced. Plenary Session III was performed to deliver Final Draft Version 1.

The subsequent phase is field test. It is done in two different locations, i.e. in Sumatra and Kalimantan. Members of INA_NIWG act as volunteers for the test. After that the results are taken up in the next plenary session to achieve Final Draft Version 2. This document is then engaged in public consultation forum through posting it on website to get public response before released as a final document. Subsequently, this document is get translated into English version and then submitted to RSPO for an approval.

1.3.3. Course of Thought

If HCV identification shows no HCV (Non HCV), neither management nor monitoring process will be required. This process can only be executed after potential HCV identified, subsequently studied scientifically according to HCV specifications (unique, rare, endangered, and sustainable use), and finally planned to secure proper restoration/rehabilitation in the next replanting period, if possible.

After having found that the intended area contains HCV, subsequently there should be classification into HCV 1, 2, 3, 4, 5, or 6; whether the assessed area contains only 1 HCV or mixed HCVs. Then the next classification is going to figure out if the HCV exists in good or poor condition areas; if the value is in good areas then follow the management and monitoring actions as suggested in management and monitoring tables. But, if exist in poor condition areas, additional actions should be performed. All are given in the Table. Briefly, illustration of the course of thought can be seen below.



First Draft, September 2009

CHAPTER 2 HOW TO USE THE DOCUMENT

(To be completed by Darmawan Liswanto for the final document)

CHAPTER 3 MANAGEMENT GUIDELINES ON HCV FOR OIL PALM PLANTATION

3.1. Introduction

Administration of HCV is aimed at maintaining or if possible enhancing values of the identified HCV, including its distribution and location in efforts to attain area protection at a large landscape level. And so, HCV management approach from threat viewpoint becomes an important portion in developing management guidelines.

Depending on condition of the area, time and budget available, threat identification toward HCV area can pursue assessment results given by HCV assessor during the identification process. Based on that findings, course of management objectives become clearer that efforts to seek out solution from management executives become more guided and planned.

No less than two steps engaged in building management process based on findings on HCV assessment, namely to search for correlation between findings and requirements of HCV management within a management unit (MU); and to do threat assessment management responsibility.

3.1.1. Correlation between Field Findings and HCV Management Requirements

HCV findings as results from identification activity is starting point of management and monitoring HCV in a particular oil palm plantation estate. Those findings comprise HCV type, location, and area extent that supporting the HCV. Correlation between finding results of HCV identification and management requirements is obviously found in continuous interaction between performed operational (both practices and administration) inside the plantation and the associated values. Interaction between MU and HCV can be internal (directly) or external (indirectly). Internal interaction can only get going if location where HCV recognized is inside the plantation estate that practices applied directly affect the values. On the other hand, external interaction can only occur to HCV that discovered out of the plantation estate, but still get influenced by the plantation practices and management. In addition to location, other finding that will responsible for deciding on HCV management is quality of the identified HCV.

HCV management program planning based on interaction MU and value of the identified HCV: from analyzing the interaction procured all probabilities of threats that would happen to the identified HCV. HCV management program is basically to make plans for appropriate actions to minimize negative impacts resulted from the threats, or if possible to remove that HCV can be improved. In pursuance of this course of thought, tables of guidelines for HCV management have been created as reference in the making of HCV management program.

3.1.2. Identification of Threat and Management Responsibility

3.1.2.1. Identification of Threat

In this context threat identification comprises both internal and external intimidations associated to type and the presence of HCV either inside or related to an MU. Internal threats are all activities related to MU's operations, such as road construction, habitat fragmentation, conversion, etc. Meanwhile, external threats are related to practices that are not in compliance with UP's efforts in HCV management, for instance: illegal logging, land encroachment, illegal poaching, poor law enforcement, unclear area's boundary, etc.

3.1.2.2. Management Responsibility

Every single HCV will be portion that requires affirmation in its management. It is therefore very important to decide who will responsible what.

There are at least three stakeholders that highly required participating in the HCV management and monitoring efforts in oil palm plantation, they are:

- A. Manager Unit
- B. Government
- C. Local Community

This section will give details of role and responsibility to be taken on by each abovementioned stakeholder.

A. Management Unit (MU)

Roles and responsibility of a Management Unit described in the following numbers:

- 1) To develop HCV management planning in an attempt to maintain or even to advance the identified values.
- 2) To provide facilities relevant to the HCV management implementation (i.e. maps of HCV area, brochures, notice boards, etc.)
- 3) To socialize the presence, surveillance, and utilization of HCV among other stakeholders.
- 4) To socialize appropriate actions to be taken when conflicts against the HCV occur.

Role of MU in HCV management is developing and implementing HCV management plan that the values can be maintained or advanced. In developing the plan related government offices and local community should actively play their own roles because HCV management is not achievable unless they are involved. At times HCV management requires a large amount of financial support and government's authority, while local people continue exploiting advantages of the HCV.

MU as the most responsible executor of the management will also need to afford both management structure and infrastructure, such as authenticated maps and boundary marks of the managed HCV areas, brochures about the HCV's presence and management, public notice, and so forth. Also, MU has responsibility to socialize the presence, surveillance, and utilization of HCV amongst local communities.

Other role of MU is to administer or address conflicts that involve HCV. Most of the time clashes have occurred between the plantation and the protected species like elephant and orangutan; MU plays its role to inhibit or reduce the conflicts, or to make plans for conflict mitigation procedure pursuant to governmental regulations.

B. Government

In the framework of maintaining and advancing quality of HCV areas, government institutions, either at central or local levels, play vital roles. It is true that not all of central government's institutions are present around HGU/Business License areas, and yet some institutions below are closely related to the management and monitoring HCV areas, pursuant to their Main Function and Task.

B.1. Central Government,

Central Government, primarily local Technical Implementation Unit (UPT)

B.1.1. National Park (NP) and Conservation and Natural Resource Agency (BKSDA)

- 1) To protect and monitor buffer zones closest to HCV areas;
- 2) To monitor the presence of rare flora and fauna;
- 3) To assist HCV management that related to species conservation;

- 4) To coordinate Forest Ranger Unit (*Polhut*) and the company's security guard to carry out security patrol over HCV areas
- B.1.2. **Watershed Management Agency (BPDAS)**
To secure, rehabilitate, and observe watershed (DAS) or sub-watershed (Sub-DAS) areas contained in the HGU/Business License.
- B.1.3. **Culture-Medium/Seedlings Preparation of Forestry Plantation Agency (BPTH)**
To supervise and collect crops from mature trees (if any)
- B.1.4. **Local Police**
 - 1) To coordinate security of HGU/Business License, including HCV area.
 - 2) To process infringement on HCV areas.
- B.1.5. **University and Research Center and Development Board (*Litbang*)**
As long as required by HGU both can assist research activity associated to the HCV.
- B.2. **Local Government**
 - B.2.1. **Plantation and Forestry Service**
 - 1) To monitor the presence of rare flora and fauna;
 - 2) To monitor and use parental trees (if any);
 - 3) To help socialize the presence of HCV, utilization of NTFP contained in the HCV area.
 - B.2.2. **Sub-district and Village Authority**
 - 1) To help socialize the presence of HCV, utilization of NTFP contained in the HCV area;
 - 2) To make inventory on local residents involved in harvesting NTFPs within the HCVF.
 - B.2.3. **Other associated offices**
All offices should give the best service pursuant to their main task and function.

C. Local Community

The success of HCV management and monitoring is definitely influenced by roles of local community in the vicinity of MU containing the HCV. Therefore, HCV management should always be carried out mutually from the process of decision making, management and monitoring planning, until evaluating HCV management. Some of local groups important to join in the process are given below. Decided local groups between places are not similar. MU has to conduct stakeholder analyses for this purpose. In general, they can consist of:

- Customary institution
- Non-governmental organization
- Cooperative
- Local community organization (farmer group, fisher group, aquaculture group, culture group, etc.)
- Youth organization
- Spiritual group

3.2. Management Guidelines for HCV 1

HCV 1 is forest areas containing significant concentration of biodiversity values.

3.2.1. Management of Sub-HCV 1.1

Sub-HCV 1.1 is forest areas containing or providing supporting biodiversity function to protection or conservation areas.

3.2.1.1. Objective of Management of Sub-HCV 1.1

To maintain integrity of protection or conservation areas within an MU in support of the preservation of flora and fauna contained in it.

3.2.1.2. Protection Areas in Oil Palm Plantation

Protection areas in the middle of oil palm plantation can be defined as follows:

- 1) Protection areas that have formally attained legal approval from Government, as indicated by decree of Directorate General of Forest Conservation and Nature Preservation (Dirjen PHPA) No.129/1996; Government Regulation (PP) No.68/1998; Law No.41/1999; and PP No. 34/2002 (Wiryo, 2003).
- 2) Peat areas >3 meters deep: based on Presidential Decree (Keppres) No.32/1990 and Law No.80/1999, and Agriculture Ministry Decree No.14/Permentan/PL.1102/2/2009 on Guideline for the utilization of Peat Areas for Oil Palm Cultivation.
- 3) Proposed protection areas that already in the middle of legislation process at each government level.
- 4) Protection forest and other zones allocated for protection areas by any governmental organization, which comprise, but not restricted to, sites that determined by Man and Biosphere (MAB), World Heritage Sites, and RAMSAR sites.
- 5) All watershed areas as indicated by Law No..... and Agriculture Minister Decree (Kepmentan) No..... covering
- 6) Local protection areas, particular locations set aside by local community for conservation purposes using regulation and management pursuant to the local agreed objectives.

3.2.1.3. Interaction between Oil Palm Plantation and Protection Areas

Several operations contained by cultivation areas that affect the preservation of protection areas are as follows:

- 1) Road construction that once used to destroy HCV1.1 and cause land erosion.
- 2) Increased fires/burning risks.
- 3) Increased access to HCV 1.1 areas.
- 4) Canal opening that dry up protected swampy areas.
- 5) Buffer zones of protection areas; for the preservation of core zones, it is strongly recommended to only allow any development occurs between 500 and 1000 meters away from the outer boundary of the areas (adjusted to current field condition).

3.2.2. Management of Sub-HCV 1.2

Sub-HCV 1.2 is critically threatened species. There are three categories relevant to this, namely:

- 1) Species that possess important values to global conservation which its own existence can develop an HCV. It is considered that the presence of species as enlisted in "critically endangered" in Red Data List IUCN (<http://www.redlist.org>), or listed in Appendix I CITES (<http://www.cites.org>) can develop an HCV. If their presence are not yet identified, and if they are potential to be found in MU, thus assumed that these species are in existence.
- 2) Critically threatened species yet little known (enigmatic), hence not included in IUCN List although deserve such attention.
- 3) Species threatened due to local extinction.

In recommendation for management action, each individual identified as HCV 1.2 inside an MU has to be treated in such a way that it can continue to exist. For immobile species like plant species, or animal species within a restricted home-range, are required: (I) the availability of enough habitat to ensure the survival and (II) the ecological attributes shall be maintained (type and food source location, shelter, and breeding ground), in particular for Dipterocarps family, if species listed as *Critically Endangered (CR)* recognized in an MU to be in a population of 100 mature individual trees thus a restricted harvest is permitted; this is relating to potential HCV 5. The MU has to set management plan for such species.

Note: this was a topic of in-depth discussion during the plenary session.

For mobile animal species that move beyond or with extensive home range, for instance elephants, tigers, orangutans, eagles, hornbills, migrating birds (Asia-Australia-Asia through Indonesia) are available different options, such as in-situ conservation by providing enough habitat, enabling migration to the nearest habitat from the MU, developing habitat corridor, and translocation or artificial habitat if only for few individuals. The latest decision, associated to particular approach to be applied, requires strong endorsement from relevant stakeholders primarily Directorate General of Forest Protection and Nature Preservation of Forestry Dept. If there is species population of HCV 1.2 that considered able to survive (viable population), therefore recommendation for management action as set up in HCV 1.3 has to be adopted.

3.2.2.1. Objective of Management of Sub-HCV 1.2

There are 2 objectives of HCV 1.2 management

- 1) To secure individuals of *Critically Endangered* (CR) flora and fauna species from extinction.
- 2) To maintain long-term water supply in efforts of conserving habitat quality in order to keep up the survival of critical, endangered, and protected species.

3.2.2.2. Critically Endangered/Threatened/Protected Species in Oil Palm Plantation Estate

A number of critically endangered key species have been identified and developing interaction with oil palm plantation, among which are:

- 1) Sumatran Tiger (*Panthera tigris*) in Aceh, North Sumatera, Riau, Jambi, and Bengkulu
- 2) Sumatran Elephant (*Elephas maximus*) in Aceh, North Sumatera, Riau, Jambi, Bengkulu, South Sumatera, and Lampung.
- 3) Borneo Elephant (*Elephas maximus*) in Nunukan, East Kalimantan
- 4) Sumatran Orangutan (*Pongo abelii*) in Aceh, North Sumatera, Jambi
- 5) Borneo Orangutan Kalimantan (*Pongo pygmaeus*) in West Kalimantan, East Kalimantan, and Central Kalimantan.
- 6) Honey Bear (*Helarctos malajanus*) in Sumatera and Kalimantan
- 7) Bekantan (*Nasalis larvatus*), Kelempiau (*Hylobates muelleri*) in Kalimantan
- 8) Antelope, mouse deer/*Napu*, tapir, scaly anteater, porcupine in Sumatera and Kalimantan
- 9) Various kinds of birds like Eagle and *Alap-alap*, Hornbill, *Bekakak*
- 10) Various kinds of plants like Dipterocarpacea (*Shorea*, *Hopea*, *Parashorea*, etc), Non Dipterocarpacea (*Gonystylus/ramin*, *kayu besi*, *tembesuk*, *jelutung*, *Kempas*)

3.2.2.3. Interaction between Oil Palm Plantation and the Critically Endangered Species

Several identified exercises associated to the presence of the critically endangered species in oil palm plantation are as follows:

- 1) Killing of wildlife to protect plantation. Most of the wild animals are treated as pest. Although these animals are not protected species and considered as pest to the oil palm trees, still they are essential part of natural food sequence to the protected species. For instance, swine which is provided by nature as food for Sumatran tigers.
- 2) Illegal poaching. Open access to and fro the plantation estate has been contributing to the carrying out of illegal poaching. Additionally, weak control over going-in-and-out of parties unrelated to the plantation and poor law enforcement by the responsible agency have aggravated the condition.
- 3) Plantation's operations have severely disrupted the wildlife habitats, for example: land clearing exercise, constructing activity during days and nights.
- 4) Forest fragmentation without biological corridors.
- 5) Fires.

3.2.3. Management of Sub-HCV 1.3

HCV 1.3 is areas as habitat for concentrations of endangered, limited population or protected viable population.

Habitats that identified to contain HCV1.3 in an MU or the neighboring areas, in connection to the capability of particular concentration to continue its existence, can be determined by population number and carrying capacity that discovered within a landscape where the MU is present. The carrying capacity of a habitat is decided based on its size and quality. The quality of a habitat is the capability of particular area to meet requirements of its living species to survive and reproduce.

The abovementioned habitats can be found:

- 1) Inside an MU;
- 2) At upstream and downstream of an MU where practices by plantation can significantly affect water quality or change the water stream that generate negative impact on species habitat of HCV 1.3;
- 3) In habitats of species with more specific requirements that can be possibly affected by the MU's operations (see HCV 1.4).

3.2.3.1. Objective of Management of Sub-HCV 1.3

There are two objectives of HCV1.3:

- 1) To maintain and or enhance habitat quality and quantity and as a result population of flora and fauna (in compliance to PP No.7/1999) is protected and concentration of endangered species (EN; VU; CITES Appendix 1 and 2) are survived
- 2) To maintain long-term water supply in efforts of conserving habitat quality in order to keep up the survival of critical, endangered, and protected species.

3.2.3.2. Carrying Capacity of Habitat of HCV 1.3

Estimation of number and habitat carrying capacity can be measured using the following qualitative methods: (1) life history parameters of that already known or estimated; and (2) based on various indicators, such as:

- 1) Data allows the *quantitative analysis* only if the guessed population has > 70% chance to live for a 100-year period. The population is then considered able to survive, and its habitats are HCV 1.3.
- 2) If the life history of related species unknown a *qualitative analysis* can be used by finding out indications/evidence of continuous reproduction. And, if the overall habitat (landscape) is estimated to be enough to accommodate more than 30 individuals, the population and habitats are categorized an HCV 1.3.

3.2.3.3. Interaction between Oil Palm Plantation and HCV 1.3

Interaction between oil palm plantation and HCV 1.3 still has relation to the presence of HCV 1.1 and HCV 1.2 that can be described as follows:

- 1) Killing of wildlife to protect plantation. Most of the wild animals are treated as pest. Although these animals are not protected species and considered as pest to the oil palm trees, still they are essential part of natural food sequence to the protected species. For instance, swine which is provided by nature as food for Sumatran tigers.
- 2) Illegal poaching. Open access to and fro the plantation estate has been contributing to the carrying out of illegal poaching. Additionally, weak control over going-in-and-out of parties unrelated to the plantation and poor law enforcement by the responsible agency have aggravated the condition.
- 3) Plantation's operations have severely disrupted the wildlife habitats, for example: land clearing exercise, constructing activity during days and nights.
- 4) Forest fragmentation without biological corridors.
- 5) Road construction that can be simultaneously used to harm HCV 1.3 and cause erosion
- 6) Increased fire risk or burning
- 7) Increased access to HCV area 1.3
- 8) Canal opening that can dry out protected swampy areas

3.2.4. Management of Sub-HCV 1.4

Sub-HCV 1.4 is area temporarily used as habitat for species or certain group of species.

If there is an HCV 1.4 in an MU, management action to undertake has to ensure that access to key habitat and its functions can be maintained or enhanced. Species that can be considered in the assessment of HCV 1.4 are all species that temporarily or repeatedly draw together on a specific attribute within their habitat.

If HCV 1.4 in an MU but few parts have directly bordered on the outer boundary of the MU without any breakage, thus these sectors will be its additional responsibility. Above all function of these parts can be affected by the condition of their outside area (especially wetlands).

3.2.4.1. Objective of Management of Sub-HCV 1.4

Its management is aimed to maintain function of habitat that temporarily used by particular species.

3.2.4.2. Habitat with HCV 1.4 in Oil Palm Plantation

Several habitat examples of HCV 1.4 in oil palm plantation that highly require attention are:

- 1) Breeding or nest grounds for some bird and bat species, such as caves or wetland habitats.
- 2) Places along the major migration routes.
- 3) Local wildlife home-range (corridor); where individual animal can move in between different ecosystems to search for foods that available periodically.
- 4) An asylum (refugia) for species during the long dry-season, floods or land fires.

3.2.4.3. Interaction between Oil Palm Plantation and HCV 1.4

Some of the plantation practices closely related to the survival of HCV 1.4 is as follows:

- 1) Plantation operations disturb/damage a number of important specific habitats (for instance: freshwater swamp forest as transitional place for migrating birds become dried, peat swamp forest, riparian forests, and corridors).
- 2) Irrigation system, mainly in peat areas.
- 3) Land fire and clearing.
- 4) Poaching and logging
- 5) Over exploitation, such as fishing using poison/electricity, mineral drilling, etc.
- 6) Very open access and land use changes due to human beings' interests, such as tourism, housing, etc.

3.3. Management Guidelines for HCV 2

HCV 2 is important landscape for ecological dynamics naturally

3.3.1. Management of Sub-HCV 2.1

Sub-HCV 2.1 is landscape area with considerable capacity to maintain either process or ecological dynamics naturally.

Landscape area which is intact and has the capability to maintain its ecological natural processes in a longer term has been defined as a mosaic of diverse natural forest ecosystems with (i) the core zone of 20,000 hectares, which in it is found only a little fragmentation or no at all, and (ii) buffer zone of vegetation with an area of at least 3 kilometers from the forest boundary encircling the core zone. These two new criteria are different from HCVF Toolkit for Indonesia (version 2003) which was originally regulated under the HCV 2.1 with a definition as 'large forest at landscape level' (large landscape level forest), that is any forest area measuring more than 50,000 hectares.

3.3.1.1. Objective of Management of Sub-HCV 2.1

This management has aimed to maintain and or expand both core and buffer zones.

3.3.1.2. Interaction between Oil Palm Plantation and HCV 2.1

The management purpose for the 2.1 is just simple: the core and buffer zones should be maintained or expanded. To achieve this, MU must stay away from all forms of encroachment on the core zone and its boundaries, whether directly or indirectly. Examples of direct encroachment by the MU include deforestation, conversion of forested land to plantations, and construction of infrastructure such as roads, canals, or settlements in the core zone and its boundaries.

Indirect encroachment refers to the transformation of natural ecosystems through the development of infrastructure which may reduce the natural functions of the core zone or increase the risk of encroachment by other parties because of increased access. Two typical examples of the indirect encroachment are (i) excavation of water canals to dry out the peat lands in the landscape edge that disrupt hydrology of core or buffer zones, and (ii) construction of access roads to production forests to selected logging, which in turn increases the risk of illegal logging or agricultural occupation in its boundaries.

Direct encroachment into the core and buffer zones is under a direct rule of MU and should be prohibited. Indirect encroachment through infrastructure development is more complicated. In fact, most of remaining intact landscapes in Kalimantan and Sumatra are due to remoteness and very limited access. In contrast, MU should build infrastructure like roads to access its management areas, even if it increases ease of access to isolated vast landscape areas. Because of social and political difficulties company can not restrict local community to the company roads. It is therefore the companies need to work proactively with local governments and law enforcement agency to anticipate the impact of infrastructure development on the existing HCV 2.1, and design proper strategies to minimize the risks.

3.3.2. Management of Sub-HCV 2.2

Sub-HCV 2.2 is a natural topography containing two or more ecosystems with unbroken boundary lines (continuously).

The natural topography containing two or more natural ecosystems with unbroken boundary lines is defined as landscape, if:

- 1) There are two or more ecosystems present contiguously and share borders, especially the transitional zone (ecotone) between various swampy areas and not swampy areas, or moorland and not moorland.
- 2) The slope of forested mountain that in is good condition and includes varied ecosystems with different altitude zones, such as lowland forest to the middle of the sub-montane forest up to the montane forest with each plant species and ecological dynamics are diverse.

3.3.2.1. Objective of Management of Sub-HCV 2.2

Management of Sub-HCV 2.2 is to maintain transitional zone (ecotone) in between two or more ecosystems.

3.3.2.2. Interaction between Oil Palm Plantation and HCV 2.2

The followings are some interactions that generally occur during the start of the operation of oil palm plantation which lacking consideration on the condition of wider landscape.

- 1) Plantation development drives the forest fragmentation
- 2) Increased fire risks
- 3) Road construction increases the destruction of forests, erosion
- 4) Interfere the forest functions (e.g. watershed)
- 5) Access road allows increased logging activities
- 6) Canal development reduces the water content in peat swamp and peat lands

3.3.2.3. Management Actions for Sub-HCV 2.2

When HCV 2.2 is identified in MU, it is therefore necessary to adequately keep the area in good condition in order to maintain the continuity of the ongoing natural ecological processes that have been taking place in two or more existing ecosystems, as well as natural ecological interactions between them.

If within the HCV 2.2 is present one or more rare or endangered ecosystems as defined in HCV 3, it is therefore enough to preserve other HCVs that identified in that ecosystems (such as HCV 1.2 and 1.3), and the transitional zone which needs to be maintained under good conditions.

If HCV 2.2 present within a landscape which categorized in compliance to the criteria of HCV 2.1 (that is a large landscape and has the capacity to maintain the dynamics and natural processes), there are at least 10,000 hectares of each ecosystem and transitional zones in between have to be maintained inside the core zone as determined in HCV 2.1. If the 10,000 hectares of each ecosystem in the core zone cannot be sustained due to inadequate ecosystem coverage, then as many possible as of each ecosystem and transitional zones inside the core zones must be maintained. These areas are defined HCVAM 2.2 (of High Conservation Value Management Area).

It should be emphasized that the analysis scope is the basis for the management planning that is unlimited to the area of MU alone, but necessarily important to see the landscape where the MU is only one part of it.

3.3.3. Management of Sub-HCV 2.3

Sub-HCV 2.3 is an area containing representative populations of natural species that continue to exist.

The continued existence of certain species in a long-term period has very depended on the survival of the smallest amount of population that keep on present (Minimum viable Population = MVP). Required size of habitat to maintain the MVP is varied between species, especially in tropical countries like Indonesia with exceptionally high biodiversity. However, a large-sized area that not fragmented and with diverse ecosystem types have more opportunities to preserve the survival of more species rather than smaller-sized and fragmented area and with limited ecosystem diversity.

3.3.3.1. Objective of Management of Sub-HCV 2.3

The management of Sub-HCV 2.3 is aimed to maintain and/or enhance the potency of area as habitat for natural vegetation species.

3.3.3.2. Interaction between Oil Palm Plantation and HCV 2.3

The followings are some interactions that generally occur during the start of the operation of oil palm plantation which lacking consideration on the condition of wider landscape.

1. Plantation development drives the forest fragmentation
2. Increased fire risks
3. Road construction increases the destruction of forests, erosion

4. Interfere the forest functions (e.g. watershed)
5. Access road allows increased logging activities
6. Canal development reduces the water content in swampy areas and peat lands

3.3.3.3. Management Actions for Sub-HCV 2.3

If there is an HCV 2.3 in MU or in a large landscape where the MU lies amid, the company must work to keep it within the landscape. However, MU is rarely - almost never – has absolute control over the landscape. Because of that, it is suggested that MU be proactive and makes appropriate approaches to government and other stakeholders to establish and implement a management plan for HCV 2.3 in a joint work either for spatial planning perspective or other fieldworks.

3.4. Management Guidelines for HCV 3

HCV 3 is area containing rare or critically endangered ecosystem.

Ecosystem that complies with one or more of the following criteria can be categorized endangered as to the definition of HCV 3.

- 1) In a bio-physiogeographic unit of an ecosystem has been experienced shrinkage up to 50% of its former size.
- 2) In a bio-physiogeographic unit is present ecosystems that will have experienced shrinkage up to 75% or more of its former size in the light of assumption that all conversion areas within a current spatial plan are convertible

An ecosystem complying with the above criteria is categorized rare ecosystem either by natural factor or human factor, and the remaining natural ecosystem only covers less than 5% of the total area of a bio-physiogeographic unit.

3.4.1. Objective of Management of HCV 3

The objective of management of HCV 3 is to maintain ecological processes and other characteristics of a rare or endangered ecosystem.

3.4.2. Interaction between Oil Palm Plantation and HCV 3

Several interactions commonly occur when the start of operation of an oil palm plantation in rare or endangered ecosystems.

1. Plantation development drives the forest fragmentation
2. Increased fire risks
3. Road construction increases the destruction of forests, erosion
4. Interfere the forest functions (e.g. watershed)
5. Access road allows increased logging activities
6. Canal development reduces the water content in swampy areas and peat lands
7. Conversion of forested land to oil palm cultivation.

3.4.3. Management Actions for HCV 3

The management of actions relating to HCV 3 should maintain ecological processes and other characteristics of rare or endangered ecosystems in the MU as well as observe the off-site impacts that taking place on threatened or endangered ecosystems outside the MU that driven by exploitation. The off-site impacts can be done by preventing the negative impacts on changes of river-flow and water quality/quantity by maintaining buffer zones. If the MU is part of the large landscape area as defined in HCV 2.1, thus the rare ecosystems can be managed through:

- 1) Ensuring that rare ecosystem of a 10,000-ha is contained in the core zones.
- 2) If the core zone of a 10,000-ha does not exist, then as many as possible of rare ecosystems should be included in the core zones.

If there is no core zone as defined in HCV 2.1, then as many as possible of rare ecosystems should be set aside with a buffer zone of at least 500 m - 1 km, where the exploitation or utilization activities should be kept as minimum as possible.

For endangered ecosystems, if MU is part of the large landscape area as defined in HCV 2.1, it can be managed and treated in similar ways to the rare ecosystem abovementioned. If in the large landscape areas where the MU lies is not identified core zone as defined in HCV 2.1, thus the remaining area has to be preserved to keep its ecological processes, especially its characteristic of these threatened ecosystems must be maintained in natural conditions plus a minimum buffer zone of 500 m - 1 km where the activity utilization should be minimum as possible.

3.5. Analyses of Threat on HCV 1, HCV 2, and HCV 3

Threats in oil palm plantation that expected would destroy the HCV 1, 2, and 3 are:

- 1) The land encroachments (as well as migration): is the most common threat in identified HCV areas. The open access to the areas is the most responsible factor to the coming of encroachers. Therefore, it is an essential factor to enforce the security all over the plantation estates in order to prevent more encroachers from getting inside. Collaboration with other MUs within an interconnected region has become an important part in addressing the uncontrolled open access. In addition, local government's guarantee is another important part in handling with these encroachments of HCV areas inside MU. Although all of those can be resolved, commitments to develop SOP (Standard Operating Procedure) on security of HCVs will be very decisive.
- 2) Fire, including uncontrolled fire: Although *zero-burning* concept has been applied in MU, it does not guarantee that during long dry season the fire does not happen in HCV area. Therefore, the Fire Brigade (Fire-force) becomes absolutely necessary requirement in order to overcome fire cases. Strict supervision and continuous observation from an observation tower to detect early possibility of fires should be drafted in a particular SOP. Especially for the most vulnerable areas, such as peat lands, or the location adjacent to the community's fields, special attention in preparation for fire mitigation which put near the location and ready to be operated at any time necessary is highly needed. Creating buffer zones from the outer boundaries identified as one of the HCVs is an effort to overcome the impact of fires on protected areas. The distance depends on field conditions, but highly recommended to be at least 500 m -1000 m away from the outer limit of the protected area.
- 3) Forest product exploitation: to meeting the basic needs of local community, it does not mean the forest products can not be utilized, especially NTFP. However, it needs close surveillance and controlled utilization using sustainable utilization concept. Strict rules and responsible supervision still allow the utilization of forest products, but if not successful, it is recommended to not exploit these products.
- 4) Subsidence on peat lands: developing oil palm cultivation on peat lands should not be practiced. Although on peat land with a thickness of less than 3 meter oil palm tree planting is permitted, but it should be noted that peat lands is one amongst critical ecosystems in the world and belong to HCV 3. However, many stakeholders are deeply concerned about the clearing of peat lands. With looking at such considerable risks, then any released land-utilization permit and containing peat lands in its concession, thus its clearing implementation must strictly follow the associated prevailing government regulations, including scientific study by credible and independent research institution. However, please note the presence of other HCVs in that area.
- 5) Infrastructure development: by considering the presence of identified HCV, infrastructure development planning should consider the presence and conservation of the HCV. Road access should never separate the identified HCV, as well as human access and the pollution impact that

can affect the presence of HCV should be minimized. Location of mills, labor housing complex, waste disposal, and the impacts of road development should have been taken into consideration while planning these constructions is associated with the presence of identified HCVs. Special construction of drainage on peat lands should be able to maintain the position of *water table* between 50 to 70 cm from the ground level.

3.6. Alternative Management Actions for Management of HCV 1, HCV 2, and HCV 3

For whole identified HCV 1, 2, and 3, in addition to management recommendations, they also need alternative management actions, among which are as follows:

- 1) For HCV containing areas with protection and conservation functions in MU, the MU managers should maintain their existence pursuant to the existing regulations.
- 2) Place a clear boundary markers or stones on HCV at the site in accordance with the map identification results.
- 3) No roads, canals, as well as other infrastructure constructions on identified HCV areas. When these constructions still found, the use must under a strict control of MU. SOP on management and monitoring of these constructions must be established.
- 4) The land clearing on plantation estates must apply zero-burning system (without fire). However, limited burning can be performed certain pest and diseases control with reference to the ASEAN Policy on Zero Burning.
- 5) Apply of fire risk control method on plantation estates, as well as prevention from spreading to HCV areas, for instance for weed control; erect observation tower for fire; and prepare and fire control units, especially in fire-prone areas.
- 6) Maintain water resources in HCV areas or areas adjacent to identified HCV area in MU (undulating area, terracing, land-cover crops, and soil pits)
- 7) Integrated pest control (IPC) in plantation estates
- 8) Fertilizing and application of other agricultural chemicals with correct dose, correct application, correct time, and appropriate type in order to prevent water pollution.
- 9) If identified HCV area adjacent to exotic plants planting area (e.g. acacia), it is important to ensure that the plants not spreading to the HCV area. Create an SOP on Weed Control for Exotic Plants.
- 10) In case of exotic species (e.g. Acacia) found, annihilate the unwanted trees slowly (with **peneresan**). This is purposed to take advantage of its shade for protecting being planted species in rehabilitation activity. But, when the invasive canopy is no longer needed, it can be immediately cut down.
- 11) If local community makes use of NTFP in HCV area (such as honey, rattan, and others), it should be acknowledged and under plantation management control. Avoid over- harvesting. Thus, SOP on NTFP harvesting for products commonly exploited by the community should be made.
- 12) If within HCV area, potential and mature NTFP/fruits producing trees are identified, mark around the tree in white color, with 10 cm width at human chest level (130 cm above the ground level), give it number, mapped and report to related institutions, such as Forestry Agency, Seed Center of Forestry Department, and so forth. Data needed as follows: 1). tree type; 2). tree dimension (diameter and total height); 3). Coordinate; 4). Fruit period; 5). Type status (protection or non – protection), as well as other important information.
- 13) Patrol over HCV area. Arrange SOP on HCV security in accordance with the organization structure of management unit.
- 14) For subsidence control: it is required to set *water management* and its SOP for non-HCV areas adjacent to the identified HCV areas by maintaining the *water table* in between 50-75 cm from the ground level. Mostly on peat lands.
- 15) Prepare such notice board to avoid either the local community or plantation labors from any destructive activity that could harm HCV area (such as tree cutting, hunting, and so forth).
- 16) Socialize HCVF Assessment which consists of Identification; Management; Monitoring; among all MU's employees

On degraded HCV habitats, there are several additional activities that necessary to be performed, among which are:

1. Inventory biophysical data (canopy cover; vegetation type; slope level; soil type, etc). Furthermore, prepare land rehabilitation technical plan.
2. For HCV containing protection areas can be performed rehabilitation actions pursuant to the prevailing regulations.
3. Type of tree appropriate for rehabilitation is as follows: 1). Local type; 2). Conforms to growing area; 3). No height requirement for growing needed; 4). Fast growth; 5). Strong roots; 6). Produces fruits as source of animal feed; 7). have benefits to the community (meets economical, ecological and social and cultural aspects); 8). Includes in Redlist

3.7. Success Indicator for HCV 1, HCV 2, and HCV 3

In order to achieve objectives of the management, success indicators of each alternative management action is definitely required. One success indicator, not just an indicator of one alternative management action, but is able to fill in one and another of two or more alternative management actions. Success indicators related to HCV 1, 2, and 3 are arranged in order in tabular format as given below.

Table 3.1 Management Guidelines for HCV 1, HCV 2, and HCV 3

HCV	Sub HCV	Description	Objective of Management	Identification of Threat	Management Action	Success Indicator	Notes
1	1.1	Area which has or provides supporting function of biodiversity to protection and/ or conservation area	To maintain integrity of protection or conservation areas within an MU in support of the preservation of flora and fauna contained in it.	1) Land encroachment (including migration) 2) Fires 3) Forest product exploitation 4) Invasive destructive exotic species 5) Subsidence on peat lands 6) Infrastructure development (roads and drainage system) 7) Illegal poaching 8) Pollution.	1. For HCV containing areas with protection and conservation functions in MU, the MU managers should maintain their existence pursuant to the existing regulations. 2. Place a clear boundary markers or stones on HCV at the site in accordance with the map identification results. 3. No roads, canals, as well as other infrastructure constructions on identified HCV areas. When these constructions still found, the use must under a strict control of MU. SOP on management and monitoring of these constructions must be established. 4. The land clearing on plantation estates must apply zero-burning system (without fire). However, limited burning can be performed certain pest and diseases control with reference to the ASEAN Policy on Zero Burning. 5. Apply of fire risk control method on plantation estates, as well as prevention from spreading to HCV areas, for instance for weed control; erect observation tower for fire; and prepare and fire control units, especially in fire-prone areas. 6. Maintain water resources in HCV areas or areas adjacent to identified HCV area in MU (undulating area, terracing, land-cover crops, and soil pits) 7. Integrated pest control (IPC) in plantation estates 8. Fertilizing and application of other agricultural chemicals with correct dose, correct application, correct time, and appropriate type in order to prevent water pollution. 9. If identified HCV area adjacent to exotic plants planting area (e.g. acacia), it is important to ensure that the plants not spreading to the HCV area. Create an SOP on Weed Control for Exotic Plants. 10. In case of exotic species (e.g. Acacia) found, annihilate the unwanted trees slowly (with	1) Controlled encroachment 2) Controlled fires 3) Controlled harvesting 4) No findings on invasive species in a destructive population number. 5) Infrastructure development (roads, canal, etc) that annihilates HCV. 6) No vegetation mortality due to subsidence (14) 7) On degraded habitat has been executed rehabilitation with minimum growth percentage at 80 %. (17;18;19) 8) Notice boards available at each strategic place/ entry access to HCV area (15:16) 9) Marks available on seedling producing trees. (12) 10) Identified activity/signs of	1) The meaning of controlled is all efforts striven for by an MU have been directed to minimize threat degree to an annihilation level. All are documented. 2) MU managers should never propose for utilizing land within conservation or protection forests. 3) If road construction in MU has exposed the area and become the only access available for local community, thus the roads have to be under a strict control of the MU. The MU has to
	1.2	Species/Critical Species	1. To secure individuals of Critically Endangered (CR) flora and fauna species from extinction. 2. To maintain long-term water supply in efforts of conserving habitat quality in order to keep up the survival of critical, endangered, and protected species.				
	1.3	Areas as habitat for concentrations of endangered, limited population or protected viable population.	1.To maintain and or enhance habitat quality and quantity and as a result population of flora and fauna (in compliance to PP				

HCV	Sub HCV	Description	Objective of Management	Identification of Threat	Management Action	Success Indicator	Notes
			No.7/1999) is protected and concentration of endangered species (EN; VU; CITES Appendix 1 and 2) are survived 2.To maintain long-term water supply in efforts of conserving habitat quality in order to keep up the survival of critical, endangered, and protected species.		<p>peneresan). This is purposed to take advantage of its shade for protecting being planted species in rehabilitation activity. But, when the invasive canopy is no longer needed, it can be immediately cut down.</p> <p>11. If local community makes use of NTFP in HCV area (such as honey, rattan, and others), it should be acknowledged and under plantation management control. Avoid over- harvesting. Thus, SOP on NTFP harvesting for products commonly exploited by the community should be made.</p> <p>12. If within HCV area, potential and mature NTFP/fruits producing trees are identified, mark around the tree in white color, with 10 cm width at human chest level (130 cm above the ground level), give it number, mapped and report to related institutions, such as Forestry Agency, Seed Center of Forestry Department, and so forth. Data needed as follows: 1). tree type; 2). tree dimension (diameter and total height); 3). Coordinate; 4). Fruit period; 5). Type status (protection or non – protection), as well as other important information.</p> <p>13. Patrol over HCV area. Arrange SOP on HCV security in accordance with the organization structure of management unit.</p> <p>14. For subsidence control: it is required to set <i>water management</i> and its SOP for non-HCV areas adjacent to the identified HCV areas by maintaining the <i>water table</i> in between 50-75 cm from the ground level. Mostly on peat lands.</p> <p>15. Prepare such notice board to avoid either the local community or plantation labors from any destructive activity that could harm HCV area (such as tree cutting, hunting, and so forth).</p> <p>16. Socialize HCVF Assessment which consists of Identification; Management; Monitoring; among all MU's employees</p>	<p>termination of exotic vegetation. (9;10)</p> <p>11) HCV is comprehended among all employees and they are able to explain their roles in the HCV management. (16)</p> <p>12) Action for water resources conservation in place.(6)</p> <p>13) Adoption of SOP on fertilizer and agricultural chemical applications (8)</p>	<p>establish an SOP on the road utilization.</p>
	1.4	Area temporarily used as habitat for species or certain group of species	to maintain function of habitat that temporarily used by particular species				
2	2.1	Large landscape area with considerable capacity to maintain either process or ecological dynamics naturally.	to maintain and or expand both core and buffer zones				
	2.2	Natural topography containing two or more ecosystems with unbroken	To maintain transitional zone (ecotone) in between two or				

HCV	Sub HCV	Description	Objective of Management	Identification of Threat	Management Action	Success Indicator	Notes
		boundary lines (continuously)	more ecosystems.		<p>On degraded HCV habitats, there are several additional activities that necessary to be performed, among which are:</p> <ol style="list-style-type: none"> 1) Inventory biophysical data (canopy cover; vegetation type; slope level; soil type, etc). Furthermore, prepare land rehabilitation technical plan. 2) For HCV containing protection areas can be performed rehabilitation actions pursuant to the prevailing regulations. 3) Type of tree appropriate for rehabilitation is as follows: 1). Local type; 2). Conforms to growing area; 3). No height requirement for growing needed; 4). Fast growth; 5). Strong roots; 6). Produces fruits as source of animal feed; 7). have benefits to the community (meets economical, ecological and social and cultural aspects); 8). Includes in Redlist 4) MU arranged SOP to protect buffer zones of large landscape that functions to maintain natural ecological process. 		
	2.3	Area containing representative populations of natural species that continues to exist.	To maintain and/or enhance the potency of area as habitat for natural vegetation species.				
3		Area containing rare or critically endangered ecosystem	To maintain ecological processes and other characteristics of a rare or endangered ecosystem.				

3.8. Management Guidelines for HCV 4

HCV 4 is area containing natural environmental services.

3.8.1. Management of Sub-HCV 4.1

HCV 4.1 is area or ecosystem important as water supply and flood control for wider community at the down streams.

Besides import functions of an area based on watershed location and downstream communities, there are several forest ecosystems or other lands that play extraordinarily important role in the local hydrological cycle and call for special attention. Ecosystem is referred to HCV 4.1 comprehends cloudy forest, ridge forests, riparian ecosystems, karst forests, and other wetland ecosystems, including peat lands (especially the forested), freshwater swamp forests, mangrove forests, lakes and swamp meadows.

Characteristic examples include:

- 1) Rivers and streams flowing from or through the MU (note: all riparian buffer zones should be protected pursuant to the Indonesian laws).
- 2) Water spring located in MU or influenced by forest outside the MU, which is used directly or through a pipeline network.
Wells and water sources located in the MU, or derived from water that is affected by the forest outside MU.

3.8.1.1. Objective of Management of Sub-HCV 4.1

To preserve and keep specific forest types (cloudy, karst, riparian, wetlands, ridges, freshwater swamps, mangroves, lakes and grasslands) in good condition in order to regulate the function of water in the down streams.

3.8.1.2. Interaction between Oil Palm Plantation and Sub-HCV 4.1

Amongst the following activities, oil palm plantation affects water quality and quantity.

1. Plantation disrupts watershed areas
2. Planting activity has ignored to secure riparian buffers
3. Plantation activity that affects the quality and quantity of water (sewage, fertilizer, uncontrolled pesticide usage, no cover crops planting during land clearing, etc.)
4. Forest conversion along watershed areas, land with slope > 40%, and unstable and easily eroded lands.

3.8.1.3. Recommendation for Management of HCV 4.1

Water resource is vital requirement for wider community as it functions as transportation means, bathing, washing, toilet, drinking water, irrigation, agriculture, fisheries and others. Water catching area management to ensure sustainability of water supply is the main obligation of each MU both in upstream or downstream, as well as to keep it from damage and changes of function. The main objective of HCV 4.1 is to maintain the survival of all watershed areas' functions that closely related to the provision of clean water to communities at the downstream regions.

3.8.2. Management of Sub-HCV 4.2

Sub-HCV 4.2 is area important for erosion and sedimentation control.

In Indonesia, the most important factors influencing the erosion rate is high rainfall, runoffs, slope, land cover, and soil condition. Among of these land-cover and soil conservation are two factors entirely able to be controlled by human beings.

The advantage of forest cover against non-forest cover in holding erosion is on the double covers of forest, particularly its ability to produce *serasah* (decayed leaves, branches, etc) and lower-part vegetations that normally dense enough underneath the forest's shade with a rather open canopy.

3.8.2.1. Objective of Management of Sub-HCV 4.2

The objective of management of Sub-HCV 4.2 is to maintain the forest's double covers through preserving *serasah* and lower-part vegetations.

3.8.2.2. Interaction between Oil Palm Plantation and Sub-HCV 4.2

Below are plantation practices that affect HCV 4.2:

- 1) Road construction and plantation infrastructures can increase erosion.
- 2) Planting on the slope above 40% and insecure lands and easily eroded.
- 3) Destruction of watershed areas and planting by the river mouth
- 4) Fire
- 5) Land clearing activities that out of control.

3.8.2.3. Recommendation for Management of Sub-HCV 4.2

Examples of areas to be managed cautiously and considering principles of soil and sedimentation conservation are as follows:

1. Steep slope area, ridges, and depth areas in shallow soil
2. Land which its soil surface is low permeability
3. Areas with cover and vegetation conditions are not adequate or few

Areas with good vegetation coverage, in this case forests or land with vegetation, have significant meaning for preventing erosion and sedimentation. Thus, vegetation coverage in areas with high erosion risk level is necessary to be maintained in good condition, or enhanced if considered less, or with the management system and covering pursuant to the real condition. In HCV area 4.2, maintaining the area as a natural ecosystem is the most effective and economical way to stop erosion and high sedimentation.

Make management plans or guideline to: (1) restrict logging activity in watershed protection areas; and (2) rehabilitate degraded areas or areas prone to erosion and/or areas where monitoring process indicates excessive erosion level.

3.8.3. Management of Sub-HCV 4.3

HCV 4.3 is area functioning as natural fire barrier to stop the spread of forest and land fires.

Most of burning cases have been originated from fire initially intended for land clearing or other uses, such as in camp, but then spreading to artificial vegetation and eventually burning the natural vegetation. Areas of destroyed vegetation like logged forests with high logging intensity leave a vast uncovered land with remaining dried logs that are very susceptible to fire spread. Immature plantation forest with very open condition and secondary vegetation like bushes and coarse grass (*Imperata cylindrica*) are also very defenseless to fire.

On the contrary, high-volume forest areas with high vegetation density and humidity tend to slow down the spread of fire. In fact, such forests rarely get on fire, unless on certain conditions, for instance proximity to a huge fire that cause local temperature changes, humidity and local winds, especially

during long drought in the ENSO period, or local conditions that facilitate the spread of fire, such as steep slopes or strong winds.

Therefore, extensive forest areas containing a high volume and dense vegetation, and high humidity level that located close enough to the damaged vegetation should be considered as a barrier against the destructive fires. This area needs to be maintained.

3.8.3.1. Objective of Management of Sub-HCV 4.3

The objective is to maintain the presence of forest areas and wetlands as barrier to the spread of forest and land fires.

3.8.3.2. Interaction between Oil Palm Plantation and HCV 4.3

A number of activities influential to HCV 4.3 in oil palm plantation area is given as follows:

1. Use of fire for land clearing
2. Use of fire by uncontrolled workers
3. Forest fragmentation
4. Increased access to forest areas that drives deforestation
5. The making of canal to dry out peat lands and swampy areas.

3.8.3.3. Recommendation for Management of Sub-HCV 4.3

1. Fragmented forests with the wide-open canopy, or have experienced high-intensity logging are more susceptible to forest fires. Strategies should be developed in order to avoid such poor condition (e.g. buffer zones, preventing access into forest areas).
2. Wet area such as peat lands and swampy should be maintained
3. Prepare SOP on fire fighting and training staff.

3.8.4. Analyses of Threat on HCV 4

Threat assessment on each component of HCV 4 in oil palm plantation is listed below.

HCV 4.1

- 1) Forest encroachment
- 2) Illegal logging
- 3) Excessive drainage
- 4) Forest and land fires
- 5) Negative impact of oil palm plantation and mill activities on quality and quantity of water

HCV 4.2

- 1) Forest encroachment or exposure of vegetation cover, especially on steep slope (> 40%)
- 2) Land clearing and planting depart from the Good Agriculture Practices
- 3) No soil and water conservation even in flat areas

HCV 4.3

- 1) The danger of fire during the peak dry season
- 2) Illegal encroachment and illegal logging near fire barrier in MU
- 3) Land use changes near fire barrier

3.8.5. Alternative Management Actions for HCV 4

HCV 4.1

- 1) To prevent the reduction of land and specific forest covers from minimum required size, and to do the recovery action on a certain location within MU that in unity with a watershed area by periodical mapping; to place boundary marks.
- 2) To formulate SOP on prevention, reduction, and recovery of specific forest cover.
- 3) To perform soil and water conservation to pressure erosion and increase the water absorption through terracing.
- 4) To map important water resource areas, including the riverbanks (pursuant to existing legislation), and to place boundary signs, and to provide protection to the location.
- 5) To identify important water catching areas for the community, to place clear boundary signs, and to determine whether the catching areas partially or entirely belong to the MU.
- 6) To implement soil and water conservation methods that can force down the runoffs but increases water infiltration. There are some cultivation techniques suitable for that, such as planting land crops, terracing, making pores or holes on the ground (pits), and applying solid and liquid organic waste. These actions can maintain and improve the quality and quantity of water in the plantation and HCV areas.
- 7) To apply green cultivation methods which are able to reduce the release of polluting substances (slow release) into the waters areas of HCVs. Contamination can be sediment and chemicals that can reduce the quality and quantity of water.
- 8) To carry out fertilizer application that complies with Good Agricultural Practices, and to utilize organic waste to reduce pollution from organic nutrients into the waters areas of HCVs.
- 9) To analyze the water quality through waste control generated from oil palm plantation and mills activities.
- 10) If the water resources in MU are shared with local community, it is required to allow the local participation in determining and maintaining the water resources.
- 11) To analyze important water resource requirements both for MU and local stakeholders (in relation to HCV 5).

Notes: Collaboration with related government institutions, such as BPDAS, BKSDA, and forestry service in management is required

HCV 4.2

1. To create periodical map of erosion estimation
2. To maintain land and vegetation covers on areas potentially high prone to erosion, and improved when necessary; to place boundary marks.
3. To create map containing MU within super-priority watershed area and within priority watershed area, or other sub-watersheds in the MU.

Notes: Collaboration with related government institutions, such as BPDAS, BKSDA, and forestry service in management is required

HCV 4.3

1. To apply zero-burning method while clearing land for plantation development.
2. To assist and maintain fire barrier that adjacent to or in MU in good condition
3. To install boundary marks and notice boards about the presence of the fire barrier.
4. To develop adequate infrastructures for forest and land fires mitigation by the management of MU.
5. To regularly patrol over the fire-prone areas within oil palm plantations, mainly in the peak of dry season. In case of fire barrier does not properly work, it is necessary to apply relevant technology to mitigate the land fires, for instance fire-proof vegetation plantings

3.8.6. Success Indicator for Management of HCV 4

The following matrix comprehends success indicators which are associated with each component of HCV 4, objective of the management, identification of threat, and management actions.

Table 3.2 Management Guidelines for HCV 4

HCV	Sub HCV	Description	Objective of Management	Identification of Threat	Management Action	Success Indicator	Notes
4	4.1	Area or ecosystem important as water supply and flood control for wider community at the down streams.	To preserve and keep specific forest types (cloudy, karst, riparian, wetlands, ridges, freshwater swamps, mangroves, lakes and grasslands) in good condition in order to regulate the function of water in the down streams.	<ol style="list-style-type: none"> 1. Forest encroachment 2. Illegal logging 3. Excessive drainage 4. Forest and land fires 5. Negative impact of oil palm plantation and mill activities on quality and quantity of water 	<ol style="list-style-type: none"> 1) To prevent the reduction of land and specific forest covers from minimum required size, and to do the recovery action on a certain location within MU that in unity with a watershed area by periodical mapping; to place boundary marks. 2) To formulate SOP on prevention, reduction, and recovery of specific forest cover. 3) To perform soil and water conservation to pressure erosion and increase the water absorption through terracing. 4) To map important water resource areas, including the riverbanks (pursuant to existing legislation), and to place boundary signs, and to provide protection to the location. <p>Notes: Collaboration with related government institutions, such as BPDAS, BKSDA, and forestry service in management is required</p> <ol style="list-style-type: none"> 5) To control waste produced by oil palm mill and plantation. 6) To apply green cultivation methods (e.g. slow-release fertilizer, organic waste application, integrated pest control). 7) If the water resources in MU are shared with local community, it is required to allow the local participation in determining and maintaining the water resources 8) To analyze important water resource requirements both for MU and local stakeholders (in relation to HCV 5). 	<ol style="list-style-type: none"> 1) Increased percentage of land cover vs. HCV forests. 2) Number and type of soil and water conservation (2) 3) Data on important water resources available (3) 4) Data on water catching areas serving as water resources for local stakeholders available (4) 5) Data on quality of the said water resources obtainable periodically (5;6) 6) Record/report of joint work between MU and local stakeholder (7) 7) Data on important water resources requirement obtainable periodically (8) 	<ol style="list-style-type: none"> 1) Land cover can be interpreted from existing images (landsat, radar, ikonos, quickbird, aerial photographs); the scale is very decisive in determining the precision of interpretation results; GIS application will facilitate the further analyses. 2) The first interpretation results can be adopted as basic map. 3) Always referring the alternative actions to the prevailing regulations. 4) Certified laboratory is preferred to conduct water quality analyses. 5) If peat land exists, the management should refer to HCV 1 in

HCV	Sub HCV	Description	Objective of Management	Identification of Threat	Management Action	Success Indicator	Notes
							association to subsidence and water table prevention.
	4.2	Area important for erosion and sedimentation control	To maintain the forest's double covers through preserving <i>serasah</i> and lower-part vegetations.	<ol style="list-style-type: none"> 1. Forest encroachment or exposure of vegetation cover, especially on steep slope (> 40%) 2. Land clearing and planting depart from the Good Agriculture Practices 3. No soil and water conservation even in flat areas 	<ol style="list-style-type: none"> 1) To create periodical map of erosion estimation 2) To maintain land and vegetation covers on areas potentially high prone to erosion, and improved when necessary; to place boundary marks. 3) To create map containing MU within super-priority watershed area and within priority watershed area, or other sub-watersheds in the MU. <p>Notes: Collaboration with related government institutions, such as BPDAS, BKSDA, and forestry service in management is required</p>	<ol style="list-style-type: none"> 1) Documented estimation map for actual erosion, if possible, or Erosion Risk Level. 2) Percentage of land cover with vegetation on highly potential prone to erosion areas 3) Documented map of MU areas within superiority watershed and priority watershed, and vice versa. 	<ol style="list-style-type: none"> 1) Actual erosion predicted using Universal Soil Loss Equation (USLE) (Wischmenier and Smith, 1978). 2) Erosion Risk Level (pursuant to available toolkit, or can also refer to the criteria established by SK Mentan No ???/1982 3) Erosion Risk Level Criteria applies Wood & Dent (1983).
	4.3	Area functioning as natural fire barrier to stop the spread of forest and land fires	To maintain the presence of forest areas and wetlands as barrier to the spread of forest and land fires.	<ol style="list-style-type: none"> 1) The danger of fire during the peak dry season 2) Illegal encroachment and illegal logging near fire barrier in MU 	<ol style="list-style-type: none"> 1. To apply zero-burning method while clearing land for plantation development. 2. To assist and maintain fire barrier that adjacent to or in MU in good condition 3. To install boundary marks and notice boards about the presence of the fire barrier. 4. To develop adequate infrastructures for forest and land fires mitigation by the management of MU. 	<ol style="list-style-type: none"> 1) Controlled forest/land fire 2) Maintained fire barrier. 3) Marks or public information about the fire barrier 	<ol style="list-style-type: none"> 1) Areas adjacent to fire barrier either inside or outside the MU exist in fire-prone areas. 2) Construction of

HCV	Sub HCV	Description	Objective of Management	Identification of Threat	Management Action	Success Indicator	Notes
				3) Land use changes near fire barrier	5. To regularly patrol over the fire-prone areas within oil palm plantations, mainly in the peak of dry season. In case of fire barrier does not properly work, it is necessary to apply relevant technology to mitigate the land fires, for instance fire-proof vegetation plantings	4) Facilities and infrastructure for fire mitigation available 5) Patrol carried out b the management of MU. 6) Technology of land fire mitigation applied.	canals on peat lands or swamps as fire barrier conforms to <i>Permentan</i> No. 14/2009.

3.9. Management Guidelines for HCV 5

HCV 5 is area containing important functions to meeting subsistent fulfillments of local communities.

A region is considered important if it is used by one or more members of particular community to meet the subsistent needs without any alternative available, or irreplaceable. *Important threshold is defined as 50% or more of the one or more basic needs can be filled by utilizing forests or other natural ecosystems.*

Forest resources must be exploited using sustainable ways and not excessive. In this case, over application of traditional practices can be destroying and threatening the presence of other HCVs, such as over-hunting of endangered species (HCV 1.2).

3.9.1. Objective of Management of HCV 5

- 1) To conserve the availability of subsistent requirements, protein, medicine, fruits, fuel, animal feed, and building materials.
- 2) To guarantee the sustainable income source
- 3) To save, protect, and develop important plant species
- 4) To save, protect, and develop hunting animal species
- 5) To protect and preserve river or lake functions for the survival of social and economy of local community

3.9.2. Interaction between Oil Palm Plantation and HCV 5

The operation of oil palm plantations in remote areas affects the characteristics and social life of local people, including:

- 1) More open access to markets
- 2) The changing lifestyle from seeking and gathering to be more consumptive
- 3) The basic need of local community partly replaced and commercial
- 4) Sources of the basic needs is farther and hardly found
- 5) More diverse social interaction

3.9.3. Recommendation for Management of HCV 5

In relation to identifying of HCV 5 within or related to MU, it is strongly recommended to establish community representative forum to discuss any policy related to their lives and livelihoods. Various problems and conflicts that occurred should be discussed and resolved in consultation in order to reach a win-win solution.

However, the presence of local communities in and around the MU will continue to be an inseparable part. Socialization activities, training and intensive communication are becoming more essential to maintaining and protecting the survival of the identified HCV. MU usually assigns a special division to deal with local community.

The existence of HCV 5 is replaceable if the MU can develop various facilities and fulfill subsistent needs of local stakeholders, among which are:

- clean water requirement,
- medicines,
- carbohydrates,
- protein,
- clothing,
- shelter

Through compensation mechanism of different programs, such as clean water supply, health facilities, education or employment, the local people can satisfy their subsistence. Put the local community as high priority for staff recruitment. Organize training and give incentives to encourage them more skilled and responsible for any given task and responsibility.

3.10. Management Guidelines for HCV 6

HCV 6 is area containing important functions as local cultural identity.

HCV 6 demonstrates areas with important function for traditional or characteristic cultural identity, where the areas substantial to satisfy the local community's cultural needs. Correlation between local community and the areas is materialized into ideas, norms, values, behaviors and attitude, as well as natural resources/environment/things which have been underlying collective behaviors of community members and governing their relationships.

Local communities who have dwelled in certain place amongst forests are usually traditional people. These communities normally highly depend on forest and natural resources within. They have norms or rules regulating the use of natural resources. The dependence of these traditional communities on the circumstance has established certain part of forest or ecosystem restricted to certain local norms for generations.

HCV 6 can be identified in an MU if one or more of the following indicators observed:

- 1) Local community still recognizes division of forest area around the village by its function, for instance the Bedouin community: *Leuweng awisan* (forest reserves), *Leuweung tutupan* (protected forest), *Leuweung titipan* (forest that must be protected), and *Leuweung garapan* (forest for utilization)
- 2) In reality traditional pouches are still found in large landscape or ecosystem, either in low, medium, or high distribution. This distribution quality may be useful as additional information to map the areas concerning to treatment and management performed by MU.
- 3) The interest level of the areas that claimed by local community still serving importance to the local community, either at lower, medium, or high scale.

There is a condition where cultural sites, which are categorized HCV 6, spreading out across MU and making difficult in the management. For that reason, MU may recommend the community to collect the cultural sites as long as their survival is kept maintained and obtain Free Prior Informed Consent (FPIC).

In case of dispute takes place between HCV 1.2 and HCV 6, the management will be prioritized to the applicable formal laws.

3.10.1. Objective of Management of HCV 6

The objective of this management is to maintain and conserve cultural values.

3.10.2. Interaction between Oil Palm Plantation and HCV 6

Several practices in oil palm plantation that can affect the presence of HCV 6 are described as follows:

- Uncontrolled land clearing activities; damaging and spoiling areas that protected under the traditional laws.
- Destruction of habitat where materials for traditional ceremonies taken from, such as habitat of some bird species (bird's feather used for traditional rituals), habitat of certain wildlife (this animal only hunted for traditional occasion).
- Some of infrastructure developments have stained the purity of certain sites.

- Destruction of cultural sites, sacred places, and ceremonial sites because of no clear marks, and HCV assessment has not been carried out while the fieldworks have moved on.

3.10.3. Recommendation for Management of HCV 6

Similar to HCV 5, areas that widely used by local communities to satisfy their cultural needs are often mistreated by other stakeholders who just arrived at the regions on behalf of natural resources management practices. Consequently, conflict interest between both parties is unavoidable, and eventually remains unresolved.

After taking a good lesson learned from such conflicts all this time, identification of HCV that can satisfy the cultural needs of local communities becomes urgent. These values can be discovered in natural forest areas where the local people perform their cultural events and their beliefs, for instance customary forests, sacred sites, old cemetery, and other relics of their ancestors.

Lately often found that modernization has entered the lives of indigenous or local communities so that those rituals have no longer been performed. But it does not mean that they not at all need these areas, because in fact they still believe and apply although very rarely or almost never at all in their lives.

Precautionary area management is obviously necessary if the objective of the Management Unit is to convert forest lands which acknowledged as fulfillment of their cultural needs. The Management Unit should intensively discuss and consult this with local community as the main user of the area, and also other relevant stakeholders before realizing the conversion.

3.11. Analyses of Threat on HCV 5 and HCV 6

- 1) Opened access has driven to the followings results:
 - a. Plundering of forest product
 - b. Land conversion to other land uses has resulted in loss of natural resources for the subsistent requirements
- 2) Reduced water source areas and water catching areas
- 3) Water pollution
- 4) Hydrological changes
- 5) Poor control over land clearing prior to cultivation
- 6) Fire
- 7) Harvesting by community without allowing for the sustainable principles.
- 8) Changed habitat that no longer suitable for plant growth
- 9) Over hunting
- 10) Habitat destruction
- 11) Silting up due to sedimentation
- 12) The presence of invasive species
- 13) Contaminated water of river / lake / water sources

3.12. Alternative Management Actions for HCV 5 and HCV 6

3.12.1. Alternative Management Action for HCV 5

General:

- 1) To conduct threat identification on the existence of HCV 5, to perform negative impacts evaluation on HCV 5 by current applied practices, and to set up mitigation plan all together with representatives of local people.
- 2) To develop utilization procedure of HCV 5 area and disseminate it among local community
- 3) To make notice boards notifying prohibitions to: poaching, fishing with poison or electricity, over harvesting on HCV 5 area.

- 4) To place notice boards on the presence of HCV 5 as much as needed relevant to the area size.
- 5) To publish brochures on HCV 5 presence, its function and utilization regulations, then distribute to the community
- 6) Companies have to provide facilities as replacement to the HCV-5 important values that required by local community, if the values can not be maintained

Water source for daily needs:

- 1) To place boundary marks/stones at site as planned and involve any responsible party that utilizes/ has an importance on the water resource.
- 2) To facilitate water resource function replacement from HCV 5 area that needed by local community if the values can no longer be maintained.
- 3) To involve local users to manage the water resource and prevent its function from functional changes
- 4) To monitor periodically to identify water-table dynamic, water quality and conduct proper corrective actions
- 5) To manage water catching areas, particularly within MU that have influence on the water resource, carry out rehabilitation, and improvement
- 6) To manage and rehabilitate river bank areas and other water resources
- 7) To prepare SOP on chemistry usage and waste control used by companies, and maintain sustainability of the water quality

Medicinal plants:

- 1) To conduct detail inventory and habitat delineation (map and location) along with local community's involvement
- 2) To arrange SOP to regulate protection on important plants
- 3) To carry out conservation for locally substantial plant species

Protein-source wild animals:

- 1) To regulate hunting and catching mechanism by involving local community if the wildlife counted as hunting animals
- 2) Monitoring the presence of wildlife species
- 3) To place notice boards related to hunting as to local community's subsistent fulfillments

River or lake to obtain fish:

- 1) To place boundary marks/stones at site as planned and involve any related party that utilizes/has importance on that river and/or lake resources
- 2) To perform management on supporting areas for water resource within MU area; to conduct rehabilitation; vegetation improvement
- 3) To manage and rehabilitate river bank area and other water resources
- 4) SOP on chemistry usage and waste control applied by companies has paid attention to the conservation of water quality
- 5) To arrange protocols for management in participatory.

3.12.2. Alternative Management Action for HCV 6

General:

- 1) To place boundary marks/stones at site as planned and involve any relevant party to the utilization of HCV 6
- 2) In case of HCV 6 covers a landscape, area security will be in cooperation with local authority and community
- 3) Plantation infrastructure made by maintaining HCV 6 as one whole unit, therefore road construction within HCV 6 area should be avoided

- 4) Road access to and fro plantation that could harm the HCV 6 sustainability should be secured by related companies through establishing guard posts
- 5) To publicize notice board on HCV 6 presence, its function and utilization regulation, then disseminate to local community
- 6) Companies has SOP for HCV 6 management
- 7) To apply precautionary approach

Preserving and conserving cultural values:

- 1) To set up clear boundary stones/marks in cooperation with local community that concerns with the site
- 2) To conduct security approach by maintaining area buffer in order to secure it from fire and other disturbances

Habitat area for wildlife animals/essential plants to cultural and religious rituals:

- 1) To set list of priority for wildlife animals that culturally and religiously important, and to select available habitat to be managed. These are carried out along with the local community who significantly depends on the resources
- 2) To place boundary stones/marks at site as planned and involve any party that utilizes the water resources

3.13. Success Indicator for Management of HCV 5 and HCV 6

3.13.1. Success Indicator for HCV 5

General:

- 1) Report on impact / threat and mitigation plan provided
- 2) Available guideline or procedure for utilization of HCV 5
- 3) Periodical monitoring reports shows that extent of areas containing HCV 5 remains the same and the values are in good quantity and quality
- 4) Increased number of local community using HCV 5 (can be quantified)
- 5) Rehabilitation or replacement on damaged HCV 5

Water source for daily needs:

- 1) Clear boundary marks and accepted amongst relevant stakeholders (verification: boundary marks, documented joint agreement, implementation of boundary marks)
- 2) Organization of management with the involvement of local community.
- 3) Implementation of delineation in the field.
- 4) The availability of water volume in water producing areas in certain periods.
- 5) No decrease of water quality.
- 6) Catching areas are well maintained
- 7) The establishment of SOP on chemicals usage and waste control.

Medicinal plants

- 1) Increased availability of medicinal plants in the natural habitat.
- 2) The availability of seedlings to meeting community's requirements.
- 3) Increased number of community making use of medicinal plants.

Protein-source wild animals:

- 1) The availability of wild animals.
- 2) Protocol on hunting agreed amongst local communities.
- 3) The availability of public informative media on hunting

River or lake to obtain fish:

- 1) The existence of delineated map and location.
- 2) Joint agreement on river/lake or other wetlands management.
- 3) Good water catching areas.
- 4) Riverbanks/lake well maintained.
- 5) Free pollution of chemicals and waste from MU.

3.13.2. Success Indicator for HCV 6

Sacred sites (burial ground), worship/religious ritual/cultural sites, historical sites:

1. Clear boundary stones/marks at related location
2. Effective fire barrier provided
3. Well-maintained sites and still used by local community

Habitat area for wildlife animals/essential plants to cultural and religious rituals:

- 1) Chosen habitat areas to be managed mutually
- 2) Clear boundary stones/marks at related location

Table 3.3. Management Guidelines for HCV 5 and 6

HCV	Sub HCV	Description	Objective of Management	Identification of Threat	Management Action	Success Indicator	Notes
5		General	<p>Sustainability of the availability of basic requirements: protein, medicine, fruits, fuels, animal feeds, <i>building materials, and instruments.</i></p> <p>Sustainability of income source availability.</p>	<p>1). Opened access has driven to the followings results:</p> <p>a. Plundering of forest products</p> <p>b. Land conversion to other land uses has resulted in loss of natural resources for the subsistent requirements</p>	<p>1) To evaluate negative impacts on HCV 5 due to applied practices, and to set up the mitigation plan.</p> <p>2) To formulate utilization procedure of HCV 5 area in participatory and disseminate it among local community</p> <p>3) To make notice boards notifying prohibitions to: poaching, fishing with poison or electricity, over harvesting on HCV 5 area.</p> <p>4) To publish brochures on HCV 5 presence, its function and utilization regulations, then distribute to the community</p> <p>5) Companies have to provide facilities as replacement to the HCV-5 important values that required by local community, if the values can not be maintained.</p>	<p>1) Report on impact / threat and mitigation plan provided</p> <p>2) Available guideline or procedure for utilization of HCV 5</p> <p>3) Rehabilitation or replacement on damaged HCV 5.</p>	See HCV 1& 3
		Water resources for daily use	See HCV 4.1	<p>1) Reduced water source areas and catching areas</p> <p>2) Water pollution</p> <p>3) Hydrological changes</p>	<p>1. To place boundary marks/stones at site as planned and involve any responsible party that utilizes/ has an importance on the water resource.</p> <p>2. To facilitate water resource function replacement from HCV 5 area that needed by local community if the values can no longer be maintained.</p> <p>3. To involve local users to manage the water resource and prevent its function from functional changes</p> <p>4. To monitor periodically to identify water-table dynamic, water quality and conduct proper corrective actions</p> <p>5. To manage water catching areas, particularly within MU that have influence on the water resource, carry out rehabilitation, and improvement</p> <p>6. To manage and rehabilitate river bank areas and other water resources</p> <p>7. To prepare SOP on chemistry usage and waste control used by companies, and</p>	<p>1) Clear boundary marks and accepted amongst relevant stakeholders (verification: boundary marks, documented joint agreement, implementation of boundary marks)</p> <p>2) Organization of management with the involvement of local community.</p>	See HCV 4

HCV	Sub HCV	Description	Objective of Management	Identification of Threat	Management Action	Success Indicator	Notes
					maintain sustainability of the water quality	3) The availability of water volume in water producing areas in certain periods. 4) No decrease of water quality 5) Catching areas are well maintained 6) The establishment of SOP on chemicals usage and waste control	
		Medicinal plants	To save, protect, and develop important plants	1) Poor control over land clearing prior to cultivation. 2) Fire 3) Harvesting by community without allowing for the sustainable principles 4) Changed habitat that no longer suitable for plant growth	1) To formulate SOP to regulate the protection for important plants. 2) To conserve plant species important to local community. 3) Companies have to provide facilities as replacement to the HCV-5 important values that required by local community, if the values can not be maintained.	1. Increased availability of medicinal plants in the natural habitat 2. The availability of seedlings to meeting community's requirements 3. Replacement facilities, such as polyclinic, health center, etc.	See HCV 1 & 3
		Wild animals as protein source	To manage the presence of hunting animal population.	1) Over hunting. 2) Destruction of habitat.	1) Formulate mechanism to regulate hunting and catching by the involvement of local community if the wildlife categorized hunting animals. 2) Place notice board related to hunting for the importance of subsistent requirements of local people.	1) The availability of hunting animal population 2) The availability	See HCV 1 & 3 Comment: for wildlife please complied with

HCV	Sub HCV	Description	Objective of Management	Identification of Threat	Management Action	Success Indicator	Notes
					3) Prohibition and restriction on protected wildlife hunting.	<p>of hunting animals unless the local community's consumption pattern changes.</p> <p>3) SOP on hunting agreed amongst local communities</p> <p>4) The availability of public informative media on hunting</p>	HCV 1-2-3.
		River or lake to obtain fish	To protect and preserve river or lake functions as fish habitat.	<ol style="list-style-type: none"> 1. Silting up due to sedimentation 2. Invasive species 3. Water quality pollution 	<ol style="list-style-type: none"> 1. To place boundary marks/stones at site as planned and involve any related party that utilizes/has importance on that river and/or lake resources. 2. To manage and rehabilitate river bank area as well as other water resources 3. SOP on chemistry usage and waste control applied by companies has paid attention to the conservation of water quality 4. To formulate SOP for management in participatory 	<ol style="list-style-type: none"> 1. Joint agreement on management of river/lake or other wetlands. 2. Riverbanks/lakes are well-maintained. 3. Free from any pollution caused by MU's chemical use and waste. 	<p>See HCV 4 and HCV 1</p> <p>For issues related to food, housing, animal feeding are considered as replaceable aspect. When found during the HVC assessment the management can refer to HCV 5.</p>
6		General	Menjaga dan melestarikan nilai-nilai budaya	<ol style="list-style-type: none"> 1) Poor control over land clearing prior to cultivation 2) Fire 	<ol style="list-style-type: none"> 1. To place boundary marks/stones at site as planned and involve any relevant party to the utilization of HCV 6 2. In case of HCV 6 covers a landscape, area security will be in cooperation with local authority and 		

HCV	Sub HCV	Description	Objective of Management	Identification of Threat	Management Action	Success Indicator	Notes
					community 3. Plantation infrastructure made by maintaining HCV 6 as one whole unit, therefore road construction within HCV 6 area should be avoided 4. Road access to and fro plantation that could harm the HCV 6 sustainability should be secured by related companies through establishing guard posts 5. To publicize notice board on HCV 6 presence, its function and utilization regulation, then disseminate to local community 6. Companies has SOP for HCV 6 management 7. To apply precautionary approach		
		Sacred sites (cemetery), place of ceremony/religious ritual/cultural and historical sites.		1) Poor control over land clearing prior to cultivation	3) To set up clear boundary stones/marks in cooperation with local community that concerns with the site 1) To conduct security approach.	1) Clear boundary stones/marks at related location 2) Well-maintained sites.	
		Habitat area for wildlife animals/essential plants to cultural and religious rituals.		1) Poor control over land clearing prior to cultivation. 2) Fire 3) Harvesting/hunting by community without allowing for the sustainable principles	1. MU provides surveillance or protection for wildlife animals that culturally and religiously important. 2. To place boundary stones/marks at site as planned and involve any party that utilizes or has importance on it.	1. Chosen habitat areas to be managed mutually 2. Clear boundary stones/marks at related location	See HCV 1 & 3

CHAPTER 4 MONITORING GUIDELINES

4.1. Objective

Monitoring is essential to conduct in order to acknowledge the implementation of High Conservation Value (HCV) management and its achievement level. Monitoring is internally carried out by a company.

4.2. Stages

2) Reviewing Document

Document looks at HCV Identification Results and HCV Planning and Management.

The objectives are as follows:

1. HCV recommendation should be managed pursuant to HCV identification results.
2. To recognize HCV management planning as a follow-up to HCV identification recommendation.

These results are important substances for UM Team to conduct reviews on report or records related to HCV management results.

3) Reviewing Report

Based on the document review above, the MU is necessary to review reports or associated documents recording HCV management activity results. In this stage, MU needs to examine completeness of the reports, records and documents (SOP) as regulated in HCV Management Guidelines.

The objective to review the reports is to obtain relevant information prior MU monitors HCV on the sites. Several findings in this review, either conforming or nonconforming, should be verified.

4) Verifying success indicators of the management

Based on results of the previous phase above, for the next step MU has to field check the compliances of success indicators as stated in HCV Management Document. Investigation process involves method of measuring, or direct checks and interviews with responsible field officers or local community.

Whenever nonconforming finding discovered, MU should immediately identify and keep a record so that Corrective Action can be conducted more easily.

5) Preparing corrective action plan for the nonconforming findings.

Based on findings observed during the management indicator investigation, MU should compile a documented corrective action plan. The plan should be made complete, cover details of actions to be executed, time limit, and third party to verify the plan.

6) Implementing corrective actions.

MU carries out necessary corrective actions based on the plan. The correction should always comply with planned actions and time limit.

7) Internal Auditing.

The very last stage of the Monitoring activities is Internal Auditing, which is aimed to scrutinize the results of corrective actions. Internal auditing is responsible to evaluate:

1. documents indulgence
2. site condition
3. time limit

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At the Audit, MU also needs to confirm status of the corrective action; whether it is closed or open. The internal audit team has to document all results and declare the closed and open status.

4.3. Field Verification Guidelines

4.3.1. Land Encroachment

Compare HCV land-cover to satellite images. Check whether changes on HCV land-cover areas took place. After that, compare land-cover area to the site condition. If land clearing does not cover spread, it is not possible to detect by satellite image interpretation. Thus, cleared land should be determined its coordinate and measured its area extent.

4.3.2. Boundary Stones

Check the boundary stones all along the HCV area; whether or not they are consistent with the delineation that on maps. Also examine boundary stone specifications: matter and size. In order to cross-check the position confirmation, GPS and compass are operated; if not conforming, set coordinate of the improper stone and keep a record. The stones should always be standing vertically, the neighboring area should always be clean, and boundary pathway for HCV area should be made too.

4.3.3. Notice Board

Check number, location, and content of notice boards containing prohibition to execute illegal practices within HCV area. The notice should be clear, readable, and understandable to the community. The location of boards should be strategic, at the entrance gates of the HCV area.

4.3.4. Examining Physical Condition of HCV Area

Thorough attention should be given to destructive exercises, such as tree cutting; land burning; ex-hunting area, or destructive NTFPs exploitation. If violation identified, its mitigation should comply to SOP. Compare records (BAP) of violation to field findings. In case of land burning or fire, determine coordinates and extent of the burned area.

4.3.5. No Destructive Non Timber Forest Product (NTFP) Utilization

Check document/administration indulgence for NTFP exploitation, for instance: NTFP type, names of individual/group users, total production, harvesting intensity, and other necessary information. Compare the of NTFP utilization compliance to site condition, for instance: quota and type of trees harvested for resin, honey, fruits, and so forth.

4.3.6. Subsidence

Eligible parameter to measure disappearance of negative impacts driven by swamp subsidence on vegetation is the absence of fallen tree. Examine whether or not water management conducted pursuant to the SOP.

4.3.7. Examining Parental Tree and/or Trees Producing-NTFP

Compare tree condition to the existing documents. Some features need investigation are location, type and dimension of tree, tree number, painted mark on tree, and tree physical condition.

4.3.8. Technical Rehabilitation Plan

In case of rehabilitation carried out (pursuant to the management guidelines), check whether or not the activity conforms to the Technical Design. Several parameters needs specific attentions are tree type agreement; planting distance, and other treatments. Target area has to be rehabilitated pursuant to the plan, including infrastructure such as roads, canals or other open spaces that are no longer in active condition.

4.3.9. Examining Rehabilitation Success Percentage

It takes rapid investigation using intensity and sampling technique that adjusted to time available and site condition. If growth percentage $\geq 80\%$, no patch required. If growth percentage ranges between $60\% - < 80\%$, patch required. While growth percentage $< 60\%$, replanting is mandatory.

4.3.10. Document of Social Activity

Socialization should comply with the management guidelines. Supporting evidences to be maintained are as follows: 1) Participant attendance list; 2) Place of activity; 3) socialization materials; 4) Image/ photograph of activity; 5). Keynote speakers

4.3.11. Invasive Exotic Species Control

Controlling actions should comply with the SOP. Success benchmark is no invasive tree species, available invasive tree is in a terminating process, such as **peneresan** or poisoning.

Note: After all monitoring activities performed, make an examination of the minute.

Table 4.1 Monitoring Guidelines for HCV 1, HCV 2, and HCV 3

HCV	Sub HCV	Description	Management Action	Success Indicator	Benchmark	Monitoring Technique	Notes
1	1.1	Area which has or provides supporting function of biodiversity to protection and/ or conservation area	<ol style="list-style-type: none"> Place clear boundary stones at HCV site based on map of identification result. It is prohibited to build roads, canals and other infrastructures within HCV area. In case of regulation violation, it is obliged to terminate it by rehabilitation. Thus, SOP on rehabilitation should be made. If HCV area is adjacent to exotic planting area (example: acacia), prevention action to avoid the spread of the exotic plants into HCV area is needed. Set up Standard Operational Procedure (SOP) on weeds control of exotic plants. In case of exotic types (example: acacia) are found, terminate the plants gradually (by peneresan). This is aimed at continuing utilizing their canopies to cover the being planted trees in the rehabilitation process. However, when the invasive cover type is unnecessary, it can be directly cut down. Prepare such notice board to avoid either the local community or plantation labors from any destructive activity that could harm HCV area (such as tree cutting, hunting, and so forth). If local community makes use of NTFP in HCV area (such as honey, rattan, and others), it should be acknowledged and under plantation management control. Avoid over- harvesting. Thus, SOP on NTFP harvesting for products commonly exploited by the community 	<ul style="list-style-type: none"> Controlled encroachment Controlled fire Controlled harvesting No invasive species found in such adverse population number Infrastructure development (roads, canals, etc) which does not eliminate HCV area. No vegetation mortality due to subsidence. Rehabilitation with minimum growing percentage as 80 % has been conducted in the degraded areas. Notice board available at every strategic place/entrance gate to HCV area. Available painted mark on seed-producing tree. Activities or signs of exotic vegetation termination identified. Technical plan of forest rehabilitation provided Socialization activity document provided 	<ul style="list-style-type: none"> Available boundary stone at every corner of HCV area No roads, canals and others. Under special condition, MU may build such infrastructure for minimum operating purpose without decreasing the values contained in HCV. Available land rehabilitation activity No exotic type or in the process of termination (available peneresan, etc). Exotic type termination activity found in process T Notice board at access gates into HCV area provided Painted mark on parental tree Subsidence observation plot on peat area provided Available SOP on weeds control of exotic species; HCV security; NTFP 	<ul style="list-style-type: none"> Compare documents to facts at site Interviews with all stakeholders Census Sampling Statistical test 	<ul style="list-style-type: none"> The examination minute (BAP) is made at last stage of monitoring

HCV	Sub HCV	Description	Management Action	Success Indicator	Benchmark	Monitoring Technique	Notes
			<p>should be made.</p> <p>7. No such human activity is allowed in HCV area particularly within Nature Reserve area, except by special permit issued by Department of Forestry *).</p> <p>8. As for an HCV area that in the form of protection forest and preservation forest within an MU should be maintained by the responsible MU as to the prevailing regulation.</p> <p>9. If within HCV area, potential and mature fruit/NTFP producing trees identified, mark around the tree in white color, with 10 cm width at human chest level (130 cm above the ground), give it number, mapped and informed to related institutions, such as Forestry Agency, Seed Center of Forestry Department and so forth. Data important to be collected is as follows: 1). tree type; 2). tree dimension (diameters and total height); 3). Coordinates; 4). Fruit period; 5). Type status (protection or non – protection) and other important information.</p> <p>10. Patrol around HCV area. Arrange SOP on HCV security in accordance with the organization structure of Management Unit.</p> <p>11. It is necessary to create observation plot of subsidence and water table for peat area with > 3 meter depth.</p> <p>12. It is necessary to make water management and SOP on Non-HCV area close to HCV area. Particularly for peat area with > 3 meter depth.</p> <p>13. Socialize HCVF Assessment which consists of Identification; Management; Monitoring; to all MU's employees.</p>		<p>harvesting; and each activity report</p> <ul style="list-style-type: none"> • Available painted mark on fruit or NTFP producing trees • Socialization activity at least once a year. The available documents consist of socialization material, attendance sheet, and photographs. • All employees show their well-understanding on HCV and are able to describe their roles in HCV management. 		

HCV	Sub HCV	Description	Management Action	Success Indicator	Benchmark	Monitoring Technique	Notes
			<p>On damaged habitats, there are several additional activities necessary to be performed, among which are:</p> <ol style="list-style-type: none"> 1. Inventory biophysical data (canopy cover; vegetation type; slope classification; soil type, etc). Furthermore, develop a technical land rehabilitation plan. 2. No further human activity allowed in HCV area as Nature Reserve. Management Unit (MU) only maintains the area in which the damaged area will be able to improve itself through succession. Moreover, MU should maintain the succession process free from outside interference. While for other protection and conservation forests rehabilitation is done according as to the prevailing regulation. 3. Type of tree appropriate for rehabilitation is as follows: 1). Local type; 2). Conforms growing area; 3). Does not need height requirement for growing; 4). Fast growth; 5). Strong roots; 6). Produces fruits as source of animal feed; 7). have benefits to the community (meets economical, ecological and socio-cultural aspects); 8). Includes in Redlist 				

1	1.2	Species/Critical Species/Enigmatic species	<ol style="list-style-type: none"> 1. Place clear boundary signs or stones at site based on identification result map. 2. It is prohibited to build roads, canals and other infrastructures in HCV area. In case of regulation violation, it is obliged to terminate it by rehabilitation. Thus, SOP on rehabilitation needed. 3. If HCV area is adjacent to exotic plants area (example: acacia), such prevention action to avoid the spread of the exotic plants into HCV area is needed. Set up Standard Operating Procedure (SOP) on weed control of exotic plants. 4. In case of exotic types are found (for example: acacia), terminate the plants gradually (by peneresan). The aim is to utilize their canopy cover to protect the planting trees in rehabilitation process. When the cover is unnecessary, it can be directly cut down. 5. Prepare such notice board so that the local community and plantation labors will not do any destructive activity that could harm the HCV area (such as tree cutting, hunting, and so forth). 6. If local community makes use of non timber forest product (NTFP) in HCV area (such as honey, rattan, and others), it should be acknowledged and under plantation management control. Avoid harmful and over harvesting. Thus, SOP on NTFP harvesting for products commonly used by the community should be made. 	<ul style="list-style-type: none"> • No encroachment • No fire • No destructive harvesting • No invasive type of vegetation is found • No infrastructure (roads, canals, etc) • No vegetation mortality related to subsidence • Rehabilitation with minimum growth percentage as 80 % has been conducted in the destructive areas. • Notice board available at every strategic place / access gate into HCV area. • Available painted mark on seed-producing trees. • Activities or signs of exotic vegetation termination found • Technical plan of forest rehabilitation provided • Socialization activity documents provided 	<ul style="list-style-type: none"> • Available boundary stone at every corner of HCV area • No roads, canals and others. • Land rehabilitation activity provided • No exotic type or in the process of termination (available peneresan, etc). • Exotic type control activity identified in process • Available notice board at entrance gate to HCV area • Available painted mark on fruit or NTFP producing trees • Subsidence observation plot provided • Available SOP on weed control of exotic species; HCV 	<ul style="list-style-type: none"> • Comparing documents to field findings • Interviews with all related stakeholders • Census • Sampling • Statistical test (if needed) 	The examination minute (BAP) is made at last phase of monitoring
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			<p>7. If within HCV area, potential and mature NTFP/fruits producing trees are identified, mark around the tree in white color, with 10 cm width at human chest level (130 cm above the ground level), give it number, mapped and report to related institutions, such as Forestry Agency, Seed Center of Forestry Department, and so forth. Data needed as follows: 1). tree type; 2). tree dimension (diameter and total height); 3). Coordinate; 4). Fruit period; 5). Type status (protection or non – protection), as well as other important information.</p> <p>8. Patrol over HCV area. Arrange SOP on HCV security in accordance with the organization structure of management unit.</p> <p>9. Create observation plot of subsidence and water table in the peat swamp area with > 3 meter depth.</p> <p>10. Non-HCV area close to HCV area should have water management and SOP. Particularly needed for peat swamp area with > 3 meter depth.</p> <p>11. Socialize HCVF Assessment which consists of Identification; Management; Monitoring; among all MU's employees.</p> <p>On degraded habitats, there are several additional activities that necessary to be performed, among which are:</p> <ol style="list-style-type: none"> 1. Inventory biophysical data (canopy cover; vegetation type; slope level; soil type, etc). 2. Type of tree appropriate for rehabilitation is as follows: 1). Local type; 2). Conforms growing area; 3). No height requirement for growing needed; 4). Fast 		<p>security; NTFP harvesting; and each activity report</p> <ul style="list-style-type: none"> • Painted mark on seed-producing trees • Socialization activity at least once a year. The available documents consist of socialization material, attendance sheet, and photographs. • All employees show their well-understanding on HCV and are able to describe their roles in HCV management. 		
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			<p>growth; 5). Strong roots; 6). Produces fruits as source of animal feed; 7). have benefits to the community (meets economical, ecological and social and cultural aspects); 8). Includes in Redlist</p>				
1	1.3.	<p>Areas of habitat for endangered species, limited spread species and protected species / type population (viable population)</p>	<ol style="list-style-type: none"> 1. Place clear boundary signs or stones at site based on identification result map. 2. It is prohibited to build roads, canals and other infrastructures in HCV area. In case of regulation violation, it is obliged to terminate it by rehabilitation. Thus, SOP on rehabilitation needed. 3. If HCV area is adjacent to exotic plants area (example: acacia), such prevention action to avoid the spread of the exotic plants into HCV area is needed. Set up Standard Operational Procedure (SOP) on weed control of exotic plants. 4. Prepare such notice board so that the local community and plantation labors will not do any destructive activity that could harm the HCV area (such as tree cutting, hunting, and so forth). 5. If local community makes use of non timber forest product (NTFP) in HCV area (such as honey, rattan, and others), it should be acknowledged and under plantation management control. Avoid harmful and over harvesting. Thus, SOP on NTFP harvesting for products commonly used by the community should be made. 6. If within HCV area, potential and mature NTFP/fruits producing trees are identified, mark around the tree in white color, with 10 cm width at human chest level (130 cm above the ground level), give it number, mapped and report to related institutions, such as Forestry 	<ul style="list-style-type: none"> • No encroachment • No fire accident • No destructive harvesting • No invasive vegetation is found • No infrastructure (roads, canals, etc) • No vegetation mortality due to subsidence • Rehabilitation with minimum growth percentage as 80 % has been conducted in the destructive areas. • Notice board available at every strategic place or entrance gate to HCV area • Available painted mark on seed-producing trees. • Activities or signs of exotic vegetation termination found in process • Technical plan of forest rehabilitation provided • Socialization activity documents provided 	<ul style="list-style-type: none"> • Available boundary pole at every corner of HCV area • No roads, canals and others. • Land rehabilitation activity found in process • No exotic type or in the process of termination (available peneresan, etc). • Exotic type control activity found in process • Available notice board at access gate into HCV area • Available painted mark on parental tree • Subsidence observation plot provided • Available SOP 	<ul style="list-style-type: none"> • Comparing documents to facts at site • Interviews with all related stakeholders • Census • Sampling • Statistical test 	<p>The examination minute (BAP) is made at last stage of monitoring</p>

			<p>Agency, Seed Center of Forestry Department, and so forth. Data needed as follows: 1). tree type; 2). tree dimension (diameter and total height); 3). Coordinate; 4). Fruit period; 5). Type status (protection or non – protection), as well as other important information.</p> <p>7. Patrol over HCV area. Arrange SOP on HCV security in accordance with the organization structure of management unit.</p> <p>8. Create observation plot of subsidence and water table in the peat swamp area with > 3 meter depth.</p> <p>9. Non-HCV area close to HCV area should have water management and the SOP. Particularly needed for peat swamp area with > 3 meter depth.</p> <p>10. Socialize HCVF Assessment which consists of Identification; Management; Monitoring; among all MU's employees.</p> <p>On degraded habitats, there are several additional activities that necessary to be performed, among which are:</p> <p>1. Inventory biophysical data (canopy cover; vegetation type; slope level; soil type, etc).</p> <p>2. Type of tree appropriate for rehabilitation is as follows: 1). Local type; 2). Conforms to growing area; 3). No height requirement for growing needed; 4). Fast growth; 5). Strong roots; 6). Produces fruits as source of animal feed; 7). have benefits to the community (meets economical, ecological and social and cultural aspects); 8). Includes in Redlist</p>		<p>on weed control of exotic species; HCV security; NTFP harvesting; and each activity's report</p> <ul style="list-style-type: none"> • Available painted mark on fruit tree / NTFP • Socialization activity at least once a year. The socialization document consists of socialization material, attendance sheet, and photographs. • All employees show their well-understanding on HCV and are able to describe their roles in HCV management. 		
1	1.4	Temporarily used habitat areas by species or group of	<p>1. Place clear boundary signs or stones at site based on identification result map.</p>	<ul style="list-style-type: none"> • Controlled encroachment • Controlled fire 	<ul style="list-style-type: none"> • Available boundary pole at every corner 	<ul style="list-style-type: none"> • Comparing documents to field findings Interviews with all related 	The examination minute (BAP) is made

		species	<ol style="list-style-type: none"> 2. It is prohibited to build roads, canals and other infrastructures in HCV area. In case of regulation violation, it is obliged to terminate it by rehabilitation. Thus, SOP on rehabilitation needed. 3. If HCV area is adjacent to exotic plants area (example: acacia), such prevention action to avoid the spread of the exotic plants into HCV area is needed. Set up Standard Operating Procedure (SOP) on weed control of exotic plants. 4. In case of exotic types are found (for example: acacia), terminate the plants gradually (by peneresan). The aim is to utilize their canopy cover to protect the planting trees in rehabilitation process. When the cover is unnecessary, it can be directly cut down. 5. Prepare such notice board so that the local community and plantation labors will not do any destructive activity that could harm the HCV area (such as tree cutting, hunting, and so forth). 6. If local community makes use of non timber forest product (NTFP) in HCV area (such as honey, rattan, and others), it should be acknowledged and under plantation management control. Avoid harmful and over harvesting. Thus, SOP on NTFP harvesting for products commonly used by the community should be made. 7. If within HCV area, potential and 	<ul style="list-style-type: none"> • Controlled harvesting • No invasive vegetation is found in such adverse number of population • Infrastructure development (roads, canals, etc) which does not eliminate HCV area. • No vegetation mortality related to subsidence • Rehabilitation with minimum growth percentage as 80 % has been conducted in the destructive areas. • Notice board available at every strategic place or entrance gate to HCV area • Available painted mark on seed-producing trees. • Activities or signs of exotic vegetation termination observed • Technical plan of forest rehabilitation provided • Available documents of socialization activities 	<p>of HCV area</p> <ul style="list-style-type: none"> • No roads, canals and others. • Land rehabilitation activity in process • No exotic type or in the process of termination (available peneresan, etc). • Exotic type control activity in process • Available notice board at entrance gate to HCV area • Available painted mark on parental tree • Subsidence observation plot provided • Available SOP on weed control of exotic species; HCV security; NTFP harvesting; and each activity's report • Available painted mark on fruit or NTFP 	<p>stakeholders</p> <ul style="list-style-type: none"> • Census • Sampling • Statistical test 	<p>at the last stage of monitoring</p>
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			<p>mature NTFP/fruits producing trees are identified, mark around the tree in white color, with 10 cm width at human chest level (130 cm above the ground level), give it number, mapped and report to related institutions, such as Forestry Agency, Seed Center of Forestry Department, and so forth. Data needed as follows: 1). tree type; 2). tree dimension (diameter and total height); 3). Coordinate; 4). Fruit period; 5). type status (protection or non – protection), as well as other important information.</p> <p>8. Patrol over HCV area. Arrange SOP on HCV security in accordance with the organization structure of management unit.</p> <p>9. Create observation plot of subsidence and water table in the peat swamp area with > 3 meter depth.</p> <p>10. Non-HCV area close to HCV area should have water management and the SOP. Particularly needed for peat swamp area with > 3 meter depth.</p> <p>11. Socialize HCVF Assessment which consists of Identification; Management; Monitoring; among all MU's employees.</p> <p>On degraded habitats, there are several additional activities that necessary to be performed, among which are:</p> <ol style="list-style-type: none"> 1. Inventory biophysical data (canopy cover; vegetation type; slope level; soil type, etc). 2. Type of tree appropriate for rehabilitation is as follows: 1). 		<p>producing trees</p> <ul style="list-style-type: none"> • Socialization activity at least once a year. The available document consists of socialization material, attendance sheet, and photographs. • All employees show their well-understanding on HCV and are able to describe their roles in HCV management. 		
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			Local type; 2). Conforms growing area; 3). No height requirement for growing needed; 4). Fast growth; 5). Strong roots; 6). Produces fruits as source of animal feed; 7). have benefits to the community (meets economical, ecological and social and cultural aspects); 8). Includes in Redlist				
2	2.1	Large landscape area containing capacity to maintain ecological process and dynamics naturally	<ol style="list-style-type: none"> 1. Place clear boundary signs or stones at site based on identification result map. 2. It is prohibited to build roads, canals and other infrastructures in HCV area. In case of regulation violation, it is obliged to terminate it by rehabilitation. Thus, SOP on rehabilitation needed. 3. If HCV area is adjacent to exotic plants area (example: acacia), such prevention action to avoid the spread of the exotic plants into HCV area is needed. Set up Standard Operating Procedure (SOP) on weed control of exotic plants. 4. In case of exotic types are found (for example: acacia), terminate the plants gradually (by peneresan). The aim is to utilize their canopy cover to protect the planting trees in rehabilitation process. When the cover is unnecessary, it can be directly cut down. 5. Prepare such notice board so that the local community and plantation labors will not do any destructive activity that could harm the HCV area (such as tree 	<ul style="list-style-type: none"> • Controlled encroachment • Controlled fire • Controlled harvesting • No invasive species is found in such adverse number of population • Infrastructure development (roads, canals, etc) which does not eliminate HCV area • No vegetation mortality due to subsidence (14) • No vegetation mortality due to subsidence • Rehabilitation with minimum growth percentage 80 % has been conducted in the degraded areas. • Notice board available at every strategic place or entrance gate to HCV area • Available painted mark on seed-producing trees. 	<ul style="list-style-type: none"> • Available boundary stones at every corner of HCV area • No roads, canals and others. • Land rehabilitation activity is in process • No exotic type found or in the process of termination (available peneresan, etc). • Exotic type control activity in process • Available notice board at access gate into HCV area • Available painted mark on fruit or NTFP 	<ul style="list-style-type: none"> • Comparing documents to facts at site • Interviews with all related stakeholders • Census • Sampling • Statistical test 	The examination minute (BAP) is made at last stage of monitoring

			<p>cutting, hunting, and so forth).</p> <p>6. If local community makes use of non timber forest product (NTFP) in HCV area (such as honey, rattan, and others), it should be acknowledged and under plantation management control. Avoid harmful and over harvesting. Thus, SOP on NTFP harvesting for products commonly used by the community should be made.</p> <p>7. If within HCV area, potential and mature NTFP/fruits producing trees are identified, mark around the tree in white color, with 10 cm width at human chest level (130 cm above the ground level), give it number, mapped and report to related institutions, such as Forestry Agency, Seed Center of Forestry Department, and so forth. Data needed as follows: 1). tree type; 2). tree dimension (diameter and total height); 3). Coordinate; 4). Fruit period; 5). Type status (protection or non – protection), as well as other important information.</p> <p>8. Patrol over HCV area. Arrange SOP on HCV security in accordance with the organization structure of management unit.</p> <p>9. Create observation plot of subsidence and water table in the peat swamp area with > 3 meter depth.</p> <p>10. Non-HCV area close to HCV area should have water management and the SOP. Particularly needed for peat swamp area with > 3</p>	<ul style="list-style-type: none"> • Activities or signs of exotic vegetation termination found in process • Technical plan of forest rehabilitation provided • Available documents of socialization activities 	<p>producing trees.</p> <ul style="list-style-type: none"> • Subsidence observation plot provided • Available SOP on weed control of exotic species; HCV security; NTFP harvesting; and each activity's report • Painted mark on seed-producing trees • Socialization activity at least once a year. The available documents consist of socialization material, attendance sheet, and photographs. • All employees show their well-understanding on HCV and are able to describe their roles in HCV management. 		
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			<p>meter depth.</p> <p>11. Socialize HCVF Assessment which consists of Identification; Management; Monitoring; among all MU's employees.</p> <p>On degraded habitats, there are several additional activities that necessary to be performed, among which are:</p> <ol style="list-style-type: none"> 1. Inventory biophysical data (canopy cover; vegetation type; slope level; soil type, etc). 2. Type of tree appropriate for rehabilitation is as follows: 1). Local type; 2). Conforms to growing area; 3). No height requirement for growing needed; 4). Fast growth; 5). Strong roots; 6). Produces fruits as source of animal feed; 7). have benefits to the community (meets economical, ecological and social and cultural aspects); 8). Includes in Redlist 				
2	2.3.	Areas containing representative population of natural species	<ol style="list-style-type: none"> 1. Place clear boundary signs or stones at site based on identification result map. 2. It is prohibited to build roads, canals and other infrastructures in HCV area. In case of regulation violation, it is obliged to terminate it by rehabilitation. Thus, SOP on rehabilitation needed. 3. If HCV area is adjacent to exotic plants area (example: acacia), such prevention action to avoid the spread of the exotic plants into HCV area is needed. Set up Standard Operating Procedure (SOP) on weed control of exotic plants. 	<ul style="list-style-type: none"> • Controlled encroachment • Controlled fire • Controlled harvesting • No invasive vegetation is found in such adverse number of population • No infrastructure (roads, canals, etc) which does not eliminate HCV area • No vegetation mortality related to subsidence (14) • No vegetation mortality 	<ul style="list-style-type: none"> • Available boundary pole at every corner of HCV area • No roads, canals and others. • Land rehabilitation activity in process • No exotic type found or in the process of termination (available peneresan, 	<ul style="list-style-type: none"> • Comparing documents to facts at site • Interviews with all related stakeholders • Census • Sampling • Statistical test 	The examination minute (BAP) is made at the last stage of monitoring

			<p>4. In case of exotic types are found (for example: acacia), terminate the plants gradually (by peneresan). The aim is to utilize their canopy cover to protect the planting trees in rehabilitation process. When the cover is unnecessary, it can be directly cut down.</p> <p>5. Prepare such notice board so that the local community and plantation labors will not do any destructive activity that could harm the HCV area (such as tree cutting, hunting, and so forth).</p> <p>6. If local community makes use of non timber forest product (NTFP) in HCV area (such as honey, rattan, and others), it should be acknowledged and under plantation management control. Avoid harmful and over harvesting. Thus, SOP on NTFP harvesting for products commonly used by the community should be made.</p> <p>7. If within HCV area, potential and mature NTFP/fruits producing trees are identified, mark around the tree in white color, with 10 cm width at human chest level (130 cm above the ground level), give it number, mapped and report to related institutions, such as Forestry Agency, Seed Center of Forestry Department, and so forth. Data needed is as follows: 1). tree type; 2). tree dimension (diameter and total height); 3). Coordinates; 4). Fruit period; 5). Type status (protection or non-</p>	<p>related to subsidence</p> <ul style="list-style-type: none"> • Rehabilitation with minimum growth percentage as 80 % has been conducted to the degraded areas. • Notice board available at every strategic place or entrance gate to HCV area • Available painted mark on seed-producing trees • Activities or signs of exotic vegetation termination found in process • Technical plan of forest rehabilitation provided • Documents of socialization activities provided 	<p>etc).</p> <ul style="list-style-type: none"> • Exotic type termination activity is in process • Available notice board at access gate into HCV area • Available painted mark on fruit or NTFP producing trees • Subsidence observation plot provided • Available SOP document on weed control of exotic species; HCV security; NTFP harvesting; and each activity report • Available painted mark on seed-producing trees • Socialization activity at least once a year. The available documents consist of socialization material, attendance sheet, and 		
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			<p>protection), as well as other important information.</p> <ol style="list-style-type: none"> 8. Patrol over HCV area. Arrange SOP on HCV security in accordance with the organization structure of management unit. 9. Create observation plot of subsidence and water table in the peat swamp area with > 3 meter depth. 10. Non-HCV areas close to HCV area should have water management and SOP. Particularly needed for peat swamp area with > 3 meter depth. 11. Socialize HCVF Assessment which consists of Identification; Management; Monitoring; among all MU's employees. <p>On degraded habitats, there are several additional activities that necessary to be performed, among which are:</p> <ol style="list-style-type: none"> 1. Inventory biophysical data (canopy cover; vegetation type; slope level; soil type, etc). 2. Type of tree appropriate for rehabilitation is as follows: 1). Local type; 2). Conforms to growing area; 3). No height requirement for growing needed; 4). Fast growth; 5). Strong roots; 6). Produces fruits as source of animal feed; 7). have benefits to the community (meets economical, ecological and social and cultural aspects); 8). Includes in Redlist 		<p>photographs.</p> <ul style="list-style-type: none"> • All employees show their well-understanding on HCV and are able to describe their roles in HCV management. 		
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3	-	Areas containing rare or endangered ecosystem	<ol style="list-style-type: none"> 1. Place clear boundary signs or stones at site based on identification result map. 2. It is prohibited to build roads, canals and other infrastructures in HCV area. In case of regulation violation, it is obliged to terminate it by rehabilitation. Thus, SOP on rehabilitation needed. 3. If HCV area is adjacent to exotic plants area (example: acacia), such prevention action to avoid the spread of the exotic plants into HCV area is needed. Set up Standard Operating Procedure (SOP) on weed control of exotic plants. 4. In case of exotic types are found (for example: acacia), terminate the plants gradually (by peneresan). The aim is to utilize their canopy cover to protect the planting trees in rehabilitation process. When the cover is unnecessary, it can be directly cut down. 5. Prepare such notice board so that the local community and plantation labors will not do any destructive activity that could harm the HCV area (such as tree cutting, hunting, and so forth). 6. If local community makes use of non timber forest product (NTFP) in HCV area (such as honey, rattan, and others), it should be acknowledged and under plantation management control. Avoid harmful and over harvesting. Thus, SOP on NTFP harvesting for products commonly 	<ul style="list-style-type: none"> • Controlled encroachment • Controlled fire • Controlled harvesting • No invasive vegetation is found in such adverse number of population • No infrastructure (roads, canals, etc) which does not eliminate HCV area • No vegetation mortality due to subsidence (14) • No vegetation mortality due to subsidence • Rehabilitation with minimum growth percentage as 80 % has been conducted in the degrade areas. • Notice board available at every strategic place or entrance gate to HCV area • Available painted mark on seed-produced tree. • Activities / signs of exotic vegetation termination in process • Technical plan of forest rehabilitation provided • Documents of socialization activities provided 	<ul style="list-style-type: none"> • Available boundary pole at every corner of HCV area • No roads, canals and others. • Land rehabilitation activity in process • No exotic type found or in the process of termination (available peneresan, etc). • Exotic type termination activity in process • Available notice board at access gate into HCV area • Available painted mark on fruit or NTFP producing trees • Subsidence observation plot provided • Available SOP on weed control of exotic species; HCV security; NTFP harvesting; and 	<ul style="list-style-type: none"> • Comparing documents to facts at site • Interview with all related parties • Census • Sampling • Statistical test 	The examination minute (BAP) is made at the last stage of monitoring
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			<p>used by the community should be made.</p> <ol style="list-style-type: none"> 7. If within HCV area, potential and mature NTFP/fruits producing trees are identified, mark around the tree in white color, with 10 cm width at human chest level (130 cm above the ground level), give it number, mapped and report to related institutions, such as Forestry Agency, Seed Center of Forestry Department, and so forth. Data needed as follows: 1). tree type; 2). tree dimension (diameter and total height); 3). Coordinate; 4). Fruit period; 5). Type status (protection or non – protection), as well as other important information. 8. Patrol over HCV area. Arrange SOP on HCV security in accordance with the organization structure of management unit. 9. Create observation plot of subsidence and water table in the peat swamp area with > 3 meter depth. 10. Non-HCV area close to HCV area should have water management and the SOP. Particularly needed for peat swamp area with > 3 meter depth. 11. Socialize HCVF Assessment which consists of Identification; Management; Monitoring; among all MU's employees. <p>On degraded habitats, there are several additional activities that necessary to be performed, among which are:</p>		<p>each activity's report</p> <ul style="list-style-type: none"> • Available painted mark on seed-produced tree • Socialization activity at least once a year. The document consists of socialization material, attendance sheet, and photographs. • All employees show their well-understanding on HCV and are able to describe their roles in HCV management. 		
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			<ol style="list-style-type: none">1. Inventory biophysical data (canopy cover; vegetation type; slope level; soil type, etc).2. Type of tree appropriate for rehabilitation is as follows: 1). Local type; 2). Conforms to growing area; 3). No height requirement for growing needed; 4). Fast growth; 5). Strong roots; 6). Produces fruits as source of animal feed; 7). have benefits to the community (meets economical, ecological and social and cultural aspects); 8). Includes in Redlist				
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Table 4.2 Monitoring Guidelines for HCV 4

HCV	Sub HCV	Alternative Management Action	Success Indicator	Benchmark	Monitoring Technique	Notes
4	1.1. Area or ecosystem substantial as water catching and flood control to downstream community	<ol style="list-style-type: none"> 1. To prevent reduction and conduct recovery for specific land / forest cover on required minimum area basis at certain location within Management Unit (MU) area in the same watershed (DAS) unit by periodical mapping and to place boundary stones. SOP on reduction prevention and recovery of specific forest cover needed. 2. To map the location of substantial water resources including river bank areas (conforming to prevailing regulations), and to place boundary stones and to provide protection at that location. 3. To determine water catching area used for water resource to the community, to place boundary marker, and identify in part or whole water catching inside MU area. 4. To analyze water quality through waste control of plantation activities and palm oil processing plants 5. If water resource within MU area is used communally with the community thus community participation on identification and management of water resources should be made. 6. To conduct analysis on important water resource for MU and the community (related to HCV 5) 	<ol style="list-style-type: none"> 1. Growing extent percentage between land cover and HCV forest cover 2. Available data on significant water resources 3. Available data on water catching areas used as water resource by the community 4. Available periodical data on water resource quality as maintained by MU 5. Records or reports on results of joint venture between MU and local community 6. Available periodical data on important water resource 	<ol style="list-style-type: none"> 1. Map of forest cover in scale \geq 1:50,000 2. Map of important water resources in scale \geq 1:50,000 3. Map of water catching used as water resource by the community in scale \geq 1:50,000 4. Analysis result of water resource quality (laboratory check) as in MU's standard 5. Reports of community participation on water resource identification and management 6. Analysis /calculation result on important water resource need 	<ol style="list-style-type: none"> 1. On the standard map, forest area should be mapped once in a year; its development orderly recorded; and the number of boundary stones is constant and immovable. 2. On the standard map, important water resource should be mapped once in a year; recorded its development orderly; and the number of boundary stones is constant and immovable. 3. On the standard map, water catching should be mapped once in a year; recorded its development orderly; and the number of boundary stones is constant and immovable. 4. Analysis result should be compared to valid standard of quality (for instance, State Minister of Environment Decree) 5. The community and MU should have access to the mentioned reports. 6. Calculation result is compared to minimum needs of the community 	Mapping process based on GPS software and image interpretation
	4.2. Areas important for erosion and sedimentation control	<ol style="list-style-type: none"> 1. To periodical map actual erosion prediction 2. Land or vegetation cover in the high 	<ol style="list-style-type: none"> 1. Map of actual erosion prediction set up if possible (refer TBE to 	<ol style="list-style-type: none"> 1. Map of erosion prediction in scale \geq 1 : 	<ol style="list-style-type: none"> 1. On the standard map, erosion prediction should be mapped once in a year, 	Mapping process based on GPS software and

HCV	Sub HCV	Alternative Management Action	Success Indicator	Benchmark	Monitoring Technique	Notes
		<p>potential erosion area should be well maintained, or should be improved if necessary and placed with boundary stones.</p> <p>3. To map MU areas within Super-priority watershed (DAS) and Priority watershed (DAS), or other watershed (DAS) and sub-watershed (DAS) within MU areas.</p>	<p>Management Division)</p> <p>2. Percentage of vegetation covers over areas prone to erosion.</p> <p>3. Maps of MU areas within Super-priority watershed and Priority watershed and vice versa set up.</p>	<p>50,000</p> <p>2. Map of vegetation cover at high potential erosion area in scale $\geq 1 : 50,000$</p> <p>3. Map of Super-priority watershed and Priority watershed inside or outside MU areas in scale $\geq 1 : 50,000$</p>	<p>particularly for high potential erosion areas; recorded each development orderly.</p> <p>2. On the standard map, land cover should be mapped once in a year, especially for high potential erosion areas; recorded each development orderly.</p> <p>3. Mapping them and obtaining info about watershed status mentioned annually.</p> <p>Notes: Cooperation with related institutions: BPDAS and Forestry Agency in monitoring should be created.</p>	<p>imagery interpretation or other provided thematically maps.</p>
	4.3. Areas used as natural buffer to prevent forest or land from fire spreading	<p>1. To apply zero burning system on MU area preparation</p> <p>2. To support and maintain fire buffer nearby or within MU in well condition.</p> <p>3. To place boundary stones and notice boards related to fire buffer existence</p> <p>4. To build infrastructure for forest and land fire mitigation by MU.</p> <p>5. To perform routine patrol throughout fire-prone plantation of palm oil during dry season, mainly at peak</p> <p>6. In such situation where fire buffer does not optimally function, applied technology of land fire mitigation, such as planting fireproof vegetation.</p>	<p>1. No forest / land fire or their frequency significantly decreased</p> <p>2. Fire buffer is well maintained</p> <p>3. Fire buffer signs in place</p> <p>4. Facilities and infrastructure for fire mitigation provided</p> <p>5. Patrol is conducted by MU</p> <p>6. Technology of land fire mitigation applied</p>	<p>1. Fire incidence controlled to zero-burning level.</p> <p>2. Periodically fire buffer maintenance</p> <p>3. Fire buffer signs placed completely</p> <p>4. Adequate facilities and infrastructure for fire mitigation</p> <p>5. Patrol over land and forest fire is carried out daily / at dry season peak</p> <p>6. Adequate</p>	<p>1. Forest fire case is maintained, mainly during dry season</p> <p>2. Daily activities of fire force are maintained</p> <p>3. Completeness and existence of fire signs are monitored repeatedly</p> <p>4. Facilities and infrastructure for fire mitigation are ready to use</p> <p>5. Frequency of patrol for land and forest fire is maintained periodically.</p> <p>6. Success technology application for land fire is significantly observable and noted down.</p>	<p>Application of technology such as planting and enrichment using fireproof vegetation apart from moistened micro climate</p>

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HCV	Sub HCV	Alternative Management Action	Success Indicator	Benchmark	Monitoring Technique	Notes
				technology for land fire mitigation 7. Well-trained fire force and at right places		

Table 4.3 Monitoring Guidelines for HCV 5 and HCV 6

HCV	Sub HCV	Description	Management Action	Success Indicator	Benchmark	Monitoring Technique	Notes
HCV 5 Area that contains substantial functions for subsistent fulfillments of local community Water reservoir evaluation report	1. Forest or other natural ecosystems that provide important and irreplaceable resources to local community		<p>GENERAL</p> <ol style="list-style-type: none"> To conduct threat identification on the existence of HCV 5, to perform negative impacts evaluation on HCV 5 by current applied practices, and to set up mitigation plan all together with representatives of local people. To develop utilization procedure of HCV 5 area and disseminate it among local community To make notice boards notifying prohibitions to: poaching, fishing with poison or electricity, over harvesting on HCV 5 area. To place notice boards on the presence of HCV 5 as much as needed relevant to the area size. To publish brochures on HCV 5 presence, its function and utilization regulations, then distribute to the community 	<ol style="list-style-type: none"> Report on impact / threat and mitigation plan provided (1) Available guideline of HCV 5 usage (2) Periodical monitoring reports shows extent of areas containing HCV 5 remains the same and the values are in good quantity and quality. The local dependent population on HCV 5 are considered to be high enough (can be quantified) There are attempts for improvement or replacement of damaged values in HCV 5 	<ol style="list-style-type: none"> Document / report on impact / threat Document on mitigation plan (in case of conflict takes place) Periodical monitoring reports Data on HCV 5 users (if any) Brochures SOP on sustainable harvesting of medicinal plants 	Visual, GPS record, survey, public consultation, Focus Group Discussion (FGD)	See HCV 1 & 3

			6) Companies have to provide facilities as replacement to the HCV-5 important values that required by local community, if the values can not be maintained.				
		Water resource for daily use	<ol style="list-style-type: none"> 1. To place boundary marks/stones at site as planned and involve any responsible party that utilizes/ has an importance on the water resource 2. To facilitate water resource function replacement from HCV 5 area that needed by local community if the values can no longer be maintained. 3. To involve local users to manage the water resource and prevent its function from its functional modification. 4. To monitor periodically to identify water-table dynamic, water quality and conduct proper corrective actions. 5. To manage water catching areas, particularly within MU that have influence on the water resource, carry out rehabilitation, and improvement 6. To manage and rehabilitate river bank 	<ol style="list-style-type: none"> 1. Clear and fixed boundary signs approved by all parties (verification: boundary marks/stones, agreement document and the implementation) 2. Management organization which allows local community's participation 3. Delineation implementation process in the field 4. Water volume availability in certain period for areas near the water resource 5. No water quality degradation 6. Water catching areas are in good condition 7. SOP on chemistry use and waste control in place 	<ol style="list-style-type: none"> 1. Boundary stones/marks in place 2. Management organization is established and functioning (organization structure, working plan and report on the implementation of working plan) 3. Document on water quality test 4. Report on water resource areas 5. SOP compiled and disseminated 	Visual, GPS record, survey, FGD, public consultation	See HCV 4

			<p>areas and other water resources</p> <p>7. To prepare SOP on chemistry usage and waste control used by companies, and maintain sustainability of the water quality</p>				
		Medicinal plants	<ol style="list-style-type: none"> 1. To conduct detail inventory and habitat delineation (map and location) along with local community's involvement 2. To arrange SOP to regulate protection on important plants 3. To carry out conservation for locally substantial plant species 	<ol style="list-style-type: none"> 1. Increased medicinal plant availability in their original habitat 2. The availability of medicinal plants nursery for local community's needs 3. The availability of facilities as replacement such as health clinic, health center and so forth 	<ol style="list-style-type: none"> 1. Data and information on condition of medicinal plants and other important plants used by local community 2. Seedling (see management) 3. User data 4. Location map of medicinal plant conservation 	Visual, GPS record, survey	<p>See HCV 1 & 3 Determination of the numbers of users so that HCV 5 can be regarded as HCV should be adapted to local condition based on survey/ identification results.</p> <p>HCV 5 that is located at smaller plots can be moved to other location that is proper and feasible from conservation perspective.</p> <p>While for HCV 6 can only be moved to such adequate location by the approval of HCV 6 community</p>
		Animals as protein source	<ol style="list-style-type: none"> 1. To regulate hunting and catching mechanism by involving local community if the wildlife counted as hunting animals 2. Monitoring the presence 	<ol style="list-style-type: none"> 1. Increased population of wildlife species 2. SOP on hunting that accepted among local community in place 3. Information media on hunting 	<ol style="list-style-type: none"> 1. SOP to monitor both hunting and catching of wildlife hunting animals 2. Information media (notice boards, 	Visual, GPS record, survey	<p>1. See HCV 1 & 3 Comments: for wildlife species, please refer to HCV 1-2-3</p>

			of wildlife species 3. To place notice boards related to hunting as to local community's subsistence fulfillment	available for public	brochures) on hunting and catching		
		Rivers or lakes providing fish	<ol style="list-style-type: none"> 1. To place boundary marks/stones at site as planned and involve any related party that utilizes/has importance on that river and/or lake resources 2. To perform management on supporting areas for water resource within MU area; to conduct rehabilitation; vegetation improvement 3. To manage and rehabilitate river bank area and other water resources 4. SOP on chemistry usage and waste control applied by companies has paid attention to the conservation of water quality 5. To arrange protocols for management in participatory. 	<ol style="list-style-type: none"> 1. Available delineation of map and location 2. Joint agreement on management of river/lake or other wetlands in place 3. Good water catching areas 4. Well maintained river bank / lakeside areas 5. Free from pollution derived from MU's chemistry and waste 	<ol style="list-style-type: none"> 1. Boundary stones/marks in place 2. Facts for having conducted socialization on sustainability harvesting regulation in local community 3. Survey reports on water catching and river bank condition 4. Reports on water quality test 	Visual, GPS record, survey	See HCV 4
HCV-6 areas that has important function as traditionally cultural identity of local			<p>General</p> <ol style="list-style-type: none"> 1. To place boundary marks/stones at site as planned and involve any relevant party to the utilization of HCV 6 2. In case of HCV 6 covers a landscape, area 		<ol style="list-style-type: none"> 1. Boundary stones in place 2. See verification for HCV 5 	Visual, GPS record, survey	

community			<p>security will be in cooperation with local authority and community</p> <ol style="list-style-type: none"> 3. Plantation infrastructure made by maintaining HCV 6 as one whole unit, therefore road construction within HCV 6 area should be avoided 4. Road access to and from plantation that could harm the HCV 6 sustainability should be secured by related companies through establishing guard posts 5. To publicize notice board on HCV 6 presence, its function and utilization regulation, then disseminate to local community 8) Companies has SOP for HCV 6 management 9) To apply precautionary approach 				
		Sacred sites (burial ground), worship/religious ritual/culture sites, historical sites	<ol style="list-style-type: none"> 1. To set up clear boundary stones/marks in cooperation with local community that concerns with the site 2. To conduct security approach by maintaining area buffer in order to secure it from fire and other disturbances 	<ol style="list-style-type: none"> 1. Clear boundary stones/marks at related location 2. Effective fire buffer provided 3. Well-maintained sites and still used by local community 	<ol style="list-style-type: none"> 1 Clear boundary stones in place 2. Fire buffer 3. Periodical report on the site condition 	Visual, GPS record, survey	
		Habitat area for wildlife	<ol style="list-style-type: none"> 1. To set list of priority for wildlife animals that 	<ol style="list-style-type: none"> 1. Habitat areas to be managed mutually are 	<ol style="list-style-type: none"> 1. Survey report on wildlife animals and 	Visual, GPS record, survey,	See HCV 1 & 3

		<p>animals/essential plants to cultural and religious rituals</p>	<p>culturally and religiously important, and to select available habitat to be managed. These are carried out along with the local community who significantly depends on the resources</p> <p>2. To place boundary stones/marks at site as planned and involve any party that utilizes the water resources</p>	<p>chosen</p> <p>2. Boundary stones/marks at related location available</p>	<p>important plants culturally and religiously to the local community</p> <p>2. User data</p> <p>3. Conservation area map of substantial plants that culturally and religiously important</p>	<p>FGD, public consultation</p>	
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First Draft, September 2009

CHAPTER 5 CLOSING

(To be completed by Ismu Zulfikar for the final document)

Annex 1 Member List of HCV RIWG

NO	NAME	POSITION	ORIGINAL INSTITUTION
1	Daud Dharsono	Chairman	DMSI
2	Purwo Susanto	Vice Chairman	YASPI
3	Ismu Zulfikar	Secretary	PT SMART Tbk
4	Darmawan Liswanto	Coordinator of Expert Team	Flora Fauna International
5	Jonotono	Expert Team	Forestry Training Center of Riau Province
6	Dwi R Muhtaman	Expert Team	AKSENTA
7	Dr.Kunkun Jakagurmaya	Expert Team	Padjajaran University
8	Prof. Dr. Sudirman Yahya	Expert Team	Bogor Agricultural Institute (IPB)
9	Dr.Kukuh Murti Laksono	Expert Team	Bogor Agricultural Institute (IPB)
10	Dr. Asril Darussamin	Expert Team	RILO
11	Wiwin Effendy	Member	WWF Indonesia
12	Thomas Barano	Member	WWF Indonesia
13	Amalia Prameswari	Member	WWF Indonesia
14	Haryono	Member	WWF Indonesia
15	Arif Budiman	Member	WWF Indonesia
16	Thomas Barano	Member	WWF Indonesia
17	Kresno	Member	Tropenbos International
18	Yana Suryadinata	Member	The Nature Conservancy
19	Musdalifah	Member	Staff of Coordinator Minister of Economy, Finance, and Commerce
20	Norman Jiwan	Member	Sawit Watch

NO	NAME	POSITION	ORIGINAL INSTITUTION
21	Deuxiemi Kusumadewi	Member	RILO
22	Rahayu Harjanti	Member	RILO
23	Dr. Darnoko	Member	PT Sri Rejeki
24	Kusuma Widya Rochmah	Member	PT SMART Tbk.
25	Nogoseno	Member	PT SMART Tbk.
26	Hendi Hidayat	Member	PT SMART Tbk.
27	Norman Faried Mustakim	Member	PT SMART Tbk.
28	Widagdo	Member	PT SMART Tbk.
29	Indra Pangasian	Member	PT Sampoerna Agro
30	Dwi Asmono	Member	PT Sampoerna Agro
31	Purboyo Guritno	Member	PT Makin
32	Bambang Dwi Laksono	Member	PT London Sumatera
33	Steaven Halim	Member	PT Kalimantan Sanggar Pusaka
34	Slamet Riyadi	Member	PT Astra Agro
35	Bandung Sahari	Member	PT Astra Agro
36	Asrini	Member	PT Asian Agri
37	Hoposan Panjaitan	Member	PT Asian Agri
38	Triadi Retnawan	Member	PT Agro Indonesia
39	Edy Kayora	Member	PT Agro Indomas
40	Jarwadi B H	Member	PT Agro Indomas
41	Yohanes Izmi Ryan	Member	PT Agro Harapan Lestari
42	Tuti Hendrawati	Member	Ministry of Environment

NO	NAME	POSITION	ORIGINAL INSTITUTION
43	Cahyo Nugroho	Member	Flora Fauna International
44	Gary Paoli	Member	Daemeter Consulting
45	M. Farid	Member	Conservation International
46	Bonie Adnan	Member	Conservation International
47	Ignatius Eri Kurniawan	Member	APOLIN
48	Rudy Lamuru	Member	