Rimbak Pakai Pengidup

Forest for Life

Sustainable Forest and Biodiversity Management in Nanga Lauk Village, Kapuas Hulu, West Kalimantan, Indonesia

Conservation Management Plan (CMP)

Submitted to the Verified Conservation Areas Standard by PRCF Indonesia

Prepared with technical assistance from LTS International and Daemeter Consulting provided through the Sustainable Forest and Biodiversity Management in Borneo project, funded by the Asian Development Bank (TA-8331-INO) and implemented by the Republic of Indonesia, Ministry of Environment and Forestry, Directorate of Ecosystem Services on Conservation Areas (DESCA).

29 November 2017
<table>
<thead>
<tr>
<th>Acronyms</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
</tr>
<tr>
<td>AR</td>
<td>Annual Report</td>
</tr>
<tr>
<td>BPD</td>
<td>Village Consultative Body (Badan Permusyawaratan Desa)</td>
</tr>
<tr>
<td>DESCA</td>
<td>Republic of Indonesia, Ministry of Environment and Forestry, Directorate of Ecosystem Services in Conservation Areas</td>
</tr>
<tr>
<td>FMU</td>
<td>Forest Management Unit</td>
</tr>
<tr>
<td>FPIC</td>
<td>Free, Prior and Informed Consent</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographic Information System</td>
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<tr>
<td>GPS</td>
<td>Geographic Positioning System</td>
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<tr>
<td>HCV</td>
<td>High Conservation Value</td>
</tr>
<tr>
<td>LPHD</td>
<td>Village Forest Management Institution (Lembaga Pengelola Hutan Desa)</td>
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<td>LPM</td>
<td>Community Empowerment Institution (Lembaga Pemberdayaan Masyarakat)</td>
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<tr>
<td>MoEF</td>
<td>Ministry of Environment and Forestry</td>
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<tr>
<td>NLHPT</td>
<td>Nanga Lauk Production Forest</td>
</tr>
<tr>
<td>NLVF</td>
<td>The Nanga Lauk Village Forest</td>
</tr>
<tr>
<td>NTFP</td>
<td>Non-Timber Forest Product</td>
</tr>
<tr>
<td>PRCF-Indonesia</td>
<td>Yayasan People Resources and Conservation Foundation – Indonesia</td>
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<tr>
<td>SMART</td>
<td>Spatial Monitoring and Reporting Tool</td>
</tr>
</tbody>
</table>
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The *Rimbak Pakai Penghidup* (Forest for Life) project will enable the Nanga Lauk community to protect forest within their village forest, and a surrounding area currently classified as production forest, from deforestation and biodiversity degradation that is expected if the activities of timber concessions, and unsustainable practices by the local community, are not prevented.

The Nanga Lauk Village Forest (NLVF) covers a total area of 1,430 ha, 58% of which is covered by peat swamp forest and riparian forest (the rest being occupied by lakes). Nanga Lauk village land also includes 8,618 ha of peat swamp and riparian forest that is currently classified as *Hutan Produksi Terbatas* or Limited Production Forest (Nanga Lauk Limited Production Forest; NLHPT). NLVF and NLHPT support the livelihoods of the 197 households in Nanga Lauk Village, and provide habitat for a diverse assemblage of plant and animal species, among which 3 tree species and 169 wildlife species are listed in the IUCN Red List of Threatened Species. The management rights for NLVF have been assigned to the Nanga Lauk Community by establishment of a Village Forest (*Hutan Desa*). The Nanga Lauk community wish to extend these rights to include NLHPT, part of which will be managed as a conservation zone and included along with the NLVF as a Verified Conservation Area. The Nanga Lauk Community aim to prevent the issuance of a new logging concession license for NLHPT (currently open for applications) and are instead applying to have the area included in their village forest (to which the Ministry of Environment and Forestry seems positively inclined).

In Kapuas Hulu District between 2005 and 2016, around 3% of the forest types present in NLVF and NLHPT were deforested and around 1.5% were degraded. If they are not effectively protected, a similar proportion of deforestation and degradation is expected in Nanga Lauk forest, as it is exposed to the drivers of deforestation and degradation that have affected similar forest types in the District of Kapuas Hulu over the last 10 years. This baseline scenario poses the realistic threat of degrading biodiversity in the project area, of emitting greenhouse gases and of negatively impacting the livelihoods of the forest-dependent Nanga Lauk community.

Over the last two years, the Nanga Lauk Community have worked with PRCF-Indonesia to develop a suite of activities that will enable them to address the threats expected to affect the NLVF and NLHPT, and prevent deforestation and biodiversity degradation. Key to the success of these activities in NLHPT is formal recognition of the area as village forest, and the Nanga Lauk community have started the process required for its recognition as *Hutan Desa*.
The community will continue to pursue this recognition, and the development of management plans for NLHPT, with support from PRCF-Indonesia.

While the process for legal recognition of management rights to NLHPT is underway, the community will proceed with the development of village regulations to ensure sustainable management of the forest in NLVF and NLHPT, and initiate a programme of forest patrol and monitoring to enable them to identify and respond to threats to the forest and biodiversity.

The Nanga Lauk community depend on the forest for their livelihood activities, and through the project they will continue to develop and diversify these activities by improving processing and marketing of rattan, bamboo and forest honey, planting species used as timber and non-timber forest products, and exploring potential for ecotourism. These activities will help to ensure the Nanga Lauk community can maximise the benefits they receive from forest protection, and develop a foundation for long-term sustainable management of their natural habitats and resources.

By helping the Nanga Lauk community to prevent the activities of timber companies, and implement sustainable forest management activities, the conservation project has potential to prevent degradation and loss of habitat for a diverse and internationally significant assemblage of tropical forest species, generate significant emission reductions, and help improve and secure the livelihoods of the Nanga Lauk community. It is hoped that this project will provide a model that can also be followed in other village forests throughout the region.
A. Introduction

A.1 Problems the project will address

The Nanga Lauk Village Forest (NLVF) covers 1,430 ha of peat swamp forest, marshland and lakes. NLVF supports a diverse assemblage of plants and animals that in turn support the livelihoods of the Nanga Lauk Village community who use the area for fishing and honey cultivation. Forest in the NLVF also plays an essential role in maintenance of a water supply for the village. The biodiversity and ecosystem services supported by the NLVF are potentially threatened by unsustainable fishing practices and Non-Timber Forest Product (NTFP) collection, and human conflict with wildlife that can attack beehives. Without effective protection of biodiversity and sustainable management of the NLVF, the fish stocks, honey yields and water supply that the Nanga Lauk community depend on are under threat. External threats of forest and peatland fires, and logging concessions also threaten the area if it is not effectively protected.

In addition, the Nanga Lauk village land includes 8,618 ha of peat swamp and riparian forest that is classified as Limited Production Forest. There is currently a proposal to reactivate logging concessions in this area. Previously PT Bumi Raya Wood Industries held a logging concession license for this area, but the area has not been logged since 2003, and the Ministry of Environment and Forestry (MoEF) revoked the licence on 7 April 2016. An application for a new licence for the concession was filed by a different company, but in view of the willingness of the Nanga Lauk community to manage the forests on their village land, the MoEF has shown the intention to not grant a new logging licence but instead to discuss a management agreement with the community for the concession area.

Logging operations threaten biodiversity and carbon stocks through deforestation and forest degradation, and endanger livelihoods and water quality in the area by displacing wildlife, disrupting waterways and destroying fishing nets with floating logs. The Nanga Lauk community also make use of this forest to collect timber used to construct artificial beehive structures (‘tikung’) that are used for honey production within the Village Forest. Without sustainable management, this important resource is also under threat as specific timber species are required, which are already becoming scarce.

A.2 Aims and objectives

The project aims to prevent loss of biodiversity and carbon stocks, and degradation of ecosystem services supported by the NLVF and production forest within Nanga Lauk Production Forest (NLHPT). The project also aims to strengthen the livelihoods the Nanga Lauk community members obtain from their natural resources and to ensure the long-term
sustainability of these livelihoods. To achieve this, the project will support the Nanga Lauk community to:

- Negotiate with MoEF to grant management rights to NLHPT and permits for carbon and ecosystems services for NLVF and NLHPT to the community;
- Develop village regulations on forest resource use;
- Mark the boundaries of the village forest and carry out patrols to deter and detect unsanctioned use;
- Implement sustainable forest management plans for the NLVF and NLHPT;
- Plant nectar producing trees to encourage honey production, and trees that can provide timber and NTFPs within NLVF and NLHPT; and
- Increase income from activities that contribute to forest protection including through natural resource based livelihood activities (including sale of honey and rattan and bamboo products), Payments for Ecosystem Services (PES), and sale of greenhouse gas emission reductions certified by Plan Vivo.

A.3 Project design history and context

The Nanga Lauk ‘Forest for Life’ project was designed in the context of the ‘Sustainable Forest and Biodiversity Management in Borneo’ (SFBMB) project (funded by the Asian Development Bank and implemented by LTS International and Daemeter Consulting), which between December 2015 and November 2017 provided technical assistance to the Directorate of Ecosystem Services on Conservation Areas of the Ministry of Environment and Forestry, Government of Indonesia. One of the defined aims of this project was to pilot-test carbon finance and Payments for Ecosystem Services (PES) for projects designed specifically for conservation and forest biodiversity management.

The SFBMB project identified the NGO PRCF-Indonesia as a suitable project coordinator, and together with the SFBMB technical team PRCF facilitated the numerous studies, consultations and agreements that formed part of the design of the ‘Forest for Life’ project. The project aimed from the start to undergo two environmental certifications that would strengthen the community’s forest and biodiversity governance structures and procedures through its monitoring, reporting and auditing requirements, as well as its ability to attract conservation finance that would support the project’s long-term sustainability. One certification is that of sustainable biodiversity management by the Verified Conservation Areas standard, the other that of community-based carbon offset project development by the Plan Vivo standard. As can be expected, there are many overlaps between this VCA Conservation Management Plan and the Plan Vivo Project Design Document, as both certifications reinforce each other.
B. Overview of the Conservation Area

B.1 Description of the project area

B.1.1 Location and legal status

The project will be carried out in Nanga Lauk Village, which is located at Embaloh Hilir Sub-district, Kapuas Hulu District, West Kalimantan Province of Indonesia (see Figure 1). The administrative extent of Nanga Lauk is 12,800 hectares (see Figure 2), within which there are two project areas – Nanga Lauk Village Forest (NLVF; 1,430 ha) and Nanga Lauk Production Forest (NLHPT; 9,169 ha).

Figure 1 Location of Nanga Lauk Village Forest (Hutan Desa Nanga Lauk) within West Kalimantan Province
Figure 2 Location of the Village Forest (NLVF), and Limited Production Forest (NLHPT) within Nanga Lauk Village land and location of logging concessions (IUPHHK-HA) and Oil Palm licenses.

According to the legal designations in the 2014 MoEF Spatial Plan, Nanga Lauk Village area consists of 12% State Protection Forest (Hutan Lindung), 71% State Limited Production Forest (Hutan Produksi Terbatas), and 17% Non-forest area (Areal Penggunaan Lain).

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1 Ministry of Environment and Forestry (MoEF) 2014 Minister of Environment and Forestry Decree No. 733, 2014
The extent of the State Protection Forest in Nanga Lauk Village is 1,505 ha of which 1,430 ha is within a Village Forest (Hutan Desa). The Village Forest was allocated in Nanga Lauk by the Minister of Forestry in January 2014. Following submission of a management plan for the village forest, the Minister of Environment and Forestry issued a decree on Nanga Lauk Management Rights (No. SK 685/MNLHK-PSKL/PKPS/PSL.0/2/2017) on February 28, 2017.

Subsequent to this issuance of ministerial decree, the village has requested the MoEF to allow the community to manage the remaining peat swamp and riparian forests within the boundary of Nanga Lauk Village, which is classified as State Limited Production Forest. The area requested is 9,169 ha of which 8,618 ha is peat swamp and riparian forests, with the remaining area covered with shrubland and wetlands. The main reason for this request is to prevent the forest from use by logging concessionaires that will have negative impacts on ecosystem services and community livelihoods.

A full plan for the management of NLHPT will be developed during the first year of the project, and will include forest conservation zones - where no agricultural activities or timber extraction will be allowed; sustainable use zones – where limited timber extraction will be allowed; and agricultural use zones within 2 km of waterways that the community will continue to use for production of food crops and rubber gardens. The community will apply to the district and province for exclusion of the agricultural zones from the designation of Limited Production Forest, since they believe these areas have mistakenly been included and should have been Other Use Areas. If successful, this will mean that the NLHPT’s area will be reduced. No new opening of forest for food crops and rubber gardens will be allowed in the remaining NLHPT, as the designation of the area remains Limited Production Forest.

B.1.2 Geophysical description

Nanga Lauk Village is located in the Embaloh peat swamp and peatland landscape complex around the Danau Sentarum National Park, in a lowland area with relatively flat topography. Elevation of the village area ranges from 10 to 100 m above mean sea level (masl). Slope ranges from 0 to 30%, but 83% of the village and area is flat (0-8% slope; SRTM 30 m; USGS, 2014).

Based on an analysis of satellite imagery², 4% of NLVF is peat swamp forest, and 54% is riparian forest; and NLHPT is comprised of 78% peat swamp forest, and 16% riparian forest (see Figure 3).

² Presented in the Plan Vivo PDD, available at www.planvivo.org
Figure 3 Land cover in Nanga Lauk Village, 2016. Source: Land Cover Change Analysis (2016)
B.2 Description of biodiversity baseline conditions

B.2.1 Endangered species and habitats

The presence of plant and wildlife species of conservation interest within the NLVF and NLHPT, and the occurrence of features with High Conservation Value were initially assessed through a household survey and participatory biodiversity assessment. Furthermore, a wildlife biodiversity baseline survey was conducted in October 2017 by a team of scientists to establish the presence and abundance of species of mammals, birds, reptiles and fish, using scientifically tested methodologies. The following is a composite summary of both surveys with regards to endangered species and habitats.

Plant and wildlife species

Forest within the NLVF and NLHPT supports a diverse assemblage of plants and wildlife species that are important not only for local community livelihoods but also for the global community. Four tree species that occur within NLVF and NLHPT are listed as vulnerable by the IUCN – Borneo Ironwood (*Eusideroxylon zwageri*), Light Red Meranti (*Shorea macrophylla*), Agarwood (*Aquilaria malaccensis*), and Ramin (*Gonystylus bancanus*), and a further 5 tree species are categorised as Lower Risk/Least Concern. Use of Ironwood (*Eusideroxylon zwageri*) is regulated by Indonesian Regulation through Ministry of Agriculture Decree No, 54/1972 that stipulates only trees with diameter more than 60 cm can be logged. Light Red Meranti (*Shorea macrophylla*) is among the protected species by Indonesian regulation (Government Regulation No. 7/1999). Agarwood (*Aquilaria spp.*) and Ramin (*Gonystylus bancanus*) are also listed in Appendix II of CITES.

Of the wildlife species that were reported to make use of the NLVF and NLHPT, 169 are listed in the IUCN Red List of Threatened Species (see The habitats where these species were encountered in the wildlife biodiversity survey are described in the survey report.

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5 Yanuar, A. et al 2017. Biodiversity Survey of the Village Forest of Nanga Lauk, West Kalimantan. Sustainable Forest and Biodiversity Management in Borneo Project

Table 1). Of these 5 are critically endangered – Helmeted Hornbill (*Rhinoplax vigil*), Spoon-billed Sandpiper (*Eurynorhynchus pygmaeus*), Sunda Pangolin (*Manis javanica*), Bornean Orangutan (*Pongo pygmaeus*), and Bornean Banded Langur (*Presbytis chrysomelas*); and 11 are endangered - Storm's Stork (*Ciconia stormi*), White-rumped Woodpecker (*Meiglyptes tristis*), Agile Gibbon (*Hylobates agilis*), Müller’s Bornean Gibbon (*Hylobates muelleri*), Hairy-nosed Otter (*Lutra sumatrana*), Proboscis Monkey (*Nasalis larvatus*), Flat-headed Cat (*Prionailurus planiceps*), Smoky Flying Squirrel (*Pteromyscus pulverulentus*), Bornean River Turtle (*Orlitia borneensis*), Spiny Turtle (*Heosemys spino*) and False Gharial (*Tomistoma schlegeli*). The habitats where these species were encountered in the wildlife biodiversity survey are described in the survey report.

Table 1 Summary of threatened wildlife species reported as making use of the NLVF and NLHPT.

<table>
<thead>
<tr>
<th>IUCN Red List Status</th>
<th>CR</th>
<th>EN</th>
<th>VU</th>
<th>NT</th>
<th>LC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plants</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birds</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>28</td>
<td>48</td>
</tr>
<tr>
<td>Mammals</td>
<td>3</td>
<td>6</td>
<td>15</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Reptiles</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td></td>
<td></td>
<td>28</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CR = Critically Endangered, EN = Endangered, VU = Vulnerable, NT = Near Threatened, LC = Least Concern

Sources: Participatory Biodiversity Assessment 2016, Biodiversity Survey 2017.

High Conservation Values

High Conservation Values (HCV)\(^7\) associated with the NLVF and NLHPT that were identified by Nanga Lauk community members and the wildlife biodiversity survey are summarised in Table 2.

Table 2 High Conservation Values (HCV) associated with the forest in Nanga Lauk Village. Source: Livelihoods and Socioeconomic Survey 2016.

<table>
<thead>
<tr>
<th>HCV Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCV 1 - Biodiversity</td>
<td>At least four vulnerable tree species, and 169 threatened wildlife species (see previous section)</td>
</tr>
<tr>
<td>HCV 2 – Landscape-level ecosystems and mosaics</td>
<td>The peat swamp forest in NLVF and NLHPT is contiguous and relatively intact (see Section B.2.1)</td>
</tr>
<tr>
<td>HCV 3 – Rare, threatened or endangered ecosystems</td>
<td>Lakes within the NLVF and some riparian areas with deep and narrow riverbeds are rich fishing grounds which are an important focus for conservation efforts.</td>
</tr>
<tr>
<td>HCV 5 – Provision of basic needs</td>
<td>Palin and Lauk Rivers are the sources of water for Nanga Lauk community. Fish from the rivers are an important source of livelihoods, as is honey produced within NLVF. Forests in NLVF and NLHPT provide</td>
</tr>
</tbody>
</table>

food, wood/timber for housing and boat making, water, medicine, and NTFPs including rattan, medicinal plants, and fruits.

Invasive alien species

No invasive alien species have been observed in the project area, nor are there any known threats of invasive species within the area and in the larger landscape.

B.2.2 Ecosystem services

Forest within NLVF and NLHPT provides a broad range of ecosystem services that support the livelihoods of local communities and that benefit regional and global communities. Among these are the provisioning and regulating services listed below:

- Provisioning services – forests are the main, and for many households the only, source of livelihoods providing food, fuel, water, medicine, and building materials;
- Regulating services – including climate regulation, local cooling effects, flood prevention, maintenance of water supplies, and maintenance of soils.

All of these services depend on the maintenance of relatively intact areas of forest. By preventing deforestation and forest degradation the project will therefore help to safeguard the ecosystem services that local and international populations depend upon.

B.3 Description of the Nanga Lauk community

B.3.1 Demographics

There are 197 households in Nanga Lauk. The village has a population of 706 people.

B.3.2 Organisational structure and capacity

Nanga Lauk Village governance consists of Village Government and Village Consultative Body (Badan Permusyawaratan Desa/BPD). These institutions have different roles in village governance. The Village Government facilitates village development, and empowerment of village communities, including planning, implementation, and reporting the activities and budget.

Village Government consists of a village head, supported by a secretary; a treasurer; three village officials dealing with governance, development, and public affairs; three section heads; and two heads of sub-villages (kepala dusun) and heads of settlement/hamlet (Ketua RW & RT). BPD approves the plans submitted by Village Government, receives feedback from the community, conveys the feedback to the Village Government, and monitors and
evaluates the Village Government activities and reports. Member of BPD are representatives of villagers and elected democratically.

In addition to these two institutions, there is a customary institution (Lembaga Adat) and a Community Empowerment Institution (Lembaga Pemberdayaan Masyarakat; LPM). These two institutions are village community institutions (Lembaga Kemasyarakatan Desa) - partners to the Village Government. The Customary Institution provides guidance and advice to the Village Government and to all community members regarding the customary functions. Meanwhile, LPM is a partner of the Village Government in empowering the community, planning and implementing the village activities and improving community services. All members of the village community have the right to elect, be elected, and/or appointed as village head, village official, member of BPD and member of village community institutions. The complete structure of Village Governance is presented in Figure 4.

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**Figure 4 Village Organization Structure (Based on Minister of Home Affairs Regulation No. 84, 2015; modified)**

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8 Article 68 (1d) of Village Act (UU No. 6/2014 Pasal 68 (1d))
In Nanga Lauk village, there are 27 individuals that hold a position in one or more village institutions. There are no section heads. It was noted in focus group discussions with the Nanga Lauk community that members of village institutions would benefit from capacity building, but that all institutions are currently functioning well. All individuals in the positions understand their tasks and actively work together with the Village Head to develop the village. Women are also represented in the village institutions.

An institution to manage the Nanga Lauk Village Forest was established through a village regulation in 2015, after the protection forest area inside the Nanga Lauk Village was allocated as a Village Forest by the Ministry of Forestry in 2014. This village regulation was renewed in 13 December 2016 in the process of obtaining the Village Forest Management Rights from the Ministry of Environment and Forestry, prior to obtaining the management rights through MoEF decree in February 2017. All members of Nanga Lauk community can become member of this institution. The management committee members are selected from the community members based on their individual interest to serve as committee members.

B.3.3 Livelihood activities and income

Based on a survey of 35 households selected at random, the main livelihood activities in Nanga Lauk are fishing, honey production, and rubber cultivation. All households have multiple income sources, and are normally engaged in more than one of the main livelihood activities. Of the 35 households surveyed 83% go fishing, 60% produce honey, and 60% cultivate rubber. Some of the villagers are gold miners, working in a group to mine gold traditionally from rivers outside the Nanga Lauk Village. Other sources of income include selling surplus vegetables and crops (if any), honey business (middleman), selling chickens and fish raised in pens ‘keramba’, selling NTFPs, and labour.

The Nanga Lauk Village community is a typical Indonesian village community who fulfil their needs by utilizing natural resources surrounding the village, including wildlife, NTFPs and food crops.

All households in the Nanga Lauk community have similar housing conditions and income status. They are rubber farmers, fishers, and honey producers with additional income from non-rubber farming, business, and traditional gold mining. Households seem to have a similar level of prosperity, and most identify themselves as being at a medium level of prosperity as described in Table 3.

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Table 3 Poverty/Wealthy Class definitions by surveyed-households in Nanga Lauk community

<table>
<thead>
<tr>
<th>Class</th>
<th>Characteristics</th>
<th>% of households surveyed*</th>
</tr>
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<tbody>
<tr>
<td>Very poor</td>
<td>Receiving basic needs support from the Government, e.g. rice, healthcare, children primary education, etc.</td>
<td>11%</td>
</tr>
<tr>
<td>Poor</td>
<td>Not owning a house or speed boat, have debt, receiving support from the Government</td>
<td>20%</td>
</tr>
<tr>
<td>Medium</td>
<td>Owning a house in the village, a speed boat, needs fulfilled, children go to school, no or small debt, continuous income although sometimes small sometimes big.</td>
<td>69%</td>
</tr>
<tr>
<td>Rich</td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>Very rich</td>
<td></td>
<td>0%</td>
</tr>
</tbody>
</table>

* From 35 household surveyed; Source: Livelihoods and Socioeconomic Survey (SFBMB 2016)

B.3.4 Land tenure

The existing laws and regulations enacted in Indonesia require land certification to demonstrate ownership rights. Although none of the households in Nanga Lauk hold land certificates for their farmland, the Nanga Lauk community considers the farmlands they manage as under their ownership. Most households manage at least one patch of farmland between 0.06 and 16 hectares depending on the capacity of the owner when opening the land or the area purchased or inherited from their parents. Some households manage as many as twelve patches. Farmland types include rubber gardens, upland fields (ladang), agroforestry/mixed-gardens, and fallow/bare-land (tanah kosong/pemuda). The Nanga Lauk community practices shifting cultivation. The first person who opens the forest is considered the owner of that patch of land. This land can then be passed-down along family lines. Land can also be sold to anyone who wants to buy, including those from other communities, although no title is issued and no farmland tax applies. Each household remembers the location and size of each of their land areas, even though only some of the areas, such as rubber gardens, are frequently visited. Non-rubber garden areas have often been left to transform into secondary forests (tanah kosong/pemuda). Land owners will visit these areas occasionally, to demonstrate their ownership.

All of NLVF and NLHPT is under state ownership. On 25 October 2016, the Minister of Environment and Forestry issued a new regulation on Social Forestry. This Regulation explains the rights of communities to manage forests under Social Forestry programs including Village Forests (Hutan Desa). The Central Government (through the MoEF) has allocated 12.7 million hectares of State Forest Areas to be included in Social Forestry Programs. This Regulation includes procedures to be taken by communities within and surrounding allocated State Forest Areas to obtain one of the Social Forestry management

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rights over forest areas in their village jurisdiction. There is therefore a clear mechanism to recognise the rights of the community to manage the NLVF and utilise its resources, and the Nanga Lauk community have re-obtained this recognition, as described in Section B1.1. This recognition must be renewed every 35 years.

Land within NLHPT is not currently registered under any Social Forestry programmes\(^\text{11}\). The process for registration will therefore be included as an activity under the conservation project, which will aim to obtain formal recognition of the community’s right to manage and utilise the forest, and to prevent its use for commercial logging, by adding this area to the current Village Forest (*Hutan Desa*).

## B.4 Baseline land use and its consequences for biodiversity

### B.4.1 Baseline land use

To describe the baseline land use (i.e. the current land use and the land use that will occur if the conservation project is not implemented) within NLVF and NLHPT it is important to consider the legal designations in the MoEF Spatial Plan\(^\text{12}\), which describes NLVF as State Protection Forest (*Hutan Lindung*), and NLHPT as State Limited Production Forest (*Hutan Produksi Terbatas*; see Figure 2). These legal designations determine how forest can be used, and most of the NLHPT is covered by a logging concession (see Figure 2). This logging concession is currently expired and no logging is taking place. So far, no new application has been made by a logging company for this concession. However, considering the legal designation of the NLHPT it is expected that without the application by the Nanga Lauk Community for adding the NLHPT to the NLVF logging activities would in due course resume by a new concessionaire.

It is also important to consider how land within the project areas is currently used by the Nanga Lauk community. A participatory land use mapping exercise\(^\text{13}\) was therefore conducted to provide information about land use activities carried out inside Nanga Lauk.

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\(^{11}\) Pelayanan Online/Daring Perhutanan Sosial Kementerian Lingkungan Hidup dan Kehutanan (http://pskl.menlhk.go.id/akps/index.php/piaps/peta)

\(^{12}\) Ministry of Environment and Forestry (MoEF) 2014 Minister of Environment and Forestry Decree No. 733, 2014

Village land. The main activities described are summarised in Table 4 and Figure 5, and the consequences of these activities are summarised in Section B.4.2.

Table 4 Land use and land cover classes in Nanga Lauk village as described by the community

<table>
<thead>
<tr>
<th>Key*</th>
<th>Land cover</th>
<th>Land use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ladang, Kebun, dan Pemuda</td>
<td>Open fields, Rubber gardens, Fallow land, Shrubland</td>
<td>Areas close to rivers and streams used for food production, rubber plantations, timber harvesting and NTFP collection</td>
</tr>
<tr>
<td>Tikung, Lalau</td>
<td>Forest</td>
<td>Accessible areas used for honey production (tikung) and harvesting (lalau). Harvesting standing and dead timber for tikung production, and rattan.</td>
</tr>
<tr>
<td>Hutan Sekunder, Lalau, Rotan</td>
<td>Degraded forest</td>
<td>Previously logged by timber company, now used for timber harvesting for local use, and rattan harvesting</td>
</tr>
<tr>
<td>Keringu, Ikan</td>
<td>Small Lake (Kerinan)</td>
<td>Fishing</td>
</tr>
<tr>
<td>Danau</td>
<td>Lake</td>
<td>Fishing and harvesting timber for tikung production from submerged trees</td>
</tr>
</tbody>
</table>
B.4.2 Consequences of current land use

Current land use practices by the Nanga Lauk community have the potential to cause a small amount of deforestation if agricultural areas are expanded into areas that are currently forested. This expansion is limited to areas close to main rivers, some of which are currently classified as Limited Production Forest. The Nanga Lauk community believe that these areas
should be classified as Other Use Areas, however, and have applied for a reconsideration of the designation.

Timber harvesting for *tikung* making, building materials for construction of housing within the village, and for sale to neighbouring villages, a local sawmill, and other outsiders has potential to cause degradation of Limited Production Forest, if sustainable harvesting practices are not carried out.

**B.5 Main threats to biodiversity**

The two potential project areas, NLVF and NLHPT, are exposed to different drivers of degradation of biodiversity and ecosystem services, as summarised below.

The legal classification of NLVF as Protection Forest will go some way to reducing the risk of deforestation and forest degradation in this area. There are logging concessions and oil palm concessions adjacent to the NLVF however, so some potential remains for encroachment by these operations into the area if it is not effectively protected. The activities of the Nanga Lauk community could also have a negative impact on biodiversity and ecosystem services within the NLVF if plans for sustainable management are not put into action.

The main potential drivers of biodiversity degradation within the NLVF are\(^\text{14}\):

- Uncontrolled fishing and NTFP collection (including ornamental birds);
- Human-wildlife conflict with wildlife that can attack bee hives;
- Forest and peatland fires; and
- Encroachment from logging concessions and oil palm plantations.

Since most of the NLHPT is allocated for licence as a logging concession, the main risks of deforestation and forest degradation come from commercial logging activities. Without effective protection, the area is also at risk from illegal logging activities, and if plans for sustainable use of timber by the community are not developed then supplies of locally valuable timber species could also be jeopardised.

The main potential drivers of biodiversity degradation within the NLHPT are therefore:

- Commercial logging operations;
- Uncontrolled hunting and NTFP collection (including ornamental birds); and

C. Project Interventions & Activities

C.1 Project interventions

The Nanga Lauk community is committed to the protection and sustainable management of NLVF and NLHPT to maintain the biodiversity and ecosystem services that their livelihoods depend upon. They are also committed to preventing commercial logging and agricultural encroachment into NLVF and NLHPT, to protecting their waterways and fish populations and preventing over-exploitation of valuable timber and NTFP resources.

The proposed interventions are:

- Prevention of deforestation and forest degradation
- Prevention of over-exploitation of fish populations, ornamental bird and *tikung*-tree populations
- Prevention of human-wildlife conflicts over honey production
- Prevention of poaching by outsiders
- Prevention of forest and peatland fires

C.2 Project activities

The project activities that will be carried out to prevent deforestation, forest degradation and biodiversity degradation are the same for both project areas NLVF and NLHPT. A summary of these activities is provided in Table 5 and they are described in more detail in the following subsections. These activities have been designed so that they work in combination to address the specific threats to biodiversity described in Section B.5.
Table 5 Summary of project activities in NLVF and NLHPT

<table>
<thead>
<tr>
<th>Project activity</th>
<th>Key tasks</th>
<th>Target group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Securing rights and strengthening the village forest management institution</td>
<td>• Obtain management rights (for NLHPT)</td>
<td>LPHD members, village officials, community representatives</td>
</tr>
<tr>
<td><em>(Lembaga Pengelola Hutan Desa; LPHD)</em></td>
<td>• Obtain permits and licenses for forest utilization and business operations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Elaborate management plans</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Equip LPHD office and learning centre</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Train LPHD members on business management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Monitor and evaluate LPHD functioning</td>
<td></td>
</tr>
<tr>
<td>Forest protection and monitoring</td>
<td>• Develop village regulations</td>
<td>LPHD members, forest patrol team, forest boundary marking team</td>
</tr>
<tr>
<td></td>
<td>• Protected forest boundary marking</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Training in forest patrol and monitoring</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Forest patrol and monitoring activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Early detection of forest and peat fires</td>
<td></td>
</tr>
<tr>
<td>Development of income sources from sustainable forest management</td>
<td>• General business skills training</td>
<td>Rattan and bamboo groups, forest honey farmers, forest rehabilitation group, rubber group, LPHD members, village officials, community representatives</td>
</tr>
<tr>
<td></td>
<td>• Training in rattan and bamboo management, processing and marketing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Training in forest honey marketing and business management</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Marketing of products from forest honey, rattan and bamboo, and rubber</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Training in development of tree nursery and planting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Training and exchange visits to facilitate ecotourism business development</td>
<td></td>
</tr>
</tbody>
</table>

C.2.1 Securing rights and strengthening forest management institutions

The aim of this activity is to address external threats to NLVF and NLHPT from activities of oil palm and logging concessions, and to provide an incentive to members of Nanga Lauk.
community to sustainably manage the forest resources. To achieve this, formal recognition of management rights for NLHPT and licences for ecosystem services derived from both forest areas will be sought from the relevant authorities. The capacity of the existing village forest management institution (Lembaga Pengelola Hutan Desa; LPHD) will also be developed so that it can effectively manage NLVF and NLHPT. The main tasks required to achieve this are described below.

**Obtain management rights (for NLHPT)**

Nanga Lauk village administration has entered into dialogue with MoEF, requesting that applications to allocation of NLHPT to logging companies are rejected. This request will be followed up with requests to obtain management rights for the NLHPT area, and initiation of a formal process for recognition of those rights. If this recognition is granted the NLHPT will effectively be added to the NLVF.

**Obtain permits and licences for forest utilization and business operations**

The permits/licenses required for Nanga Lauk community to benefit from utilizing NLVF will be sought from Ministry Environment and Forestry (MoEF), including permits to utilize ecosystem services (IUPJL), and implement forest carbon management. Once the management rights to NLHPT are obtained, the same permits and licences will be sought for NLHPT. Further permits and licences required for LPHD to legally operate as a business will also be sought including obtaining an institution tax subscriber's number (NPWP-Badan) and relevant business licences (e.g. SIUP-SITU, etc.).

**Elaborate management plans**

To obtain management rights to NLVF, LPHD was required to submit a 35-year plan to the MoEF. To operationalise this plan, additional details will be added, and 10-year and annual plans will be produced for NLVF and NLHPT. The initial 10-year plan and annual plan will be developed in the first year of the project and will be reviewed by the MoEF and Kapuas Hulu Utara FMU in the 5th year and last year of each period. The management rights can be cancelled if LPHD is evaluated by the MoEF and FMU as “failed” in implementing the management plan. Plans for the following 10-year and next year periods will be developed after the review of the plan from the previous period. A community meeting facilitated by project coordinator will be held for development of plans for each respective period.

**Equip LPHD office and learning centre**

Prior to the project, an office space was constructed using village funds for the BPD and will be shared with LPHD. The project will provide furniture and equipment for this office space to support the LPHD activities and the management of NLVF and NLHPT. A reading room will also be added, containing books and reading materials related with forest, biodiversity, agriculture, nature conservation, culture, special skills, and children books, as well as
Train LPHD members on business management
To strengthen the capacity of LPHD members to effectively manage NLVF and NLHPT, the following training will be provided to LPHD members in: i) group management; ii) photography; and iii) report writing.

Monitor and evaluate LPHD functioning
Monitoring and evaluation meetings on the implementation of planned-activities will be conducted with representatives of Nanga Lauk community and LPHD, facilitated by the project coordinator on a monthly and quarterly basis. Upon the completion of the monitoring and evaluation meetings, monthly, quarterly and annual reports will be produced.

C.2.2 Forest and biodiversity protection and monitoring
To prevent unintended encroachment into NLVF and NLHPT, and discourage the unsanctioned or unsustainable exploitation of forest resources, village regulations will be developed to ensure sustainable resource use, boundaries will be clearly marked and forest patrol and monitoring teams will be mobilised to detect and discourage encroachment and unsanctioned use, and to monitor forest condition and biodiversity. The main tasks required to achieve this are described below.

Develop village regulations
Village regulations will be developed for the management of NLVF and NLHPT, including the sustainable use of forest and natural resources within NLVF and NLHPT, e.g. fish, forest honey, ornamental birds, wildlife (bushmeat), other NTFP and timber. The process will be facilitated by the project coordinator with support from Kapuas Hulu District Legal Division staff.

Protected forest boundary marking
The boundaries of NLVF and NLHPT will be clearly marked to prevent accidental encroachment, and information boards will be placed to indicate the existence of restrictions on forest resource use.

Training in forest patrol and monitoring
Standard operating procedures will be developed for forest patrol and monitoring teams, and team members will be trained in the skills needed to complete effective patrols and monitoring activities, including: i) Basic knowledge on forest protection and monitoring the following skills; ii) Identification of endangered and protected flora and fauna; iii) Use of
Spatial Monitoring and Reporting Tool (SMART) for recording forest patrol and monitoring data; iii) Use of GPS; and iv) Data collection and reporting.

**Forest patrol and monitoring activities**

Purchase of equipment for supporting the forest patrol and monitoring activities will be facilitated by the project coordinator. Forest patrol and monitoring will be implemented by a patrol team consisting of 20 persons. Boundary patrols, including all forest patrol and monitoring team members will be carried out twice a year, in April and October. Regular, 1-day patrols will be carried out in NLVF once per month. Longer, 3-day patrols will be carried out in NLHPT every two months. After completion of each patrol, teams will submit the data collected to a dedicated data manager who will compile results for presentation at quarterly meetings with the project coordinator.

**Early detection of forest and peat fires**

A fire tower will be constructed and manned during high risk periods to enable early detection of forest fires, so that fire control teams can be mobilized.

**C.2.3 Development of income sources from sustainable forest management**

To reduce the likelihood that controls on forest resource use will displace activities to areas outside NLVF and NLHPT, and to lay the foundation for long-term financing of forest protection activities from additional income raised from sustainable forest management activities, project activities will be carried out to increase income from existing forest resource use activities, and to establish new sources of income. The tasks that will be carried out to achieve this are described below.

**General business skills training**

To strengthen the capacity of LPHD members related with business management, training will be provided for: i) Business management, motivation and planning; and ii) business accounting, promotion, and marketing.

**Training in rattan and bamboo management, processing and marketing**

A survey of rattan and bamboo potential within NLVF and NLHPT will be conducted, and rattan and bamboo activity groups will receive training on: i) the management of rattan and bamboo; ii) establishment of rattan and bamboo nurseries; and iii) conservation of rattan and bamboo resources in the wild. Standard operating procedures will be developed for: i) rattan and bamboo management; and ii) collection and processing of rattan and bamboo. Promotion and marketing of rattan and bamboo products will be implemented in coordination with other villages in the Kapuas Hulu Districts, for example by participating in promotion and marketing events, and exhibitions.
Training in forest honey marketing and business management
Standard operating procedures will be developed for forest honey business management, and honey groups will be established to purchase honey from members and provide packing. Training will be provided in promotion and marketing of honey, and transaction accounting.

Training and exchange visits to facilitate ecotourism business development
Ecotourism groups will receive training on the development and management of ecotourism enterprises. Exchange visits will be made to community based-ecotourism initiatives in Tanjung Puting National Park and surrounding communities. The project coordinator will facilitate the development of ecotourism facilities in partnership with third parties identified during exchange visits and other outreach activities. Ecotourism in Nanga Lauk will be promoted through production of promotional materials and participation in exhibitions.

Training on and development of tree nursery and implementation of tree planting
Forest rehabilitation group will receive training on tree nursery as well as the nursery equipment and seedlings. Maintenance materials for tree nursery will be provided throughout the period of the project and planting will be implemented in degraded NLHPT area in scheduled time. The Nanga Lauk community has expressed the wish to do enrichment planting with species that are good for producing of tikung, species that are attractive to bees for nectar collection, and other timber species.

Facilitation of rattan and bamboo, honey, and rubber products marketing
After receiving training on general business skills, LPHD will facilitate the marketing of rattan and bamboo, honey, and rubber to the respective groups.

C.3 Additionality of project activities

C.3.1 Regulatory surplus
As described in Section B.1.1, the NLVF and NLHPT have different legal designations:

- NLHPT is Limited production forest (Hutan Produksi Terbatas); and
- NLVF is Protection forest (Hutan Lindung).

Although designation as Hutan Lindung confers a regulatory requirement for forest protection, it is demonstrated by the project’s land cover change analysis\(^\text{15}\), that this legal designation alone is not sufficient to prevent all deforestation and forest degradation.

\(^{15}\) Presented in the Plan Vivo PDD, available at [www.planvivo.org](http://www.planvivo.org)
Limited production forest is typically used for timber extraction and does not have any regulatory requirement for forest protection.

The project’s conservation activities are therefore either not legally required (in NLHPT) or address threats that occur in spite of the legal requirement to protect (in NLVF).

### C.3.2 Barrier analysis

Despite a strong commitment to protecting forest in their village area, the Nanga Lauk community face significant political, financial, technical, institutional, social, and cultural barriers to developing and implementing effective management plans for the ecosystems they manage and the biological resources they use. A summary of these barriers, and how project activities will enable the community to overcome them, is provided in Table 6.

<table>
<thead>
<tr>
<th>Type of barrier</th>
<th>Description</th>
<th>Project activities to overcome the barrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political</td>
<td>Lack of Government support to for social forestry e.g. budget for social forestry for the West Kalimantan Province, of which Kapuas Hulu is one of 13 Districts, is just IDR 28 million (around USD 2000) per year.</td>
<td>The project will provide financial support, capacity building, and facilitation of LPHD to pursue legal processes required and develop and implement activities needed for protection and sustainable management of NLVF and NLHPT.</td>
</tr>
<tr>
<td>Financial</td>
<td>Nanga Lauk community lacks the financial means to invest in the equipment needed to conduct effective forest patrol and monitoring activities, or to provide the capital needed to improve existing livelihood activities. Community members are also exposed to an opportunity cost for involvement in forest patrol and monitoring activities, since the time required will prevent them from pursuing their usual livelihood activities.</td>
<td>The project will support the purchase of forest patrol and monitoring equipment, and provide compensation for loss of income incurred by patrol team members. Project finances will also help provide capital to improve access to markets for forest products including rattan and bamboo handicrafts and honey.</td>
</tr>
<tr>
<td>Technical</td>
<td>Nanga Lauk community members lack the capacity to conduct effective forest patrol and monitoring activities. Forest resource user groups lack business development capacity and knowledge of processes that could be used to add value to their products. The community members also lack knowledge of the processes for establishing and managing tree nurseries for the species they wish to plant.</td>
<td>Forest patrol and monitoring groups will be equipped and trained, and provided with compensation for their activities. The project will also support rattan and bamboo, forest honey, and ecotourism groups to develop business plans and provide training in approaches to add value to their products. Seedlings and training in nursery establishment will be provided to the forest restoration group.</td>
</tr>
<tr>
<td>Institutional</td>
<td>The LPHD lacks the capacity to develop and enforce village regulations on use of</td>
<td>The project will provide equipment for the LPHD office, and PRCF-Indonesia</td>
</tr>
<tr>
<td>Type of barrier</td>
<td>Description</td>
<td>Project activities to overcome the barrier</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Social</td>
<td>The older generations in Nanga Lauk have typically received little formal education, and lack knowledge of sustainable resource management practices. They also have limited access to information regarding regulations on natural resource use.</td>
<td>The project will provide training, facilitation and exposure to sustainable forest use practices and provide opportunities for all members of the community to be involved in a range of activities that aim to promote sustainable use of forest resources.</td>
</tr>
<tr>
<td>Cultural</td>
<td>The Nanga Lauk community has no customary rules that govern the use of forest resources.</td>
<td>The project will work to strengthen the LPHD and facilitate the development and implementation of village regulations on forest resource use.</td>
</tr>
<tr>
<td></td>
<td>forest resources, and has little knowledge of the legal processes needed to obtain forest management rights and permits.</td>
<td>will work with the LPHD members to build their capacity and facilitate the process of obtaining management rights and permits, and developing village regulations and forest management plans.</td>
</tr>
</tbody>
</table>
D. Project Coordination & Management

D.1 Project organisational structure

D.1.1 Area manager
The Nanga Lauk Community is the manager of the conservation area. The community has obtained management rights for the NLVF and is applying for the rights of the NLHPT, as described in Section B1.1.

D.1.2 Project coordinator
The project coordinator is *Yayasan* People Resources and Conservation Foundation – Indonesia (PRCF-Indonesia), a national NGO established in 2000 focusing on strengthening local participation in conservation of biodiversity and ecosystem functions through protection efforts and wise utilization of natural resources as well as improvement of socio-economic and cultural revitalization that impact to communities.

PRCF-Indonesia is a member organisation of the US-based PRCF Federation that has developed and operated in several Southeast Asian countries as federation of semi-autonomous country programs, many of which are now registered as national NGOs in each country. The capacity and experience of the PRCF-Indonesia are summarised in Table 3.

Table 3 Project coordinator profile

<table>
<thead>
<tr>
<th>Name and role in project:</th>
<th>PRCF-Indonesia (Project Coordinator)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal status:</td>
<td>National NGO</td>
</tr>
<tr>
<td>Long-term objectives:</td>
<td>To strengthen local participation in conservation of biodiversity and ecosystem functions through protection efforts and wise utilization of natural resources as well as improvement of socio-economic and cultural revitalization that impact to communities.</td>
</tr>
<tr>
<td>History and achievements:</td>
<td>Since its establishment in 2000, PRCF-Indonesia has carried out at least 26 projects in West Kalimantan under four programmes:</td>
</tr>
<tr>
<td></td>
<td>• Women Empowerment and Strengthening Community Cultural Identity Programme (1999-present)</td>
</tr>
<tr>
<td></td>
<td>• Democracy and Peace Building Programme (2003-2010)</td>
</tr>
<tr>
<td></td>
<td>• Habitat and Endangered Species Conservation Programme (2004-present)</td>
</tr>
<tr>
<td></td>
<td>• Community Based Forest Management, Non-Timber Forest Management and Environment Services Development Programme (2010-present)</td>
</tr>
<tr>
<td>Current activities:</td>
<td>In addition to the SFBMB project, PRCF-Indonesia are currently implementing two other projects:</td>
</tr>
</tbody>
</table>
• Village Forest Development to Support Biodiversity Conservation and Sustainable Utilization of NTFP in Kapuas Hulu District, West Kalimantan. Running from June 2014 – May 2016, funded by Tropical Forest Conservation Act – Kalimantan, No. 003/01/02/1237/TFCA2/CYC.1/IV/2014, [IDR 1,584,233,000]

• Strengthening Community-based Forest Management through Village Forest (Hutan Desa) for reducing deforestation and land degradation in West Kalimantan. Running from Oct 1015 to Oct 2016, and funded by The Asia Foundation [IDR 577,400,000]

• Sustainable Consumption and Production (SCP) of hand woven textiles (Songket, Ulos, Lurik, Abaca, Ikat): Female Entrepreneurship in Indonesia and Philippines. Running from May 2013 – Apr 2017, and funded by Asosiasi Pendamping Perempuan Usaha Kecil (ASPPUK), HIVOS, and European Union (EU) [IDR 626,232,652]

• Village Forest Development through Sustainable Utilization of NTFP and Ecosystem Services in Kapuas Hulu District, West Kalimantan; In collaboration with Aliansi Organis Indonesia (AOI), Lembaga Energi Hijau (LEH), Rumpun Bambu Nusantara (RBN), Koperasi Produsen Tuah Sidi Easi, and Koperasi Produsen Unyap Bina Usaha; Running from August 2016 – December 2017, funded by Millennium Challenge Account-Indonesia Green Prosperity Project, Window-2 of CBNRM, Grant No: 2016/Grant/055 [IDR 11,139,692,700]

Key personnel:
• Imanul Huda (Director) – Expertise in: Program management; Community Based Forest Management; Biodiversity conservation; and Community Development
• M. Syamsuri (Program Coordinator) – Expertise in: Community Based Forest Management; NTFPs; Capacity Building
• Fifiyati (Program Coordinator) – Expertise in Women Entrepreneurship; Traditional weaving development; Education
• Amaliatun Hasanah (Financial Manager)
• Jantiarto Paradise Pawa (GIS Specialist) – Expertise in: GIS and landscape architecture, Biodiversity Conservation
• Aloysius Kahariayadi (NTFP specialist) – Expertise in: NTFPs development
• Agus Dwi Wahyudi (Agriculture Specialist) – Expertise in: Sustainable Agriculture
• Rio Afiat (Rural Economic Development Specialist) – Expertise in: Institutional Economy
• Edi Waluyo Slamet (Rural Economic Development Specialist) - Expertise in: Production & Marketing

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Email: prcfindonesia@gmail.com
Website: www.prcfoundation.org
Tel: +62 81296439987

D.2 Project management

D.2.1 Record keeping

The project coordinator will maintain records of project documents, management plans, and reports received from project activity groups as paper copies with electronic versions stored on a hard drive and backed up on a cloud-based server. Full financial records of all project transactions will be maintained by the project coordinator and made available on request. All
monitoring data, and information needed for annual reporting will be stored in a project database.

**D.2.2 Project marketing and attracting funding partners**

The project coordinator will be responsible for marketing the project to potential funders, negotiating agreements with certificate buyers for carbon and other ecosystem services, processing sales, and recording transactions.

**D.3 Project financial management**

**D.3.1 Budget and financial plan**

A full financial plan has been developed for the first project period, including all costs associated with implementing the project activities, and the administration costs incurred by the project coordinator and technical partners. The project coordinator will review and update this plan throughout the project period.

**D.3.2 Mechanism for disbursement of funds**

All project funds from any source will be received by the project coordinator in a dedicated bank account that requires at least two signatories for all transactions. This bank account will be separate from the project coordinator's organisational account and will be used solely for managing project finances.

The project coordinator will be responsible for contracting trainers, technical specialists, and auditors as required to implement the management plan and fulfil all monitoring and reporting requirements. The project coordinator will also be responsible for purchasing equipment required for community groups to implement the activities described in the management plan, and for disbursing this equipment.

Cash payments to community groups will be made to the group's treasurer and at least two signatories from the group administrators will be required for all transactions. All amounts disbursed from group accounts will be recorded and reported to the project coordinator at quarterly meetings.

**D.4 Technical support**

**D.4.1 Capacity development**

Developing capacity of the community groups to effectively protect their forest and generate an income from sustainable forest management is a main aim of the project activities.
Training needs were identified during the project development phase, and required training has been incorporated into the management plan. The capacity of forest patrol and monitoring groups will be continually assessed throughout the project period, and additional training will be provided as required.
E. Stakeholder consultation

E.1 Participatory project design

E.1.1 Participatory planning process

The project has been developed with the Nanga Lauk community, starting from the use of participatory approaches to gather information and understand local drivers of deforestation and biodiversity degradation, progressing through the development and design of activities and management plans to address those drivers, and finally in the development of benefit sharing mechanisms. Unfortunately, the biodiversity monitoring plan could not yet be consulted and agreed with the community before the submission of this CMP for VCA audit. The project activities will be implemented from 2018, including those around sustainable use of the NLVF and NLHPT, i.e. the formulation and enforcement of village regulations concerning fishing, hunting, collection of ornamental birds, tikung tree harvesting, harvesting of other NTFPs and timber harvesting. The elements that will monitor the effectiveness of these activities will be designed in a participatory manner in parallel with the development of the pertinent regulations during the first year of the project.

Throughout the two-year development process there has been regular contact between the project coordinator and the Nanga Lauk community, as summarised below.

Scoping

The scoping phase of the project involved three visits to the proposed project site, by the project coordinator and technical partners. During these visits, the following activities were carried out:

- Identification of project site – Prior to the decision to begin scoping work for a conservation project, a number of candidate sites were visited to identify areas where the community was interested in exploring approaches to support sustainable management of forest areas under their management. Nanga Lauk was selected on the basis of strong local commitment to forest protection and the considerable threats to the forest in their village land.
• Problem tree analysis\textsuperscript{16} – A problem tree analysis was conducted with a representative group of participants from Nanga Lauk community to identify the causes and consequences of deforestation and degradation expected in the NLVF and NLHPT. The resulting problem trees were discussed and refined in an open village meeting.

• Village survey\textsuperscript{17} – Since recent information on socioeconomic conditions and livelihoods in Nanga Lauk was not available, a village survey was conducted using household surveys, focus group discussions and key informant interviews. The results of the village survey were presented and discussed in an open village meeting.

• Project activity scoping – Using the information from the problem tree analysis and village survey, a community consultation was carried out to identify specific activities that the community members wished to implement to address specific drivers of deforestation and forest degradation.

Project design development

During the project design development phase, the project coordinator and technical partners made frequent visits to Nanga Lauk to work with the community on the following activities:

• Participatory land-use mapping\textsuperscript{18} – Using remote sensing images as a base map, representative groups of community members produced detailed maps describing current land use within the Nanga Lauk village land.

• Project activity planning – Over a period of several months, the project coordinator worked with the Nanga Lauk community to develop detailed management plans describing activities that are required to prevent deforestation and degradation. Details of resource requirements were also discussed, and developed into full financial plans for the project. The management plan for NLVF is provided in Annex 2.

Capacity building

To enable the Nanga Lauk community to develop a full understanding of the concepts involved in a VCA and Plan Vivo project, and enter into relevant agreements under conditions required for Free, Prior and Informed Consent (FPIC), the project coordinator conducted the following capacity building activities with community members.

\textsuperscript{16} Damayanti, E. K. and Berry, N.J. 2016 Problem Tree Analysis for Nanga Lauk Village. Sustainable Forest and Biodiversity Management in Borneo Project Report

\textsuperscript{17} Damayanti, E. K. and Berry, N.J. 2016 Livelihood and Socioeconomic Survey, Nanga Lauk Village. Sustainable Forest and Biodiversity Management in Borneo Project Report.

• An overview of payments for ecosystem services and carbon markets, and how VCA and Plan Vivo project activities can enable communities to access these

• An introduction to the VCA and Plan Vivo Systems and how they can be applied to access payments for ecosystem services

• The requirements for audit/validation of the project design and registering as a VCA and Plan Vivo project

• Annual reporting requirements

• Requirements for periodic audit/verification of the benefits achieved

E.1.2 Governance of community groups

To plan and implement project activities three sections under the Nanga Lauk Village Forest Management Institution LPHD-NL were formed through Nanga Lauk Village Regulation as described in Section B.3.2. Six activity groups will be formed from members of Nanga Lauk community who are interested in participating in implementing activities in each group. This includes all adult men and women in the community (above 17 years old). A summary of the governance structure for these groups is provided in Figure 6.

Figure 6 Organisational structure for Nanga Lauk Village Forest Management Institution

E.2 Other stakeholders

Neighbouring communities are not known to utilise Nanga Lauk’s land or biological resources. Sometimes people from other communities pass through by boat along the river.
The national, regional and district level organisations with responsibility for land management in Nanga Lauk are:

- Ministry of the Environment and Forestry (MoEF)
- Putussibau Utara Forest Management Unit (KPH Putussibau Utara)
- Kapuas Hulu District Development Planning Agency (Bappeda KKH)
- West Kalimantan Provincial Forestry Service (Dishut Provinsi Kalbar)

These organisations are aware of Nanga Lauk’s management rights of the NLVF and of its application for management rights of the NLHPT.
F. Project impacts

F.1 Ecosystem & biodiversity benefits

F.1.1 Expected benefits to biodiversity and ecosystem services

As described in Section B.2.1 NLVF and NLHPT are relatively intact expanses of swamp and riparian forest that support diverse assemblages of plant and animal species many of which are endangered or threatened. The project aims to protect this forest and prevent deforestation and forest degradation that would reduce the quantity and quality of forest habitat reducing the availability of plants and animals for local use, and driving threatened species closer to extinction. The biodiversity benefits of the project are therefore expected to be significant at both a local and international level.

The expected benefits to the biodiversity and ecosystem services in Nanga Lauk are summarised in Table 7.

Table 7 Expected benefits to biodiversity and ecosystem services

<table>
<thead>
<tr>
<th>Initial situation</th>
<th>Expected benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biodiversity</td>
<td>NLVF and NLHPT support a diverse assemblage of plant and animal species (see Section B.2.1). Biodiversity value is maintained to the benefit of local and global communities.</td>
</tr>
<tr>
<td>Water/Watersheds</td>
<td>Forest in NLVF and NLHPT provides a clean source of water for Nanga Lauk and other downstream communities. Quality and quantity of water supply is maintained.</td>
</tr>
<tr>
<td>Soil productivity/conservation</td>
<td>Forest in NLHPT prevents soil erosion and helps maintain productivity in agricultural areas. Soil erosion is prevented and agricultural productivity is maintained or improved.</td>
</tr>
<tr>
<td>Other ecosystem services</td>
<td>Forest in NLVF and NLHPT provides a broad range of ecosystem services (see Section B.2.2). Supply of ecosystem services is maintained.</td>
</tr>
</tbody>
</table>

F.1.2 Potential negative impacts on biodiversity and ecosystem services

No negative impacts on biodiversity and ecosystem services are expected. No invasive alien species have been identified in the area, are known to be a threat in the larger landscape or will be introduced by the project.
F.2 Climate benefits

F.2.1 Expected climate benefits

This conservation project is also seeking certification for its expected climate benefits from the Plan Vivo standard. The methodology and parameters used to estimate the net climate benefit, including baseline scenario emissions, project scenario emissions and expected losses from leakage are described in the Plan Vivo Project Design Document, which can be downloaded from the Plan Vivo website (www.planvivo.org). The resulting estimate of the net climate benefit expected for each year of the project period from NLVF is 4,731 tCO$_2$e/yr.

The total potential climate benefit of NLVF and NLHPT combined is estimated at up to 17,000 tCO$_2$e/yr.

F.3 Livelihoods benefits

F.3.1 Expected livelihood benefits

The benefits to the livelihoods of members of Nanga Lauk community that are expected to result from project activities are summarised in Table 8.

Table 8 Expected benefits to the livelihoods of members of Nanga Lauk community

<table>
<thead>
<tr>
<th>Initial situation</th>
<th>Expected benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food and agricultural production</strong></td>
<td>Continued availability of fishing and NTFPs.</td>
</tr>
<tr>
<td>Food is obtained from fishing and collection of NTFPs within NLVF and NLHPT.</td>
<td>Individuals participating in forest patrol activities will receive payments for their activities. Individuals in rattan and bamboo, honey production, forest rehabilitation, rubber cultivation, and ecotourism groups will also receive additional income from these activities.</td>
</tr>
<tr>
<td><strong>Financial assets and incomes</strong></td>
<td></td>
</tr>
<tr>
<td>Many households derive cash income from the sale of fish, latex, and honey harvested from within NLVF and NLHPT. Some households also have a household member that receives salaried income.</td>
<td></td>
</tr>
<tr>
<td><strong>Environmental services (water, soil, etc.)</strong></td>
<td>Supply of provisioning and regulatory services provided by relatively intact forest is maintained.</td>
</tr>
<tr>
<td>Relatively intact forest provides a broad range of ecosystem services that the community depend on for their livelihoods (see Section B.2.2)</td>
<td></td>
</tr>
<tr>
<td><strong>Energy</strong></td>
<td>Supply of fuel wood is maintained.</td>
</tr>
<tr>
<td>Fuel wood is collected from within NLHPT and rubber gardens.</td>
<td></td>
</tr>
<tr>
<td><strong>Timber &amp; non-timber forest products (incl. forest food)</strong></td>
<td>A sustainable supply of NTFPs, and wood for building materials and tikung construction is maintained.</td>
</tr>
<tr>
<td>Timber for building materials, and tikung construction is harvested from NLHPT, a broad range of NTFPs are harvested from NLVF and NLHPT</td>
<td></td>
</tr>
<tr>
<td>Land and tenure security</td>
<td>Initial situation</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Management rights to NLVF have been assigned to Nanga Lauk community for a renewable period of 35 years. There is no formal recognition of Nanga Lauk community’s rights to manage NLHPT, although potential for granting these rights has been acknowledged by MoEF.</td>
<td>Nanga Lauk community will maintain management rights to NLVF and obtain the rights to NLHPT.</td>
</tr>
</tbody>
</table>

| Use-rights to natural resources | Licences governing the exploitation of natural resources and ecosystem services have not been granted for NLVF or NLHPT | Nanga Lauk community will receive licenses to utilize ecosystem services derived from NLVF and NLHPT for a renewable period of 35 years. |

| Social and cultural assets | Social and cultural heritage of Nanga Lauk community is not strongly linked to NLVF or NLHPT | The project is not expected to significantly benefit the social and cultural assets of Nanga Lauk community |

F.3.2 Potential negative impacts

Since some of the project activities involve introducing controls on the utilisation of forest resources to ensure their exploitation is sustainable and does not contribute to deforestation and forest degradation, and project activities could require financial investment and time away from other livelihood activities, some negative impacts are also possible. The potential negative impacts, and mitigation measures the project will put in place to address them, are summarised in Table 9.

Table 9 Potential negative impacts on the livelihoods of Nanga Lauk community

<table>
<thead>
<tr>
<th>Potential negative impact</th>
<th>Mitigation measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food and agricultural production</td>
<td>Expansion of agricultural areas within NLHPT will be prevented limiting potential to increase agricultural productivity by clearing new areas of forest. Nanga Lauk community members will be encouraged to diversify and intensify production within existing agricultural areas outside NLHPT that are currently designated for agricultural production so productivity can be increased without expanding the agricultural zone.</td>
</tr>
<tr>
<td>Environmental services (water, soil, etc.)</td>
<td>None – environmental services are expected to benefit from project activities. NA</td>
</tr>
<tr>
<td>Energy</td>
<td>None – supply of fuelwood is not expected to be reduced. NA</td>
</tr>
<tr>
<td>Timber &amp; non-timber forest products (incl. forest food)</td>
<td>Controls of timber for building materials and tikung construction to ensure these are maintained at sustainable levels could reduce the short-term need for material. Nanga Lauk community will be encouraged to plant and maintain trees required for tikung construction within NLHPT so that demand for materials can be maintained without exceeding levels for sustainable extraction.</td>
</tr>
<tr>
<td>Potential negative impact</td>
<td>Mitigation measures</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>term availability of these materials.</td>
<td>Requirements for building materials that exceed those which can be provided within sustainable extraction levels will be met by procuring timber from sustainable sources outside NLHPT.</td>
</tr>
</tbody>
</table>

| Land & tenure security                           | None                                                                                                                                           | NA                                                                                                           |
| Use-rights to natural resources                  | None                                                                                                                                           | NA                                                                                                           |
| Social and cultural assets                       | None                                                                                                                                           | NA                                                                                                           |
G. SWOT Analysis

G.1 SWOT Analysis

An analysis of internal Strengths, Weaknesses and external Opportunities and Threats (SWOT) was carried out by the project coordinator.

G.1.1 Strengths

The identified strengths internal to the project are:

- Strong conservation commitment within the village leadership and enthusiasm for conservation and project activities among community members. The village head and customary head, as well as the head of the Village Forest Management Institution (LPHD) have expressed their strong opposition against the resuming of commercial logging operations within the village territory and against leasing land to oil palm plantation companies. Villagers are very aware of the dependency of their livelihoods on the health of biological resources within the village boundary.

- Participatory project design. The project has been discussed in detail with community members. Inputs were received on most aspects of the project design, as described in Section E.1.1.

- The Ministerial decree on management rights of the NLVF has already been issued and the community therefore has already proven its capability of obtaining management rights.

- Village-level governance structures and processes are already in place or in the making:
  - A management plan for NLVF has already been developed;
  - The Village Forest Management Institution (LPHD) is operational;
  - The village leadership knows which village regulations need to be developed;
  - The project will be Plan Vivo validated, which requires standard operating procedures for regular monitoring, reporting and verifications, as described in the Plan Vivo Project Design Document.

- The project coordinator has strong relevant experience in the region with regards to community forest management rights, community governance development on sustainable land use and livelihoods based on sustainable use of biological resources.
G.1.2 Weaknesses
The identified weaknesses internal to the project are:

- Extraction of fish and tikung trees has increased in the last 10 years or so. While the villagers claim that fish catch is stable in terms of quantities and fish species composition, they acknowledge that the tree species most favoured for tikung production are becoming rarer (though they weren’t abundant to begin with). It is not currently understood by the community what constitutes a sustainable extraction rate of these resources. It is a possibility that the current fish catch, one of the primary sources of income and animal protein for the village, is not sustainable. The risk then exists that introduction and enforcement of regulation restricting fishing undermines the villagers’ commitment to the conservation project. To a lesser extent, similar risks surround the regulation of use of other biodiversity resources, including hunting, ornamental bird collection, tikung tree harvesting, other NTFP collection and timber harvesting.

G.1.3 Opportunities
The identified opportunities external to the project are:

- There is a high potential for replication in other villages in the district of the approach piloted by the Nanga Lauk ‘Forest for Life’ project. The project coordinator is also facilitating other villages who have expressed interest in developing conservation management plans, apply for community management rights and undergo VCA and Plan Vivo certifications if a suitable source of seed funding can be identified.
- Nanga Lauk village is located in the wetland ecoregion around the Danau Sentarum National Park. A limited tourism infrastructure has developed around this park and some surrounding villages, some of which have been facilitated by WWF Indonesia. Nanga Lauk could tap into this infrastructure to attract visitors to enjoy the scenic beauty of the NLVF and its interesting biodiversity.

G.1.4 Threats
The identified threats external to the project are:

- The community needs to submit an annual work plan for the Village Forest to the FMU for approval. If this approval is not obtained or is severely delayed it may threaten the continuity of the project. However, this would only become a real threat if it impacted on funding needed for project implementation or on the community’s management rights of the Village Forest. Neither the long-term withholding of approval by the FMU nor its potential impacts are likely scenarios.
G.2 Conclusions from SWOT analysis

It can be concluded from the SWOT analysis that the project with its strong conservation commitment translating into strong forest and biodiversity governance rules, structures and processes, and with participatory design the project demonstrates significant internal strengths.

Although one internal weakness was identified that could have significant impact if not addressed, this a) has not yet been confirmed as a realistic weakness (it depends on the sustainable fish catch), and b) the project’s development of various livelihood alternatives are designed to mitigate the risks that this potential weakness poses by diversifying the community’s livelihood basis and strengthening its conservation commitment.

The project has a high replication potential in other communities and faces no significant external threats.
H. Monitoring

H.1 Monitoring plan Nanga Lauk

The project will employ the following types of biodiversity monitoring:

i) activity-based indicators that will be tracked throughout the year to demonstrate that activities are being carried out as planned;

ii) recording of information collected during patrolling events through the year;

iii) land cover change assessment every 5 years to verify the project’s success in its most impacting project intervention: the prevention of deforestation and forest degradation; and

iv) repetition of the baseline biodiversity survey every 5 years to document project impacts on actual populations of taxa.

H.1.1 Activity-based indicators

The aim of activity-based indicators is to provide evidence that management plans are being carried out as described. Indicators are described in Table 10 for each of the main activities in the management plan, including threshold values and corrective actions required if thresholds are not met.

Table 10 Activity-based indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Threshold</th>
<th>Assessment method and means of verification</th>
<th>Corrective actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Securing rights</td>
<td>In the last 12 months, progress has been made towards securing rights to management (for NLHPT) and utilization (for NLVF and NLHPT) of the project areas.</td>
<td>Description of progress made and challenges encountered and copies of regulations, permits and licenses issued included in annual report.</td>
<td>Project coordinator to review barriers to progress and develop a plan to overcome them with the LPHD.</td>
</tr>
<tr>
<td>2) Forest management institution functioning</td>
<td>LPHD office has equipment and LPHD members have the necessary capacity to implement management plans; and in the last 12 months, members have met at least once a month, and reported to the project coordinator at least once every 3 months.</td>
<td>Quarterly equipment inventory and review of meeting reports by project coordinator.</td>
<td>Review membership of management institution and resume programme of monthly meetings.</td>
</tr>
<tr>
<td>Indicator</td>
<td>Threshold</td>
<td>Assessment method and means of verification</td>
<td>Corrective actions</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------</td>
<td>-------------------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>3) Village regulations</td>
<td>Regulations on the use of forest and fish resources are in place and are sufficient to ensure sustainable forest management, prevent deforestation and forest degradation, conserve biodiversity, and harvest biodiversity resources sustainably, including fish and tikung trees.</td>
<td>Copy of village regulations reviewed annually by project coordinator.</td>
<td>Revise village regulations.</td>
</tr>
<tr>
<td>4) Boundary marking</td>
<td>For the NLVF, the boundary of the project areas is clearly marked; for NLHPT the boundary of the project areas will be marked 20% in year-1 after the rights are secured; 40% in year-2, and 40% in year-3; sign boards with details of village regulations on use of forest resources and fire monitoring tower are in place.</td>
<td>Description of activities included in annual report, and annual inspection conducted by the project coordinator.</td>
<td>Carry out required boundary marking activities.</td>
</tr>
<tr>
<td>5) Forest patrol and monitoring</td>
<td>Forest patrol teams have necessary equipment and capacity to complete effective patrol and monitoring activities, and have conducted two boundary patrols, and 12 routine patrols in NLVF and 6 times in NLHPT, within the last 12 months.</td>
<td>Quarterly inventory of equipment, and review of patrol reports by project coordinator.</td>
<td>Project coordinator to provide necessary equipment, and training; Review membership of patrol groups and patrol schedule and update as required.</td>
</tr>
<tr>
<td>8) Rattan and bamboo</td>
<td>In the last 12 months, progress has been made in the development of rattan and bamboo management, processing and marketing activities.</td>
<td>Quarterly review of progress and sales records by project coordinator.</td>
<td>Review barriers to progress and update plans accordingly.</td>
</tr>
<tr>
<td>9) Forest honey</td>
<td>In the last 12 months, progress has been made in the development of forest honey enterprises and marketing.</td>
<td>Quarterly review of progress and sales records by project coordinator.</td>
<td>Review barriers to progress and update plans accordingly.</td>
</tr>
<tr>
<td>10) Ecotourism</td>
<td>In the last 12 months, progress has been made in the development of ecotourism facilities and program.</td>
<td>Quarterly progress review and annual inspection by project coordinator.</td>
<td>Review barriers to progress and update plans accordingly.</td>
</tr>
<tr>
<td>11) Forest rehabilitation</td>
<td>In the last 12 months, progress has been made in the development of nursery facilities, nursery maintenance, and implementation of planting.</td>
<td>Quarterly progress review and annual inspection by project coordinator.</td>
<td>Review barriers to progress and update plans accordingly.</td>
</tr>
<tr>
<td>Indicator</td>
<td>Threshold</td>
<td>Assessment method and means of verification</td>
<td>Corrective actions</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------</td>
<td>---------------------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>12) Rubber product development</td>
<td>In the last 12 months, progress has been made in the development of rubber products marketing plan and marketing activities.</td>
<td>Quarterly progress review and annual inspection by project coordinator.</td>
<td>Review barriers to progress and update plans accordingly.</td>
</tr>
</tbody>
</table>

It must be noted that the monitoring plan does not yet include any elements for the monitoring of the impact of the development and enforcement of village regulations concerning the sustainable use by community members of certain biodiversity resources. Because these regulations have not yet been designed they thus cannot yet inform the participatory design of the related monitoring elements. These elements are aimed to be included in the CMP for the next annual VCA audit.

**H.1.2 Recording of information during patrolling events**

Biodiversity monitoring information to be recorded by patrol teams during patrolling events is presented in Table 11.

**Table 11 Biodiversity parameters assessed by forest patrol teams**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Details recorded</th>
<th>Approach</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encounters with indicator species (see Table 12)</td>
<td>Location of observation (coordinates), distance from observer, type of observation (seen/heard/spoor/scat/other), sex and reproductive status (if known), confidence in identification</td>
<td>Recorded by patrol teams</td>
<td>Reported to project coordinator every 3 months</td>
</tr>
<tr>
<td>Unsanctioned animal traps located and removed</td>
<td>Location (coordinates), type of trap</td>
<td>Recorded by patrol teams</td>
<td>Reported to project coordinator every 3 months</td>
</tr>
<tr>
<td>Other threats to biodiversity</td>
<td>Location (coordinates), type (e.g. unsustainable fishing practices, or signs of unsanctioned hunting such as gunshots heard)</td>
<td>Recorded by patrol teams</td>
<td>Reported to project coordinator every 3 months</td>
</tr>
</tbody>
</table>
Table 12. List of indicator species to be recorded if sighted by the patrol teams.

<table>
<thead>
<tr>
<th>Taxa</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>English name</strong></td>
<td><strong>Vernacular name</strong></td>
</tr>
<tr>
<td><strong>Scientific name</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Mammals</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Primates:</strong></td>
<td></td>
</tr>
<tr>
<td>Proboscis monkey</td>
<td>Bekantang/Lancung/Rancung</td>
</tr>
<tr>
<td>Long-tailed macaque (Nicobar Crab-eating Macaque)</td>
<td>Kera</td>
</tr>
<tr>
<td>Maroon langur (leaf monkey)</td>
<td>Kelasi</td>
</tr>
<tr>
<td>Orangutan (visual and nest count)</td>
<td>Mayas</td>
</tr>
<tr>
<td><strong>Otters:</strong></td>
<td></td>
</tr>
<tr>
<td>Oriental small-clawed otter</td>
<td>Pusoh</td>
</tr>
<tr>
<td>Hairy-nosed otter</td>
<td></td>
</tr>
<tr>
<td><strong>All squirrels</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Birds</strong></td>
<td></td>
</tr>
<tr>
<td>Oriental pied hornbill</td>
<td>Ruwik</td>
</tr>
<tr>
<td>Black hornbill</td>
<td>Kukuk</td>
</tr>
<tr>
<td>Wrinkled hornbill</td>
<td>Kukuk</td>
</tr>
<tr>
<td>Rhinoceros hornbill</td>
<td>Rangkong badak/Tajak</td>
</tr>
<tr>
<td><strong>Storm stork</strong></td>
<td>Karaw</td>
</tr>
<tr>
<td>Greater green leafbird</td>
<td>Burung hijau</td>
</tr>
<tr>
<td>White rumped Shama</td>
<td>Burak</td>
</tr>
<tr>
<td>Oriental Magpie Robin</td>
<td>Tinyau</td>
</tr>
<tr>
<td><strong>Amphibian &amp; reptiles</strong></td>
<td>Any diurnal species</td>
</tr>
</tbody>
</table>
H.1.3 Land cover change assessment

The land cover change assessment will be carried out by a trained remote sensing and GIS technician. It will also be used for the project’s Plan Vivo verifications. The parameters that will be assessed for the biodiversity monitoring are summarised in Table 13.

Table 13 Land cover change parameters assessed to verify climate benefits and update the PDD

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Approach</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area of forest type $i$, legal classification $j$ and topography class $k$ within the project area that was deforested during the project period ($A_{PA,i,j,k}$)</td>
<td>Analysis of remote sensing (RS) data</td>
<td>Every 5 years</td>
</tr>
<tr>
<td>Area of forest type $i$, legal classification $j$ and topography class $k$ within the project area that was degraded during the project period ($A_{PA,i,j,k}$)</td>
<td>Analysis of remote sensing (RS) data</td>
<td>Every 5 years</td>
</tr>
</tbody>
</table>

H.1.4 Repetition of the baseline biodiversity survey

To assess the project’s general impact on biodiversity in the project area a biodiversity survey will be carried out every five years following the methodology applied in the wildlife biodiversity baseline survey\(^\text{19}\). Since biodiversity conservation is the primary objective of the project, the observation of conspicuous reductions in species’ abundances will require corrective actions to project design and/or implementation elements. Where species’ abundance increases this may indicate a project success where it was known that a certain species’ population was suppressed by human activities (e.g. fishing).

H.1.5 Standard Operating Procedures and community involvement

Standard Operating Procedures (SOPs) will be developed by the community and the project coordinator for all relevant monitoring activities and events before biodiversity monitoring commences. Staff responsible for data collection will be appointed and trained.

Community members from the relevant activity groups will be responsible for collecting the information on activity-based indicator values and patrolling data, and reporting these to the project coordinator. The project coordinator will compile this information and inform the community groups if any corrective actions are required to ensure that thresholds are met for the reporting period. At the end of each annual reporting period, all monitoring results

\(^{19}\) Yanuar et al 2017. Wildlife biodiversity survey of Nanga Lauk, West Kalimantan. Report to SFBMB project
will be discussed in a community meeting, and the consequences for VCA re-registration and receipt of performance based support will be explained.

The results of the land cover change assessment and the biodiversity survey completed at the end each 5-year period will be used, if necessary, to update the Conservation Management Plan and adjust village regulations and SOPs for the subsequent project period. Maps showing the location of any deforestation and degradation that occurred within the project area during the project period will be presented and discussed in a community meeting, and the consequences for VCA re-registration and receipt of performance based support will be explained.