

The Heart of Borneo

Subjects: Environmental Sciences

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The HoB is situated in Borneo, the third-largest island in the world next to Greenland and New Guinea. It is shared by Indonesia (Kalimantan) covering an area of 745,567 square kilometers (km²), Borneo Malaysia, comprising the states of Sarawak and Sabah with an area of 124,449 km² and 73,711 km², respectively, and a small-nation state, Brunei Darussalam (5765 km²). The rainforests in Borneo, which evolved between 100 and 150 million years ago, are among the most biologically diverse on Earth. Representing just one percent of the earth's terrestrial surface, the island of Borneo holds about six percent of the world's plant and animal species. There are approximately 15,000 flowering plants and 3000 species of trees found in Borneo's forest, including 6000 endemic species. The biologically diverse island is recognized as a globally significant biodiversity 'hotspot'. In addition, the uplands of Borneo are a source of at least 14 of the 20 major rivers on the island. Thus, environmentally sustainable resource management is critically important in maintaining the ecological health of riverine systems, which underpin the socio-economic progress of 17 million people in Borneo.

Keywords: transboundary ecological conservation ; indigenous adat (custom) ; value monism

1. The Heart of Borneo: The World's Ecological Treasure Trove

First, a brief introduction of the Heart of Borneo (HoB) is in order. The HoB is situated in Borneo, the third-largest island in the world next to Greenland and New Guinea. It is shared by Indonesia (Kalimantan) covering an area of 745,567 square kilometers (km²), Borneo Malaysia, comprising the states of Sarawak and Sabah with an area of 124,449 km² and 73,711 km², respectively, and a small-nation state, Brunei Darussalam (5765 km²). The rainforests in Borneo, which evolved between 100 and 150 million years ago, are among the most biologically diverse on Earth.

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In an attempt to protect the environmental integrity of the ecological treasures of Borneo, the governments of Indonesia, Malaysia, and Brunei Darussalam, in cooperation with the World Wildlife Fund for Nature (WWF), formally created a regional environmental protection framework known as the Heart of Borneo Initiative (HoBI) in 2007. This trilateral initiative also aims to promote sustainable development that improves the welfare of the local people. The adoption of HoBI resulted in the initial mapping of 23 million hectares of natural landscape straddling the transboundary highlands of Kalimantan in Indonesia and the states of Sarawak and Sabah in Borneo Malaysia, and extending to the foothills in adjacent lowlands and parts of Brunei Darussalam for conservation purposes. This massive transboundary ecological system is known as the Heart of Borneo (HoB) (**Figure 1**).

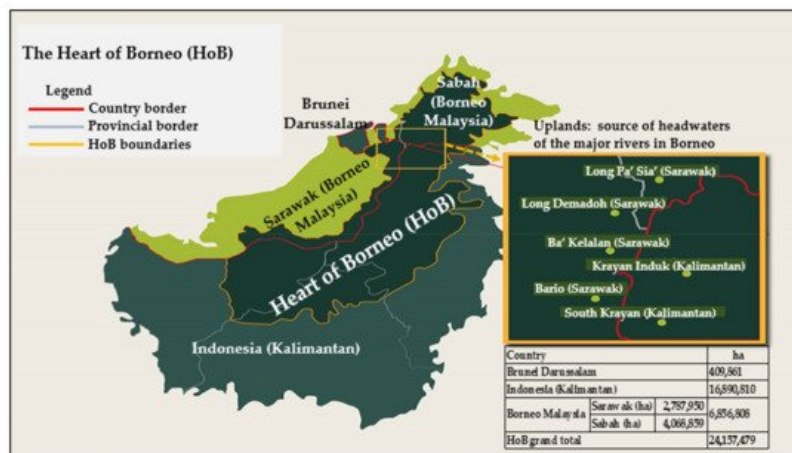


Figure 1. The Heart of Borneo location.

The HoB lies across 60 percent of the total area in Kalimantan (16.8 million ha), about 38 percent of Borneo's landmass, Borneo Malaysia (six million ha), and just under two percent (340,000 ha) in Brunei Darussalam. Later, it was increased to 2.4 million ha, with Sarawak and Sabah expanding their Protected Area networking to HoB by an addition of 600,000 and 125,865 ha, respectively (**Table 1**). In 2018, Sarawak extended its HoB areas further to 2.69 million ha, extending from Batang Ai to the western region of Sarawak [4]. It may be noted that most of Sabah's forests are located within the HoB while most of the HoB areas in Sarawak are located in the highlands, which are essential watersheds that contain the headwaters of the Baleh, Murum, and Bakun dams [5].

Table 1. The composition of the Heart of Borneo.

Country	Region	ha	ha
Brunei Darussalam	Belait	264,005	
	Temburong	94,785	
	Tutong	51,071	
	Brunei Darussalam HoB sub-total		409,861
Indonesia	West Kalimantan	4,916,316	
	Central Kalimantan	3,008,377	
	East Kalimantan	3,756,673	
	North Kalimantan	5,209,443	
	Indonesia HoB sub-total		16,890,810
Malaysia	Sarawak	2,787,950	
	Sabah	4,068,859	
	Malaysia HoB sub-total		6,856,808
	Borneo HoB grand total		24,157,479

The HoB, which represents roughly 30 percent of Borneo's landmass, is one of the world's largest remaining transboundary rainforests. It is home to a range of threatened species, including orangutans, pygmy elephants, clouded leopards, proboscis monkeys, and the critically endangered Sumatran rhino. Since 1995, more than 500 new species have been discovered within the HoB [6]. The HoB also serves as a life-support system to provide various ecosystem services to approximately 11 million people in Borneo [7]. Approximately one million indigenous people depend directly on HoB's natural resources for socio-economic sustenance and cultural practices [3][7]. The HoB is not only the key watershed area for the provision of water ecosystem services on the island, but also serves a critically important function in regulating local, regional, and global warming.

2. The Heart of Borneo Transboundary Resource and Environmental

Management System

The HoB Strategic Action Plan (HSAP) was formulated under the HoBI to enhance regional cooperation to promote sustainable resource use and management practices on the island. The plan also aims to promote green economic transformation in the HoB region. Within the present context, the HoB green economic transformation may be defined as a development strategy that meets the need to balance the three pillars of sustainable development, namely, environmental, economic, and social sustainability. The following strategic means were designed under the HSAP to guide the direction of this green transformation process (**Figure 2**):

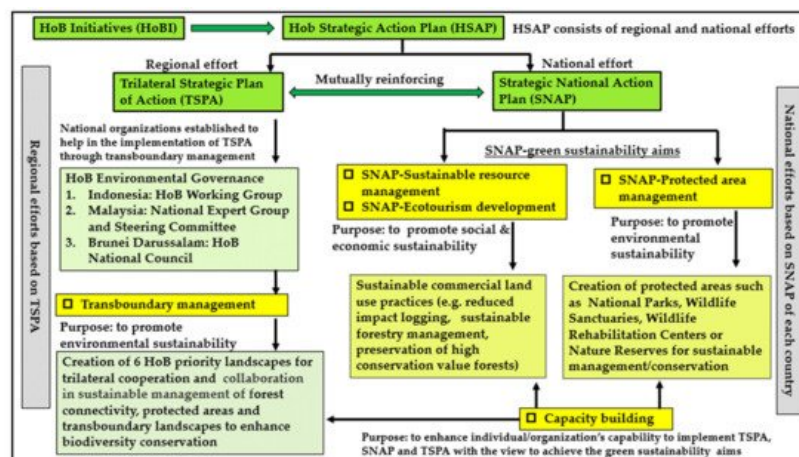


Figure 2. The Heart of Borneo framework of green economic transformation.

1. Transboundary management: to promote environmental sustainability
2. Protected area management: to promote environmental sustainability
3. Sustainable resource management: to promote environmental sustainability
4. Ecotourism development: to promote socio-economic sustainability
5. Capacity building: to enhance individual/organization's capability/capacity

With reference to **Figure 2**, the HSAP may be explained from a regional and national perspective. From a regional perspective, leaders from all member countries agreed to establish a Trilateral Strategic Plan of Action (TSPA) to serve as a general guide for transboundary management of the forest connectivity of mountain ranges. This Action Plan aims to conserve the ecological integrity of HoB transboundary wildlife connectivity corridors to protect various endangered species such as Borneo orangutans, Borneo pygmy elephants, Kalimantan hornbill, and Muller's gibbon, among others, that thrive in the regions. Six transboundary HoB landscapes comprising various national parks, jungle of forest reserves, and conservation areas were established to expedite biological and environmental conservation efforts (**Figure 3**).

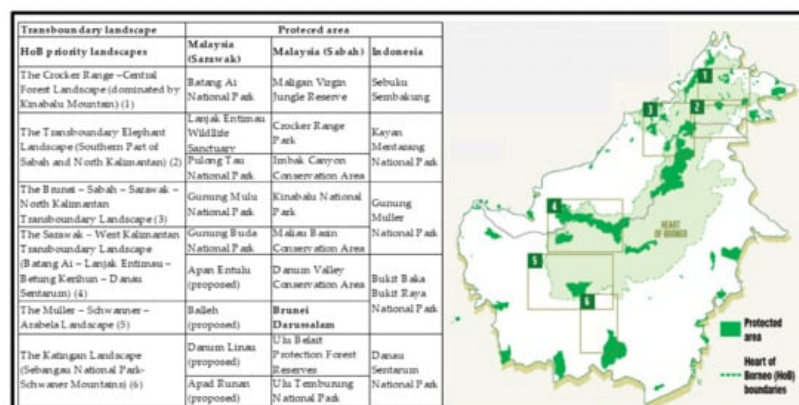


Figure 3. The Heart of Borneo priority/transboundary landscapes. Source: [1][8].

Figure 3 may be briefly summarized as follows:

1. The Crocker Range-Central Forest Landscape is dominated by the Kinabalu Mountain. It embraces various protected areas such as the Maliau Basin Conservation Area, Imbak Canyon Conservation Area, and Danum Valley Conservation Area in Sabah—collectively known as the DaMal (Danum-Maliu-Imbak).

2. The Transboundary Elephant Landscape covers the southern part of Sabah and North Kalimantan and is dominated by the Sebuks Sembakung Park (North Kalimantan). The Park contains one of the most complete concentrations of biodiverse species in Borneo.
3. The Brunei-Sabah-Sarawak-North Kalimantan Transboundary Landscape is a trilateral landscape that provides connectivity from Brunei to North Kalimantan through Sabah and Sarawak. It includes eight national parks from three countries: Kinabalu (Sabah), Gunung Mulu (Sarawak), Kayan Mentarang (northern part of East Kalimantan), and Ulu Temburung (Brunei).
4. The Sarawak-West Kalimantan Transboundary Landscape comprises the Batang Ai National Park (Sarawak), Lanjak Entimau Wildlife Sanctuary (Sarawak), Danau Sentarum National Park (Kalimantan), and Betung Kerihun National Park (Kalimantan).
5. The Muller-Schwanner-Arabela Landscape is a connection between Muller Mountain and Schwaner Central Mountain.
6. The Katingan Landscape provides an ecological connection between the Schwaner Mountains and Sebangau National Park (peat swamp forest type), with surrounding carbon-rich peat lands adjoining it. It also covers part of the Bukit Baka-Bukit Raya National Park (highland forest type) in the Schwaner Mountains.

From a national perspective, to reinforce regional transboundary management, each country has formulated its own Strategic National Action Plan (SNAP) to guide: (i) sustainable resource management, (ii) ecotourism development, and (iii) protected area management. To reinforce regional transboundary management, each country has established a network of protected areas such as national parks, wildlife reserves, and forests to enhance biological conservation, especially in the shared border areas (environmental sustainability). Notably, some parts of the HoB designated area already had a protected status before establishing the HoB trilateral ecological system. In total, as shown in **Figure 3**, 23 protected areas, including four proposed areas, were established or reaffirmed within the HoB region. Protected area management also serves as a critical means to enhance biological conservation while promoting sustainable economic use of natural resources in the region. Ecotourism has the promotion of social equity and environmental sustainability at its core. It emphasizes the positive effects of employment and revenue generation through nature adventure and indigenous culture promotion to enhance social equity (social and economic sustainability).

To further enhance regional trilateral conservation efforts, the three member countries of the HoB program have committed to further strengthening the local capacity of the relevant stakeholders in sustainable resource use and management, environmental governance, technical capability, planning and development, and policy formulation, among others (capacity building). From an environmental governance perspective, each country has already put in place various environmental laws to protect the environment and natural resources ^[9].

3. The Heart of Borneo Transboundary Environmental and Resource Management in Practice

The HoB framework serves as an important platform for implementing a range of sustainable management and conservation projects on the ground. However, due to socio-economic and political reasons, the contribution and type of involvement of each country may differ. Regardless, their natural resource management practices would follow the WWF Green Economy model whereby the HoB forests should be sustainably used and managed through reduced impact logging, selective cutting, and international certification of sustainable forest management (economic and environmental sustainability) ^[6]. At the same time, plantation development would only take place in highly degraded or deforested areas that are not high conservation value forests (HCVF) ^[6]. High conservation value forests are defined as forests that are more appreciated for biodiversity, ecological, social, and cultural values than economic value.

Under the HSAP, various programs, as demonstrated below, have been devised and implemented to sustainably manage forest resources to meet the green objectives of social, economic, and environmental sustainability. As shown in **Table 2**, which is self-explanatory, Indonesia has established the following three major conservation programs to promote environmental conservation:

Table 2. The Heart of Borneo transboundary environmental programs.

Indonesia	Malaysia
West and Central Kalimantan Program	<p>Reclassified 13,810 ha of Maliau Basin Conservation Area from Class II (production) to Class I (protection) Forest Reserve to enhance environmental protection. The connectivity of existing protected areas including Maliau Basin, Imbak Canyon, and Danum Valley, known as the HoB DaMal (Danum-Maliau-Imbak) ecosystem, has improved greatly. In addition, about 470,000 ha of forest within the HoB have been restored through the participation of the local communities. [Class I forests are totally protected by law].</p>
<p>To promote landscape level sustainable development and on-site environmental conservation of the Muller-Schwaner-Arabela Landscape which is home to a number of endangered species such as orangutan, Kalimantan hornbill, Malayan sun bear and Muller's gibbon. The scope of conservation covers 10 districts and a forest block called the Gunung Lumut conservation area (comprising 28,548 ha).</p> <p>Capacity building was conducted on various aspects of management for local organization in two districts, Sintang and Hulu Kapuas located in the upper Kapuas region.</p> <p>A number of forums including the community forum and sustainable palm oil forum were established to promote the documentation of indigenous social-culture and customary law and to share various environmental and development experiences and lessons among the relevant stakeholders.</p>	Sabah Terrestrial Conservation Program
West Kalimantan Program	<p>WWF supported the establishment of an anti-poaching task force comprising the Sabah Forestry Department (SFD), Sabah Wildlife Department, Yayasan Sabah and the Police Department (PDRM).</p>
<p>Various national and district level seminars on District Strategic Area for the Labian-Leboyan Corridor which features orangutan conservation work were conducted.</p>	

Indonesia	Malaysia
<p>WWF raised evidence produced by Eyes on the Forest (EoF) to pressure the government to take action against corporations involved in illegal and environmentally destructive land use practices.</p> <p>WWF facilitated the promotion of ecotourism through the adoption of Ecotourism Development Roadmap for the Kapuas Hulu District that also features the Betung Kerihun National Park (BKNP) and Danau Sentarum National Park (DSNP).</p> <p>WWF supported environmental conservation of the Kayan Mentarang Landscape, the promotion of Green Economy Development in the Upper Mahakam Landscape, and the protection of Borneo Pygmy Elephants and Sumatran Rhino.</p> <p>WWF worked with various government agencies and oil palm plantation developers in the North Kalimantan province to protect the elephant and rhino habitats through the adoption and implementation of the Elephant Conservation plan.</p> <p>WWF supported (i) capacity building on GIS application on conservation for government agencies, (ii) public consultation of the Kayan-Mentarang National Park zoning system in the two districts of Malinau and Nunukan with the view to strengthen park management and zonation through collaborative management, (iii) collaboration with NGOs and local community to promote environmental stewardship based on conservation and sustainable land use practices.</p>	<p>With the support of WWF and Forest Department Sarawak, one Forest Management Unit (FMU) has committed to set aside 11,600 ha as orangutan habitat and conservation area, where no logging activities will be carried out. In another FMU known as Kubaan-Puak, the FMU holder has committed to implement High Conservation Value (HCV) management and monitoring of important wildlife connectivity area. Since 2016, the state government has gazetted a total area of 903,769 ha comprising 43 national parks, 14 natural reserves, and 6 wildlife sanctuaries. In addition, Batang Ai National Park, Ulu Sebuyau National Park, Sedilu National Park, and Lanjak Entimau Wild Life Sanctuary, have now been designated as Totally Protected Areas (TPAs) to protect them from any form of commercial exploitation. [FMU is a timber concession where selective logging is performed in natural forest based sustainable forest management practices].</p> <p>Sarawak Conservation Program</p> <p>Forest Department Sarawak (FDS) has added 10,000 ha peat swamp forest protected through Maludam National Park extension.</p> <p>WWF in collaboration with Forest Department Sarawak and Ministry of Tourism Sarawak supported the promotion of ecotourism to enhance the socioeconomic progress of the local community.</p>
East and North Kalimantan Program	

Source: ^{[1][10][11]}.

- The West and Central Kalimantan Program to promote sustainable management of the Muller-Schwaner-Arabela Landscape, which is home to a wide range of endangered species.
- The West Kalimantan Program to enhance capacity building in environmental conservation and ecotourism development.
- The East and North Kalimantan Program to enhance capacity building in environmental management.

In Malaysia, the Sabah state government has established the Sabah Terrestrial Conservation Program to enhance environmental conservation through protected area management. As a result, the ecological integrity of the HoB DaMal (Danum-Maliau-Imbak) ecosystem has improved greatly. In Sarawak, the state government has set up the Sarawak Conservation Program to expedite environmental conservation efforts through protected area management.

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