

# HCV ASSESSMENT REPORT

## PT WIRA KARYA SAKTI

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Jambi, Indonesia

Asia Pacific Consulting Solutions

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### FINAL



**Acknowledgements**

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Greenpeace

WWF Indonesia

WWF International

HCVRN Indonesia

HCVRN International

Forest People's Program

Eyes on the Forest

The Forest Trust

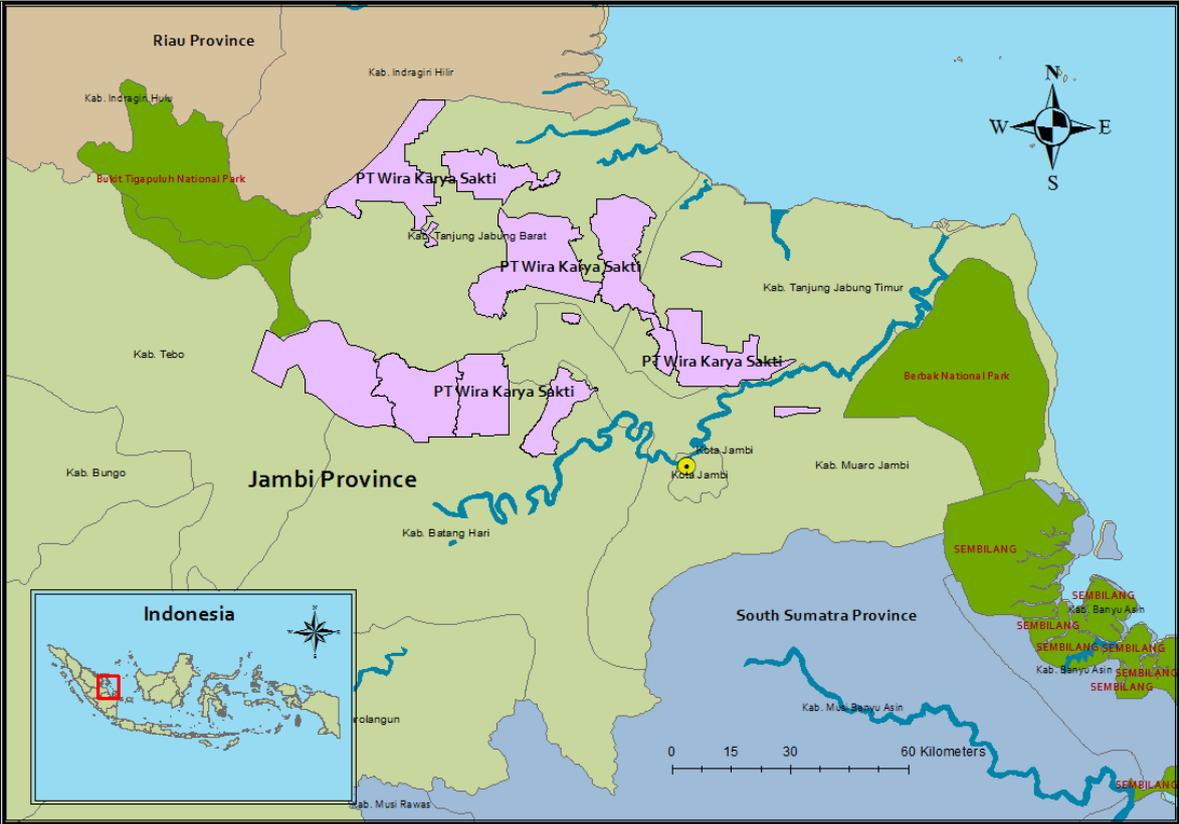
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and many others at the local level

Thank you all!!

**EXECUTIVE SUMMARY**

The HCV Assessment in Jambi province focused on three (3) concessions comprised of PT Wirakarya Sakti (WKS), PT Rimba Hutani Mas (RHM), and PT Tebo Multi Agro (TMA) all of which provides timber supply to PT Lontar Papyrus Pulp & Paper Industry which belongs to Asia Pulp & Paper (APP) Group. This particular report present findings for PT WKS and the scope of the HCV Assessment for PT WKS is limited only to the area within the PT WKS concession area.



PT WKS is a forest management enterprise managing an industrial plantation forest located within five political regencies (Batanghari, Tanjung Jabung Barat, Tanjung Jabung Timur, Muaro Jambi, and Tebo Regencies) in Jambi Province. Most of the area is plantation pulpwood forests (planted forests) and a mosaic of interspersed natural forest remaining in conservation areas with the major areas being on the west side near Bukit Tiga Puluh National Forest (BTPNP) and the north side in District I and VII.

**Project Ownership**

This project was commissioned by Asia Pulp and Paper Group. Asia Pulp and Paper Group (APP) is a trade name for a group of pulp and paper manufacturing companies in Indonesia and China. The APP group of companies is one of the world’s largest vertically integrated pulp and paper companies, with an annual combined pulp, paper, and converting products capacity of over 18 million tons. APP-Indonesia and APP-China currently market their products in more than 120 countries across six continents. Asia Pulp & Paper’s Indonesian administrative office is located at Sinarmas Land Plaza, Jalan Thamrin, Jakarta, Indonesia.

At the time of this report, the pulp mills of the Asia Pulp and Paper Group (APP) receive pulpwood from the HTI concessions of 38 suppliers located on the islands of Sumatra and Borneo. This project covers one (1) of those supplies on the island of Sumatra.

### **Concession Historical Aspects**

PT. Wirakarya Sakti, established on 11 October 1975 in Padang, submitted a request to the government to acquire forest plantation (HPHTI) permit in Jambi on 10 January 1989. The submission was first recommended by the Governor of Jambi through letter No. 522.11/6249/Bappeda dated 25 July 1991. On 14 May 1992, Ir. Hasjrul Harahap as the Ministry of Forestry issued a Decree No.454/Kpts-II/92 on Plantation Forest Right (Temporary) to PT. Wirakarya Sakti with the total area of 241.115 Ha, for the duration of 35 years with additional 8 years for the first plantation cycle. In total, the rights will expire after 43 years. The initial plantation establishment in Jambi started in 1994 in Batanghari Regency and Tanjung Jabung Barat Regency by clearing an area of 10.000 Ha in both regencies.

The total area of 241.115 Ha was then reduced to 78.240 Ha based on the Ministry of Forestry Decree No. 744/Kpts-II/1996 dated 23 November 1996. The decree was issued due to the recommendation from the Governor of Jambi No 593.6/4121/Bappeda dated 15 June 1993 adding the following clause:“should there be private areas, villages, garden, rice field, or any other areas that have been managed by third party, then the area will be excluded from the concession area of PT WKS.

On 15 March 2001, PT. WKS obtained additional concession area based on the Ministry of Forestry Decree No. 64/Kpts-II/2001 on the Ammendment of Ministry of Forestry Decree No. 744/Kpts-II/96, increasing the total concession area into 191.130 Ha. The adition of the area was from : (a) ex-area of PT. Brata Jaya Utama Natural Forest Management, PT. Kamiaka Surya and PT. Betara Agung Timber for about 43.750 Ha; (b) plantation of PT. Intra Prima Lestari, PT. Jambi Raya Palantama and PT. Batanghari Perkasa of about 35.250 Ha that was not yet active; (c) area reserved for plantation forestry of PT. Pedamaran Indah of about 3.580 Ha; and (d) area initially reserved for PT JLS of about 6.700 Ha.

Furthermore, in 2004, PT. WKS obtained another area of about 40.240 Ha based on the Ministry of Forestry Decree No. 228/Menhut-II/2004 dated 19 July 2004 on the Second Ammendment of the MoF Decree No. 744/Kpts-II/1996. The Head of Tanjung Jabung Barat and Batanghari Regencies as well as the Governor of Jambi issued recommendation on the addition making the total WKS area of 233.251 Ha. During the same year, PT WKS again proposed additional area resulting in the Third Ammendment of Ministry of Forestry Decree No. 744/Kpts-II/1996 (MoF Decree No. 346/Menhut-II/2004) so that the total area of PT WKS concession is 293.812 Ha. The concession area is located within five regencies in Jambi province.

### **Assessment Findings**

In an effort to provide APP a result that could be more easily utilized, this report, which presents the findings from the HCV assessment of PT WKS, is prepared at the concession (Forest Management Unit) level. The concession report provides:

- Introductions and assessment methods conducted during the survey for ecology, soil, hydrology, and social,

- HCV definitions according to the HCVF Toolkit for Indonesia (2010),
- a landscape context summary of the management units derived from secondary data and map analysis,
- a landscape perspective in which the concession is operating within,
- findings of the assessment,
- management and monitoring recommendations based on the identified threats, and
- barriers should the company choose to pursue FSC certification in the future.

The following descriptions summarise the results of the HCV identification process:

## **HCV 1 Areas with Important Levels of Biodiversity**

### **HCV 1.1 Areas that Contain or Provide Biodiversity Support Function to Protection or Conservation Areas**

The field study concluded that many areas in the PT WKS concession areas have provided biodiversity support functions for protected or conservation areas within and surrounding the company, particularly Bukit Tiga Puluh National Park. This means that HCV 1.1 is present.

### **HCV 1.2 Critically Endangered Species**

The team also found evidence of one critically endangered fauna species within the concession area; the Sumatran tiger (*Panthera tigris sumatrae*). In addition, 110 species of flora were identified during the assessment, 16 of which are protected globally or under national regulations; seven of these are critically endangered species from the meranti family. Thus, HCV 1.2 is present within the company area.

### **HCV 1.3 Areas that Contain Habitat for Viable Populations of Endangered, Restricted Range or Protected Species**

This is explained in the Toolkit (2010) as areas that constitute habitat for viable populations of endangered, restricted range, or protected species and the team concluded that PT WKS still retains areas that may provide habitat for viable populations for many species. While a lot more work needs to be done by the company to determine population viability than was available during the assessment, a simple approach to “potential carrying capacity” used was by observing the presence of certain species and linking them to areas that allow populations of the same species in a larger and protected forest landscape in or near the concession; in this case BTPNP and natural forest remaining within the concession. It was verified, through primary and secondary data, that PT WKS concession is part of a home range for tigers and a total of 29 species of mammals, 90 bird species, 6 herpatofauna species and 16 plant species were identified as HCV 1.3 species. HCV 1.3 is present within the company area.

#### **HCV 1.4 Areas that Contain Habitat of Temporary Use by Species or Congregations of Species**

It was found that despite a significant number of migratory birds, areas defined in the HCVF Toolkit for Indonesia did not exist any longer, having been converted to plantations.

#### **HCV 2 Natural Landscapes and Dynamics**

##### **HCV 2.1 Large Natural Landscapes with Capacity to Maintain Natural Ecological Processes and Dynamics**

PT WKS was observed by the team to be part of a landscape with the capacity to maintain natural ecological processes and dynamics inline with HCV 2.1, primarily in District VII adjoining BTNP, primarily in District VIII which is part of the buffer around the core area of the national park.

##### **HCV 2.2 Areas that Contain Two or More Contiguous Ecosystems**

Three approaches used to identify HCV 2.2 i.e. contiguous forest ecosystems were based on (1) *differences in elevation*, (2) *contiguous swamp and non-swamp ecosystems* and (3) *presence of kerangas forest*.

For the first approach; in terms of elevation the PT WKS concession only contains two large ecosystem types: interconnected **lowland and sub-montane forest ecosystems** in District VIII, in the northernmost part of the concession bordering BTNP (see Figure 21). . For the second approach; contiguous swamp and non-swamp ecosystems, based on the RePPPOT land system approach (1989), natural ecosystems differentiating between swamp and non-swamp were found in District I, District II, District V, District VI and District VII. These ecosystems were peat swamp forest, swamp forest, riparian forest and lowland forest ecosystems. Unfortunately, none of these now exist as they have been converted to monoculture plantation forests (plantation forest ecosystem). Any remaining natural ecosystems are small and are not contiguous with other natural ecosystems (except man-made ecosystems). Most of the areas that have been made protected areas are riparian forest ecosystems and a few are degraded peat swamp forest. The third approach was not found inside the PT WKS concession. Thus, HCV 2.2 was only found to exist in District VII of PT WKS.

##### **HCV 2.3 Areas that Contain Representative Populations of Most Naturally Occurring Species**

The process of identifying HCV 2.3 requires consideration on natural landscapes meeting one or more of the following criteria:

- Protected Areas identified as HCV 1.1
- Areas identified as HCVA 2.1
- Large forest blocks that did not meet requirements of HCV 2.1, due to lack of a core zone.
- Large forest blocks containing continuous forested ridges and slopes that span lowland to montane forest ecosystems.

- Area proven to have a population of one or more top predators (e.g., tiger, clouded leopard or eagle) with evidence of ongoing reproduction.
- Area that contains other populations of species known to require large habitat areas to survive, living naturally at low densities (e.g., orangutan or elephant).
- Large forest areas that until recently met criteria HCV 5 under basic needs but no longer do so because of excessive hunting, such areas may have experienced local population extinction, but they may also support representative populations, albeit at low numbers.

Another approach was used where HCV 2.3 was determined by identifying the minimum area required to sustain viable populations of apex predator species (for instance, Leopard Cats, tigers and eagles), the presence of highly forest-dependent apex herbivore/frugivore species, or the presence of other species that require large amounts of space for a low density population (for instance, tigers). Several important species were found inside management unit area, categorised under the following groups:

- **Apex predators** – Sumatra’s apex predators are the tiger and another species from the same family (Felidae) found in the PT WKS concession area; the Leopard Cat (*Felis bengalensis*). Another animal that can function as an apex predator is the Sun Bear (*Helarctos malayanus*). This small bear (120 cm tall when standing) often eats honey, but its main food is rodents, squirrels, lizards and birds. In addition to predatory mammals, some species of eagle were also found to be apex predators (see HCV 1.3 above).
- **Apex frugivores** – Apex herbivores in Sumatra are elephants and rhinoceros, but neither species was found inside the PT WKS concession. However, species that could be apex herbivores are Malayan Tapir (*Tapirus indicus*) and Binturong (*Arctictis binturong*). Attention was paid to apex frugivores or seed-eating species that are preyed upon by other animals. Bird species categorised as apex frugivores that play a role in distributing seeds throughout forest ecosystems are hornbills (see HCV 1.3 above).
- **Large area, low density** – Species that have low population densities and require a large amount of space on Sumatra, are the Sumatran Elephant, Sumatran Tiger, and orangutan. Only the Sumatran Tiger (*Panthera tigris sumatrae*) appeared present from team findings and information from staff and villagers around the PT WKS concession.

Thus, HCV 2.3 was found to exist within PT WKS concession area, primarily in district VII but other areas as well.

### HCV 3 Rare or Endangered Ecosystems

To establish which ecosystems are threatened or rare in HCV 3 areas inside the PT WKS concession, research was conducted by using physiographic analysis approach. From RePPProT (2008/2010), based on a physiographic approach Sumatra is divided into four regions: **the Western Coastal Foothills and Plains, Barisan Mountains, Eastern Plains and Hills, and the Eastern Coastal Swamps**. PT WKS is located in the South-Eastern Coastal Swamps and South-Eastern Plains and Hills regions, both of which meet the qualifications for threatened or rare based on significant conversion of natural forest within the regions.

The precautionary approach for the concession area of PT WKS was divided into an approach for the peat soil area and approach for the mineral soil area.

For Peat soil area:

1. Does one or more ecosystem(s) categorized as rare or endangered in the Toolkit occur (i) within the MU, or (ii) outside the MU but possibly affected by its operations? Answer: Yes (as described in the Figure 29 in physiographical context section).
2. Do any of the ecosystems present constitute a form of peat land vegetation? Answer: Yes.
3. Has the peat land undergone drastic changes affecting natural hydrological processes to the point that restoration of such functions is impossible? Answer: Yes.

Through the field survey, it was clear that the ecosystem condition of peat land within the concession area is degraded and has been converted into industrial plantation area with channel system. This means the concession area of PT WKS does meet the criteria as part of a landscape with rare or threatened ecosystem (HCV 3).

For Mineral soil area:

1. Does one or more ecosystem(s) categorized as rare or endangered in the Toolkit occur (i) within the MU, or (ii) outside the MU but possibly affected by its operations? Answer: Yes (as described in the Figure 29 in physiographical context section).
2. Has land cover of the ecosystem been degraded so severely that it qualifies as “unproductive land” as defined by Ministry of Forestry Decree of No 21/pts/2001? Answer: Yes (the concession area qualifies as industrial plantation forest and this assessment is under post-conversion scenario).
3. Is it possible for the ecosystem to recover – given sufficient time – through natural processes of tree growth, succession and seed dispersal considering the following factors: (i) ecological attributes of the ecosystem, (ii) condition and status of surrounding land, (iii) current land use status, and (iv) regional development planning? Answer: Yes.

The ecosystem has been degraded but (i) is in a relatively fertile soil, (ii) in close proximity with large blocks of natural forest especially in District VIII, and (iii) located in areas with no threatening development plan as it has been set aside as protection forest, may be able to recover.

Thus, from both approaches, it can be concluded that HCV 3 is present in the PT WKS concession area.

#### **HCV 4 Environmental Services**

##### **HCV 4.1 Areas or Ecosystems Important for the Provision of Water and Prevention of Floods for Downstream communities**

Rivers, wetlands and peat areas serve as (a) water catchment areas, (b) natural drainage for flood control and (c) sources of water for human and wildlife use. As sources of water, it is understood that rivers that flow from within the concession area have important roles in providing water for the surrounding living organisms and communities. The sustainability of ecosystems within WKS area is highly dependent on the existence of these rivers. The biodiversity in the river and its surrounding riparian zone is higher than that for the areas far from rivers. Aside from being utilized directly by the surrounding organisms, the river is also being utilized by the community downstream (see Basic Need – Water and Basic Need – Cash Income in HCV5).

The lakes and swamps function as water reservoirs by taking in the surface runoff of the surrounding area. Furthermore, the continuity of water comes from water seepage of surrounding rivers. Rivers that still retain their natural function plays a role in controlling floods downstream. In addition, peat centers act as water recharge areas and water reservoirs, thus serving as both source and flood control. Therefore, HCV4.1 has been found to exist within certain areas of the WKS concession including on rivers utilized by community downstream as explained in HCV 5 (see Basic Need – Water and Basic Need – Cash Income).

##### **HCV 4.2 Areas Important for the Prevention of Erosion and Sedimentation**

It is apparent that any steep slope areas, those containing highly erodible soils, as well as riparian zones along major rivers and tributaries are identified as areas critical for preventing erosion and sedimentation. Steep areas within the upstream areas particularly need to be protected by maintaining vegetation cover necessary to prevent erosion. Maintaining healthy and adequate buffer zones provide a filtration effect that removes significant sedimentation from runoff prior to it entering the streams, rivers and other water bodies.

Riparian zones also have function as erosion control. In this case the riparian zone will control erosion on river banks and as a filter that holds eroded sediment from upstream. Areas of steep slopes, containing highly erodible soils and riparian zones were identified as areas of HCV 4.2 within PT WKS concession area.

##### **HCV 4.3 Areas that Function as Natural Barriers to the Spread of Forest or Ground Fire**

Rivers with width twice the length of its highest tree canopy with a wet riparian zone are designated as HCV4.3. With the amount of water available all year around, total area of more than 1 ha, and a wet riparian zone, these areas can also act as barrier for forest fire. Therefore, the areas can also be designated as HCV4.3. The establishment of HCV 4.3 is done with an approach that forest fires as a potential disaster.

Under natural conditions, swamp and peat swamp are waterlogged and can serve as HCV4.3. However, because most of the swamp / peat swamp is converted into plantations, making the function as HCV4.3 will be lost. Function as HCV 4.3 can only work if the plantation is done with wet culture (paludiculture) method which ensures the peat swamp forests remain waterlogged throughout the year. Thus HCV 4.3 is present in PT WKS concession.

## **HCV 5 Natural Areas Critical for Meeting the Basic Needs of Local People**

Based on respondent interviews, FGD outcomes and observations on the ground in the 106 villages, the Social Assessment Team identified several things linked to factors considered important: community forest dependence, the availability of alternatives for meeting family needs, and assessing whether the use of forest or other ecosystems is conducted sustainably and not in conflict with other HCVs.

The *Suku Anak Dalam* people living in District VIII of the company concession area remain dependent on forest resources. In interviews, the *Suku Anak Dalam* people said they have no alternative for meeting their basic need for carbohydrates other than from forest or other ecosystems inside District VIII of the PT WKS concession area. This use of forest and other ecosystems does not threaten other HCVs as it is done traditionally and is not excessive.

Thus, HCV is present for the *Suku Anak Dalam* people living inside the company concession area to meet their basic need for **carbohydrates** like rice (*Oriza sativa*), sweet potato (*Ipomoea batatas*), cassava (*Manihot utilisima*), taro (*Colocasia esculenta*) and other root vegetables they grow through swidden farming in District VIII.

The basic need for **protein** HCV is present in PT WKS rivers, which are used by a minority of people in 14 villages: Pematang Lumut, Pematang Buluh, Terjun Gajah, Delima, Pangkal Duri, Pematang Mancolok, Teluk, Kaos, Lumahan, Tanjung Bojo, Bram Itam Kanan, Rukam, Dusun Mudo and Sungai Paur. As the canals communities also use are not natural ecosystems, which, according to the toolkit are a precondition for HCV 5, they were not included in HCV 5 findings. However, bearing in mind the importance of these canals to communities, this report still gives recommendations for their management and monitoring.

The *Suku Anak Dalam* community living in Ibul sub-village in Sungai Paur village inside the PT WKS concession area, meet their basic need for vitamins from vegetables and fruit such as durian (*Durio zibethinus*), jackfruit (*Artocarpus heterophyllus*) and papaya (*Carica papaya*) from swidden fields. According to WARSI (2010), fields they have moved on from in the past appear like agroforest filled with a variety of plants, particularly fruit trees. Based on interviews with the *Suku Anak Dalam* community, they have no alternatives for meeting their basic need for vitamins other than getting them from forest or other ecosystems inside District VIII of the PT WKS concession area. This use of forest and other ecosystems is not thought to threaten other HCVs as it is done traditionally and is not excessive. Thus, we can conclude that HCV is present inside the PT WKS concession for meeting the *Suku Anak Dalam* community's basic need for **vitamins**.

A minority of people in 5 villages still depend on water from rivers inside the company concession area for more than 50% of their basic need for water for bathing, washing and toilet purposes.

These villages are: Pematang Mancolok, Rawang Kempas, Tanjung Bojo and Bram Itam Kanan, and Sungai Paur where the *Suku Anak Dalam* community is living. This river use is distributed across 1 village in District II, 2 villages in District V, 1 village in District VI and 1 village in District VIII. Thus, for meeting the basic need for **water** for drinking and other daily needs, HCV is present in the company concession area with the Mancolok, Lumahan, Batang Asam, Bram Itam and Ibul rivers.

Most of the villages had alternative resources for building materials, however, for the *Suku Anak Dalam* community living in Ibul sub-village, Sungai Paur village, 100% of their building material needs are sourced from wood around their home inside the PT WKS protected area in the Ibul River riparian zone. This wood is not used for building houses or boats, but as frames for temporary shelters with tarpaulin roofs. Based on interviews with the *Suku Anak Dalam* community, they have no alternative source for meeting their basic need for wood other than forest or other ecosystems inside District VIII of the PT WKS concession area. This use of forest and other ecosystems is not thought to threaten other HCVs as it is done traditionally and is not excessive. The community wants to maintain or even improve the remaining forest and is willing to obey regulations supporting preservation of the forest. Thus, for meeting the basic need for building material, HCV is present in District VIII of the PT WKS concession area in the form of trees for **building materials and fuel** around the *Suku Anak Dalam* community settlement in Ibul sub-village, Sungai Paur village and inside the PT WKS protected area in the Ibul River riparian zone.

Despite alternative medicines available to most communities, some *Suku Anak Dalam* people use medicines from leaves and roots taken from forest inside the PT WKS concession area to treat illnesses and women who have just given birth. When interviewed, they were not prepared to detail what types of medicinal plants they use. According to WARSI (2010), illnesses often afflicting *Suku Anak Dalam* people are fevers, flu, selesma, measles, chicken pox, coughs, diarrhoea and cholera. Their culture emphasises prevention rather than treatment. They deem prevention so important that they have to separate themselves from the outside world, which they apparently believe to be the source of disease. Their treatment of ailments uses concoctions made from things they extract from the forest (ethnomedicine). However, these are not as prevalent or as popular as they are in other traditional communities. Consequently, they rarely use concoctions considered immediately effective for treating a disease. Thus, HCV is present in relation to meeting the basic need for of the *Suku Anak Dalam* community for **medicines**, which it obtains from the Ibul River riparian zone in the protected area in District VIII of the PT WKS concession.

Grass is an important source of animal fodder for one villager in Kemang Manis, and 100% of this need is secured from the company concession area. . If he cannot meet this need from the forest, he says he will take grass from community oil palm plantations. Grass from this alternative source is available all year round, and is closer than the company concession area. However, it cannot compare in terms of quantity and quality with grass sourced from the company concession area as pesticides are often used on oil palms, which makes the grass inedible to cows. The use of chemicals on palms, and better soil fertility in the company concession force the villager to take grass from inside the company area. For him this grass is an irreplaceable resource.

Thus, the basic need for cattle **fodder** (*Bos taurus indicus*), HCV is present in District III of the PT WKS concession area in the form of grass (*Imperata cylindrical*), which is used by at least one family in Kemang Manis village.

In addition, the basic need for **cash income** from rivers, HCV was found in the 6 districts in the PT WKS concession area for fishing. These rivers are the Bayas, Betara, Betara Kiri, Betara Kanan, Napal, Bram Itam, Pangkal Duri, Mancolok, Kaos and Batang Asam. The basic need for **cash income** met by selling rattan, also is present in the PT WKS concession area. Rattan is extracted from protected areas around the Tapa, Saren, Bram Itam, Kedondong, Suban, Sengkati, Rengas, Gagap and Lumahan rivers. These rivers are located in 4 districts (District I, District IV, District V and District VII). The basic need for **cash income** secured from selling honey, is present in 7 districts inside the PT WKS concession area. Honey is collected from bees nesting in *Bengris* (*Koompassia excelsa*), *Kempas* (*Koompassia malaccensis*) and *Aro* (*Ficus glabella*) trees. Around 22 *Suku Anak Dalam* families live in District VIII of the PT WKS concession area. From interviews with members of the *Suku Anak Dalam* community, they earn more than 50% of their cash income from selling dragon's blood (*Calamus sp*), rattan (*Calamus sp*), woven mats made from *rumbia* (*Metroxylon spp.*) leaves, and wild boar (*Sus scrofa*). Some of the dragon's blood and rattan comes from forest outside the concession, while some comes from inside in the protected area around the Ibul River riparian zone. HCV is present in connection with fulfilment of the basic need for **cash income** secured from forest inside District VIII of the PT WKS concession area, particularly in the conservation area in the Ibul River riparian zone used by the *Suku Anak Dalam* community.

## **HCV 6 Areas Critical for Maintaining the Cultural Identity of Local Communities**

Interviews with villagers, FGD outcomes and observations on the ground in 106 villages revealed customary areas or forest resources used collectively or by individuals in local communities to meet their cultural needs located inside the PT WKS concession area. The distribution of these customary areas or forest resources is as follows:

1. Cemeteries and sacred sites in 5 villages: Pematang Mancolok (District II), Muara Singoan (District III), Lumahan (District V), Lubuk Raman (District VII) and Lubuk Mandarsah (District VIII).
2. *Suku Anak Dalam* communities inside the PT WKS concession area (District VIII).

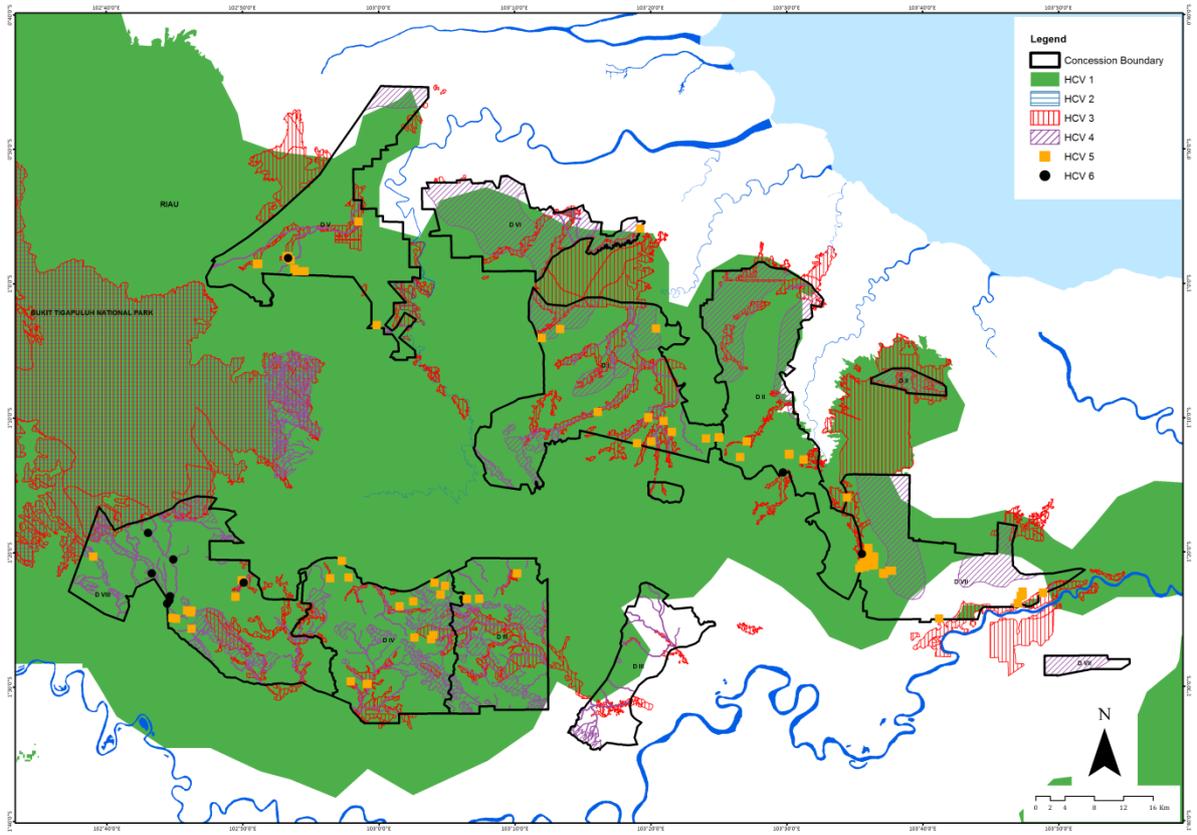
HCV 6 was found to exist inside the company concession area in the form of burial sites, sacred places and zonation by the *Suku Anak Dalam*.

The following table and map summarizes the HCV management areas identified by the assessment team. The size of the concession area based on the license is a bit different if compared with the GIS calculated size as shown in the table below. Regarding this discrepancy, the company has stated the following "The determination of concession area size is based on the Republic of Indonesia Ministry of Forestry Decree (Surat Keputusan or SK) for the plantation forest concession license which includes the appended concession map. Boundary in the field was laid down in accordance to the appended SK concession map. There is inconsistency between the calculated area size based on the field boundary and the area size that was stated in the SK. This variation is caused by the digitization process on the SK concession map, which was only available in hardcopy format when the SK was issued, into the company's Geographic Information System (GIS).

The company is still in the process of settling the definitive boundary with relevant government institutions. Under the current situation, the company decided that HCV assessment will use the GIS map which is consistent with field condition."

Type of HCV	HCV area (hectare)								
	District I	District II	District III	District IV	District V	District VI	District VII	District VIII	WKS Total
HCV 1.1	5,973.00	1,458.00	3,375.00	3,153.00	1,644.00	1,643.00	1,147.00	4,856.00	23,249.00
HCV 1.2	48,683.00	40,442.20	46,265.03	34,891.94	16,802.17	30,201.36	35,036.00	18,568.56	270,890.26
HCV 1.3	5,973.00	1,458.00	3,375.00	3,153.00	1,644.00	1,643.00	1,147.00	4,856.00	23,249.00
HCV 1.4	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	-
HCV 2.1	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	2,249.62	2,249.62
HCV 2.2	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	921.08	-
HCV 2.3	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	Not Present	2,249.62	2,249.62
HCV 3	5,973.00	1,458.00	3,375.00	3,153.00	1,644.00	1,643.00	1,147.00	4,856.00	23,249.00
HCV 4.1	11,374.26	12,231.28	6,196.21	6,310.95	2,561.63	16,752.92	17,528.27	9,487.39	82,442.92
HCV 4.2	1,427.46	65.36	2,119.00	2,701.92	485.32	403.62	18.70	4,691.25	11,912.63
HCV 4.3	1,379.01	65.36	1,282.70	804.64	485.32	403.62	18.70	1,400.46	5,839.81
HCV 5*									
HCV 6*									

\*: for HCV 5 and 6, the location is indicated by dots instead of polygon, thus the total areas for those HCVs are not presented in this table.



## **Management and Monitoring Recommendations**

APP has stated an intention to conduct an extensive “landscape management planning” process upon completion of HCV, HCS and social impact assessments that will provide a clear, holistic approach to dealing with all of the pertinent issues identified. The stated goal is to conduct extensive stakeholder consultations with government, universities, neighboring landusers, civil societies and communities during that process. **As a result management and monitoring recommendations provided in this report, as well as indicative High Conservation Management Areas (HCVMA) are provided in a generic framework to be used as a “guide” to help develop management prescriptions during this more extensive planning process.** HCV category and sub-category recommendations are provided in the full report and the following major generic recommendations have been provided without specific reference to HCV category or sub-category:

- Additional data for all HCV needs to be collected to supplement that from the assessment team, particularly relating to species presence, locality and potential population since due to time and budget constraints only a small fraction of the total area was able to be sampled;
- All final HCV management areas must be delineated on the ground and adequately protected from encroachment to protect and enhance HCV values present with the use of an appropriate buffer;
- Natural areas, particularly riparian zones and those areas that could be part of a larger concession wide wildlife corridor system connecting protected areas inside and outside the concession areas, need to be rehabilitated and restored with natural, indigenous species;
- Consultation with experts on specific species need to occur to determine when management activities have the most and least adverse effect on disturbance as well as what specific habitat needs are required;
- Hunting and encroachment of HCVMA must be controlled and prohibited, either using company staff, community patrols, government enforcement, civil society or a combination;
- Public education at the community level must occur to stress the importance of the HCV values, what they mean to the people living near the concession and why it is critical to protect and enhance these values;
- Designated staff responsible for HCV management should be assigned within each concession (at minimum concession level) and all field staff and contractors need training sessions explaining HCV values present and the importance of protecting and enhancing them;
- Areas with high populations of HCV 1.2 and 1.3 species should be considered for potential restoration as conservation areas;
- Collaboration with neighboring land users, particularly that can negatively influence HCV values within the concession and at the landscape level, must be undertaken in an effort to protect and enhance these values;
- Alternative species that require less intensive water management for survival and productivity need to be examined for peat soils to reduce the negative impact this has on the soil, hydrology and carbon emissions;
- HCV management prescriptions should be based on best practices instead of business as usual, summarized and made publically available;

- Identification of specific environmental values to monitor in order to determine the health of each HCV value and effectiveness of management programs must be developed and monitored on a regular basis;
- Periodic (minimum annually) summaries of monitoring results must be prepared and should be made publically available.