Sustainable Development Verified Impact Standard

RIMBA RAYA BIODIVERSITY RESERVE PROJECT

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Project Title	Rimba Raya Biodiversity Reserve Project
Version	v1.8
Date of Issue	20 December 2019
Project Location	Indonesia, Kalimantan (Island of Borneo), Central Kalimantan, Seruyan
Project Proponent(s)	InfiniteEARTH Todd Lemons 36/F, Tower Two, Times Square, 1 Matheson Street, Causeway Bay, Hong Kong +1-704-223-0491 contact@infinite-earth.com
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Project Lifetime	01 November 2008 – 31 October 2038; 30-year lifetime
History of SD VISta Status	N/A
Other Certification Programs	Verified Carbon Standard and Climate, Community & Biodiversity Standards (Project ID 674)
Expected Future Assessment Schedule	Initial validation/verification: Spring 2020

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1 SUMMARY OF SDG CONTRIBUTIONS

The project will generate unique benefits in terms of the planet, people, and their prosperity. The Rimba Raya Biodiversity Reserve is located in the tropical peat swamp forest on the southern coast of Borneo in Central Kalimantan province, Indonesia. The location of the project will allow for a unique contribution towards mitigating the effects of climate change because Indonesia ranks as one of the world's largest emitters of greenhouse gases despite being a non-industrialized nation whose economy accounts for less than 1% of global GDP (World Bank and IMF Global Rankings - 2008).

The construction of palm oil plantations destroys more than 25,000 square kilometers of forestland that is home to dozens of endangered species as well as impoverished communities who face looming economic forces that threaten to appropriate land that has been their home for generations. Facing this crisis, Indonesia ratified the Paris Agreement in October 2016 and the current government has pledged to cut emissions by 29% to 41% by 2030. As such, the Rimba Raya Biodiversity Reserve Project is in a unique position to address this deforestation and help meet Indonesia's climate goals.

In the table below, potential project-specific outcomes and impacts are discussed.

Table 1. Summary of Project SDG Contributions

Row number	Estimated Project Contribution by the End of Project Lifetime	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Section Reference	Claim, Asset or Label
1)	Local field staff personnel will be hired for monitoring work in the project. Develop various economic working groups so that local community members can seek alternative livelihoods and/or employment directly related to the project.	*1*	1.1 Reduced poverty of villagers within the project zone	Implemented activities to decrease	3.1 # 1	Claim
2)	Project support and training will aid in the development of plantations of various crops (pineapple, djengkol), Farmer Field Schools, and nurseries. These initiatives will allow for a varied diet of fruits and vegetables within villages, of which access is normally limited. The project will also support programs like chicken farms, and shrimp paste	2	2.1, 2.1. 2.3 Improved food security within villages in project zone	Increased	3.1 #2	Claim

	production which will provide access to a local source of protein for communities.					
3)	The project will implement programs to increase access to healthy and sustainable food choices as well as a floating health clinic which will have a positive impact on the overall health and access to healthcare for individuals living in the project zone. Through community fire-fighting initiatives, community trash cleanups, and reforestation of the project area, the Rimba Raya project will decrease the overall levels of pollution to which community members are exposed. Additionally, the project will initiate educational programs about waste disposal and organized trash cleanups within communities to reduce the amount of contamination and pollution within villages as well was within the Seruyan river.	3	3.1, 3.2, 3.3, 3.4, 3.9 Improved health or access to healthcare	Increased	3.1 #3, 4, and 5	Claim
4)	The project will improved access to education/availability of knowledge through the distribution of scholarships, creation of libraries, support for environmental education, and the distribution of reading glasses. Additionally, the project's employment programs will increase knowledge within practical fields.	4	4.1, 4.4, 4.5, 4.6, 4.7, 4b Improved and equal access to education and training	Increased	3.1 #6	Claim
5)	The project will provide training to women who wish to participate in and manage their own small businesses as well as programs for shrimp, chicken, and handicrafts. Additionally, the project will build the agency and capacity of participating women, and	5	5.5, 5.a Improve women's economic access, financial agency, and leadership opportunities	Increased	3.1 #7	Claim

	facilitate more ownership of resources and access to economic opportunities.					
6)	The project will distribute water filters to villages surrounding the project area, as well as implement forest replanting and protection activities that enhance and protect critical hydrological and water filtration services.	6	6.1, 6.6, 6.b Improve access to clean drinking water	Increased	3.1 #8 and 9	Claim
7)	The project will work to provide solar lanterns and solar power to communities that lack electrification throughout the project zone.	7	7.1, 7.b Access to sustainable energy sources	Increased	3.1 #10	Claim
8)	Field staff personnel will be hired from the local villages to conduct monitoring and patrols in the project area. Additionally, initiatives to create alternative livelihoods, such as chicken farming, shrimp production, and nurseries will be implemented.	8	8.3, 8.5 Improve access to productive employment and decent work, in addition to supporting micro/small-scale enterprises through access to finance	Increased	3.1 #11	Claim
9)	The project will generate various opportunities for the development of and involvement in small scale enterprise including shrimp and chicken infrastructure, as well as nurseries and environmental and waste reduction education.	9	9.3, 9.4 Build resilient and sustainable infrastructure by increasing access to small scale industrial enterprise and financial services	Increased	3.1 #12	Claim
10)	Provide access to economic opportunities for women within villages throughout the project zone through the chicken farm, shrimp paste, and handicraft programs, in addition to hiring women as part of the RRC staff and improving access to education throughout the region through scholarships, library access, and the distribution of reading glasses.	10	10.2 Reduce inequality within and among countries by empowering and promoting the social, economic, and political inclusion of all	Decreased	3.1 #13	Claim
11)	The project will implement of waste reduction and river cleanup programs, working	11	11.3, 11.4 Make cities and settlements inclusive	Implemented activities to increase	3.1 #14	Claim

	groups for chicken and shrimp focused on sustainability, handicraft programs from recycled materials, and hiring of locals for participatory project management.		and sustainable with the capacity for participatory planning and management			
12)	Through community trash cleanups and promotion of use of recycled materials for handicraft trainings, the Rimba Raya project will have a positive impact on the reduction of waste. Additionally, the project will provide education to communities and students surrounding waste disposal and environmental/resource awareness.	12	12.5, 12.8 Ensure sustainable consumption and production	Implemented activities to increase	3.1 #15	Claim
13)	Through the project 47,237 hectares of land will be protected and prevented from conversion to oil palm plantation. Carbon stores will be protected and replanting activities will generate opportunities for additional carbon sequestration.	13	13.1, 13.3 Take urgent action to combat climate change and its impacts	Implemented activities to decrease	4.1 #1, 3, 4, 8, and 9	SD Vista-Labeled VCU
14)	The project will create working groups for fish and shrimp production to promote sustainable seafood for the communities. In addition, river clean ups and mangrove restoration programs will benefit aquatic biota by created habitat and improving water quality.	14	14.1, 14.2, 14.7 Conserve and sustainably use oceans, seas, and marine resources	Increased	4.1 #2, 3 and 7	Claim
15)	The project will protect habitat for approximately 54 Critically Endangered or Endangered species. 15,091 hectares of peat swamp will be protected from conversion to oil palm plantation and the project will support OFIs efforts to rehabilitate and release the endangered Bornean orangutan intending to increase their population. The project will also	15	15.1, 15.5 Protect, restore, and promote sustainable use of terrestrial ecosystems, halt and reverse land degradation and biodiversity loss	Increased protection	4.1 #5, 6, and 8	Claim

	work to protect and enhance biodiversity through patrols, replanting, and restoration.					
16)	A non-discriminatory hiring process will be followed that prioritizes village applicants and capacity building of villagers. In addition, all project information and monitoring results in local languages will be disseminated to villages within the project zone, and the construction of libraries will add to the availability of information to the public.	16	16.7, 16.10, 16.b Promote peaceful and inclusive societies and institutions by ensuring responsive, inclusive, participatory and representative decision-making, public access to information, and non-discriminatory practices	Implement activities to increase	3.1 #16	Claim
17)	The project plans to develop a solar power plant and work with World Education Indonesia to further advance sustainable technology	17	17.3, 17.7 Strengthen implementation and partnership for sustainable development by mobilizing financial resources and promoting environmentally sound technology	Increase	3.1 #17 and 18	Claim

2 PROJECT DESIGN

2.1 Project Objectives, Context and Long-term Viability

2.1.1 Summary of Project Sustainable Development Objective(s)

Between 1990 and 2005 Indonesia was losing just over 2% of its forest cover annually, a rate of nearly 1.9 million hectares a year. Today, that number has grown to more than 2,500,000 hectares annuallyP1P – an area roughly the size of Belgium (FAO 2006).Extensive loss of national forest cover has been brought about through clearing of forest areas with fire to open up land for agricultural use, especially palm oil. From 2000-2005 Indonesia's forest loss represented the second highest annual loss of forest cover by area of any country in the world (after Brazil). In this same time period, Indonesia planted 1.6 million ha of oil palm, increasing production by 87% (FAO 2006). As part of this conversion process, post-fire clearing and draining of peat lands has rapidly pushed the country to be amongst the world's largest emitters of greenhouse gases (GHGs). Today, Indonesia ranks just behind the U.S. and China as the third largest emitter of greenhouse gas emissions, despite being a non-industrialized nation whose economy accounts for less than 1% of global GDP. The destruction of Indonesia's forests, the 3rd largest expanse of tropical rainforest in the world, combined with massive peat-based GHG emissions is fueling local and global environmental concerns. The task that lay ahead for Indonesia and those who are seeking new solutions to value its remaining forests is to create new economic opportunity from these environmental challenges by linking local and national forest resources with the global market for environmental services. The Rimba Raya Biodiversity Reserve Project, an initiative by InfiniteEARTH, aims to reduce Indonesia's emissions by preserving 15,091 hectares of tropical peat swamp forest. This area, rich in biodiversity including the endangered Bornean orangutan, was slated by the Provincial government to be converted into four palm oil estates. Located on the southern coast of Borneo in the province of Central Kalimantan, the project is also designed to protect the integrity of the adjacent world-renowned Tanjung Puting National Park, by creating a physical buffer zone on the full extent of the ~90km eastern border of the park.

In the absence of the Rimba Raya Project, the project area would be converted to palm oil plantations by logging, burning to clear unused felled trees and remaining forest, and systematic draining of the peatland area. This would result in the release of both above and belowground carbon deposits. As a result, millions of tons of GHG emissions would be released into the atmosphere over the lifetime of the plantations. Increasingly scarce forest habitat supporting orangutans and more than 50 other endangered species would disappear completely. The 9 local forest communities along the eastern edge of the reserve would also face the threat of their land being appropriated by palm oil companies. InfiniteEARTH (IE), the principal project proponent, seeks to use the sale of carbon credits generated by the Voluntary Carbon Standard (VCS) through the Reducing Emissions from Deforestation and Degradation (REDD) Avoided Planned Deforestation (APD) mechanism to provide a sustainable revenue stream sufficient to curtail the clearing of Rimba Raya. The Rimba Raya Project will funnel substantial

and sustainable financial resources for project area protection, local community development, and provincial government infrastructure and support in order to create a viable alternative to forest conversion in Indonesia. The Rimba Raya Biodiversity Reserve Project recognizes that in order to launch and sustain a new mechanism for valuing forests on the ground, local community involvement is not just a sufficient feature of the project, it is a necessity. Local communities have been participating in and will continue to be integrally involved in the planning and development of various aspects of the project. Programs that Rimba Raya communities have expressed interest in helping to develop and implement, include: water filtration devices, distribution of clean stove technology, solar lighting, increased access to healthcare, early childhood development materials and tools including the one laptop per child program, training in project and reserve management, and environmental conservation education. The project will create local employment in protecting the Carbon Accounting Area, implementing an integrated fire management plan, and patrolling illegal logging and wildlife poaching. InfiniteEARTH aims to demonstrate that protecting endangered peat swamp forest is commercially, socially, and environmentally advantageous. The InfiniteEARTH vision is to develop a project that harnesses the global carbon market in order to successfully compete with commercial agricultural interests in order to provide social and environmental benefits that would not otherwise be attainable. Rimba Raya peat-swamp forests and the threats it faces are not unique, rather representative of environmental degradation of increasingly scarce forest and peatland resources in Indonesia. With the Rimba Raya Project, InfiniteEARTH is determined to create an operational, voluntary market and community involvement model that can be replicated in peat swamp forest ecosystems across Indonesia for decades to come.

Rimba Raya's Sustainable Development Objectives:

- Increase Agricultural productivity and incomes of small-scale food producers
- Undertake reforms to give women equal rights to economic resources
- Capacity-building support to developing countries in water- and sanitation-related activities and programmes
- Promote the implementation of sustainable management of all types of forest, halt deforestation, restore degraded forest and substantially increase afforestation and reforestation globally
- Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity, and protect and prevent the extinction of threatened species
- Achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.
- Increase substantially the share of renewable energy in the global energy mix
- Ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, help maintain ecosystems, and strengthen capacity for adaptation to climate change, extreme weather, drought, flooding, and other disasters and that progressively improve land and soil quality

- Support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services
- Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision making in political, economic, and public life.
- Ensure universal access to affordable, reliable, and modern energy services
- Ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.
- Ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy
- Protect carbon stores and increase carbon sequestration to decrease global GHG emissions

2.1.2 Description of the Project Activity

The primary project activity has been to avoid the conversion of tropical peat swamp forest to oil palm plantations. Operationally this primary activity is achieved through the implementation of the following core project activities.

1. Establishment of the Rimba Raya Reserve. The primary project activity will be the establishment of the Rimba Raya Reserve, a privately-funded protected area comprised of peat swamp, lowland and kerangas forest along the eastern boundary of Tanjung Puting National Park. The management plan envisions the creation of a series of guard towers, a fire response plan and fire brigade, and a comprehensive monitoring system. These measures will help ensure the permanence of Project Area carbon stocks and biodiversity and the territorial integrity of TPNP. In addition, project proponents will fund significant enrichment and rehabilitation work inside the Project Area, increasing carbon stocks and habitat available for biodiversity.

2. Guard post network. OFI has been instrumental in funding and building a small network of guard posts along the perimeter of Tanjung Puting over the past two decades, with the bulk of these posts located along the park boundaries to the north and west. The Rimba Raya project will extend this network of guard posts to create comprehensive observation and communication coverage along the eastern side of the park and project area.

3. Fire Plan. In past years, largely due to the practices of palm oil plantations within the Project Zone, fires have periodically swept through the Project Area and the park during dry periods. The Rimba Raya project will create a fire response system, including training and equipping a fire brigade and developing a fire response plan for the reserve in conjunction with guard towers and stations. The Fire Plan will include an institutional component addressing capital, personnel, and organizational InfiniteEARTH is committed to protecting the concession of PT. Rimba Raya, and has contracted Marc

Nicolas, an internationally- recognized expert experienced in peat swamp fire prevention and suppression, to develop and implement a fire plan for Rimba Raya. The document examines the current conditions of the concession and its degraded peat swamp forest at high fire risk.

The technical aspects of fire prevention, pre-suppression, suppression and post-suppression are explained in detail. Fire prevention includes cooperative agreements, prevention infrastructures and fire information system. Fire pre-suppression covers pre-attack planning, fire management organization, standard operating procedures, task forces (crews, equipment and training), awareness campaigns and patrols. Fire suppression includes fire command system, mobilization, firefighting and rescue operations. Fire post-suppression covers identification of burnt areas, damage assessment and rehabilitation.

4. Project Monitoring. To further ensure permanence, a comprehensive Monitoring Plan has been developed to ensure the collection and analysis of relevant climate, community, and biodiversity data. Combining ground truthing observations, advanced remote sensing, and periodic aerial flyovers, the monitoring plan will track key indicators to ensure the integrity of the reserve's carbon stocks and biodiversity and to allow project proponents to adapt the reserve management plan to changing conditions.

5. Replanting Degraded Areas. The project proponents have committed to undertaking significant reforestation work inside the Project Area. The project proponents will carry out restoration activities, planting seedlings of native dipterocarp and other appropriate tree species in areas with an insufficient inventory of young trees. The project goal is to restore forests, including increasing carbon stocks in the Project Area and providing additional habitat, thereby strengthening the physical buffer protecting TPNP.

6. Funding of OFI activities. Tanjung Puting National Park is one of the largest remaining protected habitats for the endangered Borneo Orangutan. For over twenty years, OFI has been rescuing orangutans orphaned by deforestation, rehabilitating them, and releasing them back into the wild, where they are monitored for research and education purposes. OFI has also managed Camp Leakey, a wild orangutan reserve inside the park, and its conservation activities have extended to securing park borders and educating communities around the park.

A portion of the revenues from the sale of the project's carbon credits will be used to fund OFI's ongoing activities, including new programs for reforestation of critical orangutan habitats and acquisition of viable habitat that does not currently meet REDD project requirements for additionality.

In addition, project proponents will build three new orangutan release centers and six feeding platforms at strategic locations inside the Project Area over the first three years of the project.

Working with project proponents, OFI will use the release centers to reintroduce as many as 300 orangutans from their Orangutan Care Center and Quarantine (OCCQ) Rehabilitation Center near Pangkalan Bun, back into the wild, utilizing the reserve as a staging ground for their migration into the park. The feeding platforms, which are mobile, will function as an integral component of the reintroduction process. By progressively moving the locations of feeding platforms farther away from

the release centers, project proponents and OFI staff can monitor orangutan adaptation and exercise partial control over orangutan whereabouts for the first several months after release.

7. Co-management of Tanjung Puting National Park. The TPNP Authority currently has a staff of 56 personnel, working out of offices in Pangkalan Bun, Pembuang Hulu, Kuala Pembuang, and Kumai, whose job it is to protect over 400,000 ha of national park besieged by economic actors that would profit from its destruction. The mere presence of the Rimba Raya project along the park's exposed eastern flank will greatly reduce the resource and administrative burden for this staff.

Beyond this, and as part of their commitment to developing a for-profit conservation model for underfunded national parks, the Rimba Raya project proponents will work to strengthen the co-management agreement already in existence between Tanjung Puting National Park and OFI.

A portion of the revenues from the sale of the project's carbon credits will be used to fund directly the park's management and conservation activities. Moreover, park personnel will have access to training and capacity-building opportunities, improved equipment for monitoring and communication, and the reserve's fire brigade.

8. Development of Social Buffer. An essential element of the Rimba Raya project is the engagement of all stakeholders in the Project Zone in order to create a social buffer to the park and Project Area, thereby alleviating many of the external pressures that drive deforestation. The project proponents have created a process framework designed to disseminate information about project development and implementation, support community participation in all aspects of the project, and offer opportunities for capacity-building.

To create an effective social buffer, project proponents believe that a comprehensive approach to socio-economic development must be undertaken with the objective of addressing the root causes of community-based deforestation – namely poverty, hunger, disease, lack of adequate shelter, and exclusion. To that end, a slate of programs has been developed based on data from an initial social survey in the Project Zone and with reference to the Sustainable Development Goals.

9. Community Centers and Village Libraries. Following the successful example of OFI with communities in the park's western region, project proponents will build community centers in strategically selected villages inside the Project Zone to act as a soft interface between the project and the communities. The community centers will offer facilities for park and project staff as well as for community organizations, and they will supply news and radio communication facilities, libraries, and social and agricultural training programs.

10. Agriculture & Aquaculture Productivity. The Rimba Raya project has extended World Education's ongoing programs for food security, access to government services, and capacity building within the project zone. By helping local households meet their food needs utilizing land already under cultivation and by educating them about their political rights, the Rimba Raya project has eliminated many of the incentives driving illegal logging and the unnecessary conversion of forest to agricultural land.

11. Clean Water Systems. Over a billion people on the planet still do not have access to the most basic element needed to support life: safe drinking water. Every year, 1.7 million deaths – mainly among children under the age of five – result from diarrhea caused by polluted water.

The project will provide water filtration systems to households throughout the project zone and will explore the potential of installed village water filtration systems. This program will improve the livelihoods of all community members, reduce the resources expended on medical treatment, and indirectly remove some of the economic pressure driving deforestation in the Project Area.

12. Renewable Energy. Small Scale Solar Lighting will be provided to individual households. Additionally the project will explore installing village level solar power plants for village electrification.

13.Micro-Credit. Microcredit is the extension of very small loans to poor entrepreneurs and to others living in poverty. These individuals lack collateral, steady employment, and a verifiable credit history and therefore cannot meet even the most minimal qualifications to gain access to traditional credit.

IE hopes to provide all individuals inside the Project Zone with access to credit as a means to expand their livelihoods options and improve their socio-economic status. Towards that end, IE will develop a targeted micro-credit program for Project Zone communities.

14. Floating Clinic. Project proponents will arrange for the construction, outfitting, and deployment of a floating medical clinic. In lieu of community clinics, a floating clinic was chosen for its mobility and the resulting ability to deliver medical services up and down the Seruyan River, effectively servicing all of the communities in the Project Zone.

InfiniteEARTH has chosen to use the Phinisi and its hand-crafted design in order to promote and preserve this traditional wooden shipbuilding industry. The ship will be constructed from sustainably harvested local hardwoods.

15. Capacity Building Programs. Capacity building efforts will be focused towards women's working groups. Women's working groups have been established and finances secured for shrimp paste in an effort to keep the price these products stable in the surrounding communities as well as to provide an alternative form of revenue with a lower ecological impact than palm oil plantations.

2.1.3 Implementation Schedule

Project Phase	Event / Milestone	Activity Description / Relevancy	Start Date	Finish Date	Status	Responsible Party
1-Feasibility study	Meeting with Orangutan Foundation Intl.	Determine synergy between orangutan conservation objectives and avoided deforestation	20-Mar-2008	21-Mar-2008	Complete	Todd Lemons
1-Feasibility study	Visit potential project site area	Survey current condition of forest, assess immediate local threat from palm oil	21-Mar-2008	23-Mar-2008	Complete	Todd Lemons
1-Feasibility study	Meet independently with three members of Commission 4 (development) of the Provincial legislature	Discuss new land-use plan that intends to convert Production Forests to Palm Oil	21-Mar-2008	25-Mar-2008	Complete	Todd Lemons / Biruté Galdikas
1-Feasibility study	Meet with Provincial Governor	Determine possibility of his support given historical support of palm oil	25-Mar-2008	25-Mar-2008	Complete	Todd Lemons / Biruté Galdikas
1-Feasibility study	Meet with Conservation Dept. of the Ministry of Forestry (PHKA)	Meet with "Head of Sub-Directorate" of the dept. in order to build support at lower levels within the agency.	8-Apr-2008	8-Apr-2008	Complete	Todd Lemons / Biruté Galdikas
1-Feasibility study	Meet with Conservation Dept. of the Ministry of Forestry (PHKA)	Meet with the "Director of Area Conservation" and "Director General" to explicitly outline the project plan and ask for support	9-Apr-2008	9-Apr-2008	Complete	Todd Lemons / Biruté Galdikas
1-Feasibility study	Deliver LOI to Ministry of Forestry	Lay out plan. Demonstrate common goals with OFI and define project area.	10-Apr-2008	10-Apr-2008	Complete	Todd Lemo / Biruté Galdikas
1-Feasibility	Meet with	Determine level of	12-	12-Apr-2008	Complete	Todd

study	Minister of Forestry	support for the project. Ask for advice on how to proceed	Apr-2008			Lemons / Biruté Galdikas
1-Feasibility study	Commission "Desk Top Study"	Contract ForestCarbon to conduct a Desk Top Study of the Project area	1-Jun-2008	15-Aug-2008	Complete	Forest
Carbon						
1-Feasibility study	Application for "Area verification"	Local branch of the National Forestry Dept determines current legal status of project area and issues letter of approval if no legal conflicts with title or proposed activities	15-Sep-2008	1-Oct-2008	Complete	Todd Lemons / Prometheus
1-Feasibility study	Meet with Chiefs of the local villages	Determine level of support for the project. Discuss community concerns and needs	15-Sep-2008	18-Sep-2008	Complete	Infinite-Earth
2-Establishment of Rimba Raya Reserve	Establishment of offices	Administrative offices established in Jakarta and Pangkalanbun and field office established in Seruyan	1-Oct-2008	31-Dec-2010	Started	Infinite-Earth
2-Establishment of Rimba Raya Reserve	Project Design	Design & Development of the Rimba Raya REDD Project	1-Oct-2008	15-Mar-2009	Complete	Infinite-Earth
1-Feasibility study	Meet with Bupati of the Seruyan Regency	Determine level of support for the project. Discuss regency needs.	15-Oct-2008	18-Oct-2008	Complete	Todd Lemons
2-Establishment of Rimba Raya Reserve	Bupati's Letter of Recommendation	Bupati of Seruyan Regency signs letter of approval and recommendation of the project	1-Nov-2008	11/31/2008	Complete	Todd Lemons / Prometheus
2-Establishment of Rimba Raya Reserve	Biodiversity Study	Commission Biodiversity Study of project area	1-Nov-2008	15-Jan-2009	Complete	Daemeter

2-Establishment of Rimba Raya Reserve	Community Assessment	Commission Assessment for all communities in the project area to determine land tenure analysis, socio-economic status and needs, etc	1-Dec-2008	1-Feb-2009	Complete	Daemeter
2-Establishment of Rimba Raya Reserve	Governor's Letter of Recommendation	Governor of the Central Kalimantan province signs letter of approval and recommendation of the project	1-Dec-2008	15-Mar-2009	Complete	Todd Lemons /Dr. Galdikas
5-Extension of OFI Activities	Construction of orangutan release centers & feeding platform	Four release stations will be built inside the project area,	1-Dec-2013	31-Mar-2012	Started	Rimba Raya / OFI
6-Development of Social Buffer	Village Heads Meeting	OFI sponsored meeting of Project Zone Village Heads to discuss conservation issues.	23-Dec-2008	23-Dec-2008	Complete	OFI
6-Development of Social Buffer	Daemeter Social Survey	Daemeter field team visits villages in the Project Zone to gather info and elicit opinions on proposed project activities	23-Dec-2008	28-Dec-2008	Complete	Daemeter
2-Establishment of Rimba Raya Reserve	Agreement with carbon buyers	Contract for the purchase of REDD credits	15-Feb-2009	15-Jun-2010	Complete	Infinite-Earth
2-Establishment of Rimba Raya Reserve	Technical Proposal	Submit Technical proposal (Project Operational Plan) to Dept of Forestry for review	1-Mar-2009	15-Mar-2009	Complete	IE Mgt Team / Sonokoling
2-Establishment of Rimba Raya Reserve	Technical Proposal	Present Technical proposal (Project Operational Plan) to Dept of Forestry and field questions & concerns.	15-Apr-2009	1-May-2009	Complete	IE Mgt Team / Sonokoling
2-Establishment	Fire Plan	Design and Implementation of	1-May-	1-Jun-2010	Complete	Marc Nicolas

of Rimba Raya Reserve		comprehensive fire prevention and response plan	2009			
2-Establishment of Rimba Raya Reserve	PDD Pre-validation	PDD submitted for pre-validation review	1-May-2009	31-May-2009	Complete	Rainforest Alliance
2-Establishment of Rimba Raya Reserve	PDD Translation and Dissemination	PDD translated into Indonesian and distributed to all stakeholders for the CCB public comment period	1-May-2009	31-May-2009	Complete	Rini Firdaus / OFI / Rimba Raya
2-Establishment of Rimba Raya Reserve	Minister's Letter of Recommendation	Concession approved contingent on compliance with administrative steps	1-Jun-2009	30-Jun-2009	Complete	IE Mgt Team / Prometheus
2-Establishment of Rimba Raya Reserve	Monitoring Plan	Design & Development of Monitoring Plan	1-Jun-2009	15-Jan-2009	Complete	Forest Carbon / Daemeter
2-Establishment of Rimba Raya Reserve	Daemeter Phase 2 Biodiversity and Community Assessments	CCB validation and verification	1-Jun-2009	15-Jan-2010	Complete	Daemeter
2-Establishment of Rimba Raya Reserve	CCB Validation	PDD posted to CCB website and project validation commences, triggering public comment period	1-Jun-2009	15-Jun-2010	Complete	SCS
2-Establishment of Rimba Raya Reserve	2nd Validation of Methodology	Receive 1st validation of methodology, receive 2nd validation	1-Jun-2009	15-Jul-2010	Started	Bureau Veritas
6-Development of Social Buffer	Public comment meetings	Meetings in Project Zone communities to describe project and elicit comments	1-Jun-2009	15-May - 2010	Complete	Rimba Raya/ OFI
5-Extension of OFI Activities	Release of rehabilitated orangutans	The coordinated release of 300 rehabilitated orangutans into the project area	1-Jun-2009	31-Dec-2012	Started	Rimba Raya / OFI
2-	Environmental	Conduct	1-	15-Apr-2010	Complete	Focus

Establishment of Rimba Raya Reserve	Impact Assessment	Environmental & Social Impact Study per Dept of Forestry Regulations for final approval	Jan-2010			Consulting
6-Development of Social Buffer	Community consultations	Series of meetings with Project Zone communities to elaborate and prioritize social programs	1-Aug-2009	31-May - 2010	Complete	Rimba Raya
6-Development of Social Buffer	Community consultations	Initial (1 of 2) Public Comment Period	1-May-2010	31-May - 2010	Complete	RRC & World Education
6-Development of Social Buffer	Community consultations	Formal CCBA Public Comment Period	1-Sep-2010	30-Sep - 2010	Complete	RRC & World Education
2-Establishment of Rimba Raya Reserve	Minister's Decree granting IUPHHK Concession Rights	Final approval of the Rimba Raya rehabilitation and restoration concession license	1-Sep-2009	15-Jul-2011	In Final Stages	IE Mgt Team / Rimba Raya
6-Development of Social Buffer	Establishment of community committees	Establish system of community involvement in day-to-day operations , process and procedural rules for decision making, arbitration, etc. using existing socio/political/judicial structures (village counsels, tribunals)	1-Jan-2010	15-Jun-2011	Started	Rimba Raya / OFI
2-Establishment of Rimba Raya Reserve	IUPJL Business License	Application & Approval of Business License for trading Carbon Credits (under complicance scheme only)	15-May-2010	?	Pending	Infinite-Earth /Rimba Raya
2-Establishment of Rimba Raya Reserve	VCS Verification	VCS verification commences	15-Feb-2010	15-Aug-2010	Started	SCS

3-Execution of Rimba Raya Operational Plan	Guard Posts	Build guard posts at strategic locations across the Reserve	1-Jun-2009	31-Dec-2020	Ongoing	Infinite-Earth / OFI / Rimba Raya
3-Execution of Rimba Raya Operational Plan	Hiring and training of new personnel	Field manager, Chief Reserve warden, and 35 new guards hired and trained	1-Jan-2013	31-Dec-2039	Completed (but need more field staff)	Infinite-Earth / OFI / Rimba Raya
3-Execution of Rimba Raya Operational Plan	Hiring and training of fire brigade	Fire chief engaged and fire brigade hired and trained	1-Jun-2010	31-Dec-2015	Started	Infinite-Earth /Rimba Raya
4-Co-Management of Tanjung Puting	Execution of Co-Management Agreement with TPNP Authority	Become an additional party to the existing and historical co-management agreement between OFI and TPNP	1-Jun-2010	1-Dec-2010	Started	Rimba Raya / OFI
5-Extension of OFI Activities	Construction of orangutan remote feeding platforms	Four supplemental feeding platforms will be built inside the project area	1-Jun-2014	31-Dec-2039	Started	Infinite-Earth / OFI / Rimba Raya
6-Development of Social Buffer	Annual grants to World Education	Grants to expand World Education community activities in project zone	1-Jun-2011	31-Dec-2039	Pending	Infinite-Earth
4-Co-Management of Tanjung Puting	Commencement of annual grants to TPNP	Grants to fund TPNP conservation activities	1-Jun-2011	31-Dec-2039	Pending	Infinite-Earth
4-Co-Management of Tanjung Puting	Training of TPNP guards and staff	Bring in outside training personnel to adequately train and equip staff	1-Jun-2011	31-Dec-2039	Pending	Rimba Raya / OFI
5-Extension of OFI Activities	Commencement of annual grants to OFI	Grants to fund OFI orangutan conservation and rehabilitation activities	1-Jun-2011	31-Dec-2039	Pending	Infinite-Earth
6-Development of Social Buffer	Community centers & libraries	2-3 community centers & libraries will be built	1-Jun-2011	31-Dec-2039	Pending	Rimba Raya / OFI
6-	Water filtration	Development of	1-	31-Dec-	Pending	Rimba Raya

Development of Social Buffer	systems	community based clean filtration system	Dec-2010	2039		
7-Outreach and Education	Orangutan study	Design and setup of orangutan tracking study	15-Jun-2009	30-Jun-2020	Started	Rimba Raya / OFI
2-Establishment of Rimba Raya Reserve	CCB Verification	Receive CCB Gold Validation	15-Mar-2009	2011	Started	SCS
6-Development of Social Buffer	Early Childhood Education & Development (ECED)	Begin stocking materials and hiring trainer / instructors for the ECED programs at the 2-3 community centers	1-Jun-2011	31-Dec-2039	Pending	Rimba Raya / OFI / World Education
7-Outreach and Education	Interactive Educational Platform	Creation of an interactive educational platform around the content of the research study	1-Jun-2011	31-Dec-2039	Pending	Rimba Raya / Infinite-Earth
3-Execution of Rimba Raya Operational Plan	Implementation of Monitoring Plan	Execution of Monitoring Plan	1-Jun-2009	31-Dec-2039	Started	Forest Carbon/ Daemeter / OFI / Rimba Raya
3-Execution of Rimba Raya Operational Plan	Construction of fire towers	Build fire towers at strategic locations across the Reserve	15-Mar-2009	29-Feb--2020	Started	Rimba Raya
6-Development of Social Buffer	Commencement of micro-credit program	Provide micro-finance program to local communities for agriculture, aqua-culture and other enterprise development	1-Jun-2011	31-Dec-2039	Pending	Infinite-Earth
6-Development of Social Buffer	Construction of floating clinic	Phinisi floating clinic built; operations commence along Seruyan river	1-Jun-2012	31-Dec-2014	Pending	Rimba Raya
3-Execution of Rimba Raya Operational Plan	Phase I-III Rehabilitation of degraded habitat	Rehabilitation of degraded habitat via a multi-story mixed indigenous species natural forest &	1-Jun-2012	31-Dec-2039	Pending	Rimba Raya

		community based cash crop agro-forestry approach				

2.1.4 Project Proponent

Organization Name	InfiniteEARTH
Role in the Project	Project Proponent
Contact Person	Todd Lemons
Title	Founder and Non-Executive Chairman
Address	36/F, Tower Two, Times Square, 1 Matheson Street, Causeway Bay, Hong Kong
Telephone	+1-704-223-0491
Email	contact@infinite-earth.com

2.1.5 Other Entities Involved in the Project

Organization Name	Orangutan Foundation International (OFI)
Role in the Project	Forest Protection, Ground Surveying
Contact Person	Dr. Biruté Galdikas
Title	President, Head of Field Operations

Address	Jalan Hasanuddin No. 10 Blk DKD Pangkalan Bun Kalimantan Tengah 74111 Indonesia
Telephone	+62 0532-24778
Email	

Organization Name	World Education Indonesia (World Education, WE, or WEI)
Role in the Project	Community Development, Education, Technical Advising and Consultation
Contact Person	Edy Hartono
Title	Country Manager - Indonesia
Address	World Education Jalan Tebet Dalam IV-D Number 5A Jakarta 12810 Indonesia
Telephone	+62-812-588-8021
Email	edwihartono@id.worlded.org

Organization Name	ecoPartners LLC
Role in the Project	Remote Sensing, Land Use Change Analysis, VCS/CCB verification support services
Contact Person	Paz Lozano
Title	Manager of Developmental Services

Address	2930 Shattuck Ave Suite 305 Berkeley, California 94705
Telephone	+1 415 634 4650 extension 104
Email	plozano@ecopartnersllc.com

2.1.6 Project Type

The Rimba Raya project follows the framework of Reducing Emissions from Deforestation and Degradation (REDD) through Avoided Planned Deforestation (APD). This project is not a grouped project.

2.1.7 Project Location

The project is located in the Seruyan Regency, in the province of Central Kalimantan, Indonesia. The Project lies between 112°01'12 "- 112°28'12" east longitude and 02°31'48"- 03°21'00" south latitude and is bounded by Tanjung Puting National Park in the west, the Java Sea in the south, the Seruyan River in the east, and a palm oil concession in the north. There have been no changes to the project location since validation. The project area can be seen within greater regional area in the image below (Figure 1).

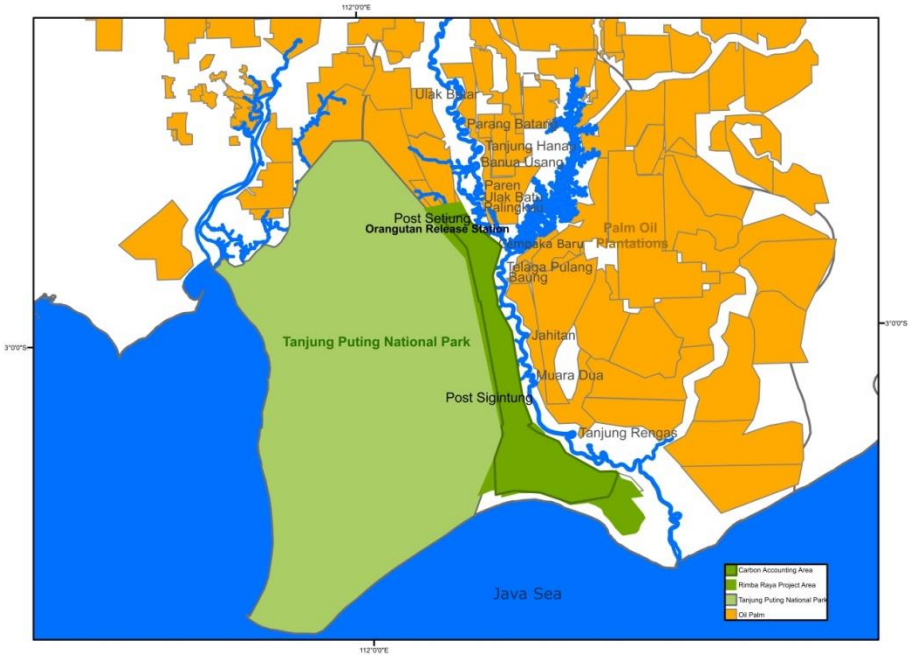


Figure 1: The Regional Location of the Rimba Raya Project

2.1.8 Baseline Scenario

Bordering the eastern boundary of the Tanjung Puting National Park in the Seruyan River watershed, Rimba Raya is rich in biodiversity and provides numerous ecosystem services for the surrounding communities. Rimba Raya is comprised of terrestrial and aquatic ecosystems that house hundreds of species of flora and fauna and provide habitat for many rare and endangered species, including the Bornean orangutan. A previous study of the project zone documented high biodiversity including 361 species of birds, 122 species of mammals, and 180 species of trees and woody plants likely to be present in the project zone. Under the baseline scenario, the project area was slated by the Provincial government to be converted into four palm oil estates.

While about three quarters of Indonesia's oil palm production comes from Sumatra, the provinces with the greatest potential for continued growth are Kalimantan and Irian Jaya, due to the relative availability of land for conversion to plantations. According to the Indonesian Chamber of Commerce, in 2006 East and Central Kalimantan together accounted for over 30 percent of the remaining land area in Indonesia suitable for conversion to oil palm plantations. This has resulted in an

increasing area within Central Kalimantan that supports industrial oil palm, going from no formal plantations in 1967 to 200-300,000 ha of planted area in 2002. The Indonesian Chamber of Commerce reports that palm oil area in Central Kalimantan grew from 240,000 hectares in 2003 to nearly 270,000 hectares in 2005.

The project activity of peat swamp forest conservation is taking place in an area that was slated for conversion to palm oil plantations by the Indonesian government. Without the project, the Carbon Accounting Area would have been deforested and drained, releasing vast amounts of CO2 into the atmosphere. The VM0004 methodology is currently the only VCS-approved methodology for avoided deforestation in tropical peat swamp forests and was designed based on Central Kalimantan peat swamps in particular.

Although there are no communities living within the Rimba Raya project area, adjacent communities were considered key stakeholders in project development. Adjacent communities live in chronic poverty, often needing to prioritize short-term economic survival over long-term ecological consequences. This project aims to strike a balance between conserving critical ecological resources without marginalizing access to natural resources that the adjacent communities depend upon for their livelihoods.

2.1.9 Causal Chain(s)

Project Activity	Outcomes	Impacts	SDG Met
Community Fire Fighting	Reduced threat of forest and peatland fires	Increased carbon sequestration and storage Improved forest health and protection of biodiversity Reduced air pollution	15, 13, 3
	Community members are better prepared to combat and prevent fires		
	Quicker response to fires, mitigating damage		
	Greater environmental awareness		
Handicraft Training	Less waste and litter	Responsible consumption and production Reduced pollution	12, 3
	Additional materials available as raw material		
	Greater environmental awareness		
Environmental Education Program	Increased environmental awareness	Clean water and sanitation Responsible consumption and production Climate action	6, 12, 13
FFS - Vegetables	Ability to implement intensified agriculture	Improved production of vegetables	2
Recycle Bank	Less waste and litter	Responsible consumption and production Reduced pollution	12, 3, 2
	Additional high-quality materials available as raw materials		
	Greater environmental awareness		
Student Award	Increased community awareness of sustainability and forest protection	Increased sustainability and forest protection within communities and project area	13
Nursery	Increased capacity for agroforestry operations	Better environment Improved infrastructure for reforestation and agroforestry operations Improved resiliency to disasters Improved biodiversity Restoration of degraded land and soil	6, 9, 13, 14, 15
	Increased scope of nursery management education		
	Increased knowledge of nursery management		

	Increased community capacity	More sustainable use of water resources Increased benefits from ecosystem services	
	Increased knowledge of fire management techniques		
	Improved forest management		
	Increased extent of forested land cover with natural species		
	Reduced negative impact from fires and natural disasters		
	Improved water management infrastructure		
Tree Planting Initiative	Increased extent of forested land cover with natural species	Better micro-climate Increased benefits from ecosystem services Restoration of degraded land and soil Improved clean air production Improved infrastructure for reforestation and agroforestry operations Mitigate climate change	3, 9, 13, 14, 15
	Increased household activity		
	Increased capacity for agroforestry operations		
	Enhanced carbon stocks		
	Increased knowledge of reforestation management and techniques		

2.1.10 Threats to the Project

The main identified risks to the project benefits are loss of carbon stocks due to ongoing pressure from oil palm expansion in the northern boundary and from fires lit by bordering communities to clear land and expand agriculture. These risks (whether natural or human-induced) would be expected to impact climate, community, and biodiversity benefits during the project lifetime. Fire has an impact on climate benefits through the release of carbon emissions from aboveground forest and belowground peat deposits, and can be expected to negatively impact biodiversity benefits through destruction of habitat. Fire can also negatively impact local communities as the smoke can cause respiratory illnesses and reduce the amount of overall GHG emissions reductions from the project, thereby reducing the project's funding.

Through the utilization of carbon funding, the Rimba Raya Biodiversity Reserve Project has expanded and enhanced the patrol and protective work being undertaken in the area since 1971 by OFI. This funding has increased the patrols to act as a deterrent and the physical presence through marking of boundaries as well as the installation of posts and fire towers in order to efficiently monitor and respond to threats.

Forest patrols protect the forested area from illegal activities by way of community socialization. Communities around the project area are included in patrols, thus the communities are made aware that such illegal activities are forbidden. Patrol activities are conducted by monitoring vulnerable areas either on foot, by motorcycle or by cess (small boat for 2 – 4 persons).

In addition, funds are available for enterprise development to reduce the pressure on agriculture expansion and oil palm expansion with the ambition to maintain and enhance the climate, community and biodiversity benefit beyond the life of the project.

The project has continued to make the necessary investments in job creation and income generation activities for the local communities from the sale of credits in the voluntary market so that agricultural expansion is less sought after.

2.1.11 Benefit Permanence

In order to maintain and enhance the climate, community and biodiversity benefits beyond the project lifetime, the project proponent has developed a model that will protect the Rimba Raya Project area in perpetuity. In the creation of this Reserve, the carbon stocks and biodiversity of the project area are intended to remain intact beyond the lifetime of the project because the Reserve itself will be protected from conversion to palm oil plantation indefinitely. In this protection, critical habitat is safeguarded for numerous species and carbon stocks present in forest and peatland swamps remain intact.

The creation of the Reserve, as well as the revenue made from the sale of carbon credits, has and will continue to fund community-based action so that benefits are experienced during the lifetime of the project and that they positively impact future generations of the community. The creation of the Reserve allows for continued community benefits such as sustainable livelihood opportunities, equal opportunity employment for women and other marginalized groups, as well as sustainable food sourcing production. This is because the Reserve itself provides sustainable employment opportunities and agroforestry-based food production, among other community benefits that will remain permanently intact.

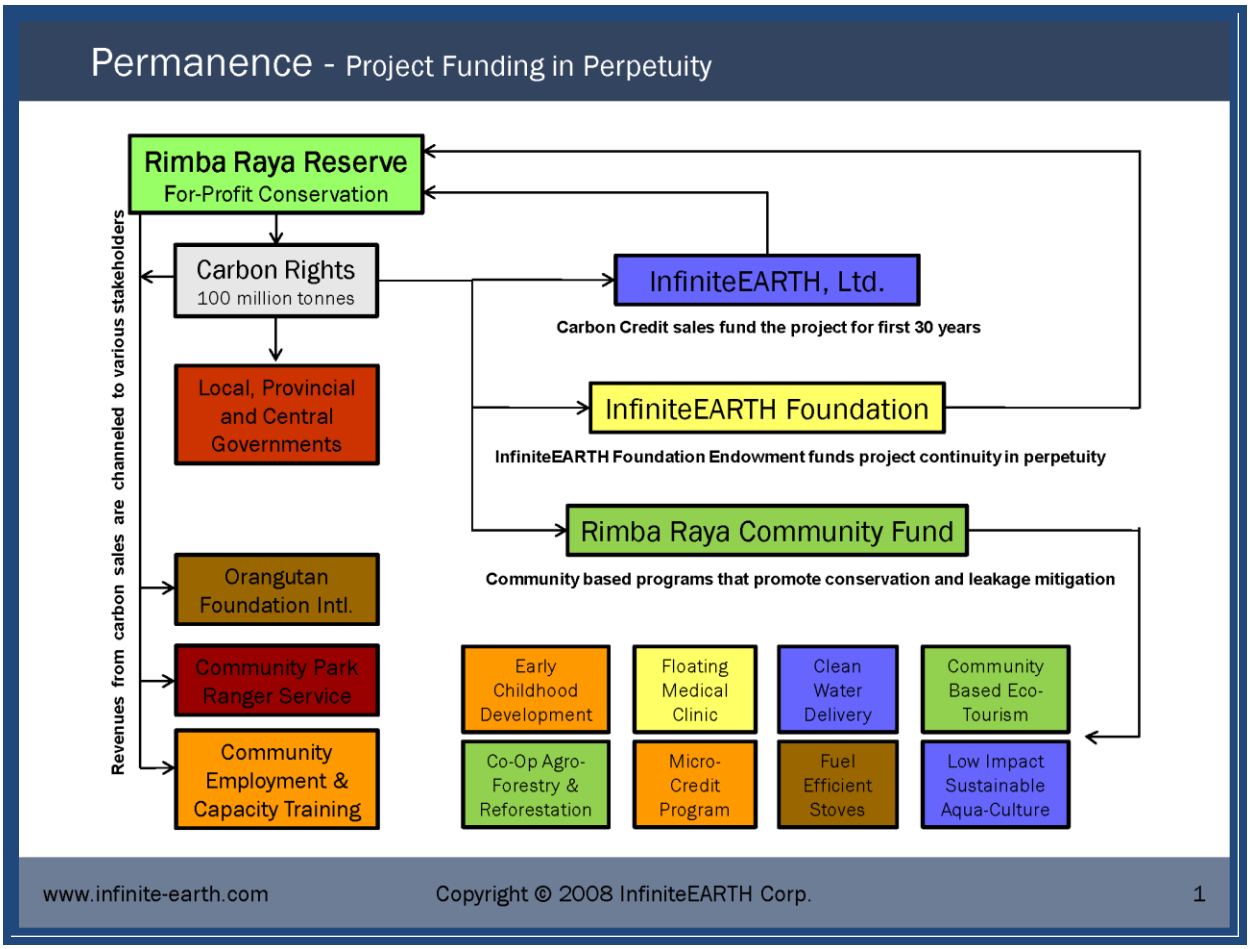


Figure 2: Outline of project permanence in terms of funding

2.2 Stakeholder Engagement

2.2.1 Stakeholder Identification

The stakeholder identification process was carried out by determining which organizations, government entities, and communities might be impacted by project activities or conversely, might have an impact on the project itself.

To determine the community groups that were stakeholders, the project assessed the presence of communities within the Project Zone, as the individuals living within these communities were most likely to impact the Project Area and to be impacted by various project activities. Many of these communities use the project area for fishing or occasional timber extraction, and since these uses had the potential to be impacted by conservation activities implemented by the project, it was considered critical to engage with any communities that were in close proximity to the Project Area.

The project additionally determined the varying levels of government with which contact and consultation would need to be maintained, including village, district, and provincial levels. Bordering the project area on the west is the Tanjung Puting National Park, and where Orangutan Foundation International plays a large role in managing this area. As the project shares boundaries with this national park, it will be important to ensure congruency between conservation efforts, especially with regards to orangutan relocation.

2.2.2 Stakeholder Description

Stakeholder Category	Description	Channels of Communication
Villagers	Recipients and beneficiaries of any program implemented in Project Zone villages	Verbal communication from village head; Written invitation from village head for meetings with oil palm companies, higher-level government officials, etc.
Farmers and Women's groups	Organization with common goal of improving member's welfare	Word of mouth; Letters and other written media; Announcement board in village office or mosque
Formal Village Leaders	Village heads, Village secretaries, and BPD Chairmen	Word of mouth; Letters and other written media; Direct visit to Village Office
Informal Leaders	Village members with influence in the village, often approached to facilitate communication	Word of mouth; Letters and other written media; Announcement board in village office or mosque

World Education	Community organizer that implements community development programs	Internet (including email and instant messaging); Telephone
OFI	Community facilitator working to raise stakeholder's awareness of conservation	Internet (including email and instant messaging); Telephone
WALHI	Environmental protection advocacy organization	Internet (including email and instant messaging); Telephone
Sawit Watch	Network of civil society organizations working to raise public awareness of the negative impacts of oil palm development	Internet (including email and instant messaging); Telephone
Government Offices	License oil palm plantation companies; monitor their progress; implement programs at the village level; facilitate conflict resolution for any village dispute	Official letter; Telephone; In-person visit
Oil Palm Companies	Plantation development, with limited social programs for local communities	Official letter; Telephone; In-person visit

2.2.3 Stakeholder Consultation

Despite the absence of communities or families living within the boundaries of the Carbon Accounting Area, the Rimba Raya Reserve project has, through a series of formalized meetings, gained local approval of the project by including communities bordering the buffer zone of the Carbon Accounting Area as stakeholders in the project development process. These meetings and community approvals are summarized in Table 2. InfiniteEARTH views local stakeholder participation as the key to the project's success in terms of preventing illegal logging and fires.

In order to engage local communities, the project proponent formed a partnership agreement with World Education, a well-known development organization that has been working with communities in the area since 2003 on a project funded by USAID. This organization in conjunction with Daemeter Consulting conducted an initial baseline survey to assess community development needs, local uses of the surrounding forests, and community land use. A large population of community members in the Project Zone was interviewed through this process.

Survey findings related to development needs have been incorporated into the development strategy of the Rimba Raya project so that program goals match local needs. In terms of local land use in the

buffer zone, it was found that local communities were highly dependent on the waterways for transport and also fishing. Community members consistently mentioned access to clean river water as an important priority and voiced their concern about the potential threat of their rivers becoming polluted with sediment and chemicals if oil palm plantations expanded in the area. Non-timber forest products were also collected for local use and these rights will be respected by the project as they promote the sustainable use of the forest. In terms of community land use, farmers use land that lies to the east of the Seruyan River, which is outside the Carbon Accounting Area and borders the Project Zone. However, there are a few exceptional cases where farmers are cultivating small plots in the Project Zone. These land rights have been recognized by the project in order to avoid local conflict, although none of these conflicts with the Carbon Accounting Area.

InfiniteEARTH has also developed a strategic partnership with the renowned conservation organization Orangutan Foundation International, which has a major role in managing the neighboring Tanjung Puting National Park. This strong relationship has allowed InfiniteEARTH to benefit from the many years of experience OFI has in managing a large-scale conservation projects and securing community support for this type of project.

In terms of engaging the Indonesian government, InfiniteEARTH has created partnerships with the government at all levels including the village, district, and provincial level. At the village level, approval from village heads has been obtained in the form of letters encouraging the further development of the Rimba Raya Reserve. The district head along with the governor have both formally approved the project and recommended it to the Ministry of Forestry. At the national level, the project has engaged the local BKSDA (forest conservation) section of the Ministry of Forestry on developing an effective fire management plan. The project proponent has taken the approach of extensive collaboration and communication with government bodies to avoid confusion and create a more transparent process for all involved parties as this will ultimately lead to a successful project implementation.

Table 2. Overview of Stakeholder Meetings during Project Development

Date	Name(Village or Organization)	Purpose of Meeting	Conducted by
December 23-26 2008	8 Villages	Initial Community Survey	Daemeter
October 16 2009 November	Tanjung Hanau	Developing agriculture, especially for woman group with 14 women Zero-burning agriculture development (rice field demonstration plot)	World Education
December 8, 2009	Ulak Batu	Planning to develop a community forest (Jelutung and Gaharu plantation) with 11	World Education

		communities	
October 13 2009		Developing agriculture, especially for woman group with 16 women	
November 2009		Community fisheries development	
December 10 2009 November 15 2009	Baung	Planning to develop a community forest (Jelutung and Gaharu plantation) with: village head and 4 community members 15 communities members a joint survey was conducted 5 communities to determined the site of jelutung forest demo-plot	World Education
November 2009		Community fisheries development	
November 20, 2009		Zero-burning agriculture development (rice field demonstration plot) with 11 communities	
October 2009 and November 2009		Forest protection, where a joint survey was conducted on determine the cause of previous forest fires	
2009.12.8-10	Tanjung Rengas	Planning to develop community forest (Jelutung and Gaharu plantation) with 7 communities	World Education
2009.12.22	Muara Dua	Planning to develop community forest (Jelutung and Gaharu plantation) With 2 communities	World Education
2008.11. 16		Community fisheries development With 11 communities	
2009.10.10 and 2009.11.12		Forest protection, where a joint survey was conducted on determine the cause of previous forest fires	

2000.11.6-11	Bahaur, Tanjung Rengas, Baung, Paren, Parang Batang, Tanjung Hanau, Paring Raya	Supporting Letter from Villages	RRC, WE
2010.01.13-14	World Education, Tanjung Puting National Park and OFI	Discussion about Rimba Raya plan of activities and sharing information with Stakeholder	RRC
2010.01.15-19	3 villages Ulak Batu, Baung, Muara Dua	Village visit to share more about PT RRC	RRC
2010.02.07-08	Agriculture Department Seruyan District Department of Forestry and Plantation Seruyan District	Additional talks about Rimba Raya to government agency	RRC
2010.02.09-10	Seruyan Government, 5 Villages (Muara Dua, Baung, Palingkau, Ulak Batu and Tanjung Hanau	Stake Holder Meeting	World Education
2010.02.26-28	3 villages (Bahaur, Telaga Pulang, Muara Dua)	Focus Discussion Group (FGD) regarding socialization of Rimba Raya	RRC, PT Focus
2010.02.25 – 2010.03.01	Hanau sub-district, Danau Sembuluh sub-district, and Seruyan Hilir sub-district	Preparation forum of socialization and to make sure location of the meeting and scheduling	RRC
2010.03.08-11	9 villages in 3 sub districts (Seruyan Hilir sub-district, Danau	Socialization of Rimba Raya Conservation on three sub-district (Seruyan Hilir, Danau Sembuluh and Hanau)	RRC, PT Focus

	Sembuluh sub-district and Hanau sub-district)		
2010.03.22-23	Forestry agency district level Head of Seruyan Hilir sub-district, Environment agency (Badan Lingkungan Hidup) District level	Distribution of UKL UPL Document	RRC
2010.03.28-30	Forestry agency district level, Province level, Environment agency District level, Province Level	Presentation UKL UPL PT. Rimba Raya Conservation, held on BLH Province level at Palangkaraya.	RRC, PT Focus
2010.05.17-19	5 villages (Baung, Muara Dua, Jahitan, Tanjung Rengas, Telaga Pulang)	Mini Solar Light Assistance program	RRC
2010.06.18-19	4 villages (Bahaur, Palingkau, Ulak Batu, Cempaka Baru)	Mini Solar Light Assistance program	RRC
2010.06.26-27	5 villages (Parang Batang, Paring Raya, Tanjung Hanau, Banua Usang, Paren)	Mini Solar Light Assistance program	RRC
2010.07.12-13	4 villages (Tanjung Rengas, Muara Dua, Jahitan, Baung)	Fire Training	BKSDA and RRC
2010.05.1-30	9 villages	Initial Public Comment Period Field-activities	RRC and World Education
2010.09.1-30	9 villages	Formal CCB Public Comment Period Field-activities	RRC and World Education

Despite the absence of communities or families living within the boundaries of the Carbon Accounting Area, the Rimba Raya Reserve project has, through a series of formalized meetings and studies, gained local approval of the project by including communities bordering the buffer zone of the Carbon Accounting Area as stakeholders in the project development process.

The project proponent has worked to create effective means of communication and consultation with the community so that their input can help to steer the project. In partnership with World Education, a well-known development organization that has been working with communities in the area since 2003, the project proponent has engaged local communities to assess community development needs, local uses of surrounding forests and community land uses. Socio-economic studies were carried out throughout the course of project development and implementation. The most recent study, conducted in 2017, provided an updated look into the lives of stakeholders living in the project zone in terms of physical, financial, social and natural capital indicators (See Rimba Raya Endline_QUICK SURVEY_Edy September 2017.xls). The results from the study's consultation and survey components provided a deeper understanding of community needs and were incorporated into the development of the project so that program goals match local needs.

Findings from the most recent socio-economic study indicated that the majority of the population in the project zone is experiencing high levels of deprivation as dictated by fluctuating income streams and the cost of food being the largest expenditure. These economic conditions and food security depend almost entirely on local natural resources – fisheries, water, fire wood and rice production – which can be inconsistently available or accessible at any given time. Because palm oil plantations act as a large provider of reliable employment for local stakeholders, they are viewed as predominately positive among community members. These trends are also observable among education and health sectors. Also notable in the recently completed study was the variability amongst the eight villages surveyed concerning the outlined indicators, despite their geographic closeness. This has reinforced the appropriateness of the project's approach in how it designs its development and implementation; intensive community-based interventions that are tailored to the local needs of the local communities are necessary for successful and effective projects.

Stakeholders were welcomed and encouraged to provide feedback to OFI and WE and well as to IE directly. One method of ensuring this communication occurred was through the creation of village agreements. Village agreements between the Rimba Raya Reserve and a community (as a partner of Rimba Raya) contained mutually agreement upon points in order to ensure benefit sharing was implemented for village communities. Figure 3 below shows the process for appropriately carrying out village agreements. Community members are encouraged to report any concerns, possible issues, suggestions, or advice to a unit manager or member of the community development staff. Each village has at least one such person who has been trained to respond to these by bringing the concern to Rimba Raya in order that a proper response can be made.

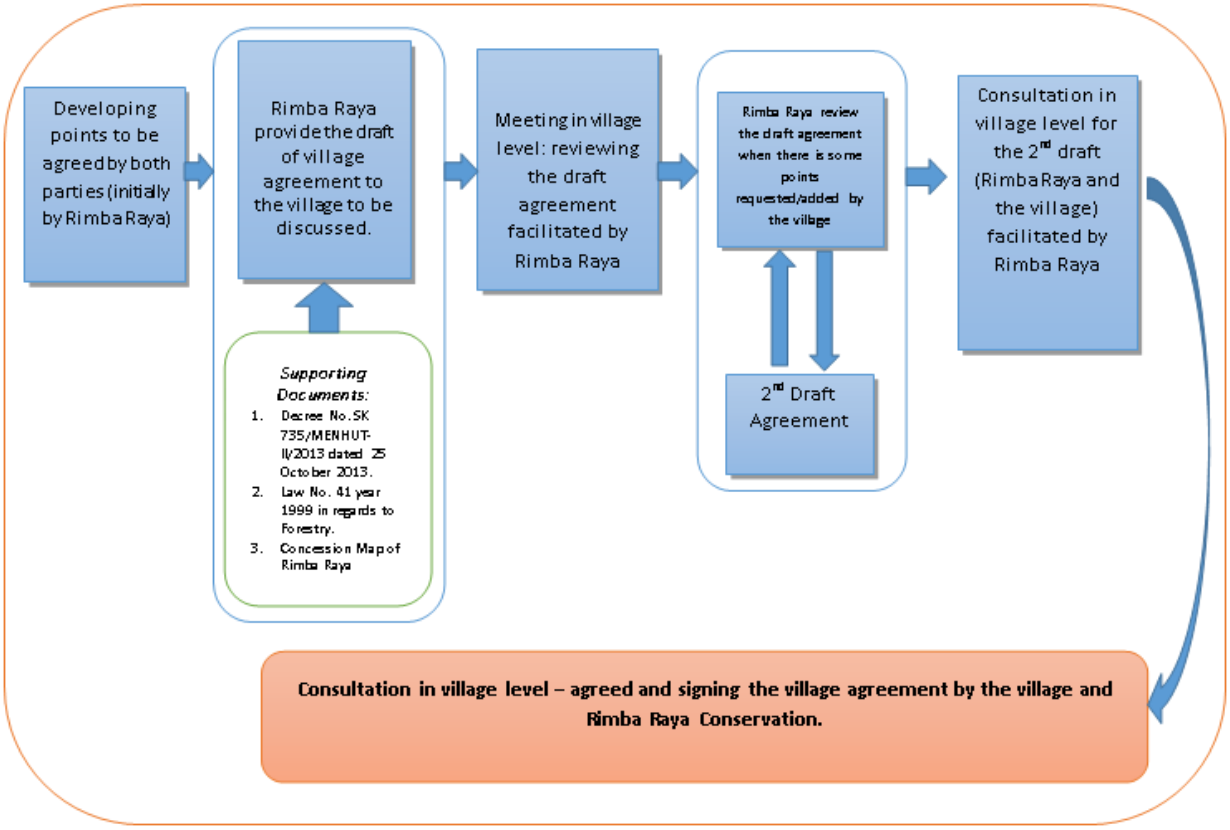


Figure 3: Agreement Process between Rimba Raya and Project Participants at the Project Level

Participatory mapping among communities will be used as a tool to engage stakeholders in the project consultation process. The participatory mapping activities will consist of sketching project activities of community areas based on traditional utilization patterns. This activity was carried out and directly managed by Rimba Raya, which engaged with WEI as a community development consultant beginning in 2015. Rimba has focused on involvement between community members, community government and local leaders.

Participatory mapping was carried out in several villages and included numerous participants. More details are included in the table below (Table 3). Additional proof of participatory mapping in the above communities may be provided upon request.

Table 3. Location, Date, and Participation of Villagers in Participatory Mapping

No	Village	Duration	Participants Number
1	Muara Dua	14 – 16 Des 2015	105
2	Baung	11 – 13 Feb 1016	119
3	Tanjung Rangas	2 – 4 March 2016	145

4	Jahitan	14 – 15 March 2016	102
5	Pematang Limau	23 – 25 March 2016	139
6	Telaga Pulang	6 – 8 April 2016	103
7	Ulak Batu	15 – 16 Sep 2016	70

The goals of participatory mapping included the following:

1) To sketch information on community management areas (traditional utilization) and spatial planning of villages around Rimba Raya Conservation.
2) Obtain information on the development areas of district level program in relation with the utilization of the area around Rimba Raya Conservation.
3) Act as the basic ingredients in the development planning of Rimba Raya Conservation along with village and district development.
4) Act as a learning media for the community and village government in the process of n village planning development.
5) Act as a learning media for community development staff in utilizing the participatory planning methods.

In working to accomplish these objectives, community members were able to voice their opinions and experiences, consequently influencing the direction of the project. Project proponents recognize the value of community input and strive to have community input influence the project. Through adaptive management, feedback from community members was used to change certain aspects of the project.

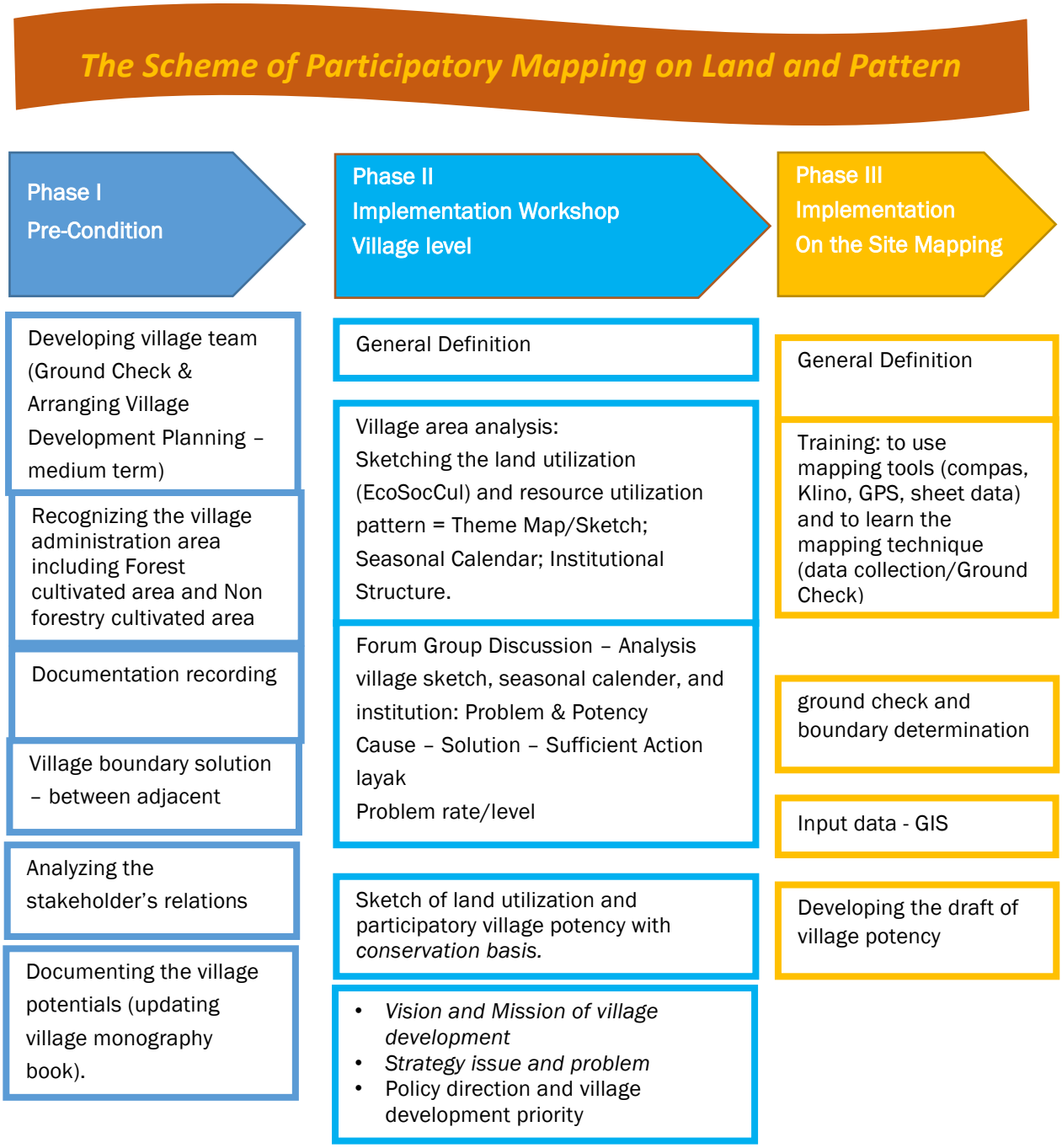


Figure 4: The Participatory Mapping Process for Community Involvement

Other, more general, methods of communication to inform stakeholders included postings on the "village board," announcements at the mosque as well as other publicized written media. Stakeholders

will be able to provide feedback through telephone calls, email/instant messaging, letters and of course, in-person visits with project proponents and other project partners.

A summary of reports will be prepared and copied for distribution in all of the villages within the Rimba Raya operational area as well as district and sub-district seats. Notices will be placed in all villages about the availability of these summaries in each of the villages and announcements included within local newspapers where Rimba Raya has a presence. World Education and Rimba Raya office locations have copies of any summaries to distribute to community members that make a request, and efforts were made by all staff when working with the community members on other components of the programs to share that these were available.

The socioeconomic study as well as other social surveys, participatory mapping exercises, collective village agreements, and other forms of dialogue with community stakeholders allow for the inclusion of their feedback into project decision making. Through adaptive management, stakeholder feedback will be used during project development and implementation in order to influence the project.

2.2.4 Continued Consultation and Adaptive Management

Prior to the social survey and dialogues with community stakeholders, project proponents intended to offer a limited set of social programs targeted directly at reducing community impacts on the Project Area. These early programs, building on work by OFI and World Education in the region, focused on conservation education and increased crop yields.

The results of the social survey made it clear that these measures would be insufficient. The development of oil palm in the region appears to be following the same course as in other parts of Indonesia, suggesting that the region will see an increase in conflicts and a diminishment in environmental services, even if the 'without project' scenario is successfully avoided. Already the region's ability to sustain traditional livelihoods is in decline. Fishing yields have decreased over the past few years with the rise of flooding, clean water is a scarce commodity, and oil palm companies have commenced a campaign of land seizures that will likely end only when all viable land has been usurped.

In discussions with community members, time and again access to clean water was listed as the top priority for any development program. After survey results were compiled, project proponents immediately began researching appropriate programs, and Potters for Peace was selected as the best candidate given local needs, project goals, and available resources.

Once project proponents understood the impoverished state of Project Zone communities, a more comprehensive effort at development commenced under the theory that only a broad-based, comprehensive socio-economic program would reduce the impact of Project Zone communities on the Project Area in a meaningful and permanent way. At this stage, project proponents adopted the Sustainable Development Goals for Indonesia as a roadmap to community engagement. A number of additional programs linked explicitly to these goals (and referencing the needs of Project Zone communities as indicated in the social survey) were researched, budgeted, and incorporated as major

project activities. Going forward, communities will again be consulted in order to refine, elaborate, and prioritize these programs.

2.2.5 Anti-Discrimination

The Rimba Raya Recruitment Policy does not discriminate based on gender and ensures that an adequate number of women and members of other underrepresented groups have the opportunity to apply. The employment policies for Rimba Raya along with the code of conduct policies are listed below:

- Pedoman Perilaku Bisnis Rimba Raya Conservation (BILINGUAL)
- Peluang kerja Rimba Raya Conservation (BILINGUAL)

2.2.6 Worker Training

A number of the activities (Reserve patrol, Fire response, Orangutan care) include a degree of risk inherent to those activities. Design and implementation of those activities will include measures to minimize risks to worker safety. In all cases, workers will be informed of risks and trained in best work practices to reduce them. We have composed our "RR_SOP_OSHE_Worker Safety_Eng_2010-07-20 (translated)" which details our plans and policies for worker safety.

Capacity building and worker training are critical elements in the operation of the Rimba Raya project's social service program. In order for these initiatives to succeed, members of the community need the skills necessary to effectively implement project activities. It has therefore been imperative for the social service provisions to not just create additional employment, but also provide training in the skills required to maximize these opportunities. Training and capacity building efforts will be designed in collaboration with the communities to ensure that they address current community concerns and prioritize community needs.

2.2.7 Equal Work Opportunities

Job announcements for the local villages will be distributed one month before the hiring of our permanent field crews and a series of interviews will be conducted in the villages where these crews are to be located. The project proponent will advertise applicable employment opportunities by contacting village heads and by posting to announcement boards in village offices and mosques. Partner organizations OFI and WE also will disseminate employment information.

The Rimba Raya Recruitment Policy ensures that members of project zone communities are given priority for all project-related positions. Priority is given to community members with skillsets that meet those required for the posted positions. As training for most staff is budgeted, prior technical experience is not imperative for some positions. In many cases, specialized local knowledge and relationships are more important than technical knowledge. For each position, once a proper applicant base is acquired – including adequate representation from women and other minority groups – an interview process featuring verbal and written consultations with multiple IE staff will be held with the goal of selecting the best candidate for the position.

The project will use community members as field guides and will make an effort to train community members in the skills of measuring peat and using such technical tools. Community members will recruited for positions such as firefighting personnel and fire brigade, forest monitoring agents, reserve guards, orangutan care providers, conservation managers, field operations managers, administrative personnel and other monitoring staff. Further, community development staff will be recruited from villages to assist in implementing community development programs within their villages.

The Rimba Raya Recruitment Policy does not discriminate based on gender and ensures that an adequate number of women and members of other underrepresented groups have the opportunity to apply (see Peluang kerja Rimba Raya Conservation (BILINGUAL).docx). The project aims to increase gender participation during the employment process since many of the women in the villages have greater long-term interest in how their communities develop and how opportunities for their family arise.

2.2.8 Workers' Rights

The main body of Indonesian law governing the relations between workers and employers is UU No. 13/2003.

In addition, the following conventions of the International Labour Organisation have been ratified by Indonesia:

- C81 – Labour Inspection Convention, 1947
- C87 – Freedom of Association and Protection of the Right to Organise Convention, 1948
- C98 – Right to Organise and Collective Bargaining Convention, 1949
- C100 – Equal Remuneration Convention, 1951
- C102 – Social Security (Minimum Standards) Convention, 1952
- C105 – Abolition of Forced Labour Convention, 1957
- C111 – Discrimination (Employment and Occupation) Convention, 1958
- C138 – Minimum Age Convention, 1973
- C169 – Indigenous and Tribal Peoples Convention, 1989
- C182 – Worst Forms of Child Labour Convention, 1999

Project proponents have maintained their strong commitment to inform all stakeholders of their rights with respect to the project. The Rimba Raya project has exceeded all local labor requirements and ensured that all workers were apprised of their rights.

Rimba Raya has company regulations that are required by law for any Indonesia company, foreign or national that has more than 10 employees. These company regulations are de facto regulated "labour agreements" that have been developed through negotiation between management and employees and

have been ultimately approved by the Department of Manpower, which is the national regulatory department in charge of worker safety. They check to ensure they met all legal requirements.

The national government has passed two new laws relevant to worker's rights for the project:

Government Regulation No. 45 on 30 June, 2015, on the Arrangements for Guaranteed Pensions Program

This law requires employers to register their employees with the Social Security Employment Agency and to participate in the Pension Guarantee Program. This requires the employer and employee to invest 2% and 1% of the employee's monthly wages, respectively, into the pension fund.

Government Regulation No. 46 on 30 June, 2015, on the Implementation of Old-Age Savings Program

This law requires employers to register their employees into a retirement fund for each employee. This requires the employer and employee to invest 3.7% and 2% of the employee's monthly wages into the retirement fund.

Both these laws have been followed for all employees in the Rimba Raya project starting on 7 September 2015.

Every employee has signed an employment agreement and has been provided a copy of the company regulations so they are aware of their rights, the policies of the company and can ask questions on any part they may have concerns with. Additionally, periodic reports have been provided to the Department of Manpower relating to employee relations, numbers of employees and locations in which any issues relating to labour laws can be identified and corrected. Salaries have been currently set at and will always exceed government mandated minimum wage for the areas that are being worked in.

2.2.9 Occupational Safety Assessment

Inherent risks arise for workers during project implementation and while a majority of project activities will not entail extraordinary risk, there are some which include a degree of risk that is inherent to their nature.

The majority of worker related risks stem from the project activities of reserve patrol, fire response/brigade, and orangutan care. These risks may include violent confrontation with illegal loggers/poachers/palm oil personnel, a multitude of serious and non-serious injuries from patrolling/traveling within the reserve itself, fire burns, smoke inhalation, orangutan bites/marks/scratches and infection which may follow most of the above listed possibilities. Design and implementation of these project activities includes measures to minimize risks to worker safety.

Risks will be minimized by informing workers about risk, properly training workers with best practices in order to minimize risks, and providing adequate equipment/tools. Verbally informing workers of these risks and how to minimize them is included as part of worker training, orientation conversations and training refreshment courses.

Additionally, SOPs have been composed for occupational safety and health, proper use of personal protective equipment (PPE), as well as emergency situation responses (see RR_SOP_OSHE_Worker Safety_Eng_2010-07-20 (translated)). This SOP will be made available to project employees in the local language. PPE will be provided for staff and will continue to be provided and emphasized from the standpoint of safety in the field. First aid and medical kits will be provided to carry into the field when conducting field operations and larger ones will be placed in each of the permanent field offices.

Retraining/refresher safety courses will be carried out periodically for RRC staff. By providing safety training, informing workers of potential risks, and supplying workers with protection equipment and first aid, project risks related to occupational safety will be minimized.

2.2.10 Feedback and Grievance Redress Procedure

A formal grievance/conflict resolution process will be instituted and publicized (see SOP-Handling Conflicts and Grievances.docx). It has all elements needed in the process to make sure it meets with standard conflict resolution protocols. Additional conflict resolution measures will be implemented that will hand additional responsibilities to local community members. For example:

- Managed by a Third party – local villagers that will be trained as community development staff have the responsibility for receiving and mediating between the communities and Rimba Raya. WEI will train these villagers with funding from Rimba Raya on how to be productive facilitators within the village and how they should be addressed.
- Formal Process – World Education will inform all villages on the process of contacting them to submit a grievance or resolve a conflict. Posters will be posted publically by community development staff at a more local level.
- Publicized - All communities and stakeholders will be informed of the 3rd party mediation of WEI. Stakeholders will be informed in face to face meetings by Rimba Raya personnel. Work will be completed to inform villagers on the transfer of responsibility from WEI to local community development staff.

During community consultations, the project proponent explained the conflict resolution process and provided clear verbal and written guidance on how grievances can be raised to the proponent. More information can be found in SOP-Handling Conflicts and Grievances.docx. These issues are handled in the following manner:

- Each community is provided with a method and contact details for a third-party intermediary who represents the project proponent. Often times this is World Education.
- When a grievance is lodged, the third-party intermediary notifies the project proponent and contacts stakeholders who lodged the grievance within one week after submission to discuss their concerns.
- The stakeholder lodging the grievance meets independently with a designated Indonesian representative of the third-party intermediary organization to identify concerns and discuss potential solutions. The intermediary documents the nature of the grievance, the actions being requested and the list of potential solutions that are discussed at the meeting with the stakeholder.

- Where a significant grievance is lodged, the third-party intermediary then reports to the project proponent about the grievance being lodged.
- The third-party intermediary and the project proponent meet to decide on the appropriate course of action to address the issue.
- The third-party intermediary then reports back to the stakeholder to present the solution.
- This exchange of information continues until the dispute has been resolved.
- The time frame should be no longer than 30 days.
- Project proponents then prepare a report on the resolution process, which is made accessible to stakeholders.

In addition to this process, the Early Warning Early Responses (EWER) procedural community conflict resolution process will be implemented by Rimba Raya in the following way:

- If field staff finds a potential problem, they are to notify the Unit Manager.
- If field staff receives a complaint from a community member, they are to notify the Unit Manager.
- The Unit Manager analyzes whether they can resolve it in the field themselves.
- If the Unit Manager can handle the issue, they have the authority to resolve it, but still must report it to the General Manager.
- If they can't handle the issue, the General Manager will respond to the issue.
- If the General Manager needs additional support to resolve the issue, higher management is notified.
- A legislative hearing will be completed if needed.

With the decentralization of responsibility from WEI staff to trained community members, villagers should be more likely to come forward with any complaints or grievances. Additionally, trained community development at a more local level will have a better understanding of these issues and be able to properly address them.

2.2.11 Feedback and Grievance Redress Procedure Accessibility

The feedback and grievance redress procedure will be socialized and publicized to communities throughout the project zone on community bulletin boards, and be made available for access within the Rimba Raya monitoring units located in the North, South, and Central zones of the project.

2.2.12 Stakeholder Access to Project Documentation

All project documentation is prepared and copied for distribution on the community information board in all of the villages within the Rimba Raya operational area as well as district and sub-district seats. Notices will be placed on the community information boards within all villages about the availability of any summary or important project documentation and announcements were included within local newspapers where Rimba Raya has a presence. World Education and Rimba Raya office locations have

copies of this summary and all other key documentation to distribute to community members that make requests, and efforts will be made by all staff when working with the community members on other components of the programs in order to share the information that these are available. All project summary reports and information will be made available in the local language.

2.2.13 Information to Stakeholders on Assessment Process

A summary of this report and the monitoring results has been prepared and copied for distribution on the community information board in all of the villages within the Rimba Raya operational area as well as district and sub-district seats. Notices have been placed on the community information boards within all villages about the availability of any summary or important project documentation and announcements were included within local newspapers where Rimba Raya has a presence. World Education and Rimba Raya office locations have copies of this summary and all other key documentation to distribute to community members that make requests, and efforts were made by all staff when working with the community members on other components of the programs in order to share the information that these were available. All summary information was made available in the local language.

2.3 Project Management

2.3.1 Avoidance of Corruption

The Rimba Raya project and organization has policies in place to inform employees about the avoidance of corruption, code of conduct, and business ethics. These policies are applied by all Rimba Raya project staff to ensure that the organization is run in accordance with all legal requirements and is held to the highest standards of operation.

The Rimba Raya policies covering the avoidance of corruption, conflict of interest, and code of business conduct are as listed:

- Kebijakan Anti Penyuapan dan Korupsi – Rimba Raya Conservation (BILINGUAL)
- Kebijakan Perihal Konflik Kepentingan – Rimba Raya Conservation (BILINGUAL)
- Pedoman Perilaku Bisnis Rimba Raya Conservation (BILINGUAL)

2.3.2 Statutory and Customary Rights

During interviews, community members reported no traditional or customary land claims in the project zone. Unlike Dayak elsewhere in Kalimantan, the villages did not have to adapt (indigenous) rules governing the management of land. Instead, land rights are privately managed, even though ownership rights continue to be retained by the national government. Though community members do not have formal documentary evidence of management rights, they have been passed down through generations and are locally acknowledged, with different parties aware of common boundaries between adjacent properties. Community members therefore reported that they have never had local conflicts over the land tenure amongst themselves.

In the area there is another category of land status called Hutan Desa or Lahan Desa, which appears legally to belong to the Desa, or administrative township. If this is forested it is called Hutan Desa. If it is deforested it is called Lahan Desa. This land can be claimed and used by individuals for agricultural purposes, but first they need to coordinate with the desa administration to do so. This entails requesting a Surat Keterangan Tanah (SKT), which, once received means the land rights become privately held.

2.3.3 Recognition of Property Rights

Project Ownership

Rimba Raya maintains the right of use for the project area. Rimba Raya's right of use to the project area is demonstrated in the 'working area map' presented below. The project has not required people to relocate and has preserved the local communities' right to access the project area for fishing, small scale removal of trees and collection of non-timber forest products. The project has pledged to never re-locate any people that could conceivably encroach on the project area lands.

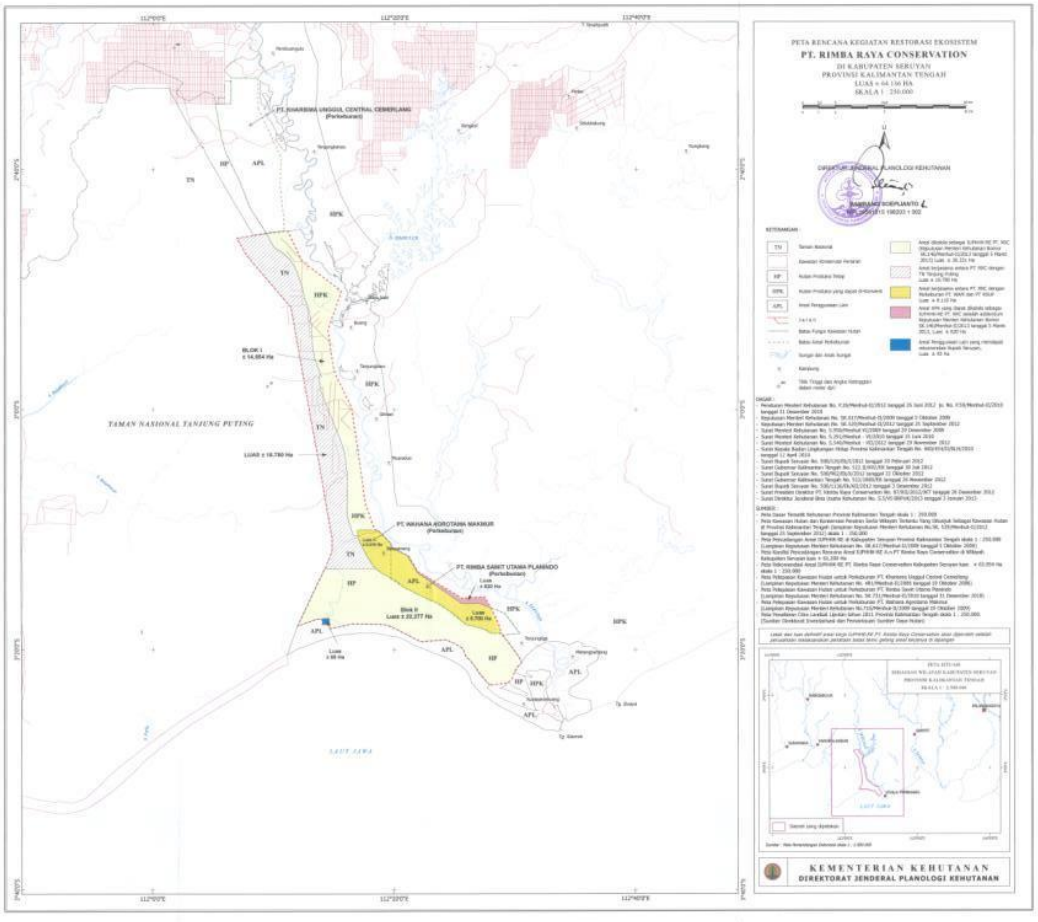


Figure 5: Original Agreements with PT Best for Conversion to Palm Oil

Decree number SK 146, grants concession of the project area comprising 36,331 hectares where right of use is specifically stipulated in the third stipulation (subsection 1), which states "(1) Conduct activities and acquire benefits from the results of its business in accordance with this license." The specifics of the license are spelled out within the decree and are defined by the allowable forest management activities (IUPHHK-RE – forest ecosystem restoration). Additionally the Collaborative Agreement between Tanjung Putting National Park and PT Rimba Raya Conservation includes verbiage defining the carbon rights, as well as its connection to government decree number SK 146. Article 1 (section 10) states "Full responsibility to fund the operation and conservation areas (including fire protection) will be borne by PT Rimba Raya Conservation, where PT Rimba Raya Conservation project will last for a period of 30 years (+30 years) and all the emission reductions due to conservation in this area will be recognized as rights of PT Rimba Raya Conservation." In addition, article 1 (section 8) states "Creating buffer zone for Tanjung Puting National Park as set in the Technical proposal IUPHHK-RE PT. PRC which delivered on October 20, 2009 at the Directorate General of Forestry Production."

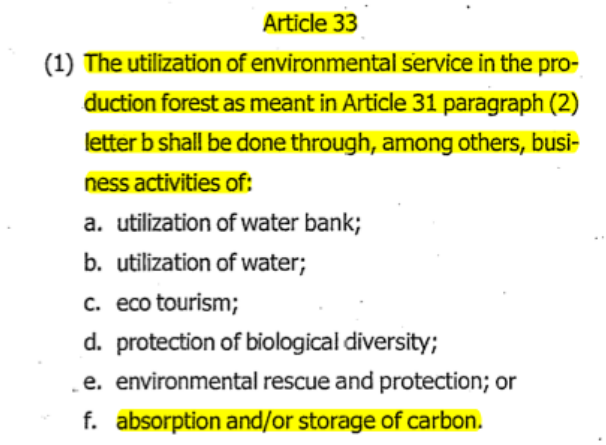
The final parcels of the right of use areas identified in the working area map approved by the Director General of the Planning Department were attained by the project through an agreement between PT Rimba Raya Conservation and PT Best. Three main documents are relevant to these lands; MoU BEST-RRC_Land-authority Transfer, government Decree number SK 716, and government decree number SK 731. As concession of the final two parcels of the project area was initially granted to holding companies of PT Best (PT Wahana Agrotama Makmur Perkasa (2,394 hectares) and PT Rimba Sawit Utama Planindo (6, 512 hectares)), the concession holder created a contract giving control of these lands to PT Rimba Raya Conservation. The transfer of these rights to PT Rimba Raya has the approval of the Forestry Minister and the Director General of Planning as noted by the signed working area map.

Therefore the Project has all necessary documents in place that demonstrate user rights and the support of the Forest Authority and Director General of Planning and as part of the agreement is legally required to protect the areas defined in the working area map. The circa 8,800 hectares currently under MOU with PT BEST are currently undergoing the formal process of conversion to IUPHHK-RE – forest ecosystem restoration, however the working area map represents the official project and government position on the long term protection of this area.

The project has continued to uphold its legal requirements as part of the IUPHHK-RE license with the formal approval of both an annual work plan and a 10 year management plan that have been provided to verifiers.

The project proponents have secured provisional tenure to the Carbon Accounting Area in accordance with government procedures for obtaining an ecosystem restoration license (IUPHHK-RE). According to Regulation No: P-61 (2008) Provisions and Procedures for Issuing Ecosystem Restoration Permits, the Ecosystem Restoration license is granted through applications and regulated by the Minister of Forestry based on Article 35 paragraph (3), Article 36 paragraph (5), Article 62 and Article 68 of Government Regulation GR No. 6 (2007) in conjunction with Government Regulation GR No. 3 (2008) on Forest Arrangement and Formulation of Forest Management and Utilisation Plans.

The IUPHHK-RE license confers carbon rights to the project proponent as specified in Article 33 of GR No. 6 (2007) and GR No. 3 (2008):



Article 33

(1) The utilization of environmental service in the production forest as meant in Article 31 paragraph (2) letter b shall be done through, among others, business activities of:

a. utilization of water bank;
b. utilization of water;
c. eco tourism;
d. protection of biological diversity;
e. environmental rescue and protection; or
f. absorption and/or storage of carbon.

Independent legal opinion confirms the relevance of these regulations and verifies that the IUPHHK-RE confers carbon trading rights.

The major milestones of the license process are described below (Table 4) and shown in the flow diagram (Figure 7) illustrating the procedure for obtaining the IUPHHK-RE. Key regulatory documents and government letters produced for the Rimba Raya Ecosystem Restoration license will be provided to auditors. Additional supporting documents related to the project proponent's carbon ownership are available for review by project validators.

The application for the Rimba Raya Restoration Concession has been approved by the Seruyan District (Nov 2008), Central Kalimantan Province (Jul 2009) and Indonesian Ministry of Forestry (Dec 2009), and the final decree is in the process of being issued. While District and Provincial approval are not federally regulated, these provide important assurances for project land use rights on the ground.

The Area Verification Map (Figure 5) issued by the Ministry of Forestry specifies the concession boundaries or Project Management Zone. Note that the Indonesian government does not differentiate the (smaller) carbon project boundary inside the PMZ (Figure 6) but instead recognizes the entire concession within which carbon trading activities are allowed. Following Area Verification, the Minister of Forestry allocated the Rimba Raya concession for Ecosystem Restoration use and instructed Forestry Planning to make an immediate change to the forest use designation from HPK (conversion forest) to HP (production forest) which bars conversion to palm oil and enables an RE license to be granted. Forestry Planning complied with this request indicated in their letter changing the designation of the Rimba Raya concession to HP forest use.

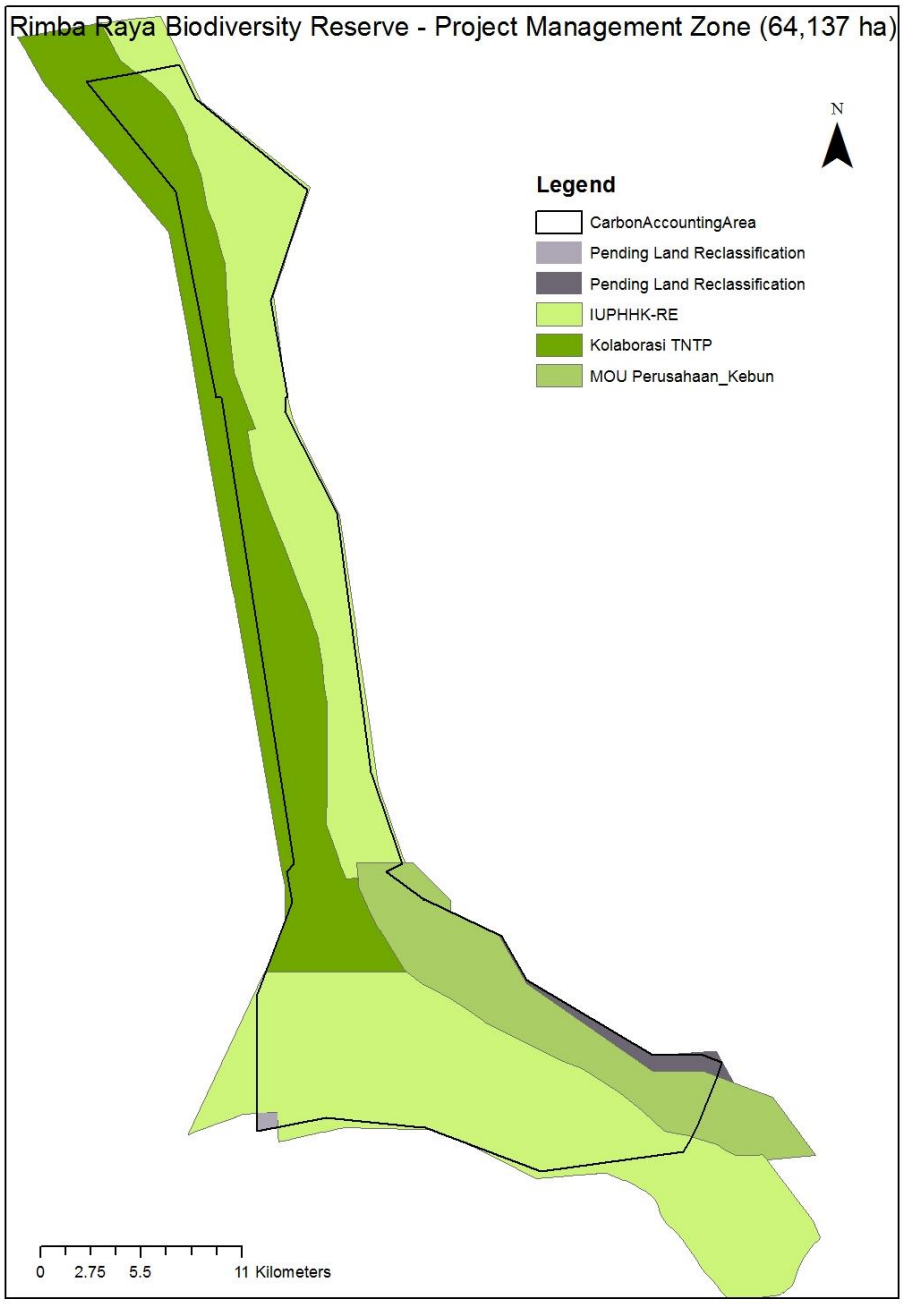


Figure 6: Rimba Raya Carbon Accounting Area as Compared to Total

Following the Area Verification process, the Minister of Forestry conditionally approved the Rimba Raya concession and instructed project proponents to complete an environmental review, indicated in the SP1 letter. The SP1 confers exclusive (although perpetually provisional) rights to use by the concession holder, as it bars all other applications according to Article 9 of Regulation P-61. After Rimba Raya successfully completed the Environmental Impact Assessment (UKL/UPL), the Minister then approved the Rimba Raya Environmental Report (UKL/UPL) as ordered by the SP1 and confirmed that project proponents had met all requirements necessary to obtaining the ecosystem restoration license

(IUPHHK-RE) as indicated by Ministerial Letter SP2. In the final major step of the licensing process, the Minister has ordered the Working Area Map to be formalized in the permanent records of the department and has instructed the legal department to draft the final decree for his signature.

Note that tenure is perpetually conditional, being reviewed every 5 years by the Minister as the basis for continuation of the permit in accordance with Article 17 of Regulation P-61.

Table 4. Milestones in the IUPHHK-RE License Process for Rimba Raya

Milestone	Description	Regulation	Date	Document
Application & Technical Proposal	Concession applicants are required to develop a comprehensive operational plan and present it to a panel of 12+ members of the Ministry of Forestry. Copies are submitted to the Governor (Seruyan District) and Head of the Provincial office (Central Kalimantan).	P-61 Art 4,5	submitted Sep 15, 2008 approved Oct 13, 2009	Technical Proposal (available for review) Lm. 147 Letter (Annex 12B)
Area Verification	Government-issued letter and map indicating the license area boundaries and confirming that there are no conflicting recognized claims to the Project Area.	P-61 Art 6	Oct 10, 2008 Oct 5, 2009 2009	S. 897 Letter (Annex 12B) SK-617 (Annex 12B) Boundary Map (Figure 5)
Allocation of area for Ecosystem Restoration	Letter from Ministry of Forestry (SK-617) allocating the entire Rimba Raya concession for Ecosystem Restoration (RE) use and ordering a forest use re-designation from HPK (conversion forest) to HP (production forest) in order to meet the requirement of an RE license.	P-61 Art 2	Oct 5, 2009	SK-617 Letter (Annex 12B)
Re-designation of Land Use	Letter from Forestry Planning acting on the SK-617 instruction from Ministry of Forestry and changing the forest use designation from HPK (conversion forest) to HP (production forest) as required by the RE license	P-61 Art 2	Nov 24, 2009	S-1046 Letter (Annex 12B)
Approval by the District Governor	Letter of approval for the Rimba Raya IUPHHK-RE license by the Head of Seruyan District. Grants support for the project and recommends that the national government issue the Ecosystem Restoration license.	not Federally Regulated	Nov 18, 2008	522.1/368 Letter (Annex 12B)
Approval by	Letter of approval for the Rimba Raya	not Federally	Jul 16,	522/896 Letter

the Provincial Governor	IUPHHK-RE license by the Head of Central Kalimantan Province. Shows support at the Provincial level and recommends that the national government issue the Ecosystem Restoration license.	Regulated	2009	(Annex 12B)
Approval by the Central Government (SP1)	National-level approval of the project by the Minister of Forestry. This document is given after the Minister approves the technical proposal and bars all other applications for the Project Area. This document signals official sanction of the project and gives the holder provisional rights to use pending completion of administrative steps. The SP1 also instructs the project proponent to complete the UKL/UPL environmental study.	P-61 Art 8	Dec 29, 2009	S.958 (SP1) Letter (Annex 12B)
Environmental & Social Impact Study (UKL/UPL)	Project proponents engaged PT Focus Consulting Group, a licensed third party consultant to conduct a comprehensive environmental impact assessment (UKL/UPL) and formal community presentations as required by the SP1.	P-61 Art 11	April, 2010	Report available for review
Approval of UKL/UPL by Provincial Goverment	The UKL/UPL must be approved in writing by the Provincial Environmental Department.	p-61 Art 11	Apr 12, 2010	No.660 Letter (Annex 12B)
SP2 Letter	Upon completion and approval of the UKL/UPL, the Minister of Forestry issues this internal document instructing the Director General of Planning to formalize the Working Area Map, which will serve as the final map for the concession license.	P-61 Art 12	Jun 15, 2010	S.291 (SP2) Letter (internal government document furnished to validators)
Final Working Area Map	After receiving instructions via the SP2, the Head of Forestry Planning finalizes the Working Area Map, which will accompany the Minister's Decree.	P-61 Art 12	2013	PETA REVISI KEGIATAN RE PT RRC
SK (Decree)	Minister's Decree officially authorizing the IUPHHK-RE	P-61 Art 12	2018 2013	SK 23, SK 146, SK 735

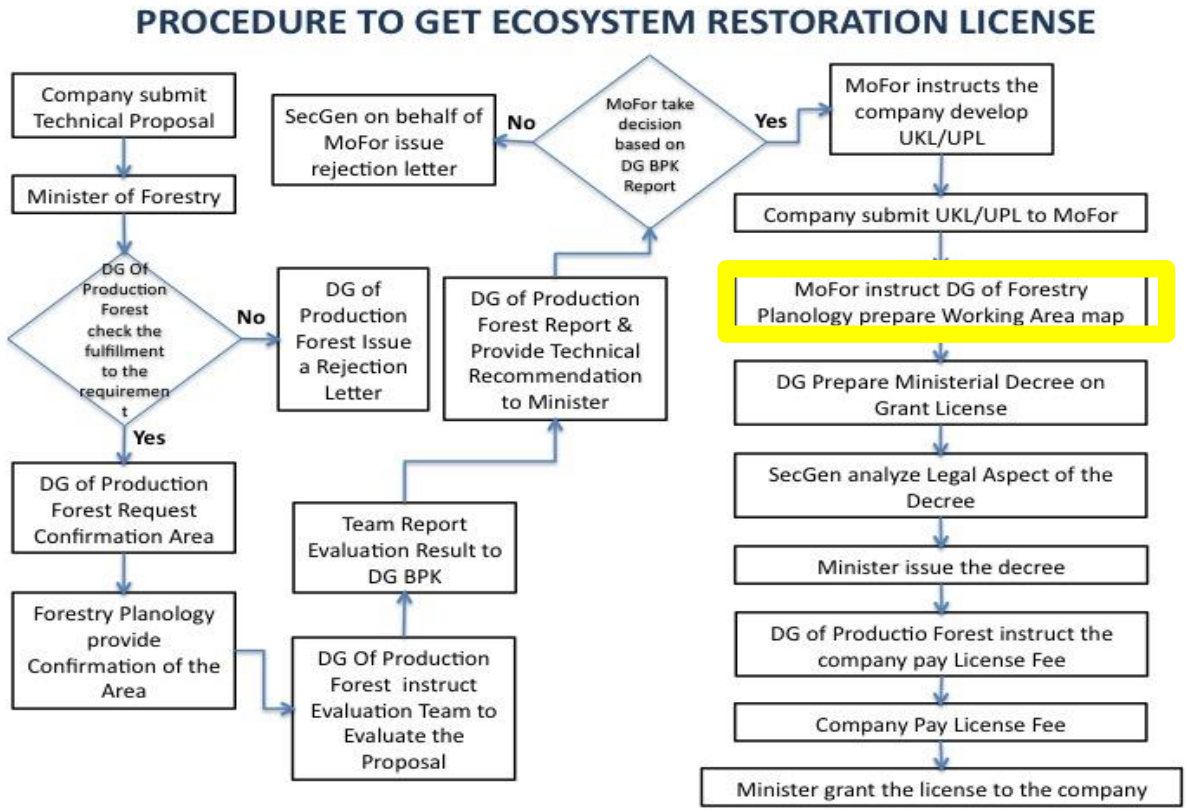


Figure 7. Flow chart for obtaining the Conservation & Restoration Concession License in Indonesia.

2.3.4 Free, Prior and Informed Consent

The project has not encroached uninvited on private, community or government property. The project has not required people to relocate and has maintained the local communities' right to access the area for fishing, small scale removal of trees and collection of forest products. The project has pledged to never re-locate any people that could conceivably encroach on the project area lands, although this has been actively prevented from occurring through patrols and education.

Because no parties' lands have been affected by the project, restitution or compensation has not needed to be allocated. There have been no changes in project design and implementation during this monitoring period which merit the need for the free, prior and informed consent of those whose property rights would be affected.

One area of concern relating to the above arose in the previous monitoring period through the discovery of people from Kuala Pembuang that bought land (not legally) along the government road running through the southern part of the concession from the town to the port and established either temporary or permanent structures within the boundaries of the concession. Options for dealing with this issue were discussed with the local government and involved several possibilities including but not limited to; reimbursement by Rimba Raya for money paid for the land subject to a valid receipt, relocation to

another area by local government with an equal area of land, allowing "occupied" residents to remain and employing them as security and monitoring, and relocation of the road so that it is outside of the concession boundaries, thus less attractive from a development perspective. This issue was resolved through the signing of a new a boundary document by the MoEF, District, Sub-District, and Provincial governments. Additionally, a procedure was developed in which local communities may make individual claims to the District Land Agency by submitting all evidence they have demonstrating their ownership, and this agency is in charge of resolving the matter. However, no claims with regards to land ownership have been made at this time.

Based on consultations with community representatives, project proponents were able to determine that, with few exceptions, village and communal property lies to the east of the Seruyan River, inside the project zone but outside the project area. To the extent that community or individual villager property lies within the project area, project proponents have offered the option of integrating the property into the project's Community Agro-Forestry program or excising the land from the project area.

All project area land belongs to the Government of Indonesia, and the appropriate licenses and authorizations for management rights were put in place prior to commencement of major project activities.

2.3.5 Restitution and/or Compensation for Affected Resources

Because no parties' lands have been affected by the project, restitution or compensation has not needed to be allocated. There have been no changes in project design and implementation during this monitoring period which merit the need for the free, prior and informed consent of those whose property rights would be affected.

2.3.6 Property Rights Removal/Relocation of Property Rights Holders

Rimba Raya maintains the right of use for the project area. All project area land belongs to the Government of Indonesia, and the appropriate licenses and authorizations for management rights were put in place prior to commencement of major project activities. The project has not required people to relocate and has preserved the local communities' right to access the project area for fishing, small scale removal of trees and collection of non-timber forest products. The project has pledged to never re-locate any people that could conceivably encroach on the project area lands.

2.3.7 Identification of Illegal Activities

The illegal activities that may be conducted from time to time in the project area and could affect the project's impacts include logging, deforestation and drainage by oil palm companies. In order to reduce these instances, the project proponent will implement preventive measures and project activities aimed at identifying and mitigating the effects of illegal activities. The following subsections describe the activities and mitigation measures further.

Encroachment by Palm Oil Plantations

The principal illegal threat to the project's benefits has continued to be encroachment by the oil palm plantation inside the project zone, specifically to the north of the project area. The plantation has already expanded its operations beyond authorized boundaries, destroying valuable forest habitat. Moreover, the plantation's drainage canals threaten nearby peat deposits inside the project area.

Due to additionality requirements of REDD projects, the relationship between project developers and palm oil concessionaires was necessarily adversarial at project commencement. Upon project implementation, however, the relationship has become collaborative to avoid leakage. Project proponents have engaged the palm oil company with a series of steps designed to defuse threats. First, a guard post was built on the northern boundary, which serves as both a way to inhibit fire prevention and encroachment. Additionally, a pineapple plantation was built in this area between the project area and plantation, which serves as a fire break protection the forest.

Illegal Logging

There is a history of illegal logging inside the project area, and some indication that logging in the southern part of project area and extending into Tanjung Puting National Park has been ongoing. Social surveys of project zone communities indicate that this threat has not arisen from within the project zone, but rather from outside communities that have no legal or traditional stake in project area forests.

To mitigate this threat, project proponents plan to establish a comprehensive network of guard towers and patrols to ensure the territorial integrity of the project area and prevent access by loggers.

Resource Use Surrounding Communities

Although minor in comparison to the threat posed by both legal and illegal palm oil plantations, the surrounding communities have placed some pressure on the physical integrity of the Rimba Raya Reserve. Anecdotal evidence suggests that community members have engaged in limited hunting and fishing inside the project area and have occasionally logged trees for timber.

Since 2003, World Education has been working with farmers around TPNP to achieve food security and alleviate pressure on proximate forest land. In 2005, these efforts expanded into the Seruyan, beginning with the introduction of rice block management techniques to greatly reduce the impact of crop pests in four villages on the east side of TNTP. Five Seruyan villages (Tanjung Hanao, Ulak Batu, Palingkao, Buang, Muara Dua) have been participating in a program intended to yield rice self-sufficiency and diversify crops by introducing agroforestry. Where viable, WE has sought to introduce community gardens and aquaculture. One such project is the development of a pineapple plantation near the norther border of the project. This project provides co-benefits in the form of additional food security and a cash crop for community members, as well as acting as a buffer against encroachment from palm oil plantations near the area.

Under the auspices of the Rimba Raya project, this program will be expanded and extended to villages throughout the Project zone. Beyond that, project proponents have designed a slate of socio-economic

programs to address poverty issues at the root of this threat. These programs, described in the Community Section, will create a social buffer and reduce this threat to project benefits.

With the exception of the oil palm encroachment, project partner, OFI has had a long and successful track record of monitoring the project area and deterring would be loggers and threats of fire such as hunters and shifting agriculture before they can do significant damage to the ecosystem, and dealing with the offenders using non-violent methods. The project filed team has worked with the same techniques and in many situations along-side OFI to continue this approach so that these instances have been reduced and have been effectively managed when they occurred.

The Project does not and has not benefited from any illegal activity.

2.3.8 Ongoing Conflicts or Disputes

There are no existing conflicts or disputes within the project area.

2.3.9 National and Local Laws and Regulations

In May of 2009 the government of Indonesia began formal regulation of REDD projects with the creation of a REDD project procedural document. This procedural regulation gives a legal allowance for voluntary carbon market project development. The project is following these REDD procedures in accordance with the following listed regulations:

1. Ministry of Forestry Regulation No. P.68/Menhut-I/2008 on the Implementation of Demonstration Activities on Reduction of Emissions from Deforestation and Degradation.
2. Ministry of Forestry Regulation No. P.30/Menhut-II/2009 on The Procedures for Reducing Emissions from Deforestation and Forest Degradation (REDD), dated 1 May, 2009.
3. Ministry of Forestry Regulation No. SK.159/Menhut-II/2004 on Ecosystem Restoration in Production Forest Areas.
4. Ministry of Forestry Regulation No. P.6/Menhut-II/2007 concerning work plan and annual work plan of utilization of timber forest products in natural forest and ecosystem restoration in natural forest within a production forest.
5. Ministry of Forestry Regulation No. P.61/Menhut-II/2008 concerning provisions and procedures for the application and granting of a business license for wood forest products in a forest ecosystem restoration of natural forests in a production forest.

As demonstrated with previous successful verifications, the project has been and continues to be in compliance with all national and local laws and regulations of Indonesia that are relevant to the project activities, including the two new laws discussed above.

2.3.10 Grouped Projects

This is not applicable because this is not a grouped project.

3 BENEFITS FOR PEOPLE AND PROSPERITY

3.1 Condition of Stakeholders at Project Start

In December 2008, a socioeconomic and cultural survey was conducted by Daemeter Consulting to identify and describe communities present in and near the Rimba Raya Project Area.

Methodology

The methodology used for collecting data included individual interview and small group discussion. The village head, deputy village head, village secretary, Chairman of BPD (Badan Perwakilan Desa, Village Representative Body), informal leaders, elders, youth, and women leaders represented the target contacts, as these individuals and groups have the greatest access to village-specific information. In some cases, members of these groups were interviewed individually, allowing for the repetition of certain questions to gauge consistency across interviewees. In other cases, the small group format facilitated discussions, allowing for the collaborative elaboration and refinement of information as it pertained to a specific village.

The interviews addressed topics as described in the CCB Standards with the goal of collecting relevant data and information, but they were otherwise unstructured, emphasizing topics of interested to interviewees.

Overview

Eight villages (*desa*) in the project zone were identified during the original baseline assessment, from Ulak Batu down to Kuala Pembuang, the capital of Seruyan District (southeast of the Project Area). Administratively, these 8 villages fall under the same district (*Kabupaten* Seruyan), but three different subdistricts (*kecamatan*). The villages and their subdistricts are: Ulak Batu, Palingkau, Cempaka Baru, and Telaga Pulang located in Danau Sembuluh Subdistrict; and Baung, Jahitan, Muara Dua and Tanjung Rengas located in Seruyan Hilir Subdistrict. Table 5 below provides population data for the villages visited.

Most community members residing in the 8 villages surveyed rely on the Seruyan River for their basic needs, cash income, and transportation. Before the 1990s, forests provided for the communities' basic needs and cash income. Villagers cleared forests to make their *ladang* and plant rice and rubber. They also logged the forests and sold logs to markets in Baung, Telaga Pulang, and Segintong Luar. However, after the operations of Hutan Lestari, conducted by the Ministry of Forestry in the late 1990s to control illegal activities within state forests, logging became the least favored livelihood option for villagers. There were (and still are) some illegal logging cases resulting in elite village officials or their family members being jailed.

Villagers' access to forests has become even more restricted with recent oil palm plantation development. In the villages surveyed, it was common to hear complaints of oil palm companies operating in a manner that caused land tenure disputes. This form of conflict reportedly never occurred in the past, when land use issues were resolved by visiting villages and asking for permission to operate in the area. Only a few companies have had the good will to resolve such conflicts by negotiating with the villagers directly, some even asking for facilitation by the government. A number of palm oil companies still use the 'New Order approach', arranging for the police's special task force or the military to support them in negotiations with villagers, a posture that is inevitably (and often intentionally) intimidating.

Table 5. Population data for villages in the Rimba Raya Project Area

No.	Village	No. of Families	No. of People	No. of Women	No. of Men	Predominant Tribe
1	Ulak Batu	70	181	89	92	Dayak Nadju & Banjar
2	Palingkau	43	168	77	91	Dayak Nadju & Banjar
3	Cempaka Baru	133	566	216	250	Dayak & Banjar
4	Telaga Pulang	411	2313	1008	1305	Banjar & Dayak
5	Baung	250	2015	992	1223	Banjar & Dayak
6	Jahitan	133	477	208	269	Dayak & Banjar
7	Muara Dua	140	523	236	287	Banjar & Dayak
8	Tanjung Rengas	320	1406	641	765	Banjar & Dayak
Totals:		**1500**	**7649**	**3467**	**4282**	

From the villages visited, most of the villagers – who typically belong to Dayak and Banjar tribes – earn their living from fishing. Seeing this, the Seruyan District government developed a program to help the communities improve the productivity and sustainability of fish populations in the river by adopting a keramba (aquaculture) system. However, it is reported that in the last five years the Seruyan River has experienced far more frequent flooding than in previous periods. In the past, flooding occurred predictably once each year and could be anticipated. Recently, they have experienced monthly

flooding, and some communities remain flooded for up to three months at a time. Only a few of the communities have healthcare facilities.

Villagers from communities without healthcare facilities go to other communities for treatment. At one point, there were a number of midwives assigned to each village, but due to the extremely challenging living conditions (unhealthy environment, lack of clean water, etc.) only a few midwives have stayed.

In terms of education, village elders did not attend school or, if they did, attended only through elementary school. On average, each village has one elementary school building that is poorly maintained. The younger generations now receive education through high school, but schoolchildren must move to Telaga Pulang or Pembuang Hulu to attend. Some teenagers return to their villages after completing high school to help their parents. Others work with oil palm companies or become boat operators. Still others do not return to their villages, instead migrating to towns and cities for other employment opportunities.

Due to the extreme poverty in the area, many villagers leave their communities to look for work elsewhere. At the same time, many migrants have started coming to the area to work with oil palm companies operating on land near these communities. A number of village officials cited these changing population trends as the principal complicating factor in conducting an accurate census of the population.

The migrant workers have become a controversial issue with villagers, who feel that they are reducing local employment opportunities. All officials interviewed said that the oil palm companies prefer to use their own workers rather than train locals to work for them. Another common complaint is that oil palm companies use community land, but the compensation paid does not meet the communities' expectations.

Life seems difficult for most of the villagers in the Project Zone. Their access to forests is limited by the expansion of oil palm plantations. They cannot fish when the river is flooded, a condition that is occurring with increasing frequency. They cannot compete with migrant workers if they wish to work for the oil palm companies. They cannot afford the day-to-day cost of living, which is significantly more expensive than in other places in Indonesia (e.g., gasoline and kerosene are priced three times higher here than in cities). They are typically last to know what is happening in the area. In effect, they are being driven from their land.

Survey Results

1. Ulak Batu. Ulak Batu used to be part of Telaga Pulang village. The name Ulak Batu was chosen by an official from the Bangkal Subdistrict in 1965 because he thought that Ulak Batu had enough people to become a separate village. It is now under Danau Sembuluh Subdistrict administration. The village borders Paren village to the north, with Sembuluh to the east, Palingkau to the south and the Project Area to the west.

The population is 181 people, comprising 89 women and 92 men in roughly 70 families. Most of the villagers are of Dayak Nadju and Banjar descent, and the vast majority are Muslim. They speak Pembuang, Banjar, and Indonesian.

Before the 1990s, the villagers practiced logging and therefore relied on the forest as their source of cash income. Beginning in the late 1990s with the Ministry of Forestry operation to combat illegal logging, however, it has been difficult for them to find cash income. They initially shifted to fishing, but they now face difficulty with seasonal uncertainty, flooding, and the degradation of the Seruyan River. It is therefore difficult for them to meet their basic needs.

2. Palingkau. Palingkau was established in 1977, and it is currently under Danau Sembuluh Subdistrict administration. It is inhabited by 168 people, 77 women and 91 men, in 43 families. Most of the villagers are Dayak Nadju or Banjar, and all are Muslim. They speak Pembuang, Banjar, and Indonesian.

The village borders Ulak Batu village to the north, Sembuluh to the east, Cempaka Baru to the south and the Project Area to the west.

Ninety percent of the families earn their living from fishing in the Seruyan River. The fish they catch include *baung*, *jelawat*, *haruan*, *biyawan*, *tapah*, and *kemancung*. In addition to fishing in the Seruyan River, they also make some "*keramba*" for aquaculture. Farmed species include *bakut*, *jelawat, toman*, *baung* and *haruan*.

3. Cempaka Baru. Cempaka Baru is one of the villages under the administration of the Danau Sembuluh Subdistrict. It contains one *dusun* (subvillage), also called Cempaka Baru, with two hamlets (RTs). The village was established in 1963. Prior to being named Cempaka Baru, it was called Danau Pepundak. The population consists of 566 people in 133 families. Approximately 360 of the villagers are of working age. Three quarters of the total population are Dayak, and the other quarter is Banjar. All of the villagers are Muslim. Of the 133 families, 70 are considered "poor" – a term locally defined as families whose house roofing is made of leaves or whose daily income is less than IDR 30,000.

The village has formal (village governance) and informal (women's group/PKK, youth group/Karang Taruna) institutions, although the informal institutions are no longer active. The village also has a cooperative bank, and all members of the cooperative can deposit money and borrow from the bank.

To meet their basic needs, the villagers depend on rivers for protein (fish) and on the forest for construction material and fuel wood. They did not indicate which forest they utilize.

Most people from Cempaka Baru do not possess a land certificate for their property. Only 5% have a Surat Keterangan Tanah (SKT) signed by the village head. Swidden agriculture areas and rubber gardens are owned individually, not communally. Individuals know the boundaries of their properties without relying on clear physical markers. They use natural features such as rivers and large trees to mark the boundaries. So far, there have been no conflicts among the villagers over land boundaries. In addition to individual property, there is also communal forest land owned by the village. The village has not established formal regulations for its utilization, but only villagers from Cempaka Baru are

permitted to use it. The village also has a land use plan that divides the village land into settlements, agricultural areas, plantations, fisheries, graveyards, and public facilities.

In general, community members would like to have a development program without sacrificing their remaining forested lands. They prefer to have a program that can protect their forests while at the same time generating income to improve their welfare.

4. Telaga Pulang. Administratively, Telaga Pulang is within the Danau Sembuluh Subdistrict. It has two sub-villages on either side of the Seruyan River, with a total of 6 hamlets. The population is 2,313 people, consisting of 1,305 men and 1,008 women in 411 families. There are 1,754 people considered to be of working age. Almost all residents are Muslim, with only one percent of families reported to be Christian. Ethnically, the villagers are Banjar (50%), Dayak (45%), and other (5%).

Fifty-five percent of families earn their living from fishing and farming, while the other 45% work for private companies (including oil palm) operating near the village. Daily income from fishing is around IDR 45,000. Fifty percent of the families are considered poor because they earn less than IDR 30,000/day and have roofs made of leaves on their houses.

The land in the village is owned privately by individuals. Only 20% of the families have registered their land with the village and received official documents in the form of SKT. About 5% of the village's total area is communal forest land. The village has yet to set up a separate body to manage this land. The villagers do not use forests for cultural or religious purposes. Basic needs met by local natural resources include protein (fish), water for bathing, drinking, and washing, fuel wood, and wood for construction. Other necessities, such as carbohydrates, vitamins, minerals, and medicines, are purchased.

The village also has a cooperative bank called *Koperasi Pare Itah* which the members can use to save and borrow money.

5. Baung. The village of Baung is located in the Seruyan Hilir Subdistrict. It has one sub-village with the same name and three hamlets (RT). Two are located along the riverbank while the third is farther south and inhabited by only three families. The total population is 2,015 people, comprising 992 women and 1223 men in 250 families. 1,631 people are considered to be of working age. Ethnically, almost 90% of the families are Banjar, 9% Dayak, and 1% Javanese.

Of the 250 families, 100 are considered poor either because their daily income is less than IDR 20,000 or because their houses are in very poor condition. These poor families receive direct cash assistance under a BLT program from the government. Farming and fishing are the principal sources of income for 70% of the villagers, while the remaining 30% work for the oil palm company. On average, farmers and fishermen can earn IDR 35,000/day. The farmers tap rubber, *jelutung* (*Dyera costulata*), and *gembor* (raw material used for mosquito repellent).

To meet their basic needs, villagers rely heavily on cash purchases from markets in the Seruyan District or other nearby villages. Natural resources used to meet basic needs include river water for drinking, bathing, and washing, fish for protein, and fuel wood from the remaining forests.

There are three economic institutions in the village, the Koperasi Usaha Mandiri (an oil palm-plasma cooperative that is not active yet), the Mekar Sari Farmer Group (a World Education-facilitated group focusing on agricultural activities), and Subur Mandiri Farmer Group (a Forestry Service Office program for planting rubber (*Hevea braziliensis*) and *jelutung* (*Dyera costulata*)).

The village has a land use plan that separates the land according to functions, including the following categories: settlement (housing), village office facility, agricultural land, plantation, fishery, and public facilities (e.g. school and medical center).

Each individual has private land for farming or settling. No one has official documentation to prove ownership, but there is consensus on property boundaries. Land conflicts among villagers have yet to occur, although there have been some conflicts with individuals from the neighboring village.

Seventy percent of the total area of the village is reported to be forest land, which makes it communal property.

6. Jahitan. Jahitan is another village under the administration of the Seruyan Hilir Subdistrict. This village was established far before Indonesian independence in 1945. It consists of only 1 *dusun* with 2 hamlets on either side of the Seruyan River. The population totals 477 people, including 269 men and 208 women in 133 families. There are 335 individuals of working age. Most of the villagers are Dayak (95%), with some Banjar (4%) and Javanese (1%). All are Muslim.

Sixty percents of the families work for the oil palm plantation belonging to PT. Gawe Bahandep Sawit Mekar, while the other 40% are farmers and fishermen. This latter group earns IDR 35,000/day on average. Of the 133 families, only 11 are considered poor and receive BLT (*Bantuan Langsung Tunai*, Cash Direct Aid) from the government.

The villagers meet their carbohydrate, vitamin, mineral, and medicinal needs by cash purchases in markets or neighboring villages. They still depend on local natural resources to meet basic needs for water, protein, construction materials, and fuel wood. They do not have any cultural relations to the forest.

Jahitan has one formal institution, the village government (village head, village representative body, village secretary and other officials). The only informal institution identified was the farmer group, Mardi Rukun, which is facilitated by the Forestry Service Office for planting rubber and *jelutung*.

The village has developed a land use system that divides the village area into the following functions: housing, agricultural, fishery, plantation, public facilities, village office, and graveyard. Seventy percent of the families have registered their land with the village head to obtain their SKT. The village still has a lot of forested land, which is considered communal property. Regulations for using these forests have yet to be developed, but in principle every individual in the village has access to it.

7. Muara Dua. Muara Dua is also under Seruyan Hilir Subdistrict administration. It has 3 *dusun* (Muara Dua, Belanti, and Tempudan) located on either side of Seruyan River. The population is 523 people, comprising 287 men and 236 women in 140 families. The number of people of working age is 419. Ethnically the villagers are Banjar (60%) and Dayak (40%), and all are Muslim. All of them earn

their living by fishing and farming, with cash income approximating IDR 40,000/day. Of the 140 families, 36 are considered poor as they earn less than IDR 20,000/day. These poor families receive Cash Direct Aid from the government.

Muara Dua villagers still depend on local natural resources to meet basic needs: fish for protein, water, wood for construction materials and fuel. They purchase other basic needs, such as carbohydrates, vitamins, minerals, non-fish protein, and medicines.

Land is owned individually and communally. Individual ownership is not registered with the village head, although landowners know the boundaries of their properties. Reportedly, there have been no conflicts between villagers and outside parties. No companies operate in the village. However, in 2008 word reached the village that the Seruyan District government had plans for part of the village land to be allocated for oil palm plantation development. At present, the oil palm company with a license for the area, PT. Ahmad Saleh, has yet to commence its operations on the ground. Similar to other villages in Seruyan Hilir Subdistrict, Muara Dua has not developed any institutions for managing the village forests, but each individual may use this communal land.

There are two farmer groups, Harapan Makmur (25 members) and Setia Karya (15 members). One is facilitated by World Education and the other by the Forestry Service Office at the District level.

8. Tanjung Rengas. Tanjung Rengas is the southern-most village in the Seruyan Hilir Subdistrict, and includes one *dusun* with six hamlets located on the west side of Seruyan River. It is inhabited by 1,406 people, consisting of 765 men and 641 women in 320 families. The number of working age people is 985. Ethnically the population is 50% Dayak and 50% Banjar.

Seventy percent of the villagers earn their living from fishing, 20% from farming and 10% from working for companies. The average income from fishing or farming is IDR 30,000/day. Of the 320 families, 70% reportedly live in poverty, which they define as having an income of less than IDR 25,000/day, owning no land, or living in a house with a palm roof.

Similar to other nearby communities, villagers here meet their basic needs for carbohydrates, vitamins, minerals, and medicines through cash purchases and depend on local natural resources for water, construction materials, and fuel wood. The villagers do not have cultural ties to the forests.

Land is owned individually, but most of the land has not been registered with the village. Only 5% of the families have obtained a SKT signed by the village head. There is communal forest land available for use by the villagers. Officially, any individual who wants to use the land must report to the village head to apply for a SKT, but no sanctions are applied for failure to do so. The village has delineated village land into the following use categories: housing, office, agricultural use, plantation, fishery, public facilities, and graveyard. There are five farmer groups, each with 20-50 members.

Stakeholder Baseline Scenario

The approach to demonstrate net community benefits in the Project area is based on an assessment of 'with' and 'without' project scenarios in relation to project goals. As compared to the baseline scenario, the project activities are designed to provide a net positive impact on the communities and their well-being. A comparison of the baseline and project scenarios and descriptions of how project activities are aligned with various sustainable development goals are summarized below:

SDGs 1, 2, 8, and 10: Eradicate extreme poverty and hunger, promote inclusive employment and reduce inequality

Palm oil is Indonesia's second most successful agricultural product, after rice, and the largest agricultural export. It provides a means of income and economic development to a large number Indonesia's rural poor[1]. With over half of Indonesia's population living in rural areas—of which over 20 percent live below the poverty line—the palm oil industry provides an incomparable means of poverty alleviation (Budidarsono, et al , 2013; Norwana; et al 2011). It allows small landholders to participate in the cash economy and often results in improvements to local infrastructure and greater access to services. In some areas, the cultivation of oil palm has replaced traditional practices, often due to the higher income potential of palm oil (Budidarsono, et al , 2013; Norwana; et al 2011).

However, in some cases, land has been developed by oil palm plantations without consultation or compensation of the indigenous people occupying the land which has led to conflict, including conflict in Indonesia. Additionally, some Indonesian oil palm plantations are dependent on imported labor or undocumented immigrants, which have raised concerns about the working conditions and social impacts of these practices[2].

Plantations systematically destroy the rainforest land that the local people depend on; communities are continuously finding themselves with no choice but to become plantation workers. Faced with poor and degrading working conditions, they often earn barely enough income to survive and support their families. Instead of being able to sustain themselves, indigenous communities become reliant on the success of the palm oil industry for their income and survival, leaving these community members incredibly vulnerable to the world market price of palm oil which they have no control over. In the baseline scenario, the majority of community members - would continue to depend on the palm oil industry for employment.

[1] See 'the Economic benefit of Palm oil to Indonesia. A report by World Growth. Available at http://worldgrowth.org/site/wp-content/uploads/2012/06/WG_Indonesian_Palm_Oil_Benefits_Report-2_11.pdf

[2] See Ghosts of our Land. Indonesian oil plam smallholders and the roundtable on sustainable palm oil. Forest Peoples Programme. Available at: http://www.forestpeoples.org/sites/fpp/files/publication/2011/02/ghostsonourownlandtxt06eng.pdf.

This would likely be the case for the two identified community groups in the project – those communities living in the project zone and those which travel to the project zone for logging, hunting or for collecting non-timber forest products. Prior to project creation, the area in which the project area exists was part of several concessions that were planned to become a palm oil plantation. Therefore, it can likely be assumed that in the absence of the project, the land would have been converted to palm oil plantation. Community members living in the project zone would likely become employed by the palm oil company and lose their local forest. This would leave them vulnerable to the associated palm oil industry issues, as described above. This would include vulnerability to poverty and hunger. Likewise, community groups that did not live in the project zone but traveled to the project zone for logging, hunting and non-timber forest products (NTFP) would either see the same fate as community groups living within the project zone (employed by the palm oil industry, losing their local forest and being susceptible to poverty and/or hunger) or they would travel elsewhere to access forestland for logging, hunting and NTFP and likely, to access employment as well. With the absence of these plantations, it is likely that fewer people from outside the area moved into the project zone for employment. However, those that have traveled to the project zone are eligible for employment in the Rimba Raya Project. Additionally, while they are discouraged from conducting illegal deforestation in order to secure the project area, they are permitted small harvests like all other community members, and are granted the same access rights for hunting and NTFP.

The Rimba Raya project will generate employment throughout the project zone and will work to improve the livelihoods of the villagers near the project boundary. Additionally, activities like Farmer Field Schools, nursery establishment, chicken farms, shrimp paste production, and various project-supported plantations will help to provide a varied diet to local villagers, increase food security, and provide various forms of income generation to villagers.

SDG 3 and 4: Improve health and well-being for all, and ensure inclusive and equitable education

Whilst the development of lands into palm oil plantations can be associated with increases in other services, an Indonesian study has found that access to elementary schools and medical facilities was similar for communities who rely on oil palm compared to communities who don't. However, distances to schools, hospitals and other medical services were significantly higher in communities relying on oil pam industry compared to those who don't. This was likely because the communities which rely on oil palm are more remote, public/government facility developments are not prioritized in these remote areas (Budidarsono, et al , 2013), and the oil palm plantations are not filling the gap in providing these services.

Furthermore, community members working in oil palm plantations are often women and children. The jobs associated with harmful health practices, such as the spraying of pesticides, is often performed by

women and children as it seen as less laborious[3]. This contributes to worsening health conditions for women and children due to employment by palm oil.

Within the communities themselves, especially rural communities, medical and health services are often difficult to access. Palm oil plantations, which often dominate the existence of many rural communities, often do not provide these services to their employees. Therefore, community members themselves lack the resources for disease treatment. This would likely affect both community groups – those living inside the area that would be the project zone and those which travel to the area that would be the project zone. Notably, with community groups that travel to the area that would be the project zone, distance would be increased and thus access to health care and medical assistance would be increasingly difficult to reach.

Under the baseline scenario, these conditions for women and children of both community groups (groups which live in the project zone and groups which travel to the project zone) would likely continue. As such, access to education would be limited and health conditions for women and children would continue to decline.

Under the project scenario, Rimba Raya will be working to establish village libraries to increase community access to books, and will support environmental education initiatives in schools throughout the project zone. The project will also support students in the Seruyan area from less fortunate families with good academic scores to continue their education to senior high school level or equivalent for a period of 3 years. The Rimba Raya project will also promote programs to provide community members and students with reading glasses to ensure accessibility to education to those with vision impairment. With regards to health, the project will aim to support the development of a floating clinic that can provide health services to villages along the river that do not have any nearby medical care facilities. Finally, the expansion of health services throughout the region along with an increased availability of vegetables and essential nutrients is expected to help reduce infant mortality rates and improve the overall health of villagers in the project zone.

SDG 5: Promote gender equality and empower women

In the baseline scenario, work in oil palm plantations is hard for both men and women, though quite different. It is quite frequent that women help their husbands in the plantations to meet demanding production quotas, usually doing unpaid work. In the baseline scenario, this would likely be applicable for both community groups – those which lived in the area which would be the project zone and those which traveled to the area which would be the project zone.

In the case that women work on a hired basis, they often receive lower wages than men. This discrimination is set on the grounds that their work is easier than that of men. According to an article by

[3] See http://www.ran.org/campaigns/rainforest_agribusiness/resources/fact_sheets/hostile_harvest_us_agribusinesses_and_labor_rights_abuses/

Rainforest Action Network[4], women are often assigned tasks that seem less onerous, but which are actually more dangerous and physically demanding than that of their male counterparts. In Indonesia, women are often designated to spray pesticides because it is less physically taxing than other plantation work. Unfortunately, they are rarely given proper protective gear like gloves and masks and thus are susceptible to becoming sick or injured by the dangerous chemicals present in most industrial pesticides and insecticides.

Outside of working in the palm oil plantation, women fulfill other roles. In the baseline scenario women have to take care of the children, prepare food and collect firewood and water, (which are often made farther due to destruction of the forest by the oil palm plantations). While women are rarely the heads of households, they often are responsible for the management of a functioning household. If working, such as at a plantation or helping out in the processing of fish products if their husbands are fishermen, when they return home, women have to prepare food for their families, often with pesticide residue still on their skin and clothes[5]. Women, whether working or not, are still responsible for the management of the home and children, with little time, resources, or opportunity for other ventures, private activities, or means of personal investment/empowerment. For working women that are part of community groups that travel to the area where the project area would be, even more time would be spent traveling to and from the plantations.

Under the baseline scenario, these conditions for women (in both identified community groups) would likely persist as palm oil plantations dominate the employment opportunities and there would likely be not many, if any, opportunities to become financially independent or programs which promote the empowerment of women.

The Rimba Raya project will focus on providing women with alternative forms of employment, including participating in chicken farms, shrimp paste production, handicraft production, and the ability to be part of the field staff team. The opportunity to have independent forms of employment is expected not only to benefit women and their families economically, but help to empower them to be able to have more ownership and agency over their lives and their family's well-being.

SDG 6, 7, 9, 11: Provide access to clean water, sustainable energy, resilient infrastructure, and resilient human settlements

Palm oil development does result in increases in some infrastructure and services within communities that work in plantations, however, palm oil companies are not required to bring development services or infrastructure to neighboring communities.

[4] http://wrm.org.uy/oldsite/bulletin/134/Indonesia.html

[5] See http://www.ran.org/campaigns/rainforest_agribusiness/resources/fact_sheets/hostile_harvest_us_agribusinesses_and_labor_rights_abuses/

The Rimba Raya project will work to provide solar lanterns and solar power to communities that lack electrification throughout the project zone. Additionally, household water filters and large-scale community water filtration systems are planned to be distributed to communities. The project area also has a high risk of fire, and the project will train community fire-fighters, provide equipment, and drill wells for fighting fires to ensure that communities are more resilient against fires.

SDG 12: Ensuring sustainable consumption and production

The development of palm oil plantations is associated with various serious environmental challenges including:

- Biodiversity loss, including loss of rare and endangered species
- Pollution of soil, air, and water
- Soil erosion
- Greenhouse gas (GHG) emissions and climate change
- Loss of key ecosystem services

Deforestation also has significant social implications and can be very damaging for the communities that depend upon these forests for their livelihoods (Colchester, 2011). Serious conflicts can arise when palm oil companies disregard the rights of local communities. Social impacts of palm oil production can include:

- Land grabs
- Loss of livelihoods
- Social conflict
- Forced migration
- Loss of social/cultural identity associated with land
- Loss of access to non-timber forest products

Under the baseline scenario, continued deforestation would be expected. Correspondingly, the detrimental social and environmental effects which accompany deforestation would also persist for both community groups – those living in the area that would be the project zone and those which travel to the area that would be the project zone for hunting, logging, and collection of NTFP. Specifically, both groups would need to travel elsewhere, likely farther in distance, in order to access forests for their needs.

Additionally, villages within the project zone, with or without palm oil development, face huge barriers to implementing waste management practices. With no formal waste management systems, the community members are forced to live surrounded by the garbage that is generated, and often resort to using the river as a waste-disposal mechanism. This not only creates serious health problems for communities, but the pollution of the river impacts the organisms living in it, of which many are essential sustenance for villagers.

The project will focus on developing initiatives and forms of employment that are based on the sustainable use of resources. Additionally, the project will work to raise awareness about and reduce the amount of waste generated within communities as well as various facilities for waste disposal.

SDG 16, 17: Promote inclusive and transparent sustainable development, and strengthen external partnerships

In the baseline scenario, the area which would comprise the project area would likely be converted to palm oil plantation. Although Indonesia has been working towards creating a sustainable palm oil industry, the country as a whole has a long way to go. As of 2017, only 12% of the approximately 11.9 million hectares of palm oil plantations are Indonesia Sustainable Palm Oil (ISPO) certified[6]. ISPO standards require producers to fulfill certain environmental as well as labor and social standards; implementation of these standards helps to create a global partnership for development as it promotes international principles centered on sustainable social development for impoverished communities worldwide. Because ISPO corresponds with UNDP (United Nations Development Program), which created the Sustainable Development Goals, the baseline scenario would only meet the goal of developing a global partnership for development if the plantation met the ISPO requirements.

If this were the case, community groups (both those in the area that would be the project zone and those who travel to the area that would be project zone) may receive fair social and labor treatment if employed by the plantation. In doing so, this would contribute to Indonesia's progress in developing a global partnership for development.

However, because sustainable palm oil production is currently a very small percentage of the country's output, it is more than likely that the palm oil plantation that would be developed in the absence of the project would not be sustainable under ISPO standards, only two of which are located near the project area. While several plantation companies in Central Kalimantan are ISPO certified, only two near the project area, PT Bangun Jaya Alam Permai & PT Wana Sawit Subur Lestari, have received their ISPO certification as of 2016. Both are located just north of TPNP. Also, as of 2016, only 132 companies of the 562 companies[7] that applied for certification had received an ISPO certification. Thus, it is likely that the proposed plantations in the plantation scenario would likely not provide environmental, social and labor related rights to both identified community groups that would be employed as plantation workers.

In contrast, the Rimba Raya project is committed to hiring staff, and providing training and employment opportunities to local villagers through non-discriminatory policies. Additionally, Rimba Raya has policies governing worker's rights, safety, no-corruption, and other important employment safeguards. The project is also committed to strengthening external partnerships both with local and international organizations in order to bring additional resources and services to local communities through the project zone. Rimba Raya will work with World Education International to help develop environmental

[6] See http://www.thejakartapost.com/news/2017/04/12/only-12-of-indonesias-oil-palm-plantations-ispo-certified.html

[7] http://www.majalahhortus.com/hukum/item/213-46-perusahaan-sawit-terima-serifikat-ispo.html

education curriculum and to design alternative economic activities for villagers. Additionally, the Rimba Raya project will work to bring in other sources of funding or resources from international aid organizations or other partners that are interested in contributing to various project goals such as solar electrification, community-level water filtration, and other important infrastructure needs of the communities.

3.2 Expected Impacts on Stakeholders

Impact #1	Reduced poverty of villagers within the project zone, SDG 1.1
Type of Impact	Positive, actual, direct impact.
Affected Stakeholder Group(s)	Villagers, Farmers and Women's Groups
Resulting Change in Well-being	The project will employ people from the community in its field activities and generate other forms of economic opportunities for vulnerable community members through programs such as chicken farming, shrimp paste groups, nursery establishment, fire-fighting, and handicraft training. The magnitude of the impact is expected to be a consistent number of people within the villages in the project zone with steady and reliable income sources that can reduce poverty for them and their families.

Impact #2	Improved food security within villages in project zone, SDG 2.1, 2.2, 2.3
Type of Impact	Positive, actual, direct.
Affected Stakeholder Group(s)	Villagers, Farmers and Women's Groups
Resulting Change in Well-being	Project support and training for the development of plantations of various crops (pineapple, djemgkol), Farmer Field Schools, and nurseries will allow for a more varied diet of fruits and vegetables within villages, of which access is normally limited. Project support of programs like chicken farms, and shrimp paste production will also provide a consistent and improved source of protein for communities.

Impact #3	Longer lifespan of villagers, SDG 3.2
Type of Impact	Positive, predicted, indirect.
Affected Stakeholder Group(s)	Villagers
Resulting Change in Well-being	Through RRC's support of programs that will provide villagers with a more varied diet of different fruits, vegetables, and proteins as well as the planned provision of a floating health clinic, it is expected that these programs will have a positive impact on the overall health of the villagers in the community and increase the longevity of people throughout the region in the long-term.

Impact #4	Improved health or access to healthcare, SDG 3.1, 3.3, 3.4
Type of Impact	Positive, predicted, direct
Affected Stakeholder Group(s)	Villagers
Resulting Change in Well-being	Through RRC's support of programs that will provide villagers with a more varied diet of different fruits, vegetables, and proteins as well as the planned provision of a floating health clinic, it is expected that these programs will have a positive impact on the overall health and access to healthcare of individuals within the project zone communities.

Impact #5	Reduced air, soil, and water pollution, SD 3.9
Type of Impact	Positive, predicted, direct
Affected Stakeholder Group(s)	Villagers

Resulting Change in Well-being	Through community fire-fighting initiatives, community trash cleanups, and reforestation of the project area, the Rimba Raya project will have positive impacts on the overall levels of pollution that communities are exposed to. Fires are a consistent problem throughout Indonesia and have been a risk to the peat forests of the project area. These fires end up producing levels of smoke and air pollution that severely impact the health of communities living within range of the fires. By training community members to combat wildfires, the project is helping to reduce the risk of fire and subsequent air pollution associated with these natural disasters. Additionally, the project will teach communities about waste disposal as well as organize trash cleanups within communities to reduce the amount of contamination and pollution within villages as well was within the Seruyan river.

Impact #6	Improved and equal access to education and training, SDG 4.1, 4,4, 4.5, 4.6, 4.7, and 4b
Type of Impact	Positive, actual, direct
Affected Stakeholder Group(s)	Villagers, Farmers and Women's Groups
Resulting Change in Well-being	The project plans to improve access to education throughout the region through the creation of a scholarship program, the creation of village libraries, support for environmental education curriculum, and through the distribution of reading glasses to community members and students with needs. It is expected that these activities will increase the availability of knowledge within communities and support talented students in reaching higher levels of education that would not have been possible without the project. Additionally, the project's employment programs for chicken farming, shrimp paste, and famer field school, will provide adult members of the community with increased knowledge, skills, and capacity within practical fields.

Impact #7	Improve women's economic access, financial agency, and leadership opportunities, SDG 5.5, 5.a
Type of Impact	Positive, predicted, direct

Affected Stakeholder Group(s)	Women's Groups
Resulting Change in Well-being	The Rimba Raya project will provide access to economic opportunities for women within villages throughout the project zone through the chicken farm, shrimp paste, and handicraft programs, in addition to hiring women to be part of the RRC staff. By training women to participate in and manage their own small businesses, the project is building the agency and capacity of participating women, and facilitating more ownership of resources and access to economic opportunities.

Impact #8	Improve access to clean drinking water, SDG 6.1, 6.b
Type of Impact	Positive, actual, direct
Affected Stakeholder Group(s)	Villagers, Farmers and Women's Groups
Resulting Change in Well-being	The project aims to provide every family within the project zone villages with water filter systems to ensure access to clean drinking water. Additionally, community-level water filtration systems are being proposed as more long-term and sustainable options for community water access. As the villages do not have access to clean drinking water as of the project start date, these activities will have a major positive impact for communities to access drinking water, leading to a reduction in illnesses and improved resiliency of the communities.

Impact #9	Protect and restore water-related ecosystems, SDG 6.6
Type of Impact	Positive, predicted, indirect
Affected Stakeholder Group(s)	Villagers

Resulting Change in Well-being	Through widespread protection of the project area's forests as well as the replanting initiatives in areas that have been burned or degraded, the project will be contributing to the protection of the peat dome, which provides critical hydrological and water filtration services. It is likely that through these activities, the water capture and ecosystem services that these peatlands provide will be preserved and their degradation or destruction minimized.

Impact #10	Access to sustainable energy sources, SDG 7.1, 7.b
Type of Impact	Positive, actual, direct
Affected Stakeholder Group(s)	Villagers, Farmers and Women's Groups
Resulting Change in Well-being	The project will provide households throughout the project zone with solar lanterns, for immediate household needs, as no electricity exists in the majority of communities. A proposed long-term solution that the project will explore is the development of localized small-scale solar power plants to electrify individual villages and to provide more developed and sustainable electrical sources for communities.

Impact #11	Improve access to productive employment and decent work, in addition to supporting micro/small-scale enterprises through access to finance, SDG 8.3, 8.5
Type of Impact	Positive, actual, direct
Affected Stakeholder Group(s)	Villagers, Farmers and Women's Groups

Resulting Change in Well-being	The Rimba Raya project will generate employment and create various economic opportunities throughout the project zone. The farmer's and women's groups are geared towards providing communities with opportunities for small enterprises such as the chicken farm, shrimp paste, farmer field school, and nursery. Additionally, the Rimba Raya will hire local community members for the field team to assist with field monitoring and the implementation of community development activities.

Impact #12	Build resilient infrastructure by increasing access to small scale industrial enterprise and financial services, in addition to the upgrading of industries to increase sustainability and resource-use efficiency, SDG 9.3, 9.4
Type of Impact	Positive, actual, direct
Affected Stakeholder Group(s)	Villagers, Farmers and Women's Groups
Resulting Change in Well-being	The Rimba Raya project will generate various opportunities for the development of and involvement in small scale enterprise throughout the project zone. The farmer's and women's groups are geared towards providing communities with opportunities for small enterprises such as the chicken farm, shrimp paste, handicrafts, and nursery, all of which promote use of recycled materials and sustainable practice. Additionally, the Rimba Raya will hire local community members for the field team to assist with field monitoring and the implementation of community development activities.

Impact #13	Reduce inequality within and among countries by empowering and promoting the social, economic, and political inclusion of all, SDG 10.2
Type of Impact	Positive, predicted, indirect
Affected Stakeholder Group(s)	Villagers, Farmers and Women's Groups

Resulting Change in Well-being	The Rimba Raya project will provide access to economic opportunities for women within villages throughout the project zone through the chicken farm, shrimp paste, and handicraft programs, in addition to hiring women to be part of the RRC staff. By training women to participate in and manage their own small businesses, the project is building the agency and capacity of participating women, and facilitating more ownership of resources and access to economic opportunities, thus reducing inequality for women. Additionally, the project plans to improve access to education throughout the region through the creation of a scholarship program, the creation of village libraries, support for environmental education curriculum, and through the distribution of reading glasses to community members and students with needs. It is expected that these activities will increase access to education by vulnerable or marginal groups.

Impact #14	Make cities and settlements inclusive and sustainable with the capacity for participatory planning and management, in addition to strengthening efforts to protect the world's cultural and natural heritage, SDG 11.3, 11.4
Type of Impact	Positive, actual, direct
Affected Stakeholder Group(s)	Villagers and Women's Groups
Resulting Change in Well-being	The project plans to implement a variety of sustainable development initiatives, including the training of women's groups to make and sell recycled handicrafts and the monitoring of project area to ensure sustainable use. The project also intends to hire community members as part of the monitoring and RRC staff. All development and planning in villages will be participatory, strengthening community capacity for program involvement.

Impact #15	Ensure sustainable consumption and production by reducing waste generation and promoting information and awareness for sustainable development and lifestyles, SDG 12.5, 12.8
Type of Impact	Positive, actual, direct

Affected Stakeholder Group(s)	Villagers and Women's Groups
Resulting Change in Well-being	Through community trash cleanups and promotion of use of recycled materials for handicraft trainings, the Rimba Raya project will have positive impacts on the reduction of waste. Additionally, the project will teach communities and students about waste disposal and environmental/resource awareness. These activities will not only reduce the consumption and production of waste, but the disposal as well.

Impact #16	Promote peaceful and inclusive societies and institutions by ensuring responsive, inclusive, participatory and representative decision-making, public access to information, and non-discriminatory practices, SDG 16.7, 16.10, 16.b
Type of Impact	Positive, actual, direct
Affected Stakeholder Group(s)	Villagers
Resulting Change in Well-being	The Rimba Raya project promotes inclusivity through participatory planning of villages and mapping projects and includes community input through a non-discriminatory hiring process that prioritizes village applicants and capacity building of villagers. In addition, all project information and monitoring results will be disseminated to villages within the project zone, and the construction of libraries will add to availability of information to the public.

Impact #17	Strengthen implementation and partnership for sustainable development by mobilizing financial resources for developing countries, SDG 17.3
Type of Impact	Positive, actual, direct
Affected Stakeholder Group(s)	Villagers

Resulting Change in Well-being	The project plans to maintain relationships with international organizations and governments in order to provide funding options for sustainable development, as exemplified in the planned development of a solar power plant through funding by the HEF NZ Embassy.

Impact #18	Strengthen implementation and partnership for sustainable development by promoting the development and dissemination of environmentally sound technologies, SDG 17.7
Type of Impact	Positive, actual, direct
Affected Stakeholder Group(s)	Villagers and Farmers
Resulting Change in Well-being	The Rimba Raya project will implement a variety of environmentally sound technologies that advance development and sustainability, including the construction of a solar power plant to provide electricity to villages, an orangutan` release camp and program, and floating health care clinics. All of these programs will implement sustainable technology, and the project will maintain engagement in World Education Indonesia to further advance technology.

Impact #19	Improve access to productive employment and decent work, in addition to supporting micro/small-scale enterprises through access to finance, SDG 8.3, 8.5
Type of Impact	Negative, predicted, indirect
Affected Stakeholder Group(s)	Villagers and Farmers
Resulting Change in Well-being	The implementation of chicken farm programs may cause increased economic vulnerability, as there is potential for egg and meat oversupply. Economic vulnerability may decrease productive and decent work and may cause a collapse in small-scale enterprises.

Impact #20	Improve access to clean drinking water, SDG 6.1
Type of Impact	Negative, predicted, direct
Affected Stakeholder Group(s)	Villagers
Resulting Change in Well-being	The dissemination of water filters may increase economic vulnerability for marginal groups, as distribution of filters will cause a dependence on spare parts. Groups without resources to access parts may continue to lack access to clean drinking water or may be economically burdened by filters. The project will mitigate this risk by continuing to financially support the replacement of water filter parts and will work to install community-wide water filtration systems that may require less frequent maintenance.

Impact #21	Improved health or access to healthcare, SDG 3.9
Type of Impact	Negative, actual, direct
Affected Stakeholder Group(s)	Villagers and Farmers
Resulting Change in Well-being	The development of chicken farms will lead to increased waste production. While the project aims to support sustainable farming practices, there will still be increased amounts of chicken waste that may lead to pollution, eventually decreasing community health. However, the expected number and scale of chicken farms will likely not be so large as to generate a significant negative impact.

3.3 Stakeholder Monitoring Plan

The Rimba Raya project is committed to the development of sustainable livelihoods for communities in the project zone. Monitoring activities used to measure the project's impact on community livelihoods have been designed to suit specific goals and interventions. Both a sustainable livelihoods framework (based on Bebbington 1999) and a Theory of Change framework was used to guide this process. The sustainable livelihoods framework is based on the premise that user groups and individual households

have five capital assets, which they can use for various livelihood outcomes. These five capital assets include:

1. Physical capital (e.g., household assets, agricultural implements, transport, energy, communication and other infrastructure, technology).
2. Financial capital (e.g., credit, savings, remittances, pensions).
3. Social capital (e.g. adherence to rules, relationships of trust, mutuality of interest, leadership, kin and ethnic networks, social networks or organizations, access to wider institutions, ability to demand).
4. Natural capital (e.g. soil fertility, water resources, forest resources, grazing resources, land quantity and quality)
5. Human capital (e.g. knowledge and information, skills, health, ability to work).

All five of these capital assets are closely linked to each other and important to the development of sustainable community livelihoods. In the table below, the capital assets approach is used to frame principles, criterion, and indicators that may be appropriate for the Rimba Raya project zone. The listed criteria and indicators were chosen based on community livelihood needs identified during the preliminary social survey. Specific interventions were initially chosen with reference to the Sustainable Development Goals, and adjusted to meet local needs in a participatory fashion, with target communities helping to identify the appropriate principles, criteria, interventions, and indicators for their area. Also note that criteria can be developed for various scales (e.g., household, village, and district levels). The examples below focus on the household and village level.

Table 6. Parameters for the Rimba Raya Community Monitoring Plan

Monitoring Component		Activity
Initial Community Monitoring Component	Physical	Number of households that have upgraded from leaf to aluminum roofs.
		Number of individuals with fishing boats or other fishing equipment.
	Financial	Income and expenditures of families (e.g., proportion of households with income higher than the current level of income).
		Employment rates (e.g., number of family members with a job or business; distribution of job opportunities across gender and social status).
	Social	Number of households with members involved in at least one community organization or program.
		Proportion of families who participate in the formal electoral process (Number of households with actual voters).
		Number of grievances recorded against oil palm companies declines.

Monitoring Component		Activity
		Level of adherence to laws and frequency of penalties being given for those breaking them.
	Natural	Assess any decrease in flooding of their agricultural land and/or an increase in productivity of arable land.
		Assess that forests and agricultural areas that are important to meeting basic needs have become available.
		Assess water quality for turbidity and pollution and that draining of peat swamps in the area has stopped.
	Human	Check improvement in proportion of households or individuals with knowledge and information on hygiene
		Check number of incidence of diarrhea, typhoid
		Check proportion of households with sanitary toilet facilities (not excreting into the Seruyan River where they wash dishes and bathe)
		Check for improved sanitation facilities (hand washing soap, safe water containers, water treatment)
		Check percentage of households with access to clean water
		Check number of water treatment facilities in a village
		Check mortality rates (infant, child, mother)
		Existence of medical centers (including number of doctors and nurses and number of patient visits)
		Check prevalence of acute and chronic malnutrition and disease
		Check number of children attending school
		Check percent of family members who go/have gone to school
		Check number of family members who are able to read and write
		Check number of family members who have attended some type of livelihood related training

Monitoring Component		Activity
Comprehensive Community Monitoring Component	Preliminary High Conservation Monitoring Plan	Mapping of HCV5(basic needs) and HCV6 (Cultural Identity) areas
	Community Needs assessment	In depth community needs assessment in each village prior to any on the ground project implementation in coordination with World Education. To identify gaps between community needs and desired conditions with regard to all five capital assets as shown above.
	Illegal logging	Mapping of real actors of illegal logging
	Job Opportunities with the Rimba Raya Project	Develop a strategy to provide training and other educational programs with the goal of increasing local capacity to fill more skilled and permanent positions within the project organization. Check local capacity has increased within the project organization.

The Theory of Change framework for monitoring overlaps significantly with the framework described above, however, the TOC framework helps to provide more direct links between monitoring indicators and long-term project impacts. A detailed TOC analysis was conducted and relevant project activity outputs/monitoring indicators were identified. See "TOC Activity Matrix v1.17.xlsx" for the full TOC analysis, and for a summary of expected project impacts from the TOC as they relate to SDGs, see "Theory of Change Summary - Climate, Community & Biodiversity v1.2.xlsx." The project activities implemented by the Rimba Raya Conservation team will be monitored to ensure that impacts from those activities can be quantified and reported.

Community Needs Assessment

An in-depth community needs assessment will be carried out for each community in the Project zone prior to any on-the-ground project implementation. Such an assessment is important for identifying gaps between community needs and desired conditions with regard to all five capital assets – the foundation for creating sustainable livelihoods. This information will feed into all elements of project development, and will particularly guide the design of suitable community development programs. Importantly, it will also initiate relationship-building, crucial to project success. Engaging communities early in the project, with a focus on their needs, is also an important way to build a sense of belonging to the project. It must be noted that this can also be one of the riskiest stages in project development as it is often the stage where communities' hopes are raised and expectations can soar. Communities will be hoping for programs that offer immediate tangible benefits (jobs, healthcare, and other income-

related activities). If such hopes are unwittingly created during this initial engagement, and subsequently unmet, conflict will likely arise, risking project success. It is critical that this assessment is undertaken in a manner that manages this risk. To avoid these risks, this assessment will be undertaken in cooperation with World Education, which has active programs and a productive working relationship in several of the Project zone villages.

Job Opportunities with the Rimba Raya Project

Conflict between projects and local communities often occur when projects hire non-locals for all skilled and senior positions, offering only unskilled jobs to local community members (e.g., casual work during planting or harvesting seasons in oil palm plantations). The Rimba Raya project will invest in a strong strategy to provide training and other educational programs with the goal of increasing local capacity to fill more skilled and permanent positions within the project organization. The Phase II Community Assessment will seek to identify appropriate positions and individuals from within Project zone communities.

Illegal logging

Illegal logging appears to be an on-going threat to forests and biodiversity in the Project area. Mapping the real actors involved in this illegal activity will be the first step in preparing strategies to resolve the issue. Given that a number of village heads in the Project zone were recently arrested for their involvement in illegal logging, it will be important to gain a clear picture of these individuals, their involvement, and their level of influence over community members.

3.4 Net Positive Stakeholder Well-being Impacts

The project's community benefits represent a net positive benefit for all community groups. Attaining positive impacts on communities within the project zone is an extremely important aspect of this project. Nearly every step of the project will involve the feedback and participation of community members in one form or another. Community members will be vital to the design and implementation of the project. Without the feedback and participation of community members, this project would not exist. Project activities will be designed to incorporate community needs and concerns so that the project may be truly impactful not only in terms of climate and biodiversity objectives but in terms of community goals.

Furthermore, these benefits will be provided in a manner which maintains one of the most important local assets of the project communities: the natural capital of local forests and the ecosystem services they sustain. These resources will remain intact and available for current and future generations. This benefit is in direct contrast to livelihood opportunities that would have been generated through the palm oil conversion, through which the area's natural capital would be eroded and become unavailable over a relatively short period of time. To evaluate these benefits, impacts will be analyzed using the Sustainable Development Goals and the Theory of Change framework as a tool for community project activity design and monitoring.

Throughout the Theory of Change (TOC) exercise, the Rimba Raya project identified four broad categories for all project activities that are being implemented. These categories are Access to Resources, Education, Inclusion, and Enterprise. On a broad level, these categories also work to address the Sustainable Development Goals identified below. By providing access to resources, education, inclusion, and enterprise, the project activities can directly improve the well-being of communities within the project zone. A detailed TOC model was developed in order to trace both the positive and potential negative impacts that project activities might have on communities (for example see the TOC models for Chicken Farm and Water Filter in TOC Activity Matrix v1.17). While the SDGs are important targets for the project to aim for, it is important to consider the specific dynamics of the communities and their individual needs in order to minimize the negative and optimize the positive impacts. For this reason, the project is focusing on using the TOC as a tool going forward to achieve its specified community objectives, including the SDGs listed below.

The Sustainable Development Goals (SDGs) are the United Nations quantified targets for addressing extreme poverty in its many dimensions – income poverty, hunger, disease, lack of adequate shelter and exclusion – while promoting gender equality, education, and environmental sustainability. They are also basic human rights – the rights of each person on the planet to health, education, shelter, and security. In an effort to create a social buffer for the project area and nearby Tanjung Puting National Park, InfiniteEARTH has designed many project activities around targets and success indicators proposed by the SDG program for Indonesia. The project will work to accomplish these goals and ensure that the net impact of the project on communities within the project zone is positive. The community-related SDGs are as follows:

Goal 1: End poverty in all its forms everywhere

Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Goal 3: Ensure healthy lives and promote well-being for all at all ages

Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Goal 5: Achieve gender equality and empower all women and girls

Goal 6: Ensure availability and sustainable management of water and sanitation for all

Goal 7: Ensure access to affordable, reliable, sustainable, and modern energy for all

Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Goal 10: Reduce inequality within and among countries

Goal 11: Make cities and human settlements inclusive, safe, resilient, and sustainable

Goal 12: Ensure sustainable consumption and production patterns

Goal 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels

Goal 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development

The project has also identified clear objectives related to the protection of poor and marginalized individuals within communities as follows:

At least 25% of the poorest people in each community where the project works will benefit from the project

Engage with 25% of the poorest people in each community that the project works with to identify and overcome barriers and risks to project benefits

Avoid or mitigate negative impacts in each community that the project works with, including for the women, as well as poor, vulnerable, or marginalized individuals.

Sustainable Development Goals were used as key rationale to assess the project's progress in terms of community benefits because they are the standards created and used by the United Nations to address the universal needs of the world's poorest. Although Indonesia is the largest economy in Southeast Asia and has made considerable advances in recent years in reducing poverty among its inhabitants, it is still considered a medium development country where many inhabitants, especially those in rural areas, are directly affected by poverty. The location of the project, in the rural Seruyan Regency of the province of Central Kalimantan, has been identified as one of the poorest districts in Indonesia.

Seeing as communities within the project zone are some of the world's most impoverished people, application of these development goals are appropriate. Moreover, the SDGs encompass issues which are directly pertinent with those that have arisen within the project. Thus, inclusion of the SDGs makes sense as their ultimate purposes are almost entirely the same as those outlined by the project, and they are part of a pre-approved and applied system. Some of the primary planned activities with community impacts are outlined below:

Construction and operation of Guard & Fire Towers and Orangutan Care Facilities

For communities within the project zone, the construction and operation of the guard and fire towers, as well as the orangutan care facilities will provide positive impacts in the form of employment opportunities, and thus alternative streams of revenue. It should be noted that individuals within the project zone will be given priority during the hiring process.

Solar Lighting

Solar lanterns will be distributed to families throughout the project zone, and the potential development of solar power plants to electrify entire villages will be explored by the Rimba Raya team.

Access to Clean Water and Healthcare

As there have been increased instances of flooding in the Seruyan River watershed, Project zone communities continue to have trouble gaining access to clean water resources. Through community consultation, it has been determined that clean water is one of the largest priorities for those living in the communities. The project will prioritize the purchase and distribution of water filters to distribute to households throughout the project zone, with the goal of improving overall community health. The anticipated impacts of water filter distribution are multifaceted. By distributing water filters, some of the short-term outcomes that are expected included fewer sick days for adults and children, lower medical costs for families due to fewer illnesses, an overall reduction in waterborne illnesses, and improvements in water quality throughout the project zone. Longer-term impacts were identified that include benefits to the local economy due to higher worker productivity, empowerment of vulnerable or marginal groups due to the knowledge gained from trainings on water filtration systems, reduction in maternal illnesses and infant mortality, and the distribution of benefits to poorer and more vulnerable groups. Some negative identified impacts were the dependence on spare parts for water filtration systems that might not be locally available, however the project will work to mitigate this need by supplying and providing access to spare parts when needed.

In the long term, the project plans to facilitate access to healthcare services through a floating clinic that can periodically visit communities and provide them with basic health services.

Carbon, Community, & Biodiversity Monitoring

CCB monitoring will provide positive impacts in the form of employment opportunities and alternative streams of revenue for communities. The Rimba Raya project plans to hire local community members to develop local monitoring teams throughout the project zone. These staff members will be trained and their capacity built up to participate in the implementation and monitoring of activities throughout the project zone and project area.

Capacity Building Programs

Capacity building efforts and trainings will generate positive impacts to community groups. Capacity building will allow community members within the project area to train and pursue the learning of alternative skills and livelihood capabilities. In expanding worker skills sets and abilities, community members located within the project zone will be able to advance their socio-economic status. Planned capacity building programs include farmer field schools, nurseries, agroforestry plantations, community fire-fighting, chicken farms, shrimp paste production, and handicrafts.

Educational Programs

The planned construction of community centers/libraries will provide employment opportunities and improve access to educational materials for communities. Additionally, the project plans to provide scholarships to exceptional students to cover their expenses for high school, and to create environmental education curriculum in schools to promote awareness of climate change for improved conservation and waste management.

Micro-credit Programs

Micro-credit programs are planned project activities which are anticipated to provided positive benefits for community groups. Micro-credit programs will provide financial and entrepreneurial support so that various working groups – shrimp paste, salt fish, chicken meat production – can operate. In doing so, community members from inside and outside of the project zone will be able to make revenue from alternative, sustainable practices. Making money outside of the palm oil industry allows community members safer, more empowered livelihoods. The increase in production of chicken farming has the potential for the negative effect of contaminating the water supply; however the project will taking measures to reduce this negative impact through its water filtration system and the monitoring of water quality in the project zone.

Replanting of the project area and project zone

Reforestation through community nurseries is a project activity designed to create community employment and to restore degraded areas within the project area and project zone.

4 BENEFITS FOR THE PLANET

4.1 Condition of Natural Capital and Ecosystem Services at Project Start

Vegetation and Land Cover

Rimba Raya is comprised of a diversity of natural and human-disturbed wetland and dry land vegetation types (Figure 8), dominated by peat swamp forests on peat soils ranging from 2 to more than 6 meters deep. Deforested peat swamps form extensive peat shrublands in the south and seasonally inundated wetlands along The Baung and Seruyan Rivers. Peatlands grade into kerangas forest and open kerangas scrub on sandy soils in the southwestern Carbon Accounting Area and the Northwestern Project Management Zone. The northwestern part of the project adjacent to Tanjung Puting National Park also supports increasingly rare lowland forest on mineral soils, which contributes significantly to the biodiversity of the project area. Figure 9 shows a satellite image view of forested areas in Rimba Raya. Carbon Accounting Area vegetation is shown in Figure 10. Peat swamp forest and other peatland types comprise 78.5% of the Carbon Accounting Area (Table 8). All but the kerangas forest and kerangas open scrub types are on peat substrates. The land cover accuracy assessment demonstrated a 90.0% classification accuracy for lightly degraded peat swamp forest and 81.3% overall within the project management zone.

Table 7. Soil Types

Soil Types in the Carbon Accounting Zone				
Dominant Soils	General Description	Parent	Sub-landform	Relief

		Material		
Haplohemist, Sulfihemists	Moderately decomposed peat soils some of which are sulphic	Organic	Peat Dome	Flat
Endoaquepts, Sulfaquents	Saturated Inceptisols and Saturated Sulphic Entisols	Alluvium	Delta or Estuary	Flat
Endoaquepts, Dystrudepts	Saturated Inceptisols and Acidic Inceptisols	Alluvium	Alluvial Flood Plane	Flat
Quartzipsam-ments, Durorthods	Quartzic Entisols and Spodosols with a Cemented Hardpan	Sediment	Terraces	Flat - Rolling
Haplorthods, Palehumults	Freedraining Spodosols and Humus rich Ultisols	Sediment	Terraces	Flat - Rolling

Wetlands International mapping of peat distribution in the project area shows shallow peats distributed throughout most of the Carbon Accounting Area (Figure 10). Carbon stock field surveys showed that peats were moderately deep and typically exceeded the limits of the 4 to 6 meter peat probe used to measure peat depth.

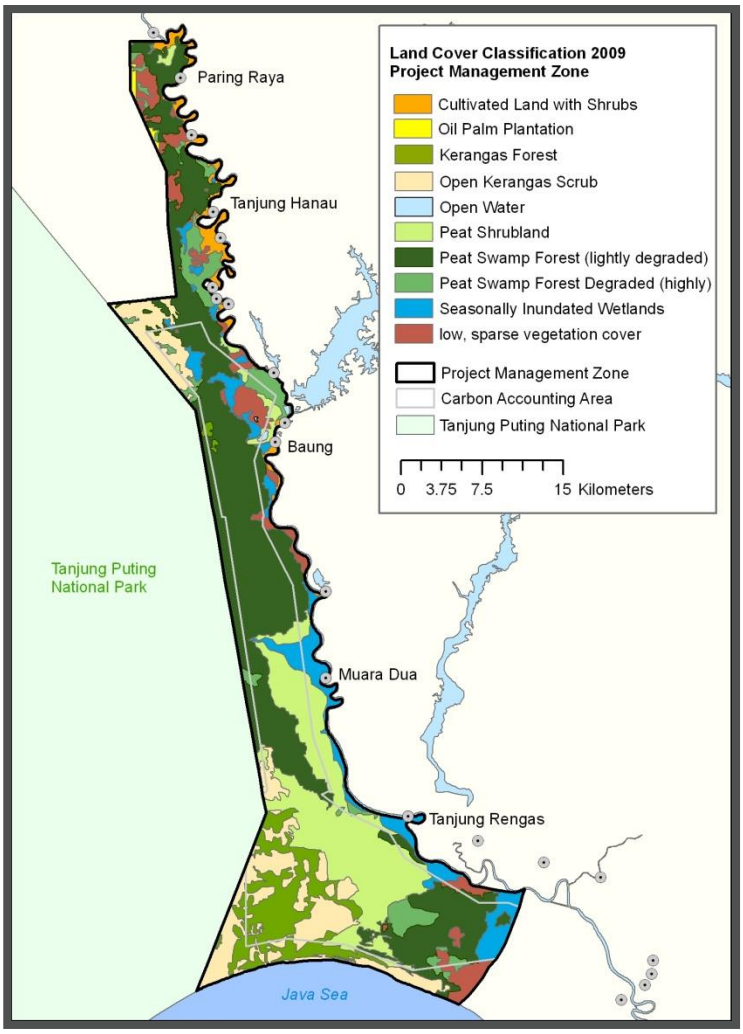


Figure 8. Rimba Raya Vegetation and Land Cover 2009

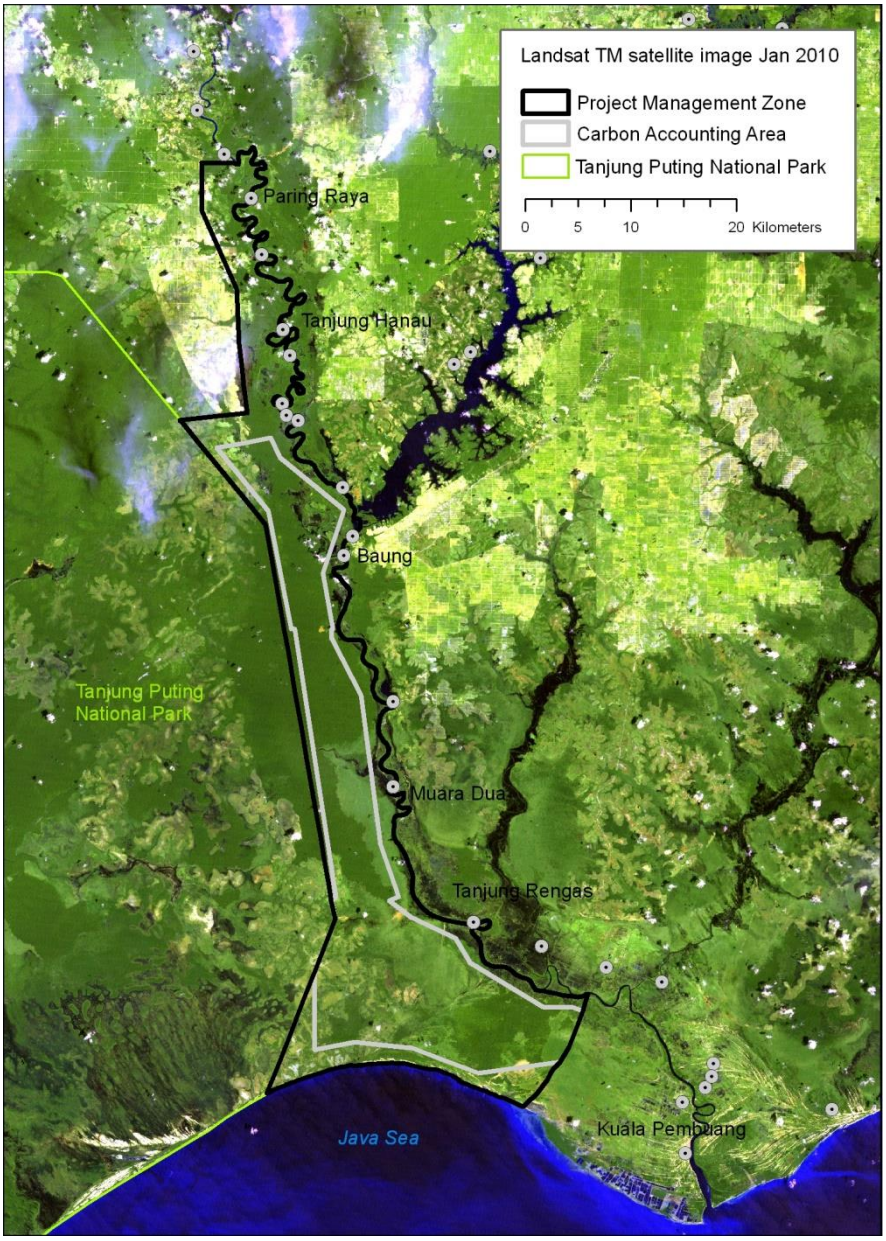


Figure 9. Forest and Vegetation cover of the project area shown on Landsat TM image, January 2010 Dark green areas indicate forest cover, light yellow areas indicate bare or exposed soil.

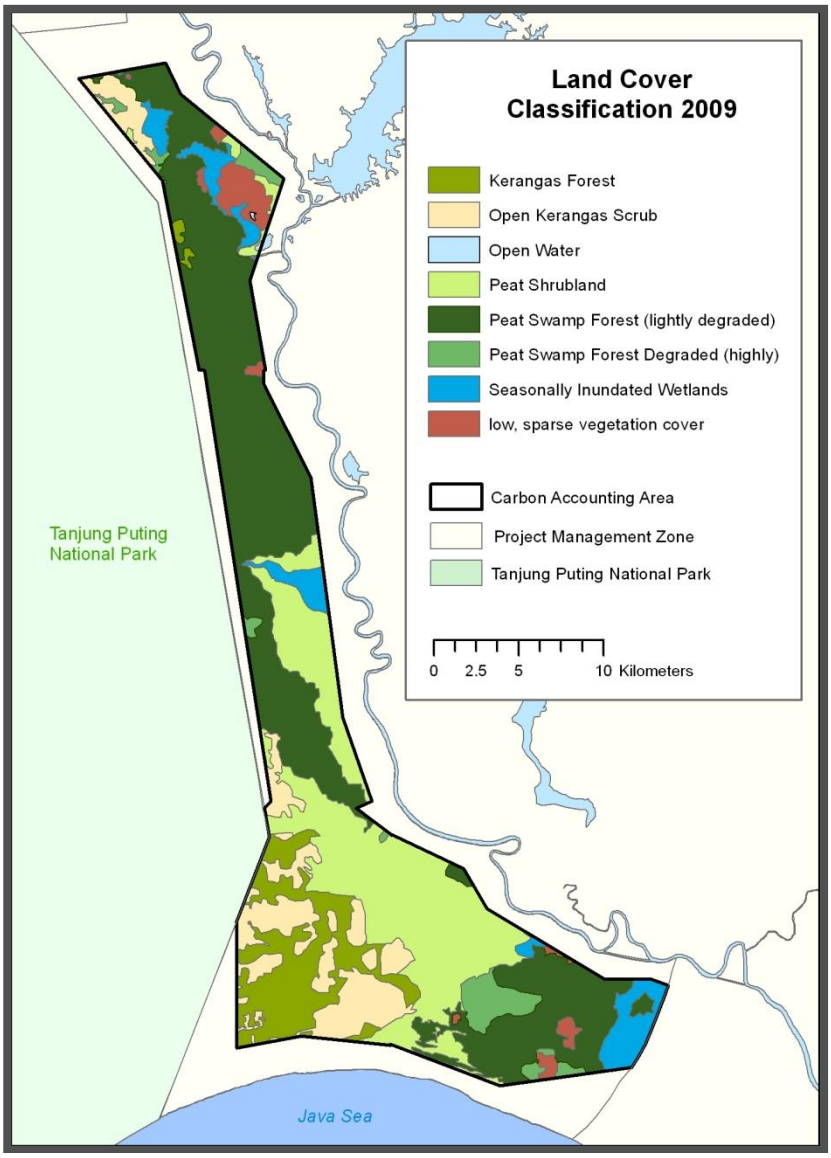


Figure 10. Land Cover and Vegetation in the Carbon Accouting Area

Table 8. Land Cover in the Carbon Accounting Area		
Land Cover Description	**Extent (Ha)**	**% Total**
Peat Swamp Forest (lightly degraded)	19,215	40.7
Peat Swamp Forest Degraded (highly)	1,734	3.7
Peat Shrubland (<20% Tree Cover)	12,040	25.5
Kerangas Forest	4,810	10.2
Kerangas Open Scrub	5,349	11.3

Low, sparse vegetation cover	1,342	2.8
Seasonally Inundated Wetlands	2,704	5.7
Open Water	43	0.1
Grand Total:	47,237	100.0

Biodiversity

A recent study of the Project Management Zone documented high biodiversity including 361 species of birds, 122 species of mammals, and 180 species of trees and woody plants likely to be present in the project area.

Rimba Raya biodiversity notably includes the endangered Bornean orangutan (*Pongo pygmaeus*), the only great ape outside of Africa, whose populations have declined 95% in the last century. Tanjung Puting National Park houses one of the largest protected orangutan populations, and the Rimba Raya project area augments adjacent Tanjung Puting orangutan habitat by ca. 14%.

Project area forests likely house eight other primate species including the endangered proboscis monkey (*Nasalis larvatus*) and agile gibbon (*Hylobates agilis*). More than half of all mammals occurring in Borneo are likely present on the project area including the more common sun bear (Helarctos malayanaus), barking deer (Muntiacus muntjak), and bearded pig (Sus barbatus) and the endangered Borneo Bay cat (Catopuma badia) and hairy-nosed otter (Lutra sumatrana). An estimated 45 species of bats (47% of the Borneo list) are likely to be present in the project area. A third of these are IUCN Red Listed, 13 of which have restricted ranges or are endemic to Borneo.

Some 361 bird species are likely present in the project area. Of these, 156 species are of national and/or international conservation significance. Eighty species are listed by the IUCN as Threatened or Near-Threatened with Global Extinction, including the Endangered Storm's Stork (*Ciconia stormi*), which is considered one of the twenty most endangered bird species in the world.

Borneo is one of the richest islands on the Sunda Shelf for reptiles and amphibians (MacKinnon et al 1996) but remains understudied. Tanjung Puting National Park's herptofauna has never been surveyed, and the full suite of herptofauna likely present in the park and Rimba Raya project area remains unknown. Of particular concern is the endangered False Ghavial (*Tomistoma schlegelii*) which has been hunted to extinction in most of Borneo, but is still present in TPNP, and may still be present in the Seruyan River, as well as the protected Estuarine Crocodile (*Crocodylus porosus*) which is reported to be present in the project area but has suffered severe over-hunting.

Plant species diversity in the project area is no doubt extremely high, and many elements of the flora are rare, threatened or protected species. Comprehensive, systematic floristic surveys have not been conducted in either nearby Tanjung Puting National Park or the project area so the present list is incomplete. Of the 180 plant taxa expected to occur in the project area, 25 species are critically endangered and 14 endangered. Many of these are Dipterocarps that have been targeted by the timber

industry and include *Shorea balangeran*, which occurs in deep swamps of the project area and is considered the most highly threatened dipterocarp on Borneo.

4.2 Expected Impacts on Natural Capital and Ecosystem Services

The project has identified key biodiversity and natural capital impacts that the project plans to achieve. The details and monitoring results are presented in the tables below, as well as in section 4.2. All impacts are aligned with one or more SDGs.

Impact #1	Reduced emissions, and increased carbon sequestration and storage. SDG 13.1
Type of Impact	Positive, actual, direct impacts.
Affected Natural Capital and/or Ecosystem Service(s)	Forest resources, air quality, carbon sequestration
Resulting Change in Condition	The project will train and employ local community members to perform routine patrols and surveys of the project area to identify and reduce fire risk. Increased fire patrols and hotspot monitoring may lead to early fire detection and reduction of impact on carbon stores.

Impact #2	Support Sustainable Seafood Production for Local Communities SDG: 14.7
Type of Impact	Positive, actual, direct impacts.
Affected Natural Capital and/or Ecosystem Service(s)	Sustainable seafood
Resulting Change in Condition	Increase access to alternative livelihoods, local markets and sustainably sourced food.

Impact #3	Improve resiliency toward natural disasters SDG: 13.1, 13.3, 14.2
Type of Impact	Positive, actual, indirect impacts

Affected Natural Capital and/or Ecosystem Service(s)	Mangroves, coastal forest, fish habitat, carbon sequestration, soil, biodiversity
Resulting Change in Condition	The project will support communities in creating nurseries from planning to continued maintenance of the nurseries. Seedlings grown in local nurseries will provide an opportunity for alternative livelihoods while also indirectly aiding in the restoration and enhancement of forested areas within the project area by providing seedlings to restoration and replanting initiatives.

Impact #4	Improved education of youth about climate change and its impacts SDG: 13.3
Type of Impact	Positive, actual, indirect impacts.
Affected Natural Capital and/or Ecosystem Service(s)	Water and air quality, carbon storage, biodiversity
Resulting Change in Condition	While indirect, environmental education will inform community members about the importance of natural resources and conserving them in order to continue receiving critical ecosystem services. Climate change education will empower communities to make informed decisions regarding sustainable development and build initiatives to improve local resiliency.

Impact #5	Protection of endangered species SDG: 15.5
Type of Impact	Positive, actual, direct and indirect impacts
Affected Natural Capital and/or Ecosystem Service(s)	Orangutan habitat, carbon storage, forest resources, biodiversity
Resulting Change in Condition	The project will provide financial support to OFI to continue the rehabilitation and release programs for the endangered Bornean orangutan. The Bornean orangutan is endangered and endemic to the island of Borneo. Orangutans play a critical role in seed dispersal and ecosystem health which is beneficial to a host of other forest dwelling animals in the project area, as well as local communities who depend on forest resources.

Impact #6	Increased benefits from ecosystem services SDG: 15.1
Type of Impact	Positive, actual, indirect impacts
Affected Natural Capital and/or Ecosystem Service(s)	Forests resources, carbon storage, soil
Resulting Change in Condition	The project will implement replanting and restoration initiatives, including mangrove restoration, agarwood planting, and river cleanups. These project activities will enhance benefits received from ecosystem services such as soil health and regeneration, water filtration services, habitat for terrestrial and marine biota, and carbon sequestration.

Impact #7	Reduce local downstream pollution SDG: 14.1
Type of Impact	Positive, actual, direct impacts
Affected Natural Capital and/or Ecosystem Service(s)	Water quality, riparian ecosystems
Resulting Change in Condition	Improved water quality and habitat quality for aquatic species.

Impact #8	Mitigate loss of forest area for endangered species SDG: 13.1, 13.3, 15.5
Type of Impact	Positive, actual, direct and direct impacts
Affected Natural Capital and/or Ecosystem Service(s)	Forests, biodiversity, carbon storage, soil

Resulting Change in Condition	The project protects critical habitat for threatened and endangered species. A total of 54 species listed as Critically Endangered or Endangered by IUCN are likely present in the Rimba Raya Project area. The project will utilize biodiversity monitoring, fire prevention patrols and monitoring, and replanting techniques to mitigate the loss and degradation of forest area. Through widespread protection of the project area's forests as well as the replanting initiatives in areas that have been burned or degraded, the project will be contributing to soil health and the protection of the peat dome, which provides critical hydrological and water filtration services.

Impact #9	Increased capacity for climate-related hazard and natural disasters SDG: 13.1, 13.3
Type of Impact	Positive, actual, indirect impacts
Affected Natural Capital and/or Ecosystem Service(s)	Forests resources, carbon storage, soil
Resulting Change in Condition	The project will implement multiple replanting and restoration projects, including mangrove restoration and agarwood planting using seedlings from local nurseries. These project activities will enhance benefits received from ecosystem services such as soil health and regeneration, hydrological and water filtration services, carbon sequestration, flood attenuation and increased protection from storm surges.

4.3 Natural Capital and Ecosystem Services Monitoring Plan

Carbon Monitoring

A Monitoring Plan has been developed for Rimba Raya and will be revised and updated as needed. Community Monitoring will take place bi-annually. A monitoring plan has been developed and implemented for Rimba Raya by combining OFI's long-running forest protection and management activities with the VCS methodology for carbon stock monitoring. The Carbon and Climate Monitoring Plan should be considered a living document with adjustments being made as needed on an on-going basis as part of Adaptive Management.

The purpose of carbon monitoring

The purpose of monitoring for carbon accounting is to ensure that the estimates of GHG removals presented in the VCS Project Document are being met, and to identify and account for any unplanned

reductions in project carbon stocks, increase in project emissions or possible leakage outside the project boundary. Additionally, monitoring the project implementation will enable project proponents to objectively assess project components, identify gaps and deficiencies and use this information to improve both monitoring and management. This adaptive management approach is a key feature of the Rimba Raya program.

Approach to monitoring

Annual monitoring activities consist of remote sensing and G.I.S. analysis, routine field patrols and directed field sampling in areas prioritized by systematic site assessments. The monitoring system takes a hierarchical approach starting with medium resolution (30-50m) satellite imagery, then high resolution satellite or aerial imagery (5-10m), and finally with ground patrols.

A key feature of the Rimba Raya monitoring plan is to employ spatial data and tools to systematically monitor land cover change, forest degradation and carbon pools in the project area and project buffer. This is combined with ground-based surveys to investigate and record information on any activities that affect project carbon stocks and peat emissions (e.g. fire, logging). Such an approach improves the efficiency and effectiveness of directed field visits, which is essential for reliably monitoring the Rimba Raya project boundary in extensive and inaccessible peat swamplands.

This type of approach to field monitoring has been employed by project partner, Orangutan Foundation International, in the project area since 2004. Rimba Raya monitoring builds on the existing field reconnaissance, forest survey and G.I.S. team training, protocols and monitoring systems already in place for many years.

Types of data and information to be reported

As part of monitoring, any increases in GHG emissions that occur within the project boundary after the start of the project must be recorded and deducted from the baseline estimated emissions. The following information will be recorded in the project database and reported at annual verifications:

1. Area where natural or anthropogenic disturbances (including fire, illegal logging and other land use change) occurred within the project boundary by date, location, biomass lost or affected, and the preventative or curative measures, if any implemented.

2. Number and location of logging gaps by date, location, biomass lost or affected, and the preventative or curative measures, if any implemented.

3. Area and depth of peat burned within the project area by date, location, estimated peat emissions, and the preventative or curative measures, if any implemented.

4. Area of peat, if any, that was drained within the project boundary by date, location, estimated peat emissions, and the preventative or curative measures, if any implemented.

5. Information on forest protection practices

Data sources

Monitoring data will be derived from multiple direct sources including field measurements recorded using GPS, hardcopy field data sheets and electronic data recording instruments as well as spatial analysis tools including remote sensing, G.I.S., statistics and spreadsheet software. Other scientific research, academic literature and expert opinion will be used to supplement field measurement and analysis where appropriate and as recommended by the methodology. Such indirect sources are necessary for developing and refining reliable assessment tools for carbon accounting in peat swamps where the science is still new and growing. It is hoped that publication of Rimba Raya monitoring and research can help build this important regional database for similar REDD peat conservation projects.

Monitoring description

Monitoring will target land cover change and activities potentially affecting carbon stocks and GHG emissions in defined strata of the project boundary, project management zone (including 3km buffer) and leakage areas. Estimation, modeling, measurement and calculation approaches will follow requirements of the VCS methodology.

Routine monitoring patrols at guard posts, major waterways and project access points will be ongoing monthly as part of forest protection activities throughout the project management zone. Patrol activities will be compiled in quarterly reports.

Land cover change monitoring using readily available satellite imagery such as Landsat and ALOS will be monitored quarterly to ensure complete temporal and spatial coverage of the project management zone. In addition, high spatial resolution imagery such as Quickbird, Ikonos or LIDAR satellite data or aerial surveys will be collected annually for the carbon accounting area to record forest condition and identify forest gaps. Detected change will be recorded and investigated using image analysis techniques followed by survey patrols. These patrols will be deployed as needed depending on the frequency and scale of deforestation and will be used to record any new logging, canal building or other deforestation activity as described in the methodology. It is expected that such activities will be limited in the project area and that two to three annual patrols will be sufficient to report on activities and record damage. Land change monitoring reports will be compiled annually.

Fire monitoring will be conducted over a range of frequencies depending on the season and fire condition and will rely on the Fire Information for Resource Management System (FIRMS) delivery of MODIS satellite maps of hotspot and fire locations. After the rainy season begins, usually December, fire map data will be monitored monthly. As the dry season approaches, usually July, fire map data will be monitored weekly. And at the height of fire season, usually August-October, fire data will be monitored daily. Satellite monitoring will be implemented as part of the comprehensive fire plan and will be used to direct and deploy firefighting and survey teams on an as-needed basis. Fire monitoring and response activities will be reported annually at the end of fire season surveys.

Biomass plots surveyed at the project start were established on permanent transects and recorded to facilitate regular monitoring over the life of the project. Such monitoring is additional to methodology requirements but can provide detailed accounts of forest condition over time. Provided that all required

land change monitoring necessary for carbon accounting can be accomplished, biomass plots will be resurveyed every four to five years. By surveying in years 1, 5 and 10, three surveys will have been completed by the ten-year baseline reassessment required by VCS, thus allowing trends in biomass change to be detected.

The project boundary and stratification will be monitored for any changes to land cover that reduce project carbon stocks or increase GHG emissions. Since the project boundary is not a functionally discrete hydrological unit, a 3km buffer zone surrounding the project boundary will be monitored for new drainage activities that could potentially impact peat emissions inside the project boundary. Stratification of the project area will be monitored and periodically updated to incorporate any land change into revised land cover classification maps based on new data.

Leakage or activity displacement outside the project boundary will be monitored and accounted in order to adjust net GHG emissions avoided by the project. Monitoring will include existing or new concessions operated by PT Best (the agent of baseline deforestation) as well as any unpermitted land conversion by PT BEST.

Monitoring Components

There are eight major components of monitoring: three that are focused on project conditions and forest protection (Table 9) and five that are focused on annual land change assessment for carbon accounting (Table 10).

Table 9. Monitoring Components: Project Conditions and Forest Protection

Monitoring Component	Activity and Years	Times and periods	Detection frequency	Remote sensing data source	Field survey frequency	Reporting frequency
Boundary	Mark in field	Year-end	Non-specific	n/a	1 field survey annually	Annually
	Patrol Yr1-Yr30		Annually	Landsat 30m satellite imagery annually.		
Stratification	Land cover classification (Yr1 develop model, Yr2-3 refine model, Yr 4-30 apply standard model)	Year-end	Annually	Landsat 30m satellite imagery annually.	1 field survey annually	Annually
				PlanetScope 3m satellite imagery		

Forest Protection	Routine patrols and as-needed intervention (expanding coverage and intensity of intervention Yr-1 to Yr-3 in conjunction with community and stakeholder involvement)	Year-round	Quarterly	Landsat 30m satellite imagery annually.	1 patrol quarterly and as-needed	Quarterly

Table 10. Monitoring Components: Land Change Assessment for Carbon Accounting

Monitoring Component	Activity and Years	Times and periods	Detection frequency	Remote sensing data source	Field survey frequency	Reporting frequency
Land change	Detection and area calculation of land change caused by agents other than logging or fire (e.g. mechanical clearing)	Year-round	Semi-annually	Landsat 30m for detection PlanetScope 3m satellite imagery	2-3 field surveys annually	Annually
Logging	Detection and area calculation of deforestation caused by logging Detection and survey of transport canal-building associated with logging	Year-round with increased activity during wet season	Semi-annually	Landsat 30m for detection combined with field work PlanetScope 3m satellite imagery	2-3 field surveys annually	Annually
Fire	Detection of fire ignitions, calculation of burn areas (deforestation associated with fire)	Year-round with increased activity during dry season	Monthly, weekly, daily	MODIS imagery (1 km thermal band detects fires as small as 100m2 and imagery is collected and posted daily)	2-3 field surveys annually	Annually

				Landsat 30m for detection combined with field work PlanetScope 3m satellite imagery		
Biomass plot surveys **(not required)**	Survey of above ground biomass originally conducted for the baseline carbon assessment	End of year	None	Linked to high resolution aerial imagery (1-5m)	1 field survey every five years	10-year baseline reports
Leakage	New permit activity	Year-round	Quarterly	n/a	n/a	Annually

Managing Roles and Responsibilities

Monitoring will be carried out by RRC and OFI professional field and GIS teams under the direction of the project coordinator. Monitoring systems have been in place for the project management area since 2005 and have been and will continue to be improved by the project since 2008. Guard posts are staffed 24-hours with two full-time staff that carry out routine observations, nearby patrols and daily reporting via radio to the OFI office. The office operations manager records daily reports into a permanent log book. The GIS team led by a GIS manager collects remotely sensed imagery and conducts monitoring analyses in the office.

These analyses are provided to the field manager who uses this information to plan and schedule field surveys. The field manager prepares transportation and logistics and handles field budgets. Field team leaders direct staff in the field for conducting surveys, recording data and delivering data back to the GIS team who conducts data entry. Fire monitoring is similarly implemented with a specialized fire team manager and trained fire team. Field reports are written by field team leaders and provided to the project coordinator, as are GIS data and maps. The project coordinator uses this information to compile quarterly and annual reports and conduct or supervise the carbon accounting that must be reassessed every year prior to verification. The project coordinator also ensures the QA/QC plan is followed and is responsible for updating SOPs and coordinating regular team training as well as training of new personnel.

Managing data quality is key to conducting successful monitoring and will be accomplished by implementing a series of protocols and standard operating procedures, conducting annual training for field staff, implementing a QA/QC plan and assigning senior personnel to supervise key phases in data handling.

Field survey protocols are described in the Carbon Stock Assessment SOP and Forest Protection SOP. Data handling, storage and access methods follow the QA/QC plan as required by the VCS methodology.

These plans will be employed by project staff, updated annually, and included in annual monitoring reports.

In accordance with the VCS, the project proponent is committed to storing all project data in a secure and retrievable manner for at least two years after the end of the project crediting period. Project data will be stored and regularly maintained on redundant external hard drives at onsite (Pangkalan Bun, Central Kalimantan) and offsite (Jakarta) locations and secured with backup software using standard protocols. Any changes in these locations will be listed in annual verification reports. Project data will be managed by the Rimba Raya Conservation (RRC) project coordinator in conjunction with the GIS manager to ensure security, accessibility and long-term storage. In order to facilitate project management and long-term accounting, all primary data outputs supporting annual verification including the spatial database, will be stored and maintained for each 10-year crediting period.

Biodiversity Monitoring

Four broad categories of monitoring activities that address biodiversity management goals of the project include: (i) change in forest cover and condition; (ii) plant and wildlife population; (iii) quality and condition of aquatic habitats – including rivers and lakes – and of terrestrial wetland ecosystems such as marshes and inundated grasslands; and (iv) fires.

Forest Cover and Condition

As most biodiversity management goals are linked to the maintenance and protection of forests, monitoring the extent and condition of forest cover in the Project zone will be a top priority. This portion of the plan also links directly to maintenance and monitoring of carbon stocks, so the ultimate design of a forest cover and condition monitoring system must be sufficiently robust to describe change within acceptable levels of precision as required.

Forest cover and condition monitoring can be achieved through a combination of remote sensing methods and field observation. Medium-resolution imagery (e.g. Landsat 7) should be obtained and analyzed every six months, supplemented with high-resolution (Ikonos, QuickBird, or aerial photography) imagery obtained and analyzed on an annual basis. Forest cover and condition classes should be analyzed using at least three classes, e.g. > 70%, 70-50% and < 50% canopy cover. These classes can be defined first through image classification, but should then be investigated intensively on the ground during the first year to test that degradation classes based on image analysis in fact correspond to real difference in canopy cover, perhaps using basal area as an easily measured proxy.

Accurate interpretation of satellite imagery to classify forest cover and condition classes may require ecosystem-specific methods (e.g., peat swamp vs. kerangas vs. lowland dipterocarp forest) in order to increase global accuracy across the Project Zone.

Another form of field data collection that should be incorporated into a forest cover and condition monitoring plan is ground-based forest observation patrols. Because potential forest loss or degradation can take place at a spatial scale finer than what can be readily detected by satellite image analysis, a set of permanent 10-20 km transects should be marked and walked on a continuous basis

across all the major forest ecosystem types to monitor tree-by-tree losses in the Project Zone. This approach will provide direct evidence for individual trees losses (which may be permitted in some areas for subsistence purposes) and a robust measure of effectiveness for protection measures. Ground surveys to monitor logging within the Project Zone should operate on a continuous basis with quarterly interim reports and an annual summary.

Plant and Wildlife Populations

The fact that current hunting pressures and the incidence of capture of song birds for the commercial pet trade in the Project Zone appears to be low means that a robust program for monitoring the success of forest protection efforts will serve as a reasonably good proxy for success of overall biodiversity conservation efforts. However, such pressures could rise over time, and off-site impacts originating in oil palm plantations to the north or climate change more generally could intensify. A system must be in place to ensure such impacts can be measured over the duration of the project. For this reason, a monitoring program for targeted plant and wildlife populations in the Project Zone should be developed.

Such a monitoring program must include the following key elements:

- Selection and justification of focal taxa for monitoring purposes – this can be based on the status of individual species or guilds as iconic species, umbrella species, indicator species, top predators, or other keystone functions (e.g., predatory large forest cats; seed dispersal agents such as fruit bats, hornbills, or gibbons; strangler figs for frugivores; amphibians as indicators of disturbance).

- Selection and justification of parameters to be measured – alternatives include: (a) composition and diversity of species within a guild or taxonomic group (e.g., all birds or mammals or herptofauna; tall canopy trees; all primates or arboreal frugivores or understory birds); (b) population size and range movements of target taxa of exceptional importance (e.g., orangutan); or (c) changes in abundance and distribution of indicators for disturbance, such as relative abundance of closely related light-loving versus shade-dependent plant species (e.g., Macaranga versus Mallotus in the plant family Euphorbiaceae).

- Development and justification of taxon-specific approaches to sampling – these must be adequate to quantify mean and variance of the parameters, and with sufficient replication to detect meaningful changes in the parameters over time.

- Determination and justification of data collection schedules – should be at least once annually, but some data collection will be essentially continuous, such as forest monitoring outlined above and orangutan population surveys.

- Clarification and justification of analytical methods for data analysis to ensure data are adequate to capture changes in whatever parameters are being measured, such as population size for individual species of concern (e.g. orangutans), community composition, diversity, or species richness.

- Identification of who will do the data collection and analysis, what forms of training will be required, and who can deliver this training to increase local capacity both for increasing project awareness and involvement, as well as local job creation.

Quality and Condition of Aquatic and Wetland Ecosystems

Given the prevalence of open wetland or other hydrologically sensitive ecosystems within the Project Zone, consideration should be given to monitoring the status of these ecosystems. At a minimum, monitoring of water quality in the Seruyan River, and possibly nearby Lake Sembuluh, should be included in the plan.

Water quality measurements should include basic health and ecological parameters such as dissolved organic matter, sedimentation loads, pH and alkalinity, dissolved oxygen levels, and phyto and zooplankton loads, among other. Experts should be consulted in the development of specific methods of data collection and analysis, subject to the same quality considerations outlined under point (ii) above.

Fire

The seasonal occurrence of fire in periodically inundated grasslands, which historically have been a main source of ground fires, should be monitored. Periodic fires have direct negative impacts on resident wetland wildlife, and can set back the regeneration or accumulation of biodiversity habitat in these important areas. Moreover, such burning, especially in peat areas, has off-site negative impacts on water quality in the Seruyan and air quality in the Project Zone (which can affect pollination success of insect-dependent plant species). Such fires also increase the risk of wildfires spreading from the south into the mature central areas of peat swamp forest.

Improved Ecosystem Mapping

This component will be required to refine the current understanding and delineation of ecosystem types in the Project Zone, which will enable improvements in carbon estimation; description of flora and fauna known or likely to be present; population estimation of rare, threatened, or endemic/restricted-range species (especially wetland specialist birds); and development of more detailed management activities to ensure long-term conservation of ecosystem and associated biodiversity. Accurate ecosystem mapping will require a combination of GIS, remote sensing, and field survey techniques to describe vegetation types based on structural attributes and diagnostic species assemblages. Mapping should take advantage of any high-resolution imagery or aerial photography used for other components of the Rimba Raya project (e.g., carbon estimation) to develop a draft vegetation map integrating these data with other secondary sources such as improved soil maps, geology, and RePPProT land systems.

Confirmation of Species Likely or Potentially Present

Apart from the orangutan and a limited number of other species, most of the biodiversity data prepared for the PDD are inferential, based on geographic range of species and availability of suitable habitat

rather than on direct observation. For this reason, most species are listed as likely or potentially present in the species tables. Field surveys will be required during Phase II to confirm the presence of these species in the Project Zone, so as to deepen understanding of the overall biodiversity value of the area and spatial patterning of biodiversity within it. This work will be vital to prioritize conservation actions and develop more detailed monitoring plans. In the medium term, it should be adequate for surveys to focus on major taxonomic groups, including plants, birds, mammals, and herptofauna. In the future, surveys can be expanded to include less studied groups, including insects, fish, and aquatic invertebrates. The surveys should be designed as general inventories of all species encountered, but where possible special emphasis should be placed on confirming the presence of rare, threatened, or endangered species.

Botanical Survey. Botanical and descriptive vegetation surveys provide the basis for understanding spatial patterning of biodiversity. Such surveys will be required during Phase II to document more fully the diversity of plant species present in the Project Zone, which to date has not been formally surveyed and is certain to be diverse. The area likely shares many species in common with nearby Tanjung Puting, but direct survey will still be required in order to provide a baseline for ongoing monitoring in the Project Zone. One area of special consideration should be the survey of orchids and other rare epiphytic plants, which are likely to be present in diverse numbers given the presence of peat swamp and kerangas forest types. This work requires specialized skills, however, which might be sourced through the Herbarium Bogoriense in Cibinong, West Java.

Avifaunal surveys. Birds can be an extremely useful and cost-effective indicator of habitat quality and diversity due to the dependency of certain species on specific habitat types that retain relatively intact ecosystem function. Such surveys must be performed throughout the Project Zone to begin developing a sense for areas rich in rare, threatened, or protected bird species as a means for prioritizing conservation and habitat protection activities. Bird surveys should be carried out in coordination with surveys for other taxa, in particular plants, and the selection of survey sites should be informed by refined vegetation maps.

Mammal surveys. The indicator value of most readily surveyed mammal species is lower and less cost-effective than of birds. Mammal surveys should be carried out in coordination with surveys for other taxa and, as for birds, the selection of survey sites should be informed by improved maps of ecosystem types and condition. The orangutan merits special attention during mammal surveys, and should perhaps be considered a survey project unto itself. The primary goals of orangutan surveys should be to map orangutan distribution within the Project Zone, estimate approximate population densities within different ecosystem types (in particular peat vs. not-peat and mature vs. recently disturbed areas), orangutan ability to move among different ecosystem types, and threats to population persistence (if any) beyond factors related to the direct risk of habitat loss by conversion to oil palm.

Herptofauna surveys. Reptiles and amphibians can be very informative indicators of habitat quality due to their small body size, porous skin, and dependence (in some cases) on remarkably narrow ecological niches characteristic of mature natural habitats. Herptofauna surveys can be extremely time-intensive, however, making it difficult to sample with sufficient replication across large areas to characterize large landscapes. Herp surveys also require specialized skills for confident identification. These downsides

notwithstanding, herptofauna surveys must be given high priority during Phase II, as the predominance of wetland and/or waterlogged ecosystem types are very suitable habitat for amphibians in particular.

One Critically Endangered species of herptofauna was identified as potentially present in the Project Zone: the Painted river terrapin (Callagur borneoensis). This species is known to inhabit tidal portions of rivers and estuarine mangrove areas, where it feeds on fruit, leaves, and clams. Females nest on sand beaches along riverbanks and coastal beaches. Distribution of the species on Borneo is unclear, but based on preliminary descriptions of habitat types in the south of the Project Zone, the species is considered potentially present. Follow-up surveys should address this possibility.

Other aquatic reptiles of concern – and which should be surveyed in tandem with the Painted river terrapin – are the False Ghavial (Tomistoma schlegelii) and the Estuarine Crocodile (Crocodylus porosus). The False Ghavial is considered Endangered by IUCN and has been hunted to extinction throughout much of Borneo. The species is still present in nearby Tanjung Puting, and may also be present in the Seruyan River inside the Project Zone. The Estuarine Crocodile (Crocodylus porosus), also present in Tanjung Putting, is listed as lower risk by IUCN, but has suffered severe overhunting and is listed as CITES Annex II and protected by Indonesian law. While conducting social surveys in the Project Area, villagers reported that crocodiles still exist in the Seruyan River and its tributaries. Surveys for both species should therefore be considered.

Bird Survey of Lake Sebuluh

Migratory and aquatic birds associated with Lake Sembuluh on the eastern edge of the Project Zone comprise a category of avifauna of special interest for survey. Some 62 bird species from 11 families that use inland or sub-coastal wetlands are considered potentially present at Lake Sembuluh, as regular migrants or seasonal non-breeding visitors. Species of conservation concern include 31 'shorebirds' or 'waders'; 10 herons, egrets, and bitterns; six ducks; six rails and crakes; three gulls and terns; two kingfishers; and four migratory passerines. Twenty of these species are protected under Indonesian law, and four are listed as Near Threatened by IUCN – the Band-bellied Crake (Porzana paykullii) and three Palearctic waders: Black-tailed Godwit (Limosa limosa), Eurasian Curlew (Numenius arquata), and Asian Dowitcher (Limnodromus semipalmatus). Sixteen of these species have been recorded previously at nearby Tanjung Puting and may also be present in the Project Zone.

4.4 Net Positive Natural Capital and Ecosystem Services Impacts

The net biodiversity benefit for the Project Zone over the project lifetime will clearly be positive, as seen in a comparison of the 'with project' and 'without project' scenarios along any metric. The 'without project' scenario equates to conversion of most or all remaining forests in the Project Area to oil palm plantations, currently the greatest threat to biodiversity in the Project Zone and throughout Borneo more generally. Four oil palm plantation licenses have already been issued inside the Project Area, covering 47,237 ha of mature to lightly disturbed forest. A fifth plantation to the north is already operational and was therefore excluded from the Project Area. This plantation and has cleared large areas of forest on peat and mineral soils with direct negative impacts on biodiversity on site and associated off-site impacts, including apparent increases in the occurrence of fire.

Without the project, the other four oil palm license areas will soon become operational, likely extending their reach beyond authorized boundaries and placing the entire Project Zone at risk. The realization of this threat will lead to a sharp decline in the biodiversity of the Project Zone through direct negative impacts of land clearing and associated indirect impacts (e.g., providing access to more remote forests – including the nearby TPNP – for hunting, illegal logging, and the draining of peat swamp forest.

Conservation efforts planned by the project to protect all remaining natural forests and other natural ecosystem by (i) reducing fire risk through prevention of widespread illegal logging, (ii) fighting fires through immediate detection using observation towers and rapid response through deployment of firefighting teams and equipment, and (iii) prevention of continued expansion of oil palm will result in net positive impacts on forest conservation and forest area, endemic, rare, and endangered species and ecosystems, natural capital and ecosystem services. Additional information on natural capital and ecosystem services impacts can be found in the document titled Rimba Raya Project CCB_VCS Monitoring Report 2017_2019 MP5 v1.3.

Project Activities and Invasive Species

The Rimba Raya project plan includes both an enrichment component for forested areas (divided into 40 blocks, I - XL) that may have been slightly degraded due to illegal logging, and a restoration component for deforested and highly degraded areas (divided into 60 blocks, A – BH) that require significant restoration work. The species to be used for enrichment and rehabilitation are listed in Table 11 below. None of these species is invasive.

Table 11. Species to be used for Rimba Raya project restoration and enrichment activities

No.	Species		Block Plantation
	Local Name	Scientific Name	
I	ENRICHMENT PLANTING		
1	Meranti	Shorea sp.	I - XL
2	Jelutung	Dyera costulata	I - XL
3	Ramin	Gonystylus bancanus	I - XL
4	Keruing	Dipterocarpus sp	I - XL
5	Ulin	Eusideroxylon zwageri	I - XL
6	Tengkawang	Shorea stenoptera	I - XL
7	Merawan	Hopea sp	I - XL
8	Dahu	Dracontomelon sp.	I - XL
9	Melur	Dacrydium sp	I - XL
10	Gelam	Melaleuca sp	I - XL

11	Nyatoh	Palaquium sp)	I - XL
12	Terentang	Campnosperma sp	I - XL
13	Pulai	Alstonia scholaris	I - XL
14	Durian Hutan	Durio Sp.	I - XL
15	Bintangur	Callophyllum sp.	I - XL
16	Jambu-jambu	Eugenia sp.	I - XL
17	Kayu Arang	Diospyros sp.	I - XL
18	Resak	Vatica sp.	I - XL
19	Puspa	Schima sp	I - XL
20	Saninten	Castanopsis sp.	I - XL
21	Gembor,	Alseodaphne spp.	I - XL
22	Karet hutan (Hevea brasiliensis Mull.Arg)	Hevea brasiliensis Mull.Arg	I - XL
II	REHABILITATION PLANTING		
1	Jabon	Antocephalus cadamba	A-BH
2	Binuang	Octomeles sumatrana Miq	A-BH
3	Makaranga	Macaranga sp	A-BH

Project Activities and GMOs

Project proponents guarantee that no GMOs will be used to generate GHG emission reductions or removals.

Potential Negative Offsite Biodiversity Impacts

The project is unlikely to have any negative impacts on biodiversity outside the Project Zone resulting directly from project activities. There is the possibility for activities currently active in, or slated for, the Project Area to be displaced into neighboring areas or other parts of Kalimantan. For example, oil palm companies that are unable to operate in the Project Area (as a result of the project) may purchase licenses to operate in neighboring areas, having a clear negative impact on biodiversity in that area. Similarly, illegal logging currently taking place in the Project Area may be displaced into other neighboring areas, intensifying damage to these areas.

At a landscape spatial scale, oil palm development and illegal logging will continue to spread into other areas regardless of project activities in the Project Area. This can be argued based on the current distribution of both activities in and near the Project Zone, existing oil palm licenses in the region, local development plans for a major Crude Palm Oil export facility on the southern coast of the Project Area

and ongoing expansion of both activities across Kalimantan. For oil palm, current land use planning in Kalimantan, current and predicted expansion rates for oil palm in Kalimantan, and continued market demand for this relatively inexpensive oil indicate that oil palm will continue its rapid expansion. For illegal logging, a lack of enforcement of Indonesian laws limiting unpermitted logging and timber export, and continuing global markets for cheap, illegal wood, indicate that this threat to biodiversity will also continue.

The project's presence may shift the spatio-temporal dynamics and/or intensity of when these activities reach other areas in the immediate vicinity, but given the full range of factors driving oil palm expansion mentioned above, the incremental impact within the Project Zone and adjacent areas is likely to be small. One possible exception is the short-term response of the four oil palm companies whose licenses are retired if the project is implemented as planned. If these licenses are simply retired through a commercial transaction, then off-site biodiversity impacts will be zero. If a license swap is pursued, whereby the current licenses are retired and/or traded for licenses in new areas, then biodiversity impacts in these new areas will be negative. In this scenario, net biodiversity impacts will depend on exactly where such licenses are established, and subsequent comparisons of biodiversity gains in the Project Area compared to biodiversity losses where the new licenses are issued. The project has a clear plan for tracking the future business activities of the companies whose licenses will be retired in the 'with project' scenario.

From a biodiversity perspective, both oil palm and illegal logging are environmentally unsustainable options, to be minimized or avoided wherever possible. By creating and protecting a large area of natural habitat contiguous with TPNP, the project will be helping to maintain and enhance biodiversity in a region that would otherwise be degraded or lost to these two activities. Maintaining biodiversity in rain forests is highly dependent on maintaining ecosystem dynamics between species, and retaining large enough tracts of habitat for species with the largest ranges. Oil palm plantations completely uncouple ecosystem dynamics and illegal logging can heavily disturb the dynamic and make forests susceptible to fire, which results in vast losses of biodiversity.

To gauge off-site impacts to biodiversity that may be caused by the project, project proponents will monitor the movements and business activities of oil palm companies that will retire their licenses in the Project Area as a result of project activities. To mitigate the potential off-site impacts of oil palm displacement, project proponents will attempt to cooperate with displaced companies via leakage contracts to shift their operations to non-peatland that has already been deforested.

The project will also document the political economic dimensions of illegal logging activities in the Project Zone (e.g., where loggers originate, who is funding the illegal logging) and report the activity to appropriate authorities. Alternative job opportunities will be sought for local residents involved in the illegal logging through community development initiatives. The project will also attempt to track where illegal logging operations relocate, in an effort to monitor off-site impacts to biodiversity.

It should be noted, finally, that any potential off-site negative impacts to biodiversity will be more than offset by the projects role as a physical buffer to Tanjung Puting National Park and the protection that the project will offer to the park's biodiversity.

Demonstration of Net Positive Biodiversity Impacts

The evaluation of on-site biodiversity benefits of the project in comparison to potential off-site unmitigated negative impacts can be framed as follows:

There is a risk that disturbance to remaining biodiversity in neighboring areas may intensify more quickly than it would without the project (off-site negative impacts), which may offset to an unknown degree the enhanced security of an important, at-risk biodiversity area that would eventually be lost without the project (on-site positive impacts).

Given that the areas to be protected by the project – namely, nearby TPNP and the associated buffer zone – are widely acknowledged as the most important biodiversity reservoirs in southern Kalimantan, and that they are both highly threatened, any rational evaluation strongly suggests that net impacts will be overwhelmingly positive.

5 OPTIONAL: CLIMATE MODULE

Prior to seeking validation under SD VISTA, the project has been verified under VCS and has claimed 7,722,728 tCO2e emissions reductions and removals. The project plans to continue claiming greenhouse gas (GHG) emissions reductions and removals. Please see VCS monitoring reports and project description document (available on Verra project portal) for more information on project methodology, monitoring, verified carbon units, and net emissions reductions.