Rimba Raya REDD+
Biodiversity Reserve, Indonesia

Based on the island of Borneo in Indonesia, this REDD+ project preserves carbon-dense tropical peat swamp by helping to halt deforestation of roughly 47,000 hectares of forest originally slated for conversion to palm oil plantations. The project focuses on both community development and biodiversity conservation, particularly the protection of the endangered Borneo Orangutan.

In order to deliver on its goals, the project actively engages local communities to improve food security, income opportunities, health care, and education.

The area

The Rimba Raya Biodiversity Reserve is based on the southern coast of the island of Borneo in a carbon-dense tropical peat swamp forest which is part of the Seruyan River watershed. The project's wildlife and carbon stocks are being protected mainly through physical barriers and management regimes: the construction and operation of guard towers, fire protection plans and infrastructure, monitoring plans, and orangutan care facilities. In addition, the project plays an important role in ecosystem conservation by expanding habitats within a Key Biodiversity Area, as it is situated adjacent to Tanjung Puting National Park. Rimba Raya provides a natural buffer to the park which is renowned for providing one of the few remaining habitats for orangutans and recognised as a world Biosphere Reserve by the United Nations (UN).

The country, deforestation and biodiversity

Indonesia's forests represent 10% of the world's remaining tropical forests. Its deforestation rate has doubled over the last decade from approximately 1 million hectares per year in 2001-2003 to more than 2 million hectares per year in 2011-2012.[1] The Food and Agriculture Organization of the United Nations (FAO) estimates that Indonesia has lost over 20% of its forest cover between 1990 and 2010. It is also estimated that over 85% of the country's greenhouse gas (GHG) emissions derive from deforestation and peat fires, driven primarily by agricultural expansion.[2] [3] Agricultural conversion has come largely from palm oil plantations along with subsistence agriculture, mining and logging.

Including land-use change and deforestation emissions, Indonesia is thought to be the 7th largest emitter of greenhouse gas emissions globally.[4] However, this does not take into account emissions from peat land conversion: the World Resources Institute (WRI) estimates Indonesia to rank third globally in GHG emissions when these are taken into account.[5] At the same time, Indonesia is a non-industrialised nation with an economy which accounts for less than 1.5% of global GDP. It is this combination of high rates of deforestation, critical areas of biodiversity importance, and economic wealth which make carbon finance critical in order to halt emissions from deforestation and protect biodiversity.

In addition to being important for their carbon content, tropical peat swamps play an important role in biodiversity conservation. The Sundaland hotspot, largely dominated by the islands of Borneo and Sumatra, is in the top five 'hottest hotspots': it contains plants and animals that amount to up to 5% of total species world-wide, while having less than 8% of its primary vegetation remaining.[6] Biodiversity Hotspots are areas featuring exceptional concentrations of endemic species while experiencing exceptional loss and threat to habitat.

According to the International Union for the Conservation of Nature (IUCN) Red list, Indonesia in general has the largest number of threatened mammal species in the world and the fourth largest total across flora and fauna species types.

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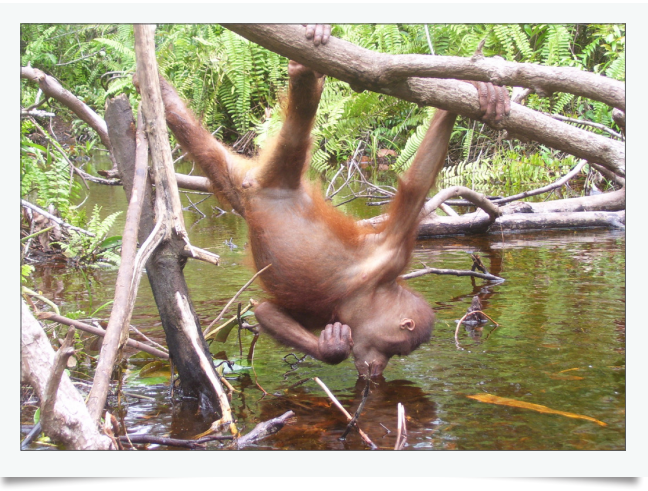
[1]http://www.nasa.gov/content/goddard/nasa-usgs-landsat-data-yield-best-view-to-date-of-global-forest-losses-gains/#.UuLZIRAo7IU
[2]http://www.cifor.org/publications/pdf_files/Books/BVerchot0101.pdf
[3]http://theredddesk.org/countries/indonesia
[4]WRI's Climate Data Explorer tool (CAIT 2.0)
[5]http://www.wri.org/our-work/project/forests-and-landscapes-indonesia/forests-agriculture
[6]Biodiversity hotspots for conservation priorities, Nature

Palm oil

Nearly 85% of global palm oil production currently comes largely from Indonesia and Malaysia, with the industry predicted to double by 2020.[7] Meanwhile, a large percentage of palm oil expansion in these two countries occurred at the expense of virgin and biodiverse forests, many of which lie on top of carbon-dense peat bogs.

In addition to the released carbon emissions, palm oil conversion causes a host of other ecological problems, often irreversible, including destruction and fragmentation of habitat for endangered species, soil erosion and increased sedimentation in rivers, air pollution from forest fires, soil and water pollution from heavy use of pesticides and dumping of untreated palm oil-mill effluent, and increasing flood frequency. The water pollution and flood frequency has a measurable impact on downstream agricultural productivity and the welfare of communities. In addition, after approximately 20-25 years, the palm oil plantations are often no longer productive and they must move to new areas, as the soils can take many years to recover.



Peat

Palm oil is a lucrative business, especially on peatlands where 25% more profit can be made. However, the GHG emissions are nearly four times greater than if palm oil conversion is from primary forests on mineral soils (and even more so on already degraded land).[8] Peat is formed, usually in marshy areas, when plant materials are inhibited from fully decaying under anaerobic conditions. As a result it has high carbon content. Peat soils are drained for a variety of agricultural activities as well as extraction for fuel use. Through oxidation, this drainage process releases 5,000 to 10,000 years' worth of stored carbon. Further emissions are released from peat through fires, which is common practice after the peat forests have been logged and degraded.

Indonesia has by far the highest GHG emissions from peatlands due to drainage and deforestation globally. It is estimated that 900 million tonnes of carbon are being emitted per year.[9]

Ecosystem conservation

Enrichment and rehabilitation

In addition to protecting the area against deforestation, the Rimba Raya project has committed to undertaking significant enrichment activities in the area through planting seedlings of native dipterocarp and other native tree species (particularly jabon, binuang, and makaranga, which thrive in degraded conditions).

Protecting orangutans

The Tanjung Puting National Park is home to approximately 10% of the global orangutan population and there is significant presence in the areas surrounding the park as well, making the Rimba Raya Project crucial in helping protect the species. The project is the largest donor to date to The Orangutan Foundation International (OFI), which rescues orangutans orphaned by deforestation, rehabilitates them, and releases them back into the wild.

It is believed that over 80% of orangutans' habitat in Asia has been destroyed, leaving them only currently found in the rainforests on the islands of Borneo and Sumatra. With approximately 55,000 Borneo Orangutans left in the wild, the United Nations Environment Programme believes that, if the trend of illegal logging, fire, and extensive development of oil palm plantations continues, they will become extinct in as short a time frame as 10 to 20 years.

Protecting other species

Maintaining large areas of contiguous habitats plays a vital role for other species in the area too. Peat swamp forests are key habitats for the unique proboscis monkey (Nasalis larvatus), which are found only in coastal and riverine habitats in Borneo. The area is also considered an Important Bird Area (as identified through Birdlife International) with more than 200 bird species recorded in the Tanjung Putting National Park.

Community activities

There are 14 villages in the Rimba Raya project area, totalling approximately 11,000 people with an average household income of around $1.80 per day. The project engages and works with all local stakeholders in the project area and is investing in the development of social programmes to help alleviate many of the pressures that drive deforestation. By addressing these issues of poverty, hunger, disease and lack of adequate shelter, the project can enhance its role in providing a buffer area to the project and national park. Community surveys are used to help determine which social programmes the surrounding villages prioritise for implementation.

Improving food security:

The project plans to implement a community-based agroforestry programme of native species, which will contribute to the project's commitments in both reforesting degraded lands and improving agricultural productivity. Additionally, the project has developed low-impact aquaculture programmes which have played a significant role in replacing the traditional reliance of communities on burning out swamp forests for the creation of seasonal lakes for fish harvesting.

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[7]FAOSTAT (2012) Online statistical service. Available:http://faostat3.fao.org/home/index.html#VISUALIZE.
[8]http://www.cifor.org/publications/pdf_files/Books/BVerchot0101.pdf
[9]http://www.wetlands.org/Whatwedo/Savingpeatlands/Carbonemissionsfrompeatlands/tabid/2738/Default.aspx

Improving income:

In addition to increased agricultural productivity, the mixed-agro forestry initiatives provide communities with opportunities to sell excess output of cash crops including fish, fruit, rubber trees, and vegetables.

Additionally, a number of direct employment opportunities have been created in order to patrol the reserve, care for the orangutans, monitor the carbon and biodiversity of the project, and help with project management and community development activities. A goal of employing at least one member of 50% of families by 2015 has been set.

Improving sustainable energy access:

Fuel-efficient cookstoves are being given to the communities, reducing smoke during cooking and decreasing pressure on nearby forests for fuel wood. The stove distribution programme is currently in early stages, but the intention is to make them available to everyone in the project area.

The project is also planning to initiate a programme for biochar briquette production. Traditionally rural communities use raw biomass or compressed charcoal as an energy source, which is both inefficient and degrades the surrounding environment; the production of sustainable biochar briquettes provides an additional opportunity for community based enterprise. Importantly, bioachar enriches soils and can therefore also help in improving food productivity and security.

In addition, the project intends to develop solar energy for the communities to help provide electrification to quite a remote area. A pilot project is under consideration in village community centres, which act as schools, to provide reading light and enough voltage to charge mobile phones.

Improving health:

The Rimba Raya project has developed a health care and immunisation programme and a floating clinic, which delivers medical services up and down the Seruyan River, effectively serving all of the communities in the project zone. The project is partnering with the NGO, Health in Harmony, to provide education on all aspects of disease control such as HIV/AIDs. Another partner, World Education, is providing education about sanitation facilities.

Community surveys highlighted access to clean drinking water as a key priority in the area. As a result, the project has partnered with Potters for Peace (a member of the World Health Organisation's International Network) to train local communities in making and selling inexpensive water filtration devices that are effective in eliminating approximately 99.88% of water-borne disease agents. The project has also begun distribution of colloidal silver water filtration systems to provide clean drinking water.

Carbon and community monitoring

The Rimba Raya Project is verified and validated to the Verified Carbon Standard (VCS). The carbon emission reductions are calculated from a protected area of approximately 47,000 hectares. However, the total management zone of the project compromises over 64,000 hectares with the additional area acting as a buffer around the carbon accounting area and supporting all the project's community and conservation activities.

In addition to the VCS validation for carbon accounting, the project also ensures there are net positive community and biodiversity impacts and conforms to the Climate, Community, and Biodiversity (CCB) standard. The project has achieved Gold Level status under the CCB standard as it both significantly assists communities in adapting to the impacts of climate change and displays high biodiversity benefits.

Project partners

InfiniteEARTH has developed and implemented this ground breaking REDD+ project with the primary objective of forming an alliance between conservation, community, and commerce to preserve high Conservation Value Forests that are also habitats for endangered species. The project has also partnered with a number of other groups and NGOs to assist in the project development, including World Education, Potters for Peace, the Organization for Tropical Studies, the Centre for International Forestry Research (CIFOR), and Health in Harmony, an organisation which links conservation activities with health care.

Location

Rimba Raya is located in the Seruyan Regency, in the province of Central Kalimantan, Indonesia. It 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.