United Nations Development Programme
County: Regional (Sabah, Malaysia)
PROJECT DOCUMENT

Project Title: Biodiversity conservation in multiple-use forest landscapes in Sabah, Malaysia

UNDAF Outcome(s): UNDP Strategic Plan Environment and Sustainable Development <u>Primary</u> Programme Outcome: Mobilizing environmental financing

UNDP Strategic Plan <u>Secondary</u> Outcome: Mainstreaming environment and energy

Expected CP Outcomes:
2008-2012:Outcome 3: Enhancing environmental management of biodiversity and natural resources.
2013-2015:Outcome2: Strengthened institutional capacity in managing climate change, including achieving both the 2015 renewable energy target of 5.5% of total electricity generation mix and an enhanced national framework for biodiversity management of the central forest spine in Peninsular Malaysia and the heart of Borneo.

Expected CPAP Outputs: Improved capacity of stakeholders in environmental management
Executing Entity / Implementing Partner: MINISTRY OF NATURAL RESOURCE AND ENVIRONMENT, MALAYSIA; STATE ECONOMIC PLANNING UNIT, SABAH
**Implementing Entity/Responsible Partners:** Sabah Forestry Department

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Sabah is one of the thirteen states of Malaysia and is located in the northern part of the island of Borneo. Under a mild climate and supported by a diversity of soils, the biodiversity of Sabah is exceptionally high, helping to earn Malaysia its status as one of 17 mega-diversity countries. Among Southeast Asian countries, Malaysia's biodiversity in terms of plants, mammals, birds, reptiles and amphibians is ranked fourth after Indonesia, China and Papua New Guinea. Most of Sabah's biodiversity is found in the forest reserves, which occupy about half of its total landmass of 7.34 million hectares. Sabah's forest reserves are an integral part of the 20 million hectares of equatorial rainforests demarcated under the 'Heart of Borneo' tri-government (Malaysia, Indonesia and Brunei Darussalam) initiative aiming at conserving and managing the tropical forest biodiversity sustainably.

Over the last 30 years, Sabah has experienced rapid economic growth relying heavily on its forest resources to finance its socio-economic development programmes. There had been an acceleration of forest conversion, particularly outside the forest reserves, as well as forest degradation within the forest reserves associated with overharvesting of resources. These trends have resulted in the progressive loss and degradation of much of the biodiversity in the forest landscape. Protected areas are becoming increasingly isolated, thus decreasing prospects for viability of species.

The proposed 261,264 ha project landscape represents one such landscape, which forms an important connecting landmass to three renowned protected areas in Sabah; the Maliau Basin Conservation Area (58,840 ha) to the West, the Danum Valley Conservation Areas (43,800 ha) to the East, and the Imbak Canyon Conservation Areas (16,750 ha) to the North. The project landscape constitutes a connecting landscape that is utilized for timber production (69% of total area), industrial tree plantation (16%), rehabilitated forests by enrichment planting (6%) and conservation purposes (6%). This landuse mix is an emerging trend in the forest reserves of Sabah driven by: (i) the comparative disadvantage in crop gestation periods between growing trees and agriculture crops, (ii) low rent capture, and: (iii) incoherent enforcement associated with the lack of expertise in multiple-use forest landscapes. Under a business-as-usual scenario, the above protected areas will become increasingly vulnerable to fire during prolonged droughts potentially from the surrounding degraded forests.

The objective of the project is to bring the landuses in the connecting landscape and protected areas under a common and integrated management umbrella strategy in order to mainstream biodiversity, ecosystem functions and resilience, while enabling ongoing sustainable uses. The project will meet this objective by achieving three interconnected outcomes: (1) provisioning of an enabling environment for optimized multiple use planning, financing, management and protection of forest landscapes; (2) demonstration of multiple-use forest landscape planning and management system, and (3) demonstration of innovative sustainable financing methods for multiple-use forest landscape management. Assistance provided by GEF will strengthen the conservation of the largest area of mostly contiguous forest in Sabah, and one of the most important remaining forest landscapes in the Heart of Borneo. GEF's intervention amounts to USD4.4 million against USD 19.5 million from the Government of Malaysia and co-financing from
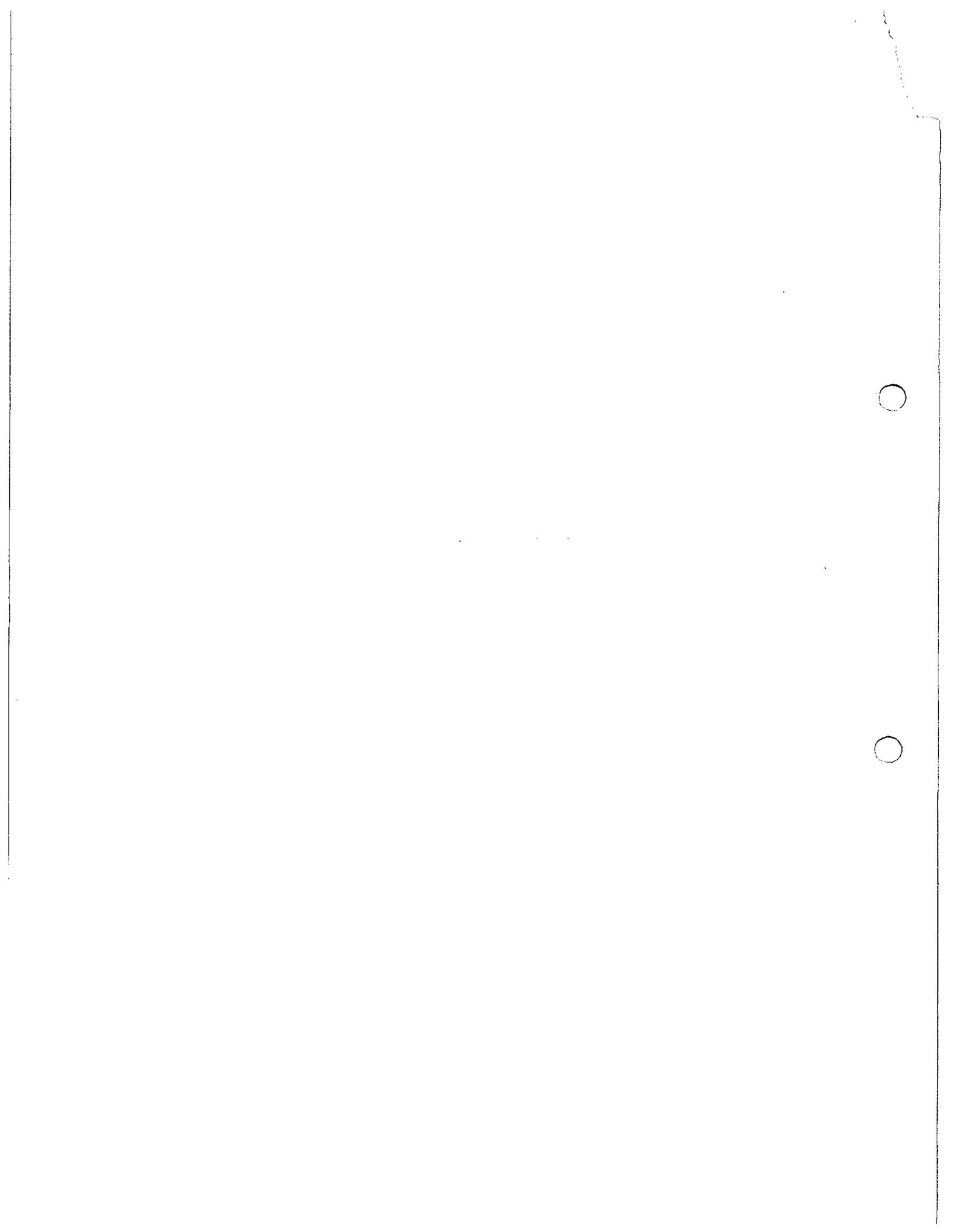
implementing partners. The project is expected to serve as a model to draw lessons learnt in best practices for replication in other forest landscapes within Sabah and in other parts of Malaysia and the Heart of Borneo.

Programme Period: 2012-2018 Atlas Award ID: 00063217 Project ID: 00080468 PIMS #: 4186 Start date: May 2012 End Date: May 2018 Management Arrangement: NIM PAC Meeting Date: April, 2012	Total budget: US$ 23,900,000 Allocated resources: • GEF: US $ 4,400,000 Co-financing: US $ 19,500,000 o Sabah Forest Department : US$ 15,000,000 o Sabah Foundation: US$ 4,400,000 o WWF US$ 100,000

5/6/12

DATUK DR RAHAMAT BIVI BT. YUSOFF
Ketua Pengarah
Unit Perancang Ekonomi
Jabatan Perdana Menteri

Agreed by (Government): _____ Date/Month/Year

Kamal Malhotra
Resident Representative 22/6/2012

Agreed by (UNDP): _____ Date/Month/Year

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ADB	Asian Development Plan
APR	Annual Project Review
AWP	Annual Work Plan
BD-SO	GEF Biodiversity Strategic Objectives
BD-SP	UNDP Biodiversity Strategic Plan
BCT	Borneo Conservation Trust
BBOP	Business of Biodiversity Offset Programme
CBD	Convention of Biodiversity
CHP	Comprehensive Harvest Plan
CITIES	Convention on International Trade in Endangered Species
CPAP	UNDP Country Programme Action Plan
CTA	Chief Technical Advisor
DBH	Diameter at Breast Height
DID	Department of Irrigation and Drainage, Sabah
DO	District Officer
DVCA	Danum Valley Conservation Area
EA	Executing Agency
EE	Executing Entity
ENSO	El Nino Southern Oscillation
EPD	Environment Protection Department, Sabah
ERC	UNDP Evaluation Resource Centre
ESA	Ecosystem Service Approach
FCCC	Framework Convention on Climate Change
FMP	Forest Management Plan
FMU	Forest Management Unit
FRIM	Forest Research Institute Malaysia
FSC	Forest Stewardship Council
GEF	Global Environment Facility
GDP	Gross Domestic Product
GFTN	WWF-Global Forest and Trade Network
GoM	Government of Malaysia
GTZ	Deutsche Gessellschaft fur Internationale Zusammenarbeit
HCVF	High Conservation Value Forest
HoB	Heart of Borneo Programme
IA	Implementing Agency
ICCA	Imbak Canyon Conservation Area
ICSB	Innoprise Corporation Sdn. Bhd
IE	Implementing Entity
INIKEA	Innoprise-IKEA Forest Rehabilitation Project
INFAPRO	Innoprise Forest Absorbing Project
ITP	Industrial Tree Plantation
JICA	Japan International Corporation Agency
LEAP	Land Empowerment and Animals People
LCC	Land Capability Classification
LFC	Luasong Forestry Centre
MDF	Mixed Dipterocarp Forest
MDP	Malaysia Development Plan
MBCA	Maliau Basin Conservation Area
METT	Management Efficiency Tracking Tool
M&E	Monitoring and Evaluation
MoA	Memorandum of Agreement
MoU	Memorandum of Understanding
MoV	Means of Verifications
MoFS	Ministry of Finance, Sabah
MTE	Mid-Term Evaluation
MUFLM	Multiple-Use Forest Landscape Management
MRED	Ministry of Rural and Entrepreneurial Development, Sabah
MTDEST	Ministry of Tourism and Environment Science and Technology, Sabah
NAP	National Agriculture Policy
NC	National Consultants

NEP	New England Power, USA
NFC	National Forestry Council
NFM	Natural Forest Management
NGOs	Non-government organizations
NIM	UNDP National Implementation
NKEA	National Key Economic Areas
NPD	National Project Director
NPV	Net Present Value
NRE	Ministry of Natural Resources and Environment, Malaysia
NROS	Natural Resource Office, Sabah
NWFP	Non-Wood Forest Products
OPPS	Outline Perspective Plan of Sabah
OWP	Operational Work Plan
PA	Protected Areas
PAC	Project Advisory Committee
PACOS	Partners of Community Organizations
PB	Project Board
PES	Payment for Ecosystem Services
PIR	Project Implementation Review
PM	Project Manager
PMU	Project Management Unit
POC	Project Organizing Committee
PPG	Project Preparation Grant
PPR	Project Progress Report
RCU	UNDP Regional Coordinating Unit
REDD	Reduced Emission from Deforestation and Degradation
RM	Malaysian Ringgit
RIL	Reduced Impact Logging
RBJ	Rakyat Berjaya Sdn. Bhd.
RS	Royal Society, UK
RSPO	Roundtable Sustainable Palm Oil
SAP	Sabah Agriculture Policy
SBC	Sabah Biodiversity Center
SBBA	Standard Basic Assistance Agreement
SBC	Sabah Biodiversity Council
SC	Steering Committee
SEPU	State Economic Planning Unit, Sabah
SFD	Sabah Forestry Department
SFM	Sustainable Forest Management
SFMLA	Sustainable Forest Management Licence Agreement
SRF	Strategic Result Framework
SSC	Soil Suitability Class
SWD	Sabah Wildlife Department
SUAS	Swedish University of Agricultural Sciences
TEV	Total Economic Valuation
TF	Task Force
TLAS	Timber Legality Assurance System
TOR	Terms of Reference
UMS	Universiti Malaysia Sabah
UNDP	United Nation Development Programme
UNDP-CO	UNDP-Country Office
UPM	Universiti Putra Malaysia
WWF	World Wildlife Fund for Nature
YS	Yayasan Sabah/Sabah Foundation
YSCA	Yayasan Sabah Concession Area

1.1 Context and global significance

1. This section presents the context and global significance for the present project. It includes the following sub-sections: environmental context; global significance; environmental economic and socio-economic context; protected area system context, and; institutional and policy context. Each sub-section provides a state-level (and in some cases national-level) overview of the issue, together with, in relevant sub-sections, specific information regarding the pilot project landscape.

ENVIRONMENTAL CONTEXT

2. Sabah is one of the thirteen states of Malaysia and is located in the northern part of the island of Borneo, between latitudes 3° to 5° N and longitudes 119° to 123° E (**Figure 1**). With a land area of 7.49 million ha, Sabah occupies about one tenth of the island of Borneo, and is bounded by Sarawak (the second Malaysian State on Borneo Island) and Brunei to the west, and by Indonesian Kalimantan to the south. It is neighbor to the Philippines to the northeast, Indonesia to the south and Brunei and Indo-China to the west. Sabah is largely surrounded by water, with the South China Sea bordering the West, the Sulu Sea to the Northeast, and the Pacific Ocean further to the East. With 90% of Sabah's border formed by water, its climate is heavily influenced by the sea.

3. Sabah's climate is warm and humid throughout the year. Mean daily temperature based on a 5-year average (2005-2009) is between 24 and 31°C with relative humidity at 83% (Sabah Statistics Department, 2010[1]). The annual rainfall recorded for the same period was 3,022 mm. Monthly temperatures and rainfalls are influenced by two monsoon seasons: the northeast monsoon from October to March and the southeast monsoon from May to September. Periods of drought have become more frequent over the last four decades; there have been eight prolonged drought incidents since 1965 associated with the El Nino Southern Oscillation ENSO phenomenon (Yayasan Sabah, 2003[2]).

4. Sabah can be divided into four main physiographic regions, oriented in a north-south direction (Government of Sabah, 1988[3]). The Western Lowlands include the foothills, plains and islands to the west of the Crocker Range. The soils in this area are derived from parent materials of coralline limestone, beach deposits and alluvium. The Western Cordillera comprises a belt of mountainous country about 80 km in width parallel to the west coast and includes the Crocker, Trusmadi, Witti and Maligan ranges and associated inter-montane plains and valleys. Soils here are derived from sedimentary rocks, including shales, mudstones and sandstones. The Central Uplands, comprising extensive tracts of mountainous country to the east of the Western Cordillera, include the Labuk, Kuamut, Segama and Tawau highlands. Parent materials of the soils in this area are derived from igneous and volcanic rocks. The Eastern Lowlands stretch from the Bengkoka Peninsula in the north to the Semporna Peninsula in the south, and include extensive tracts of moderate to low hills, the broad valleys of the Sugut, Labuk, Kinabatangan and Segama rivers and extensive deltas.

5. The project landscape is located near the east coast of Sabah between latitude 4°N and 5°N and longitude 110° 2'E and 110° 3'E (**Figure 2**). It consists of a 261,264 ha landscape, and represents 26% of the one million hectares Yayasan Sabah Concession Area (YSCA). Within the landscape, the dipterocarps and heath forests occupy 44% or 115,760 ha of the total area and are located in the (300<750m) southern and central highlands (see **Map 3**). The next dominant forest type is the upland dipterocarp forests, representing 41% or 106,511 ha, which are mostly found in the northern and eastern regions. The remaining area consists of lowland dipterocarp (13% or 32,884 ha) and upland kerangas forests (0.1% or 316 ha).

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[1] Sabah Statistics Department, 2010. Yearbook of Statistics Sabah 2009.
[2] Yayasan Sabah, 2003. Strategic Management Plan for Maliau Basin Conservation Areas, Sabah, Malaysia. Yayasan Sabah.
[3] Government of Sabah, 1988. Sabah Coastal Zone Profile. http://www.iczm.sabah.gov.my.

GLOBAL SIGNIFICANCE

6.   Under a mild climate that rains all year round, and supported by a diversity of soils, the flora and fauna diversity of Sabah is exceptionally high, helping to earn Malaysia its status as one of 17 mega-diversity countries (Mittermeier et al. 1997[4]). Among Southeast Asian countries, Malaysia's biodiversity in terms of plants, mammals, birds, reptiles and amphibians is ranked fourth after Indonesia, China and Papua New Guinea. The entire state of Sabah falls within the WWF Global 200 Borneo Lowland and Montane Forest Ecoregion and the Sundaland Global Biodiversity Hotspot.

7.   Most of Sabah's forests are located within a larger ecological area which has become known as the "Heart of Borneo (HoB)." This area contains some 200,000 km^2 of ecologically interconnected rainforest in the Indonesian province of Kalimantan, the East Malaysian states of Sabah and Sarawak and the nation of Brunei Darussalam. The HoB occupies approximately 30% of Borneo's land area and houses a diversity of plants and animals endemic to the island. This natural heritage also provides goods and services critical to the people of Borneo.
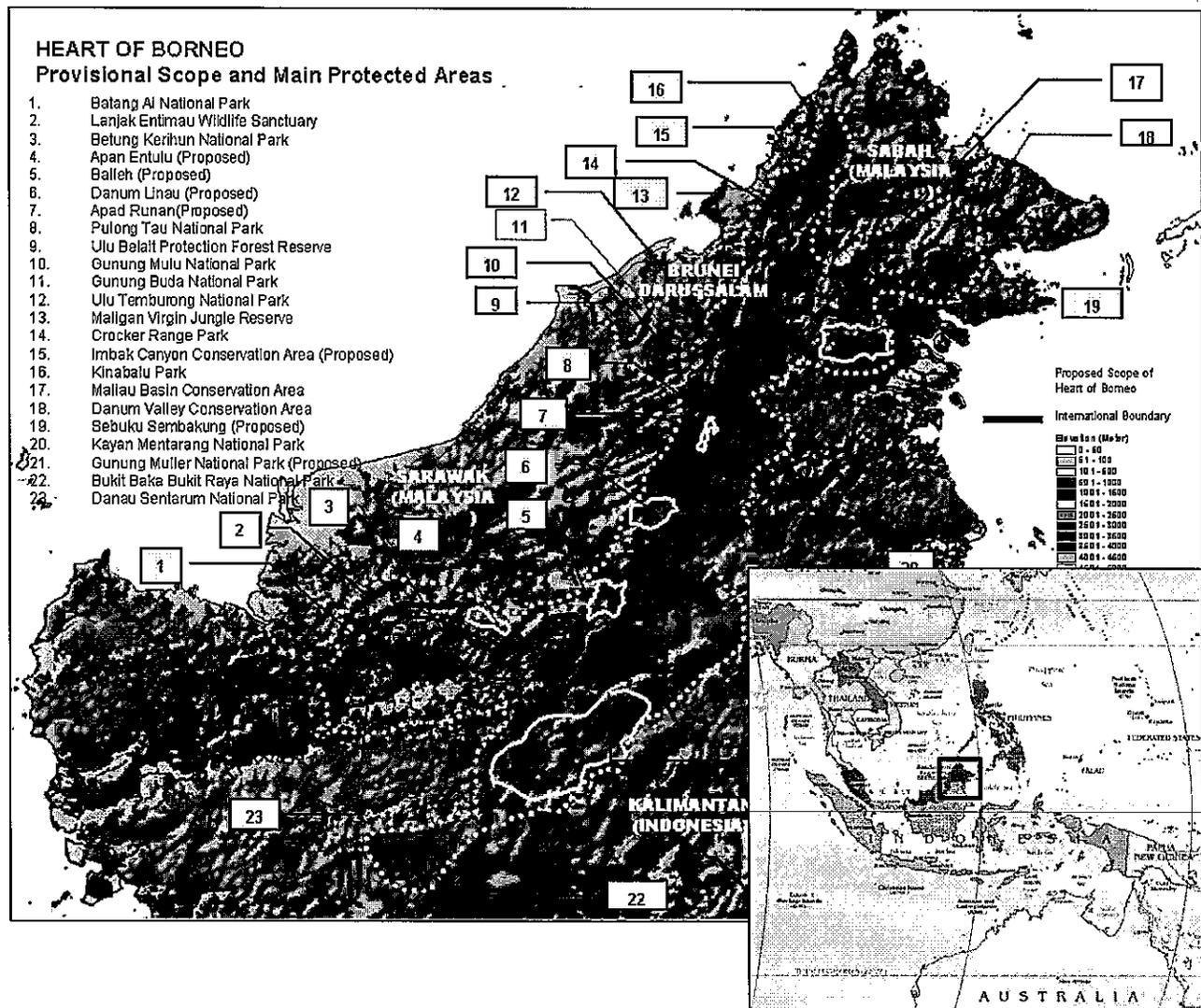
Figure 1:   Location map of Sabah and areas (item 14, 15, 16, 17, 18) included under the Heart of Borneo (HoB) initiative.

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[4] Mittermeier, R.A., Robles-Gil, P. and Mittermeier, C.G. 1997. Megadiversity. Earth's Biologically Wealthiest Nations. CEMEX/Agrupaciaon Sierra Madre, Mexico City..
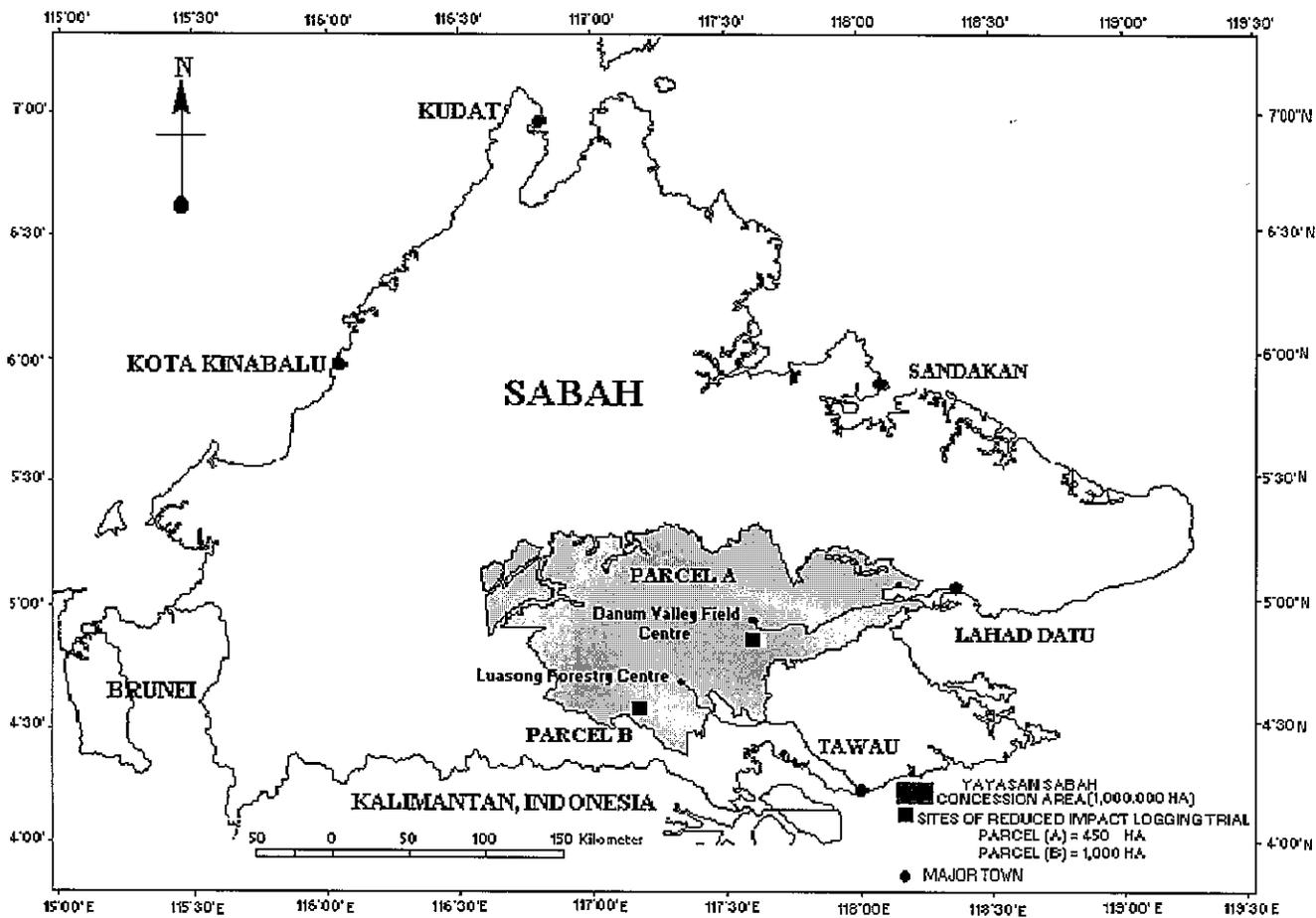
Figure 2: Yayasan Sabah Concession Area and project landscape in Sabah, Malaysia

8. Sabah's flora is estimated to comprise over 6,000 species of flowering plants, 650 species of ferns, and 2,000 species of orchids. These estimates are nearly half of those reported for Malaysia as a whole, and many species are endemic to Sabah. Among these are over 267 genera of plant species that can reach timber size in the family Dipterocarpaceae (Wood and Meijer, 1964[5]). Eight of these genera (*Shorea, Parashorea, Hopea, Dipterocarpus, Dryobalanops, Anisoptera, Vatica* and *Cotylelobim*), comprising 160 species in the Dipterocarpaceae family, are currently of commercial value.

9. In its pristine form, dipterocarp forest is characterized by five canopy layers. Near the ground is the herbaceous layer reaching up to a meter high. Overshadowing the herbaceous layer is a scattered layer of shrubs that can reach 3 m in height. Above the shrub layer are the understory trees. Next is the canopy layer, comprising most of the larger trees. The emergent layer, which grows above the main canopy and reaches up to 40-60 m height, is where most of the commercial species are found. The species composition in this forest type varies with locations along slope gradient and ecological niche.

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[5] Wood, G.H.S. and Meijer, W. 1964. Dipterocarps of Sabah. Sabah Forest Record No.5. Forestry Department, Sabah, Malaysia.

10. It has been reported that at least 132 species of flowering plants in 101 genera and 53 families thrive in Sabah's lowland mixed dipterocarp forest (MDF) below 750 m a.m.s.l. (Latiff et al., 2005[6]). The dominant families are Rubiaceae (31% by species), Euphorbiaceae (17%), Annonaceae (32%) and Dipterocarpaceae (20%). Dipterocarpaceae are most abundant among trees above 10 cm diameter at breast height (DBH), followed by Rubiaceae, Euphorbiaceae and Mytaceae (Jumaat Adam, 2005[7]). Commercial species in the emergent canopy layer include *Shorea* spp., *Parashorea* spp., *Dipterocarpus* spp., *Dryobalanop* spp., *Hopea* sp., *Vatica* spp., while the non-dipterocarps include the Podocarpus spp. and others. In elevations above 750m, where the soils are derived from ultrabasic rocks, the *Shorea* spp. and the *Dryobalanops* spp. are generally absent.

11. The wildlife population is exceptionally rich. Sabah supports 189 species of land mammals, 42 of which are endemic to Borneo. Globally significant species include the Orang-utan, Proboscis monkey, Sun bear, Banteng/Tembadau, Sumatran rhino, Borneo elephant and Clouded leopard. It has been estimated that not more than 12,000 Orang-utan survive in Sabah, and their numbers have continued to decline in recent years (Rijksen and Meijaard, 1999[8]; Ancrenaz et al., 2004[9]; Alfred et al., 2010[10]). Of the approximately 2,000 pygmy elephants in Borneo (Malaysia and Indonesia), about half currently live in the central region of Sabah. The vertebrate fauna is exceptionally rich with records of over 120 species of mammals, 300 birds, 72 reptiles, 56 amphibians and 37 fishes. In addition to pygmy elephants, of particular significance are populations of 10 species of primates, including the endemic Proboscis monkeys, as well as Orang-utan, Clouded Leopards, Sumatran Rhinoceros and Malayan Sun Bears. The population of Sumatran Rhino has been estimated at 9-16 individuals. These large mammals are of special conservation interest because most species are relatively sensitive to timber harvesting disturbance (Payne and Raymond, 2006[11]). For example, primate abundance has declined in the recent past mainly as a result of extreme habitat degradation and fragmentation due to timber harvesting (Ancrenaz et al., 2003[12]). These large mammals require extensive forest areas to support viable breeding populations.

12. The avifauna is made-up of 540 species of birds representing 60 families, 1000 species of butterflies and 500 species of moths recorded. In addition, 100 species of reptiles, 80 species of amphibians and more than 100 species of freshwater fishes have been described. These species are found in both primary and disturbed forests.

13. Much of Sabah's flora and fauna biodiversity remains to be identified, especially amongst lower plants such as the bryophytes, algae, lichens and fungi. The rate of discovery of new species over the last 10 years following scientific expeditions within protected areas is roughly 10% of the total flora and fauna collections.

14. Within the project landscape, the lowland dipterocarp forests are especially rich in tree species, with 814 species of woody plants of 1 cm diameter and larger found (Newbery et al., 1992)[13]. Endemic, rare and threatened species of flora within the project landscape include the protected *polod* palm species (*Arenga undulatifolia*) and the elephant ear orchid (*Phalaenopsis gigantea*).

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[6] Latiff, A., Zainudin Ibrahim, A., Sukup Akin, Zainal Awang and Mat-Salleh, K. 2005. On the flowering plants of Gunung Danum, Danum Valley Conservation Area. *In* Laily, B. Din, Muhammad Yahya, Norhayati, A., Nizam, M.S., Sinun, W. and Latiff, A. (eds.): Danum Vally Conservation Area: hysical, Biological and Social Environments.

[7] Jumaat, H.A. 2005. Tree species composition at the Borneo Jungle Lodge. *In* Laily, B. Din, Muhammad Yahya, Norhayati, A., Nizam, M.S., Sinun, W. and Latiff, A. (eds.): Danum Vally Conservation Area: hysical, Biological and Social Environments.

[8] Rijksen, H.D. and Meijaard, E. 1999. Our vanishing relative: the status of wild orang utans at the close of the 20th century. Tropenbos publications, the Netherlands.

[9] Ancrenaz, M., Dg. Suzita Sheena James, Sinyor, J. and Maklarin Hj. Lakim. 2004. Orang-utan surveys in Crocker Range Park. In Maryati, M. Hamzah, Zulhazman, Tachi, T. and Nais, J. 2004. Crocker Range Scientific Expedition 2002.

[10] Alfred, R., Koh, S., Lee, S.K., Ambu, L.,D. and Sharma, S.K. 2010. The Status of Orang-utan density and population size in Seven key orang-utan habitats in Sabah. *Submitted to American Journal of Primatology*

[11] Payne, J. and Raymond, A. 2006. Orang-utans in Ulu Segama-Malua Forest Reserves (USM): Background perspective and summary of currently available information and issues. Unpublished Report.

[12] Sawang, A., Suali, M., Ahmad, E., Abd. Razak Saharon, Lackman-Ancrenz, I. and Ancrenz, M. 2006. Orang-utan and Gibbon populations in the forests of Lower Segama. *In* Maryati Mohamad, Bernard, H., Sofian Abu Bakar and Matsunaga, R. (eds.): Lower Segama Scientific Expedition. Universiti Malysia Sabah.

[13] Newberry, D., McC., Campbell, E.J.F., Lee, Y.F., Ridsdale, C.E. and Still, M.J. 1992. Primary Lowland Dipterocarp Forest at Danum Valley, Sabah, Malaysia: Structure, Relative Abundance and Family Composition. Phil. Transaction of the Royal Society Series B, Vol.335: 341-356.

15. The project landscape is highly significant in terms of global biodiversity. As shown in **Table 1** below, six out of seven of Sabah's globally threatened fauna species are present within the landscape. Its lowland dipterocarp forests are particularly rich in species diversity, with 814 species of woody plants of 1 cm diameter and larger found in a 50 hectare area. Endemic, rare and threatened species within the project landscape include the protected gaharu timber (*Aquilaria borniensis*). About half of the pygmy elephant population in Borneo (Malaysia and Indonesia) currently lives in the central forest reserves area of Sabah. Orang-utans, numbering approximately 700, and rhinoceros also share the same habitat.

16. The significance of these forests will be critical to the persistence of the long-term global benefits generated by the area, in particular their ability to support high levels of biodiversity while helping to mitigate climate change. The area provides connectivity to and buffers critical storehouses of, biodiversity found within neighboring PAs. This latter function becomes of special importance within a context of climate change, when ecosystem resilience cannot be maintained by focusing on relatively small and increasingly isolated protected areas, but instead requires a matrix of compatible surrounding land uses. Potential climate change impacts on species composition and ecosystem function further increase the importance of these interconnecting landscape areas for the ecological sustainability of the conservation areas.

Table 1. List of endangered fauna species in CITES

No	Wildlife	Scientific name	Status in Red List	Population trend in Sabah	Present in Project landscape
1	Orang-utan	*Pongo pygmaeus*	Endangered	Decreasing	Yes
2	Bornean Elephant	*Elephas maximus borneensis*	Endangered	Decreasing	Yes
3	Sumatran Rhinoceros	*Dicerorhinus sumatrensis*	Critically Endangered	Decreasing	Not confirm
4	Clouded leopard	*Neofelis nebulosa*	Vulnerable	Decreasing	Yes
5	Proboscis monkey	*Nasalis larvatus*	Endangered	Decreasing	Yes
6	Sun bear	*Helarctos malayanus*	Vulnerable	Decreasing	Yes
7	Tembadau	*Bos javanicus*	Endangered	Decreasing	Yes

ENVIRONMENTAL ECONOMIC, SOCIO-ECONOMIC AND LAND USE CONTEXT

17. In order to understand both the environmental and socio-economics of biodiversity conservation and resource use in Sabah, it is useful first to review trends in land use allocations, including past, present and future land use breakdowns.

18. Land use allocation in Sabah is guided by the Land Capability Classification (LCC) (Acres, et al., 1975). The LCC classifies land according to its relative economic capability and based on ground slope, and soil physical and chemical properties. LCC I is allocated for mining of minerals; LCC II and III for agriculture development differentiated according to a range of crops to be cultivated, LCC IV for forestry uses and LCC V for hydrological and wildlife conservation. Within the LCC, land for agriculture development is based on five soil suitability classes (SSC): SSC 1 to 3 are best suited for agriculture, SSC 4 for forestry and SSC 5 for conservation of water and wildlife.

19. Based on the LCC and SSC guidelines, Sabah's land area has been divided into four land use classes (see **Table 2**). Forest Reserves cover the largest area of the four classes, occupying 3.60 million ha, or 48% of Sabah's 7.49 million ha. landmass. The main use of the Forest Reserves is forestry development. Stateland, which is mainly used for agriculture, occupies 3.48 million ha, or 46% of the total landmass. Wildlife Sanctuaries and Sabah Parks cover the remaining 5%, at 152,828 ha (2%) and 245,172 ha (3%) respectively. Among these four land uses, Stateland and to a lesser extent Forest Reserves are witnessing rapid land use change—mainly conversion to oil palm—encouraged by the National Agricultural Policy (NAP3) and the Sabah Agricultural Policy 2 (SAP2). It is upon the remaining forests within these land use categories[14] that most of the deforestation and degradation debate is focused.

20. The following sub-sections look in detail at Sabah's two major land uses, namely agriculture and forestry and associated use and non-use values, along with the tourism sector. The discussion is aimed at quantifying important and ongoing state-wide trends in land use change associated with, on the one hand, economic growth and development and, on the other hand, deforestation, degradation and habitat loss. A final sub-section looks at land uses in and around the project landscape, which are affected by, and also illustrate, the state-wide trends discussed below.

Agriculture

21. Agriculture is one of the most important economic sectors in Sabah, contributing *c.* 38% of the State's GDP in 2009. Growth in the sector has been fueled by a combination of factors, including Malaysia's National/State Agriculture Policy (NAP2 and SAP2)[15], buoyant market prices for the main agriculture commodities and physical expansion of agriculture plantations.

22. Agricultural land use in Sabah has expanded at a fast pace. In 1970, the total area of land cultivated with various agricultural crops was 263,399 ha; this figure increased to 564,000 ha by 1980, to 1,000,000 ha by 1990, and to 1,182,000 by 2000. This represents an annual growth rate of 11% or 31,000 ha per annum (Government of Sabah, 2008[16]). Nearly all agricultural expansion takes place on what had theretofore been forested land. By 2009, about 67% or 1.47 million ha of the 2.2 million ha of Stateland deemed suitable for agriculture development had already been developed into various agriculture plantations (Government of Sabah, 1998[17]; **Table 2**). Thus, approximately 730,000 ha of largely forested Stateland remain available and designated for conversion to agriculture.

23. Sabah's main agricultural crops are oil palm, rubber, paddy, cocoa and coconut. Oil palm was first established in Sabah in 1961 with a mere 2,000 ha, but rose to 40,000 ha in 1970, 100,000 ha in 1980, 281,000 ha in 1990, 630,000 ha in 1995, and 980,000 ha in 2000 (**Figure 3**; State Government of Sabah, 2008[18]). As of 2009, a total of 1,330,364 ha, or 90% of developed agriculture land, was covered by oil palm (**Table 2**). With the price of crude palm oil rising recently to a record high, oil palm plantations in Sabah will no doubt continue to expand.

24. Other agricultural crops include rubber, paddy, cocoa and coconut. Rubber was the golden crop of Malaysia in the 1960s and 1970s. Total land area cultivated with rubber for the period 1964-1983 was 105,000 ha. This figure dropped to 85,000-88,000 ha between 1984 and 2001 due to a shift to oil palm. Area opened for rubber continued to show a decline in the last seven years (2003-2008), and is now estimated at 75,082 ha. Total area of cocoa cultivation was 4,000 ha in 1970 rising to 60,000 ha in 1980. Planting expanded further reaching 205,000 ha in 1990. As with the rubber situation, cocoa plantations shrank, reaching only 21,000 ha in 2004. The rapid expansion and decline in cocoa cultivation was fuelled by fluctuating cocoa prices. Currently, cocoa plantations cover only 8,399 ha, a figure which is expected to remain relatively stable for the near future. Land area planted with coconut in Sabah was substantial in 1963 at 40,000 ha increasing to 61,000 ha in 1972. Coconut is cultivated mainly for copra as an export commodity, but market demand is not high. Total coconut plantation in 2003 was 20,836 ha and registered a steady decline to 18.875 ha by 2009 (**Table 2**). Paddy occupies about 38,936 ha in 2009.

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[14] Most statelands are covered by forest prior to their conversion to oil palm.

[15] NAP policy aims to set in place the enabling environment and supportive measures to promote growth in the agricultural sector.

[16] State Government of Sabah, 2008. Sabah Land Utilization Policy Study: Interim Report.

[17] Government of Sabah. 1998. Sabah coastal zone profile 1988.

[18] State Government of Sabah, 2008. Sabah Land Utilization Policy Study: Interim Report.

Table 2. Landuses classification and trend in Sabah (2003-2009)

YEAR	2003	%Tot	%STot	2004	%Tot	%STot	2005	%Tot	%STot	2006	%Tot	%STot	2007	%Tot	%STot	2008	%Tot	%STot	2009	%Tot	%STot
1. Stateland*	3,378,751	45.8%		3,378,751	45.8%		3,495,052	46.7%		3,494,354	46.7%		3,484,697	46.5%		3,484,697	46.5%		3,484,697	46.5%	
1.1 Agriculture	1,227,996	16.7%	36.3%	1,280,928	17.4%	37.9%	1,369,823	18.3%	39.2%	1,384,902	18.3%	39.6%	1,449,506	19.4%	41.6%	1,471,656	19.7%	42.2%	1,471,656	19.7%	42.2%
Wet Paddy	36,346	0.5%	1.1%	36,003	0.5%	1.1%	35,822	0.5%	1.0%	34,104	0.5%	1.0%	32,866	0.4%	0.9%	33,746	0.5%	1.0%	33,746	0.5%	1.0%
Dry Paddy	4,869	0.1%	0.1%	4,819	0.1%	0.1%	3,809	0.1%	0.1%	5,467	0.1%	0.2%	3,468	0.0%	0.1%	5,190	0.1%	0.1%	5,190	0.1%	0.1%
Rubber	63,887	0.9%	1.9%	64,593	0.9%	1.9%	66,367	0.9%	1.9%	70,367	0.9%	2.0%	73,293	1.0%	2.1%	75,082	1.0%	2.2%	75,082	1.0%	2.2%
Cocoa	25,287	0.3%	0.7%	21,020	0.3%	0.6%	14,440	0.2%	0.4%	11,446	0.2%	0.3%	9,691	0.1%	0.3%	8,399	0.1%	0.2%	8,399	0.1%	0.2%
Coconut	20,836	0.3%	0.6%	21,084	0.3%	0.6%	20,975	0.3%	0.6%	18,727	0.3%	0.5%	18,673	0.2%	0.5%	18,875	0.3%	0.5%	18,875	0.3%	0.5%
Oil Palm	1,076,771	14.6%	31.9%	1,133,409	15.4%	33.5%	1,228,410	16.4%	35.1%	1,244,791	16.6%	35.6%	1,311,515	17.5%	37.6%	1,330,364	17.8%	38.2%	1,330,364	17.8%	38.2%
1.2 Others**	2,150,755	29.2%	63.7%	2,097,823	28.5%	62.1%	2,125,229	28.4%	60.8%	2,109,452	28.2%	60.4%	2,035,191	27.2%	58.4%	2,013,041	26.9%	57.8%	2,013,041	26.9%	57.8%
2. Forest Reserves	3,594,516	48.8%		3,594,516	48.8%		3,594,512	48.0%		3,595,210	48.0%		3,604,867	48.1%		3,604,867	48.1%		3,604,867	48.1%	
Class 1: Protection	342,150	4.6%	9.5%	342,150	4.6%	9.5%	342,150	4.6%	9.3%	342,848	4.6%	9.5%	348,016	4.6%	9.7%	364,766	4.9%	10.1%	364,766	4.9%	10.1%
Class 2: Commercial	2,683,480	36.4%	74.7%	2,683,480	36.4%	74.7%	2,683,480	35.8%	74.7%	2,683,480	35.8%	74.6%	2,682,636	35.8%	74.4%	2,665,886	35.6%	74.0%	2,665,886	35.6%	74.0%
Class 3: Domestic	7,355	0.1%	0.2%	7,355	0.1%	0.2%	7,355	0.1%	0.2%	7,355	0.1%	0.2%	7,355	0.1%	0.2%	7,355	0.1%	0.2%	7,355	0.1%	0.2%
Class 4: Amenity	20,940	0.3%	0.6%	20,940	0.3%	0.6%	21,086	0.3%	0.6%	21,086	0.3%	0.6%	21,284	0.3%	0.6%	21,284	0.3%	0.6%	21,284	0.3%	0.6%
Class 5: Mangrove	316,024	4.3%	8.8%	316,024	4.3%	8.8%	315,874	4.2%	8.8%	315,874	4.2%	8.8%	320,522	4.3%	8.9%	320,522	4.3%	8.9%	320,522	4.3%	8.9%
Class 6: VJR	91,914	1.2%	2.6%	91,914	1.2%	2.6%	91,914	1.2%	2.6%	91,914	1.2%	2.6%	92,401	1.2%	2.6%	92,401	1.2%	2.6%	92,401	1.2%	2.6%
Class 7: Wildlife	132,653	1.8%	3.7%	132,653	1.8%	3.7%	132,653	1.8%	3.7%	132,653	1.8%	3.7%	132,653	1.8%	3.7%	132,653	1.8%	3.7%	132,653	1.8%	3.7%
3. Wildlife Sanctuary	152,828	2.1%	100%	152,828	2.1%	100%	152,828	2.0%	100%	152,828	2.0%	100%	152,828	2.0%	100%	152,828	2.0%	100%	152,828	2.0%	100%
4. National Parks	245,172	3.3%	100%	245,172	3.3%	100%	245,172	3.3%	100%	245,172	3.3%	100%	245,172	3.3%	100%	245,172	3.3%	100%	245,172	3.3%	100%
TOTAL SABAH	7,371,267			7,371,267			7,487,564			7,487,564			7,487,564			7,487,564			7,487,564		

* Sum of 1.1 and 1.2

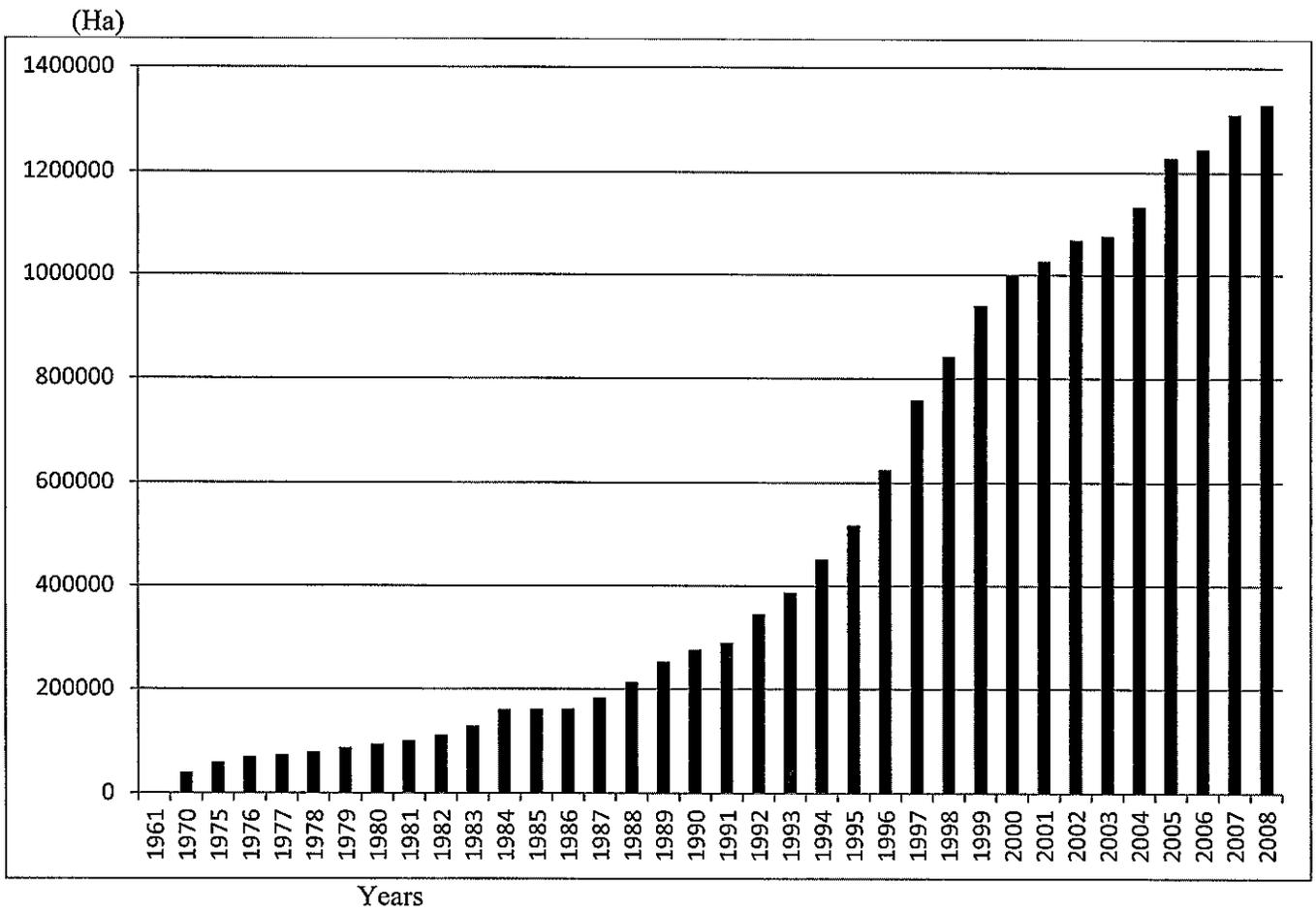** Includes water bodies and land under State Control

(Ha)

Figure 3. Trend in oil palm plantation development in Sabah (1980-2008).

25. Of these, 90% are wet paddy located within the major flood plains along the west coast of Sabah. Wet paddy expansion into the interior of Sabah is restricted by poor irrigation. Hence, hill paddy has been promoted in rural interiors at household scale. Other crops include tea, coffee, ginger and vegetables. These crops are cultivated in small scales, each covering less than 2,000 ha.

26. The physical expansion of agricultural land in Sabah corresponds with rapid increases in earnings from cultivated crops. Among them, oil palm has consistently commanded top export earnings over the last five decades. In 2009, oil palm earned RM13.8 billion, representing 34% of the state GDP of RM37.2 billion for the main agricultural crops, followed by rubber at RM367 million (1%), and cocoa at RM29 million (0.1%) (Table 3). From 1970-1995, the production and export of crude palm oil (CPO) rose from 28,197 tonnes to 673,858 tonnes. By 2009, Sabah recorded a crude palm oil production of 5.72 million tonnes. Export earnings have also risen: RM8.2 billion in 2005; RM9.1 billion in 2006; RM14.3 billion in 2007; RM19.0 billion in 2008 and RM13.8 billion in 2009.

27. Besides GDP earning, the agriculture sector has contributed substantially to Sabah's socio-economic development, particularly in terms of employment creation. In 2009, the agriculture and forestry sector employed 365,300 people representing 29% of all employed persons in Sabah (Department of Statistics Malaysia, 2009[19]). Assuming that 60% of the remaining 730,000 ha of undeveloped agriculture land were cultivated with oil palm, this would generate 55,000 new agricultural jobs on the basis that each 1,000 ha requires approximately 125 workers. Large-scale employment in the sector also creates business spin-offs in the building, materials and food supply chain, benefitting municipal and local industries.

28. The agriculture sector has been identified as one of 12 National Key Economic Areas (NKEA) for the Nation under the 10th Malaysia Plan and will continue to expand. This means that oil palm plantations [20] are expected to expand heavily into the remaining 730,000 ha of Stateland. The continuing conversion of Stateland to oil palm will further reduce forest cover, and increase forest fragmentation. The impacts of habitat loss and fragmentation on biodiversity will be heightened by the extremely limited value of oil palm for wildlife in terms of offering connectivity among increasingly fragmented forest areas. Thus, as conversions within Stateland proceed, Forest Reserves will need to bear an increasing responsibility for maintaining connectivity between remaining natural habitats, including protected areas.

29. While there has so far not been any agricultural conversion occurring within the project landscape itself, a significant oil palm development is taking place in an area located to the immediate southeast and bordering the project area.

Forestry, forest products and values associated with standing forests

30. In contrast to the agriculture sector, Sabah's forest lands provide a broader range of values, including both use and non-use values. Unfortunately, not all of these values are easily monetized.

31. Forest Reserves occupy 3.60 million ha or 48% of the total area of Sabah (Table 2). There are seven classes of forest reserves (see Table 2 for area by class breakdowns), as follows:
    - Protected forest reserves (Class I) are for maintenance of ecosystem services and functions (e.g. climate and hydrological regulation);
    - Commercial forest reserves (Class II) are the most extensive by area totaling 2.67 million ha, where the bulk of which is for timber production;
    - Domestic forest reserves (Class III) are for local people to gather firewood and building materials collections only for subsistence living;
    - Amenity forest reserves (Class IV) are for recreation purposes within local districts;
    - Mangrove forest reserves (Class V) are for the protection of the mangrove ecosystem as a source of food (fish, prawns and crabs) for local communities;

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[19] Department of Statistics, Malaysia. 2011. Labour Force Survey Time Series Data 2001-2009.
[20] The oil palm sector is currently the number one agriculture sub-sector in Malaysia, and is Malaysia's fourth most important overall sector in terms of income.

Table 3. Export of major commodities from Sabah (2005-2009)

(a) By production (tonnes)

Year	Total Export (tonnes)	Palm Oil (tonnes)	%Tot	Palm Kernal Oil (tonne)	%Tot	Rubber (tonne)	%Tot	Cocoa Beans (tonne)	%Tot
2005	5,607,450,000	5,010,158,000	89.3%	512,673,000	9.1%	74,164,000	1.3%	10,455,000	0.19%
2006	6,026,148,000	5,410,658,000	89.8%	535,319,000	8.9%	71,579,000	1.2%	8,592,000	0.14%
2007	6,122,175,000	5,501,864,000	89.9%	547,212,000	8.9%	64,407,000	1.1%	8,692,000	0.14%
2008	6,364,875,000	5,731,802,000	90.1%	568,776,000	8.9%	61,168,000	1.0%	3,129,000	0.05%
2009	6,326,583,000	5,723,510,000	90.5%	536,160,000	8.5%	63,494,000	1.0%	3,419,000	0.05%

(a) By export value (RM)

Year	Total Export Sabah (RM)	Total (RM)	%Sabah	Palm Oil (RM)	%Tot	%Sabah	Palm Kernal Oil (RM)	%Tot	%Sabah	Rubber (RM)	%Tot	%Sabah	Cocoa Beans (RM)	%Tot	%Sabah
2005	23,883,246,000	8,527,899,000	36%	7,052,417,000	83%	30%	1,135,131,000	13%	5%	283,396,000	3%	1.2%	56,955,000	1%	0.2%
2006	27,002,478,000	9,629,133,000	36%	8,060,566,000	84%	30%	1,035,850,000	11%	4%	489,050,000	5%	1.8%	43,667,000	0%	0.2%
2007	33,603,884,000	14,789,964,000	44%	12,784,959,000	86%	38%	1,503,376,000	10%	4%	453,635,000	3%	1.3%	47,994,000	0%	0.1%
2008	48,146,184,000	19,553,755,000	41%	16,976,598,000	87%	35%	2,028,709,000	10%	4%	525,157,000	3%	1.1%	23,291,000	0%	0.0%
2009	37,178,141,000	14,208,610,000	38%	12,576,569,000	89%	34%	1,235,952,000	9%	3%	366,927,000	3%	1.0%	29,162,000	0%	0.1%

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- Virgin Jungle Reserves (Class VI) are primary forest that has been set aside for scientific research and educational purposes;
- Wildlife reserves (Class VII) are conserved as wildlife sanctuaries.

32. A significant portion of the use values comes from the Class II Commercial forest reserves, which are equivalent to 74% of total forest reserve area and some 36% of Sabah's overall land area. The most important use value is, unsurprisingly, timber. In 2009, total timber export earnings were RM2.7 billion, representing 7% of Sabah's total export earnings of RM37.2 billion (**Table 4**). Plywood commands the highest earnings, with 49% of total export earnings, followed by sawn timber (26%), sawlogs (10%), timber mouldings (6%), veneer (5%), and laminated wood (4%). Timber export earnings in 2009 registered a drop against previous years.

33. In volume terms, timber export earnings corresponded to a total production of 1.2 million m^3 in 2009, with plywood representing 81% of the total wood output, veneer (7%), laminated wood (7%) and wooden mouldings (5%). Total timber production from planted forests was 4.72 million m^3 valued at RM22.5 million. Annual timber production for the period 2005-2009 has been on a declining trend, which is likely to continue into the future, yet it will continue to contribute significantly to Sabah's economy.

A significant portion of timber is processed locally. Currently, there are 122 sawmills, 38 veneer / plywood processing plants, 70 particle board mills, 2 paper mills, 1 chip mill, 2 wood preservative plants, 12 kiln dried plants, and 44 kiln dried plants. These forestry industries employ a total of 43,432 people. Additional economic spin-offs from these are business opportunities in the food and material supply chain, medical and tourism benefits.

34. Non-wood forest products (NWFPs) are a second significant use value associated with forested lands, and are an important source of income for rural communities in Sabah. The most significant NWFP is rattan. Seven of the world's 13 genera of rattan, comprising some 50 species, are found in the natural forests of Sabah. The most important genera of commercial value are *Calamus, Kortalsia, Daemonorops* and *Plectocomia* (Dransfield, 1984[21]). Rattan has multiple uses, including for making furniture parts, fish traps, baskets, mats, hats and walking sticks (Dransfield and Manokaran, 1993[22]). In 1987, Sabah exported 6,340 tonnes of rattan worth RM22 million. By 2008, however, the production of rattan from natural forests had been dramatically reduced to 141 tonnes—a collapse associated with the reduction in primary forests. Nevertheless, rattan continues to play an important role in the livelihood of local communities.

35. Medicinal plants remain an important category of NWFPs for Sabah's population. In a survey of 22 village households living adjacent to the Crocker Range along the west coast of Sabah, 21 of the households collected and used wild medicinal plants for healthcare needs (Anderson et al., 2003[23]). A total of 110 specimens representing 40 families were identified, most of which come from secondary forests. Another study on the traditional use of medicinal plants in Lower Segama reported that the Tidong communities collected medicinal plants from forests that include sambung (*Blumea balsamifera*), tongkat Ali (*Eurycoma longifolia*), daun ular (*Cratoxylum* sp.), lampuyang (*Zingeber* sp.), asuk-asuk, kacip Fatimah, lampunis, imbakawan, kengei and lasing to treat gastritis, stomach ache, light injury, snakebite, fever, headache, and hypertension (Poukin et al., 2006[24]). The value of these medicinal plants has not been estimated, but the world trade in raw materials for botanical medicines, vitamins and minerals was estimated at US$8 billion, and most of these come from tropical forests (Ten Kate and Laird, 1999[25]).

[21] Dransfield, J. 1984. The rattans of Sabah. Forest Record no. 13. Sabah Forestry Department, Malaysia. 182 pp.

[22] Dransfield, J.and Manokaran, N. 1993. Ratans. Plant resources of Southeast Asia. Wageningen. 137 pp.

23 Andersen, J., Nilsson, C., de Richelieu, T., Fridriksdottir, H., Gobilick, J., Mertz, O. and Gausset, Q. 2003. Local use of forest products in Kuyongon, Sabah, Malaysia. ASEAN Review of Biodiversity and Environmental Conservation.

[24] Poukin, E., Maryati, M., Sofian Abu Bakar and Intan Azirah Abdul Rahman. 2006. Traditional use of medicinal plants among the Tidong Communities in Lower Segama. In Maryati, M., Bernard, H., Sofian Abu Bakar, Matsunaga, R. (eds.): Lower Segama Scientific Expedition. Universiti Malaysia Sabah.

[25] Ten Kate, K. and Laird, S.A. 1999. Commercial use of Biodiversity: Access to genetic resources and benefit sharing. Earthscan Publication Ltd.

Table 4. Export of timber products from Sabah (2005-2009)

(a) By volume (m³)

Year	Total Timber Export (m³)	Sawlogs (m³)	%Tot	Sawntimber (m³)	%Tot	%Sabah	Veneer (m3)	%Tot	Plywood (m3)	%Tot	Laminated Wood (m3)	%Tot	Wooden Mouldings (m3)	%Tot
2005	1,664,214,000	1,205,000	0.07%	647,000	0.0%	2%	125,713,000	7.6%	1,389,651,000	83.5%	108,973,000	6.5%	38,025,000	2.3%
2006	1,590,008,000	903,000	0.06%	603,000	0.0%	2%	94,703,000	6.0%	1,348,334,000	84.8%	101,023,000	6.4%	44,442,000	2.8%
2007	1,653,689,000	950,000	0.06%	603,000	0.0%	1%	98,237,000	5.9%	1,383,171,000	83.6%	106,724,000	6.5%	64,004,000	3.9%
2008	1,359,934,000	596,000	0.04%	531,000	0.0%	1%	98,351,000	7.2%	1,123,510,000	82.6%	93,430,000	6.9%	43,516,000	3.2%
2009	1,214,525,000	485,000	0.04%	455,000	0.0%	1%	97,787,000	8.1%	991,268,000	81.6%	68,761,000	5.7%	55,769,000	4.6%

(b) By value (RM)

Year	Total Export Sabah (RM)	Total Timber Export (RM)	%Sabah	Sawlogs (RM)	%Tot	Sawntimber (RM)	%Tot	%Sabah	Veneer (RM)	%Tot	%Sabah	Plywood (RM)	%Tot	%Sabah	Laminated Wood (RM)	%Tot	%Sabah	Wooden Mouldings (RM)	%Tot	%Sabah
2005	23,883,246,000	3,435,743,000	14%	591,810,000	17%	822,497,000	24%	3%	145,643,000	4%	1%	1,661,703,000	48%	7%	132,378,000	4%	1%	81,712,000	2%	0%
2006	27,002,478,000	3,585,815,000	13%	457,056,000	13%	870,277,000	24%	3%	126,215,000	4%	0%	1,898,147,000	53%	7%	129,927,000	4%	0%	104,193,000	3%	0%
2007	33,603,884,000	3,745,914,000	11%	454,604,000	12%	938,051,000	25%	3%	133,904,000	4%	0%	1,903,437,000	51%	6%	134,478,000	4%	0%	181,440,000	5%	1%
2008	48,146,184,000	3,132,800,000	7%	345,863,000	11%	853,399,000	27%	2%	131,673,000	4%	0%	1,544,654,000	49%	3%	128,182,000	4%	0%	129,029,000	4%	0%
2009	37,178,141,000	2,701,219,000	7%	262,580,000	10%	715,747,000	26%	2%	132,122,000	5%	0%	1,311,382,000	49%	4%	106,385,000	4%	0%	173,003,000	6%	0%

36. Other NWFPs in demand includes a highly priced resin extracted from gaharu wood (*Aquilaria malaccensis*), which is used for making essential oils. Lower grades of essential oil from this species fetch between US$19 and US$9,589/kg (Chakrabarty et al., 1994[26]). More expensive grades can sell for up to US$27,400/kg. Gaharu contributed between RM222 and RM338 or 33-38% of the total income of those rural households being surveyed in Malaysia (Lim et al., 2007[27]). The extremely high price paid for gaharu had motivated indiscriminate felling of the tree in protected areas such as the Maliau Basin Conservation area; as a result, the tree is facing extinction in Sabah. Hence, extraction of this species has been prohibited under the Sabah Forest Enactment (1968) since 1994, and its trade is also banned under the Convention in International Trade in Endangered Species (CITES).

37. Forest lands also provide a potentially sustainable source of wildlife products. A number of these species are hunted for game, as well as for their meat, skins, hides, medicinal value and for use as decorative items. The estimated total revenue from wildlife products in 1988 amounted to about RM 6 million (Sabah Statistics Department, 1988[28]). However, this figure represents only a small fraction of the total value of wildlife consumptive use, as wildlife is rarely sold in markets, but typically consumed as household food (Stuebing et al., 1993[29]) or traded illegally. The illegal wildlife trade includes live pets, hunting trophies, fashion accessories, cultural artifacts, ingredients for traditional medicine and wild meat (The Star Online, 2010[30]). For example, sun bears are sought after as pets priced at US$15-240 per animal, for medicine at US$10-55 per gall bladder and as decorative trophies at US$250 per paw (Meijaard, 1999[31]).

38. In the category of non-use values, the forests of Sabah also provide vital ecological services, such as water supply, flood control, carbon sequestration and climate regulation. There are 19 river basins in Sabah, most of which are located in the upland regions in the interior of Sabah. These water catchments contain pristine forests that are important in regulating the hydrological cycle. The Kinabatangan river basin on the East Coast is the largest, covering an area of 15,385 km^2, followed by the Padas river basin on the west coast which covers an area of 8,726 km^2. There are 13 main rivers in these 19 river basins. At 560 km in length, the Kinabatangan River draining much of the eastern region of Sabah is the longest in Sabah, and the second longest river in Malaysia. The Kinabatangan basin was identified by a 2011 study commissioned by WWF as one of two river basins in Sabah where pilot studies should be undertaken to test the business case for implementing payment for watershed services[32]. On the west coast, the Padas river is being utilized for hydro-electricity generation and provides approximately 340,000 MWh or 30% of Sabah's total electricity requirements. More than 90% of the water from these river basins is utilized for residential, industrial and irrigation in the agriculture sector (Government of Sabah, 1998[33]). Many Malaysian rivers also have high recreation value. For example, the upper Padas river and Kiulus river are popular for white water rafting. Traditionally, most rivers in Sabah are utilized by rural riverine populations for daily consumptive uses, and as means of travelling.

39. The State has yet to capitalize on the various goods and services provided through payment for ecosystem services (PES) mechanisms. For example, a study commissioned by the Sabah Forestry Department in 2009 estimated that the 3.6 million ha forest reserves holds *ca.* 566 million tonnes of carbon with a potential value of US$2.8 billion (valued at US$5/tonne of CO_2). Sabah has pioneered two carbon offset projects on a bilateral arrangement. It has been estimated that primary forests in the east coast of Sabah within the Ulu Segama Forest Reserve hold a carbon stock of *ca.* 400 Mg C/ha, which was reduced by half to 200 Mg C/ha following timber harvesting (Tay, 1999[34]). Studies by Kitayama et al. (2010[35]) for Deramakot Forest Reserve in Sabah reported similar values for logged forests of between 126 and 162 Mg C/ha. Applying a conservative price for carbon at USD10/Mg CO_2 or USD36.7/Mg C,

[26] Chakrabarty K, Kumar A & Menon V (1994), Trade in Agarwood. Traffic India and WWF-India, New Delhi.

[27] Lim, H.F., Parid, M.M. & Chang, Y.S. 2007. The contribution of gaharu to harvesting to household economy. MOSTI project no. 04-03-10-SF0020.

[28] Sabah Statistic Department, 1988. Year book of statistics Sabah 1988.

[29] Stuebing, R.B., Gasis, J. and Lee, B.H. 1993. Economic exploitation of wildlife in Sabah: an ecological perspective. Sabah Museum Journal 1:73-87

[30] The Star Online, 2010. Illegal wildlife trade is still rife in Sabah. 15 December 2010.

[31] Meijaard, E. 1999. Human imposed threats to sun bear in Borneo. Urus. 11: 185-192.

[32] Witteveen Bos Indonesia, 2011. Quick Scan watershed services, Heart of Borneo, Report to WWF.

[33] Government of Sabah. 1998. Sabah coastal zone profile 1988.

[34] Tay, J. 1999. Economics of reduced impact logging in Sabah, Malaysia. PhD. Thesis. University of North Wales, Bangor, UK.

[35] Kitayama, K., Imai, N., Titin, J., Ong, R., Chung, A. and Lee, Y.F. 2010. Options to maximize the benefits of REDD+ in Sabah: Suggestions based on a case study in Deramakot.

the carbon value per hectare for primary and secondary forests would be USD14,680 and USD4,624, respectively.

Tourism

40. Tourism is envisaged to be a key economic driver for the services sector in Sabah being the third highest contributor to the state's economy after agriculture and manufacturing. It contributed 7.4% of Sabah's GDP in the 8th Malaysia Plan and 10% in the 9th Malaysia Plan. Growth in Sabah's ecotourism sector is evidenced in the visitors' statistics and receipts. In 2005, Sabah recorded arrivals of 1.29 million, which had doubled to 2.50 million by 2010 registering a compounded growth rate of 10% per annum. Sabah tourism also recorded strong growth in tourism receipts with an annual compounded growth rate of 27.4% over the last five years[36]. Per capita international tourist spending of RM2,517 is also higher than the national average of RM2,067; its compounded annual growth rate is three times the growth rate recorded by Malaysia –5.05% vs. 1.60%. Tourism receipts are projected to increase to RM8 billion in 2012 and RM48.5 billion by 2025.

41. Sabah's tourism strength lies mainly in its nature attractions, underpinned by many nature and wildlife conservation areas and parks. A survey undertaken in 1994 reported that 69% of that year's 450,120 visitors were attracted to Sabah's nature, flora and wildlife[37]. Major nature destinations include the UNESCO World Heritage Mount Kinabalu Park, Sepilok Orang-utan Rehabilitation Centre, Lower Kinabatangan / Sukau Wetlands, Tabin Wildlife Sanctuary, Gomatong Cave, Maliau Basin, Danum Valley, Tawau Hills Park, and Poring Hot Spring. Sabah is also endowed with many islands off its coast which include the Tunku Abdul Rahman Marine Park, Sapi Island, Manukan Island, Mamutik Island, Pulau Tiga, and Selingan Turtle Island.

42. Hence, the focus of Sabah's tourism strategy under the 10th Malaysia Plan will be to strengthen eco-tourism development[38]. In moving forward, the existing network of protected areas will be enhanced and new nature sites will be developed to showcase the biodiversity of Sabah's rainforests, marine and fresh water habitats, and their associated flora and fauna. These developments will be guided by careful planning and management consistent with the Sabah Tourism Development Policy.

Forestry, agriculture and other land uses in and around the project landscape

43. The project landscape covers 261,264 ha and represents 25% of the overall area managed by Yayasan Sabah. The broader Yayasan Sabah Conservation Area (YSCA) consists of 1,007,073 ha, 77% or 778,083 ha. of which are Class II Commercial forest reserves that have been logged from the early 1970s except areas allocated for water catchment, water falls and rafflesia reserves. Of these 778,083 ha, 39% or 396,696 ha, are under natural forest management (NFM) where timber harvesting remains active in some parts. Another 32% or 322,873 ha have been locked-up under collaborative arrangements with third parties involving enrichment planting, research and recreation. Total area set aside under strict protection represents 17% or 168,087 ha of the YSCA. Areas thus far earmarked for tree and rubber plantations occupy 5% or 48,697 ha of the YSCA. Another 11% or 109,600 ha is being developed into oil palm plantation under a separate licence and subsidiary company (Benta Wawasan Sdn. Bhd.) under YS management.

44. The present landuses within the project landscape itself are as follows (see also **Figure 4** below):

    a) 180,426 ha (69% of the Project landscape) of Class II Commercial forest reserves designated as natural forest management (NFM) area. This area is a contiguous block running in a northeast-southwest orientation in the west of the project landscape. The northern half of this area falls within Forest Management Unit 23 (FMU23) and the southern half in FMU24; both FMUs fall within the Gunung Rara Forest Reserve. This forest reserve shares a common boundary with the Maliau Basin Conservation Area to the West, and the Imbak Canyon Conservation Area to the North.

[36] Institute for Development Studies, 2007. Sabah Development Corridor Socio-Economic Blueprint.
[37] Government of Sabah, 1998. Sabah Coastal Zone Profile.
[38] Keynote address by YB Datuk Masidi Anjun, the Minister of Tourism, Culture and Environment, Sabah. http://www.itc.gov.my/media/
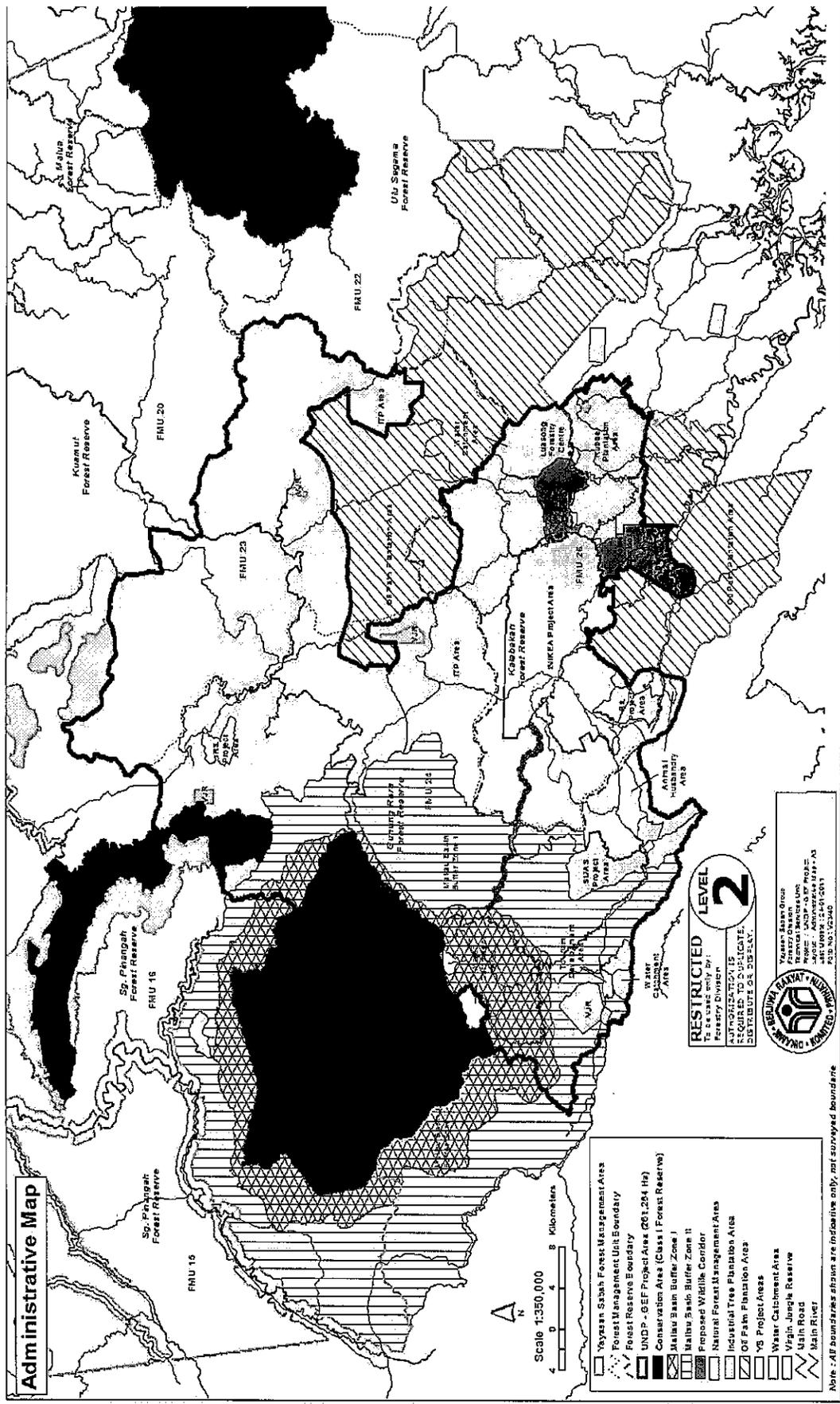
Figure
4:

Landuses within and adjacent to project landscape

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b) 43,821 ha (16%) of Industrial Tree Plantation (ITP) located in the south-eastern part of the project landscape. Most of this area is within FMU26 of the Kalabakan Forest Reserve and is being planted with rubber and acacia.

c) 18,500 ha (6%) of degraded forests that are in the process of being planted with indigenous tree species by enrichment planting. The area is located in a contiguous block in the lower eastern part of the project landscape within FMU26 of the Kalabakan Forest Reserve;

d) 18,517 ha (6%) under various forms of conservation for Water Catchment (5,530 ha), Virgin Jungle Reserves (2,656 ha), long-term research plots (SUAS: 3,300 ha; RIL: 2,665 ha), Wildlife Corridors (INIKEA-Luasong: 4,632 ha; SUAS-Maliau: 1,000 ha) and Salt Lick (2,149 ha).

45. Major land uses adjacent to the project landscape, but within the broader YSCA are as follows;

a) 132,640 ha of Class I Protection Forest Reserves in three separate blocks i.e., the Maliau Basin Conservation Area (58,840 ha) to the West, the Danum Valley Conservation Area (43,800 ha) in the East and the Imbak Canyon Conservation Area (16,750 ha) in the North. These areas contain some of the largest and most globally significant biodiversity in Southeast Asia.

b) 109,500 ha of logged-over forests 80% of which has been developed into oil palm plantation. The plantation is separated into two blocks; the larger block, known as Benta I contains 79,400 ha and has a common boundary with the project landscape on the east. A smaller block, Benta II, is located adjacent to the southern part of the project landscape and covers 30,200 ha.

46. The present land uses within the project landscape reflect an emerging multiple-use trend within Sabah's forest reserves. The motivation to replace natural forests with fast growing plantations is based on the more rapid return on investment associated with latter's comparatively short gestation period. Exotic tree species such as acacia, gmelina or eucalyptus takes 10-15 years to mature for sawlog, while indigenous tree species can take up to 60 years to mature. Rubber grown for latex is tappable in 6 years and annually thereafter until age 25, at which point the tree can be harvested for its timber

47. Within the project landscape, a production forest contractor may be allocated one or more coupes ranging from 2,000 to 5,000 ha. The maximum tenure of these contracts is 5-years, but they are renewable on a case-by-case basis. There are presently seven coupes active within the project landscape's NFM area. Of these, three are expiring in 2011, one in 2013 and two in 2014. These coupes range from 830 to 7,699 ha.

48. The economic value of the provisioning and regulating services provided by the target landscape is summarized in **Table 5**. It should be noted that often the valuation of ecosystem services, especially

Table 5. Summary of information available to inform valuation of ecosystem service

Type of Ecosystem Service		Economic benefit / outcome	Economic Valuation
Provisioning Services	Timber	Timber	**Timber (NFM):** RM5,412/ha (gross) at sales value of RM164/m^3 and harvestable volume of 33m^3/ha. Sales volume for 2010 at 1,968,253 m^3 corresponding to sales value of RM322,236,193. Harvestable volume based on CHP for YT2/08 at 32.67 m3/ha. **Rubber:** Financial analysis - NPV of RM24,506.678 and an IRR of 11% (22 year project period). This equates to RM 3,930 per ha NPV over 22 years and is based on rubber production (from year 10) and wood in year 16). See Nicohandal SDN. BHD (undated). **Acacia:** RM 21,036/ha (US$6,857) (8 year rotation, rough, undiscounted estimate of net financial returns at year 8)
	NTFPs	Fuelwood, construction products, food, medicines	No quantitative information on the collection of NTFPs
	Genetics	Variety in the forest flora and fauna gene pool	Service first needs to be defined quantitatively
	Ornamental resources	Ornamental resources	Service first needs to be defined quantitatively
Regulating Services	Regulation of GHGs	Carbon sequestration	No site specific data. Estimates from Sabah: Primary forests: US$14,680/ha/year Secondary forests:US$4,624/ha/year
	Micro-climate regulation	May effect rainfall & moderate local temperature extremes	This service needs to be defined and quantified for the target landscape before valuation is possible (bio-physical data required)
	Water regulation	Flood protection	*As above*
		Water quality maintenance (for drinking water, fisheries, hydropower)	*As above*
	Erosion control	Sediment retention (can benefit reservoirs and treatment plants)	*As above*
	Educational	Education	Education service needs to be defined. Could be partly based on research expenditures
	Recreation and ecotourism	Recreational hunting, birdwatching, hiking, ecotourism	Tourism plan needs to be developed including carrying capacity and proposed fees and charges
	Biodiversity non-use	Non-use value	Flora and Fauna needs to be quantified and determined to what extent it is of regional / global significance

regulating services, is not possible due to missing bio-physical data. Unsurprisingly, timber commands the highest gross net present value of RM30,378/ha among the provisioning services. The NPV for timber from natural forest is estimated at RM5,412/ha at a harvestable volume of 33m³/ha valued at RM164/m³. Acacia is planted for sawlog on an 8-year rotation yielding an NPV of RM21,036/ha (undiscounted). Rubber is grown for latex and wood over a gestation of 22 years with an NPV of RM3,930/ha. Carbon value in primary forest was estimated at RM51,380/ha/yr (US$14,680 at exchange rate of US$1=RM3.50), while for secondary forest at RM16,184/ha/yr (US$4,624/ha/yr).

PROTECTED AREA SYSTEMS CONTEXT

49. Many of the key environmental values described in the forgoing section—in particular those related to water, carbon and biodiversity values—can be conserved through Sabah's protected area systems. The following description is confined to the terrestrial protected sub-system of relevance to this project.

50. Terrestrial Protected Areas (PA) in Sabah have their origins in the 1950s, and currently cover some 1.36 million ha., or 18.6% of Sabah's total land mass of (see **Table 6**). Protected areas in Sabah are established by a legislative process initiated by the respective government/statutory bodies through powers conferred under their respective enactments. There are three governmental bodies having such authority: Sabah Parks, the Sabah Wildlife Department and the Forest Department. These are described in turn below.

51. According to the Sabah Parks Enactment 1984, Sabah Parks is responsible for constituting, administering, and financing all State Parks and Reserves in Sabah. To date, Sabah Parks has established a total of 243,216 ha of protected areas at various locations in Sabah for education, research and recreational use. The primary uses in the State Parks are recreation, education and research.

52. Wildlife conservation in Sabah is under the jurisdiction of the Sabah Wildlife Department, whose enactment (Wildlife Conservation Enactment 1997) provides for three types of protected areas. These are: (i) Conservation Areas, designed for fast and flexible protection of wildlife and habitats; (ii) Wildlife Sanctuaries, the strongest conservation category for fauna, flora, genetic resources and habitats, and (iii) Wildlife Hunting Areas intended for animal population management by regulated hunting (Sabah Wildlife Department, 2010[39]). Currently, a number of nature areas have been gazetted under the provisions totaling 162,636 ha.

53. Under the Forest Enactment (1968), the Forest Department is responsible for seven classes of forest reserves[40] (**Table 6**). Four of these (see Table 6 below) are strict protection areas with no destructive activities allowed within them. The first of these is the Class I Protected Forests, which are under strict protection for education, research and recreation purposes. These include Danum Valley (43,800 ha), Maliau Basin (58,840 ha) and Imbak Canyon (30,000 ha) Conservation Areas (all of which either border, or are near to, the project landscape and are within the YSCA). These conservation areas received further legislative protection under the State Natural Heritage Law. The three remaining forest reserve classes subject to strict protection are: (i) Class V, which consists of mangrove areas protected as breeding areas for aquatic and fauna habitat; (ii) Class VI Virgin Jungle Reserves (VJRs), which are small (<1,000 ha.), fragmented nature reserves that were left unlogged due to their location in steep, rocky and otherwise inaccessible terrain and that are now used for education, research and recreation. The present management provision in most VJRs is in the form of protecting them from encroachment. (iii) Class VII, protected areas for wildlife conservation. Altogether, 56 reserves covering 910,342 ha. are classified within these four strict protection reserve classes.

54. As noted above, the area immediately surrounding the project landscape includes several of the key protected areas in Sabah. The Maliau Basin Conservation Area - known to many as Sabah's lost world - is isolated from other areas due to its rugged topography. Its unique geomorphic processes are exemplified by the steep escarpment rising to 1,700 m to the rim of a basin from within Maliau. Scientists believe that

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[39] Sabah Wildlife Department, 2010. Protected areas in Sabah. *http://www.wildlife.sabah.gov.my/WildlifeEcotourism.htm*
[40] See para. 30 above for descriptions of each of these classes.

Table 6.   Protected areas in Sabah

Management authority	PA type	Protected Areas (PAs)	Area (Ha): Terrestrial	Area (ha): Marine	Area (ha) Total
Sabah Parks	Terrestrial	Kinabalu Park, Tawau Hills Park, Crocker Range Park,	243,216		243,216
	Marine	Tunku Abdul Rahman Park, Turtle Island Park, Pulau Tiga Park, Tun SakaranPark, Tun Mustapha Park		1,032,613	1,032,613
Sabah Wildlife	Terrestrial	Tabin Wildlife Sanctuary, Lower Kinabatangan, Sipadan, Kota Belud, Mantanani Kecil, KK Bird Sanctuary,	162,636		162,636
	Marine	Sugud Islands Conservation		46,300	46,300
Sabah Forestry Department	Class I protected forest	Bald Hill, Balembangan, Bidu-bidu, Gemok Hill, Gomantong, Gunung Lumaku, Kelawat, Leila, Limau-limauan, Lipaso, Mt. Cochrane,Mt. Conner, Mt. Walker, Pababag,Quoin Hill, Segarong, Selangan Island, Sosopodon, Tanjong Nagas, Tambalugu, Tawai, Tenompok, Timbun Mata, Tinagat, Ulu Telupid, Mandamai, Mount Pock, Mt. Hatton, Binsuluk, Gunong Lumaku, Klias, Sungai Serudong, Lamag, Mt. Wullersdoft, Mt. Andrassy, Ulu Kalumpang, Bukit Kuamus, Botitian, Bengkoka, Bukit Taviu, Silabukan, Danum Valley, Maliau Basin, Sapagaya, Gomantong-Geluang-Gesusu, Bukit Hampuan , Bukau Api-Api, Ganui, Sipitang, Imbak Canyon, Sungai Tongod, Pulau Saga, Saddle & Laila, Gana, Sungai Kiluyu, Gunung Tinkar, Banggi, Dalit, Trusmadi	466.757		466.757
	Class V mangrove	Pulau Malawali, Sg. Lasun/Pulau Evans	320,522		320,522
	Class VI Virgin Jungle Reserves	Taman Botanikal Sepilok, Kerangas, Merisuli, Lajong, Siaugau and Mesapol, Milian Labau, Kretam, Lungmanis, Melawaring, Kitabu, Loro, Sg. Simpang, Garinono, Labuk Road, Umas-Umas, Rafflesia, Ulu Sepapayau, Sg. Lokan, Mengal	92,401		92,401
	Class VII, Wildlife reserve	Tabin Wildlife Sanctuaryong,	132,653		132,653
		Total	1,418,185	1,078,913	2,497,098

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the crater was made through sedimentary forces over 15 million years ago, combined with major geological shifts, creating more than 30 spectacular waterfalls in the valley. Maliau Basin is an area of incredible biodiversity featuring areas of lowland rainforest, heath forests and oak conifer, with cloud forests on the higher elevations. With over 1,800 species of plant being recorded here including 80 species of orchid and six endemic pitcher plants, it is one of the rare sites in Sabah that is home to the rare rafflesia. Some of the world's most rare and endangered wildlife species are also found here including the Sumatran Rhinoceros, wild buffalo (Banteng), Orang Utan and Proboscis monkey.

55. Of similar conservation significance to Maliau Basin is Danum Valley Conservation Area (DVCA). The area contains some of the oldest geological, structural and geomorphological history of the central part of Sabah. DVCA occupies much of the upper catchments of the Segama River, and comprise mostly rugged terrain between 150 and 1,000 m a.s.l. It is entirely primary forest dominated by trees in the family Dipterocarpacea, where 20 of the 59 plant genera are endemic to Danum. The vertebrate fauna of DVCA is equally rich with records of over 120 species of mammals, 300 birds, 72 reptiles, 56 amphibians and 37 fishes. Of particular significance are populations of 10 species of primates including the orang utan and proboscis monkey as well as clouded leopard, Malayan sun bear and Borneo pigmy elephant. A small number of Sumatran rhino also survive, making DVCA one of the only two or three such sites known in Borneo.

56. Imbak Canyon is a 25 km long valley hemmed in on three sides by sandstone ridges rising o 1,120 m. This unique geological feature serves as an important catchment area for the Imbak River, which drains into the Melian River and the Kinabatangan river system. The Canyon is one of the few contiguous blocks

of undisturbed tropical rainforests, and is still largely unexplored. Small scientific expeditions to the area have found that Imbak Canyon is refuge to a number of new flora and fauna species. Its faunal composition includes the Sun bears, pigmy elephants and rare bird species such as the Oriental Darter and Helmeted Hornbill.

SUSTAINABLE FINANCE CONTEXT

57. **Annex** 4 provides the baseline results for the financial scorecard.

58. The main source of funding for forest management in Sabah, including management of Class I and other strict protection forest reserves, is the revenues generated by production forest concessions.[41] This is unsurprising, given that such royalties represent about 75% of total forest sector revenues. However, these revenues are declining; state-wide, revenue from the forestry sector has declined over the last three years from RM551 million in 2007 to RM345 million in 2009, due to a corresponding decline in forest harvests (Sabah Forestry Department, 2009)[42]. Conversely, forest management expenditures have increased from RM78 million to M95 million for the same years; taken together, these trends are clearly unsustainable. With the ongoing decline in timber resources from natural forests, forest sector revenues are very likely to decline further, leading to increasing pressure being placed on forest sector, including conservation, budgets.

59. An essential component of sustainable forest finance is that operations must generate optimal rent capture. The main source of funding for the project landscape comes from revenues generated from the sales of timber from the NFM areas. Timber rent captured by YS is at a fixed rate of RM80 m^3 paid by sub-contractors who hold the timber marketing rights. By surrendering the marketing rights to these contractors, rent capture is therefore not maximized by YS. On the other hand, production forest contractors tend to maximize profit by increasing production output.

60. The annual operating budget for the project landscape is approximately RM11-12 million. The approved expenditure budget for 2011 was RM11.4 million. A high proportion of the budget is allocated to

[41] To be clear, logging is not permitted within the strict protection reserves themselves; however, revenues generated by logging within Class II reserves currently represents a major portion of SFD funding, and therefore a key, albeit indirect, source of financing for management of strict protection reserves.
[42] Sabah Forestry Department, 2009. Annual Report 2009.

production (32%), camp services (23.5%) and office expenditure (13%). This excludes budget for specific projects such as the INIKEA and SUAS which have separate budget lines. In terms of the possible financing gap for the *current activities* of the site, this could be conservatively estimated at RM12 million (the difference between the original proposed budget and the actual budget). The actual budget is therefore 57% of the budget requested.

LEGAL, INSTITUTIONAL AND POLICY CONTEXT

61. After the formation of Malaysia in 1963, the Federal Constitution was amended to include special provisions applicable to the states of Sabah and Sarawak. Some federal Acts of Parliament apply differently to these states, such as Acts related to immigration, land and natural resource management. For example, in the Peninsular, the *National Land Code* governs most of the laws relating to land. In Sabah, the main legislation is the *Sabah Land Ordinance*; and in Sarawak, the *Sarawak Land Code*. Governance of the State of Sabah is the responsibility of various authorities of the State government of Sabah, and the Federal Departments based in the State. The mandates of these agencies can be found in various enactments, which range from the provision of ratified international treaties, through Federal legislations, to State Acts and Ordinances and down to regulations and by-laws.

62. Within the Government of the State of Sabah, five levels of authority can be identified. The Ministries represent the policymaking base and the highest level of decision making in the State. At present, there are 11 ministries in Sabah having 14 Cabinet-rank ministers, and 14 assistant ministers, and all ministries have some interest in the management of the forestry sector. The administration of each ministry devolves downward from the highest civil servant therein: the Permanent Secretary.

63. Departments are the implementing arm of the civil service, and fall under appropriate ministries. The administrative and financial operational procedures of a department are subject to civil service regulations and procedures. Departments are headed by a Director, who reports to the Permanent Secretary. Federal ministries are usually represented by departments that provide services at the State level. Departments themselves may be further subdivided into units and/or sections which are components of the department looking after specialized parts of the role and function of that department.

64. In addition to these 'line-agency' bodies, a number of government agencies exercise authority as defined in various enactments. A Statutory Body (Agency) is an implementing arm of the civil service (similar to a department), whose roles and functions are governed by law instead of civil service regulations and procedures. The Sabah Foundation (Chief Minister Department), Sabah Parks Authority (Ministry of Culture, Tourism and Environment), Sabah Ports Authority (Ministry of Communications and Works), as well as the Municipal Councils (Ministry of Local Government and Housing) are examples of statutory agencies.

65. Given that a statutory body abides by laws defined in the relevant enactment, the decision-making process is less complicated and quicker than for governmental agencies. The Sabah Foundation ('Yayasan Sabah'), for example, which is responsible for management of the project landscape under the oversight of the Forestry Department, was established by an enactment of the Sabah State Legislature in 1966. According to the enactment, the Foundation's mission is to improve the quality of life of the people in Sabah in the fields of education, welfare and health. Its socio-economic programmes include rural health care and scholarships to Malaysians residing in Sabah, and are largely financed through proceeds from sales of timber from its one million hectare forest concession. This mission is to be financed through funds generated from a one million hectare forest concession in Sabah over which the Foundation was given a 100-year tenure. The Enactment provides for the establishment of a Board of Trustees (BoT) to manage the Foundation, the Chairman of which is the Chief Minister and whose members comprise State Cabinet Ministers (2), State Secretary, Director of Sabah Foundation, Director of the Sabah Forestry Department, appointed members (2) and the Group Corporate Secretary. Management responsibility for YS lies with the Board of Directors (BoD), whose Executive Chairman is the Director of Sabah Foundation and members comprising ex-civil servants (3), Director of Forestry Department, and the Company's Secretary. The role of the BoD is to receive and approve management recommendations from the Group of companies. There are presently a group of 20 wholly-owned and joint-venture companies within the Sabah Foundation Group involved in forestry, agro-plantation, tourism, shipping, petroleum

and gas, biotechnology, fisheries and food property and glue manufacturing. The companies under the Group are placed under a management holding company known as Innoprise Corporation Sdn Bhd (ICSB).

66. Under the Co-operative Act (1993), an agency (not necessarily an implementing agency) can be established, whose role would be to cater for the interest of special groups (for example: farmers, fishermen). It is also possible for agencies to be created under informal mechanisms directly by the Cabinet, government committees, local authorities, etc.

67. Some Federal enactments deal only with issues specific to the State, but normally Federal statutes confer certain mandates on Federal ministries, which then carry out such mandates within Sabah through their departments in the State. For example, in environmental protection, the mandate for demanding and evaluating Environmental Impact Assessment (EIA) rests with the Federal Department of the Environment (although in future the State Department may assume responsibility). Nevertheless, all commitments of the GOM in multilateral environmental agreements are implemented by the Federal Ministry of Natural Resources and Environment through these State agencies.

68. The State enacts its own laws and ordinances, which provide the mandates for the State ministries and agencies. These in turn may be empowered to draw up regulations and bylaws to execute their duties effectively.

69. The Sabah Forestry Department has overall jurisdiction over forestry matters within the 3.6 million ha of forest reserves in Sabah under the provision of the Sabah Forest Enactment (1968), which is the principal forestry law in Sabah. The Forest Enactment provides for forest reserves, and their use and management, as well as for control of cutting and removal of forest produce from state land. In addition to the Forest Enactment (1968), the planning of state forest is guided by the State Forest Policy first adopted in 1954 with further amendments made in 1974. The State Forest Policy describes the role and functions of forests, their contribution in maximizing social, economic and environmental benefits for the State, and principles of sound forest management.

70. The Sabah Forestry Department is headed by a Director, who reports to the Chief Minister coordinated through the Permanent Secretary of the State Natural Resource Unit under the Chief Minister Department. The Director is assisted by four Deputies in charge of forest sector planning, development, management, and research respectively, and 15 Divisional Heads based in the Headquarters in Sandakan. Day-to-day forestry operations are administered by 27 District Forest Officers. As of 2008, the Department has a total of 1,844 staffs comprising of 1,165 permanent posts, 37 temporary posts and 461 open vote posts and 181 contract posts (Sabah Forestry Department, 2009[43]).

71. In addition to the Forest Department, two other State bodies share jurisdiction over Sabah's forests. The first of these is the Sabah Biodiversity Council (SBC), whose functions are guided by the Sabah Biodiversity Enactment (2000). SBC was established by the Sabah State Legislature to safeguard the biodiversity and biological resources of the State. It is supported by a Secretariat known as the Sabah Biodiversity Centre (SaBC), which was established in 2008. SaBC is headed by a Director and has a management team of 10 people.

72. The second state body with forest-related responsibilities is the Sabah Wildlife Department (SWD), which is responsible for implementation of the Sabah Wildlife Enactment (1997). Under this enactment, SWD has jurisdiction over the management of wildlife within both state land and forest reserves, including wildlife sanctuaries and other protected areas. The Department also coordinates and implements CITES, and other international, national and bilateral agreements. Administratively, the SWD is under the Ministry of Tourism Development, Environment, Science and Technology (MTDEST); it is headed by a Director, who is supported by 229 staff spread across five regions (West Coast and Kudat, Keningau, Sandakan, Lahad Datu and Tawau).

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[43] Sabah Forestry Department, 2009. Annual report 2010.

73. Within this evolving landscape, a key challenge is to achieve an appropriate balance between development and environment, which is a complex relationship. The pre-requisite to this balance lies within a strong policy framework to guide developments within, as well as outside of, the forest reserves. Sabah already possesses a wide array of policies and plans related to biological conservation that includes: (a) Outline Perspective Plan for Sabah (1995-2010); (b) Sabah Physical Landuse Plan; (c) Sabah Conservation Strategy (1990); (d) Sabah Water Resources Master Plan (1998); (e) Sabah Agricultural Policy (1999-2010), and (f) Sabah Forestry Policy (2005). The intentions of these State policies and plans are in congruence with those of national policies and plans.

74. In addition to these policies, the State Cabinet has passed laws that are under the jurisdictions of various governmental departments related to environmental conservation and protection. These include the Sabah Foundation Enactment, 1966 (Sabah Foundation), Forest Enactment, 1968 (Sabah Forestry Department), Agricultural Produce Board Enactment, 1981 (Agriculture Department), Parks Enactment, 1984 (Sabah Parks), Wildlife Conservation Enactment, 1997 (Sabah Wildlife Department), Cultural Heritage (Conservation) Enactment,1997 (Sabah Museum), Sabah Water Resources Enactment, 1998 (Drainage and Irrigation Department) and the Environment Protection Enactment, 2002 (Environment Protection Department). The most recent law passed by the State Legislative Assembly is the Sabah Biodiversity Enactment 2000, which came into force only in 2002, and which paved the way for establishment of the Sabah Biodiversity Council and the Sabah Biodiversity Centre.

1.2 Threats and underlying causes

75. Major threats to globally significant forest biodiversity in Sabah are associated with the following sources: forest conversion, forest degradation, over-harvesting, fire and infrastructure expansion. Most of these threats are also present within the project landscape. The threats, and their associated underlying causes, are discussed below.

FOREST CONVERSION

76. Over the last 30 years, Sabah has experienced rapid economic growth spurred by the 5-year Malaysia Plans (MP), which are now in their 10th cycle. The ultimate goal of the MP is to lift Malaysia up from a developing to a developed nation. Sabah has relied heavily on its forest resources to finance its socio-economic development programmes, particularly in the early phase of the MPs. Thus, over the last three decades, there has been an acceleration of forest conversion, particularly outside of the forest reserves.

77. Forest conversion is a serious threat to the biodiversity of Sabah. As highlighted above, the Agriculture Sector has played an important role in Sabah's socio-economic development, contributing 38% of the State's Gross Domestic Product (GDP) in 2009. Agriculture has replaced the Forestry Sector as the top revenue earner—with the latter now leveling off at around 10%. This is not surprising given that the average annual per hectare productivity of the oil palm industry is about 18 times that of the forestry sector (Greer, 2010[44]). However, growth in the sector has largely come through expansion in total area under cultivation, with area under cultivation increasing from 263,000 ha. in 1970 to 1.47 million ha in 2009 (see Figure 3 above). This expansion has taken place almost entirely through forest conversion.

78. Looking ahead, oil palm continues to be promoted under development plans (Department of Statistics Malaysia[45]). Under the current MP, the target is to increase the palm oil industry's output by RM21.9 billion, with export earnings of RM69.3 billion (New Straits Times, 2010[46]). This increase in output will be obtained largely through expansion of agricultural land in Sabah and Malaysia. The continued heavy reliance on oil palm to propel the economic growth in Sabah means that more native forests within the

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[44] Greer, T. 2010. Planting paradise – is there an option. World Agriculture Vol.1 No.2: 18-22.
[45] Department of Statistics Malaysia, 2006. Agriculture and agro-based manufactured export: 2000-2010.
[46] New Strait Times, 2010. 10th Malaysia Plan 2011-2015.

remaining 730,000 ha of undeveloped Stateland will be cleared, thereby reducing habitat while increasing the degree of forest fragmentation.

79. Forest conversion for agriculture is also occurring within the forest reserves, albeit at a smaller scale compared to Stateland. The Forest Enactment (1968) allows for the conversion of native forests to tree plantations only in cases where the area in question contains a low growing stock of commercial tree species. At the end of 2009, total forest that had been either restored or replanted in Sabah was 326,976 ha (**Table 7**). Of these, 61% or 199,257 ha of native forest were clear-felled and converted into mono- or mixed-species exotic tree plantation; 32% or 104,110 ha of logged-over forests were treated with climber cutting, and 7% or 23,608 ha of logged or burnt forests were enriched with new native tree seedlings planted between buffers of natural forest strips. The maximum extent of forest plantation development in the Class II Commercial Forest Reserves has been set at 500,000 ha according to a Sabah Forestry Department directive. However, even meeting this limit would imply conversion of nearly 20% of existing Class II forest reserves to tree plantations..

80. The decision as to which rehabilitation or conversion option to choose is largely made on financial grounds. Climber-cutting is the least expensive compared to replanting, provided that the forest still contains sufficient stock of natural regeneration. Otherwise, areas that contained low natural regeneration or have been burnt are generally re-stocked through planting. In this case, mono- or mixed-species fast-with growing tree plantation is generally the preferred option, because it takes only 8-12 years to mature compared native tree species that requires 60-80 years. Fast-growing tree plantations also provide intermittent streams of revenues over the rotation of natural forest, which requires 60-80 years before harvest can be made. In recent years, enrichment planting using native tree species has begun to find favour, due to its lower investment cost relative to clear-fell planting, and its advantages in meeting conservation objectives. Although rattan was used in enrichment planting, it is now out of favour in Sabah because of its low harvest yield and financial return.

81. The addition of rubber to the list of approved 'tree' crops in the last five years has made it more attractive to establish forest plantations in Sabah. Prior to this addition, the approved tree crops for forest plantation were restricted to fast growing exotic tree species (e.g. *Acacia* spp., *Gmelina* spp., *Eucalyptus* spp.) or species of native origins (e.g. the dipterocarps). These crops offer significant return on investment at the cost of long-term loss of significant amounts of natural capital. To date, total forest reserves approved for rubber and oil palm plantations are *c.* 20,000 ha, and 110,000 ha, respectively.

82. Part of the future forest plantation development described above will likely be located within the proposed project landscape, but the extent remains to be determined. The threat of continuing conversion at the project landscape is therefore a very real one. About 90% of the site has been logged at least once, rendering the site in need of intensive silviculture such as climber cutting or replanting. Unless this is done, the present degraded forests will take a long time (>60 years) to become productive again, and therefore risk instead to be converted into short-rotation (8-12 years) industrial tree plantations. As discussed above, the latter approach has certain advantages from a strictly financial point of view.

83. One important underlying cause of conversion relates to the fact that forestry projects typically have to deal with crops that mature at different times. For example, oil palm matures in 3 years and is ready for harvest in the fourth year and thereafter until age 25, acacia trees mature in 6 years for pulplog and 12 years for sawlogs, and rubber trees produce latex in 6 years and harvestable wood at the end of 25 years. These crops have relatively short gestation periods compared with dipterocarps, which take 60-80 years to mature. The different crop gestation periods affect the return on investments in financial analysis due to the effect of time on discounting. Oil palm is the most profitable largely because it starts producing in the fourth year, which is much faster than any of the other crops. The yield per hectare is between 25-30 tonnes per ha and is typically priced between RM300 and RM700 per tonne. The internal rate of return (IRR) for oil palm had been estimated at between 35 and 68%, which is three to five times more than

Table 7. Forest plantation and restoration in Sabah's forest reserves

	Forest Plantation (Ha)				Native Species	Forest Restoration (Ha)		Grand Total (Ha)
	Fast Growing (1)	High Value (2)	Rattan (3)	Total Planted (4)	(5)	Natural Regeneration (6)	Total Restored (7)	(8)
A: Sabah Forestry Department:								
1 District Forestry Office	106.69	608	0	714.69	0	0	0	714.69
2 Forest Research Centre	118.11	72.61	5.43	196.15	0	0	0	196.15
3 Tangkulap/Pinangah FR (FMU17) (Tamoi)	0	0	0	0	303	15,793.00	16,096.00	16,096.00
4 Sapulut FR (FMU25)	0	363.62	0	363.62	364	603	967	1,330.62
5 Deramakot FR (FMU19A) (Balat)	0	0	0	0	1,222.58	13,023.17	14,245.75	14,245.75
6 Ulu Kalumpang/Wullersdorf FR	0	0	0	0	156.32	0	156.32	156.32
7 Timimbang/Boitian FR	0	0	0	0	69	1,375.00	1,444.00	1,444.00
Sub-Total	224.8	1044.23	5.43	1274.46	2114.9	30794.17	32909.07	34183.53
B: Yayasan Sabah								
1 ICSB (Luasong)	0	860.83	0	860.83	0	0	0	860.83
2 PISP (Luasong)	28.06	27.2	0	55.26	0	0	0	55.26
3 Forest Regeneration & Research (Danum)	6.3	131.2	0	137.5	0	100	100	237.5
4 Danum (INFAPRO)	0	0	0	0	6,046.00	5,465.50	11,511.50	11,511.50
5 Inikea Project (Kalabakan)	0	0	0	0	7,786.30	593.1	8,379.40	8,379.40
6 USM Project	0	0	0	0	1,101.00	12,204.00	13,305.00	13,305.00
Sub-Total	34.36	1019.23	0	1053.59	14933.3	18362.6	33295.9	34349.49
C: SFMLA Holders								
1 Sabah Forest Industries S/B (FMU7)	43,506.24	0	0	43,506.24	1,127.00	723.83	1,850.83	45,357.07
2 KTS Plantation S/B (FMU19B)	116	2,163.00	0	2,279.00	2,918.00	9,363.58	12,281.58	14,560.58
3 Total Degree S/B (FMU18B)	0	2,369.87	0	2,369.87	0	0	0	2,369.87
4 Tabung Haji (Bonggaya Sdn Bhd)(FMU18A)	0	2,339.20	0	2,339.20	0	0	0	2,339.20
5 TSH S/B (FMU4)	4,972.00	1,043.00	0	6,015.00	54	13,249.00	13,303.00	19,318.00
6 KM Hybrid (FMU11)	1,090.90	16.3	0	1,107.20	0	0	0	1,107.20
7 Borrion Timber S/B (FMU11)	669.31	3,353.12	0	4,022.43	24	7,550.22	7,574.22	11,596.65
8 Timberwell Berhad (FMU3)	1,939.98	479.37	0	2,419.35	0	12,332.00	12,332.00	14,751.35
9 Sapulut Forest Development S/B (FMU14)	4,185.10	1,142.61	0	5,327.71	32	6,382.74	6,414.74	11,742.45
10 Anika Desiran (FMU5)	0	0	0	0	0	2,487.00	2,487.00	2,487.00
11 Lebihasil Sdn Bhd (FMU17)	684.93	29.14	0	714.07	0	0	0	714.07
12 Maxland S/B (FMU17A)	110	0	0	110	0	168	168	278
13 Eco-Plantations S/B (FMU2)	61	0	0	61	0	2,698.00	2,698.00	2,759.00
14 Benta Wawasan S/B	10,595.00	0	0	10,595.00	0	0	0	10,595.00
Sub-Total	67,869.46	12,996.61	0.00	80,866.07	4,155.00	54,954.37	59,109.37	139,975.44
D: Agencies/Companies								
2 Sabah Softwood S/B	24,224.20	1,079.34	0	25,303.54	0	0	0	25,303.54
3 Ladang Jati Keningau S/B	15.18	1,467.82	0	1,483.00	0	0	0	1,483.00
4 Boonrich S/B	12.15	634	0	646.15	0	0	0	646.15
5 SAFODA								
a) SAFODA Project	10,728.18	76.7	2,399.00	13,203.88	0	0	0	13,203.88
b) SAFODA Scheme	1,277.30	0	0	1,277.30	0	0	0	1,277.30
6 Syarikat Lak S/B	117	0	0	117	0	0	0	117
7 Syarikat Justin Enterprise S/B	0	121	0	121	0	0	0	121
8 Terusan Enterprise S/B	0	81	0	81	0	0	0	81
9 Kebun Rimau S/B								
a) Kebun Sg. Balung	37.63	168.35	0	205.98	0	0	0	205.98
b) Kebun Rimau Estate	0	6.84	0	6.84	0	0	0	6.84
Sub-Total	36,411.64	3,635.05	2,399.00	42,445.69	0.00	0.00	0.00	42,445.69
E: Lembaga Industri Getah Sabah (LIGS)	0	76,021.69	0	76,021.69	0	0	0	76,021.69
Sub-Total	0	76,021.69	0	76,021.69	0	0	0	76,021.69
Grand Total	104,540.26	94,716.81	2,404.43	201,661.50	21,203.20	104,111.14	125,314.34	326,975.84

1&2: Clear fell and plant   199,257.07 Ha   60.9%
3&5: Enrichment Planting in degraed forests   23,607.63 Ha   7.2%
6: Liberation thinning   104,111.14 Ha   31.8%

other tree crops (Bacha & Rodriquez, 2007[47]; Noormahayu1 et al.[48]). A comparative financial analysis of rubber, sentang, teak and acacia showed investment returns of 11%, 16%, 17% and 15%, respectively (Krisnapillay, 1998[49]). Financial factors thus favor short rotation crops over long-rotation crops, a fact which increases the likelihood that natural forests will continue to be cleared and replaced with monoculture plantations if left to strictly free market forces.

TIMBER HARVESTING AND OTHER CAUSES OF FOREST DEGRADATION

84. Forest degradation associated with unsustainable timber harvesting practices (including illegal harvesting) is the most extensive form of forest disturbance in Sabah. Prior to stricter enforcement beginning in 1997, timber harvesting damages were relatively high. The most obvious damages caused by log extraction operations are the open spaces created in the forest area, where up to 40% of a logged forest can be occupied by roads, skid trails, log yards and camp areas (Lanly, 1982[50]). Vines quickly infest these open spaces hindering natural regeneration (Fox, 1968[51]). Consequently, future growing stock is substantially reduced. Soil in these open spaces is usually compacted because of the repeated passes made by heavy bulldozers (Dias and Nortcliff, 1985[52]). This greatly increases the water run-off and the flow of eroded sediments into rivers and streams (Gilmour, 1982[53]). In harvesting 4-15 trees representing only 2-10% of the total number growing from a hectare of forest, it has been reported that approximately 50-60% of the remaining trees are damaged (Marns and Jonkers, 1982[54]; Tay et al, 2001[55]). Of particular concern now are the extensive areas that had been logged previously with unsupervised harvesting that need intensive silviculture treatments to restore their ecosystem functions and vitality. This will have implications on the economics and appropriate financial instrument (e.g. REDD+) to support forest restoration works.

85. Timber harvesting is not the only cause of degradation, however, though it is often a precursor to other problems. Over-harvesting of forest resources, including flora and fauna for trade and domestic use, has also contributed to habitat degradation and to reductions in species populations. Among the most sought after trees is Gaharu, which is highly prized for its resin for the perfume industry. Others include dammar or resin of Agathis spp. and dipterocarps such as the *Dipterocarpus* spp. Hunting for Sumatran rhinoceros body-parts and wild buffalo (tembadau) meat and trophies is a pervasive problem. These hunting intrusions by outsiders, as well as by timber harvesting workers and gatherers of forest products on a continuing basis, seeking ungulates and other animals, have depressed wildlife populations in Sabah.

86. Degraded natural and planted forests are particularly vulnerable to fire during prolonged droughts (Woods, 1989[56]; Goldammer et al., 2002[57]). Timber harvesting creates a more open forest structure that leads to increased evaporation and desiccation during droughts, and to additional fuel in the form of harvest debris. The combination of increased desiccation and fuel load in the undergrowth make the forest more vulnerable to fire. Apart from these direct effects, timber harvesting also makes forests more accessible, thereby increasing fire risk through human activities such as slash-and-burn agriculture. In Sabah, an estimated one million ha of natural forests were damaged by fire related to the 1982/1983 El

[47] Bacha, C.J.C. & Rodriquez, L.C.E. 2007. Profitability and social impacts of reduced impact logging in the Tapajos National Forest, Brazil – a case study. Ecological Economics, 63(1), 70–77.

[48] M.N. Noormahayu1, A.R. Khalid1 and M.A. Elsadig2

[49] Krishnapillay, D.B. 1998. Case study of the tropical forest plantation in Malaysia. FAO Working Paper FP23. [These IRRs assumed the end products being sawlogs, prices and costs valued at 1998 and gestation periods of between 15-20 years].

[50] Landly, J.P. 1982. Tropical Forest Resources, FAO Forestry Paper 30. FAO, Rome.

[51] Fox, J.E.D. 1968. Logging damage and the influence of climber cutting prior to logging in the lowland dipterocarp forest in Sabah. Malayan Forester 31: 326-47.

[52] Dias, A.C.C.P. and Nortcliff, S. 1985. Effects of tractor passes on the physical properties of an oxisol in the Brazilian Amazon. Tropical Agriculture (Trinidad) 62: 561-577.

[53] Gilmour, D.A. 1977. Effects of rainforest logging and clearing on water yield and quality in a high rainfall zone of northestern Queensland.

[54] Marn, H.M. and Jonkers, W. 1982. Logging damage in tropical high forest. UNDP/FAO Working paper no. 5. FO:MAL/76/008. Sarawak Forestry Department, Malaysia.

[55] Tay, J., Healey, J. and Price, C. 2001. Financial assessment of reduced impact logging in Sabah, Malaysia. International Conference on the application of Reduced Impact Logging to advance Sustainable Forest Management. Kuching, Sarawak.

[56] Woods, P. 1989. Effects of logging, drought and fire on structure and composition of tropical rainforests in Sabah, Malaysia. Biotropica 21: 290-298.

[57] Goldammer, J.G., Seibert, B. and Schindele, W. 2002. Fire in Dipterocarp forest. Dipterocarp forest ecosystem: Towards Sustainable forest management. http://

Nino event, of which 85% were logged forests and 15% primary forests (Beaman et al. 1985[58]). The rates of tree mortality after fire ranged from 38 to 94% in logged forests, and from 19 to 71% in unlogged forest (Woods, 1989). For saplings, rates of mortality of original species exceeded 80% in both forest types. In the same site, fires had a significant negative impact on the seed-bank and seedlings in burnt logged forest, which did little to assist the recovery of the original species (Woods 1987, 1989). As yet, there has not been any major fire damage reported on any large-scale forest plantation in Sabah. However, monoculture forest plantations are vulnerable to fire risk because of the fewer species, and much smaller diameter and evenly distributed trees per hectare that present a drier environment ideal for fire breakouts (Barber and Schweithelm, 2000[59]). Thus, the presence of degraded forests and monoculture plantations surrounding the edges of protected areas presents a significant threat to their future, and would be catastrophic for all the components of biodiversity in the area in the event of a major fire outbreak.

87. Finally, infrastructure development, especially road networks for harvesting, affects biodiversity both directly and indirectly. The direct impact of these roads is to facilitate access to forests, which leads to disturbance, pollution and encroachment upon biodiversity-rich ecosystems. Indirectly, they may attract satellite developments or settlements that can cause fragmentation of species-rich habitats.

88. Like many of Sabah's forests, the project landscape has suffered from timber harvesting disturbance. Areas that have been logged twice face the follow-up threat of being converted to monoculture plantations, for two main reasons. First, the altered forest structure no longer provides a suitable environment for shade-tolerant indigenous trees to grow due to high light intensity. Second, there is an absence of future harvest trees in these areas due to excessive harvesting damages. Both of these factors contribute to making conversion substantially more financially profitable than other alternatives.

89. The above-described factors are leading to further forest fragmentation, putting at risk the survival of key migratory wildlife species such as elephants, rhinoceros and hornbills. Over-extraction of timber resources is likely to impair ecosystem recovery and result in the loss of forest ecosystem functions. Intensive timber harvesting at the headwaters is known to increase sedimentation, affecting water quality and aquatic wildlife in the river systems. The substitution of fast-growing tree plantations for natural forest increases fire risks at the project landscape. Finally, poaching is endangering existing populations of Orang-utans, rhinos, elephants and reptiles.

90. If these activities in the production landscape proceed according to business-as-usual, the ability of Maliau, Danum and Imbak conservation area systems to achieve their intended conservation outcomes will be significantly jeopardized. Although the 261,264 ha project landscape remains today an important ecological corridor for plants and wildlife, the predictable impacts from the business-as-usual activities are loss of biodiversity and connectivity among existing PAs, threatening the latter with becoming ecological islands.

91. Areas within the project landscape that have high conservation values (HCV) are at particular risk of irreversible loss related to timber harvesting. A recent assessment of HCV within the project landscape found that FMU 23 and FMU24 contained 19 and 37 endemic plant species, respectively (WWF[60]). In terms of fauna, there were nine endemic species in FMU 23, and 14 in FMU24. These FMUs also provide food, shelter, water and temporary refuge for wildlife entering and living in nearby protected areas such as the Imbak Canyon Conservation Area and Maliau Basin Conservation Area. In addition, the HCV team identified several rivers and streams in YT 3/08 and YT 4/08 as providing critical ecosystem services.

92. The impact of forest disturbance can also be inferred from the wildlife population presence within the YSCA. A recent estimate by Alfred et al., (2010[61]) reported that elephant concentration in the

[58] Beaman, R. S., Beaman, J. H., Marsh, C., and Woods, P. 1985. Drought and forest fires in Sabah 1983. *Sabah Society Journal* 8:10–30.
[59] Barber, C.V. and Schweithelm, J. 2000. Trail by Fire: Forest fires and forest policy in Indonesia's era of crisis and reform. World Resources Institute.
[60] WWF. 2011. High Conservation Value Forest Assessment of Forest Management Unit 23 and 24 in Kalabakan Forest Reserve, Sabah.
[61] Alfred, R., Ahmad, A.H., Payne, J., Williams, C. and Ambu, L. 2010. Density and population estimation of the Bornean elephants in Sabah. Journal of Biological Science 10(2): 92-102.

Kalabakan-Sapulut-Maliau Range located within the project landscape had increased from 0.01 to 0.28 animal km^2, respectively (**Figure 9**). A significant increase in Orang-utan concentration was also observed in the north-eastern Gunung Rara and eastern part of the Kalabakan Forest Reserves (Ancrenaz, 2005; Alfred, 2010; **Figure 10**). Sumatran rhino have been reported in the greater Danum valley area and greater Maliau Basin conservation areas. In May 2004, footprints of rhino were found in the Imbak Canyon conservation area. A female rhino was found killed at the southern part of the SUAS project area (FMU25) in March 2001. Follow-up surveys found evidence of another rhino still roaming in the same area. There is a possibility that the project landscape is used by rhino to move within the three conservation areas. In addition, the endemic wild buffalo Tembadau (Banteng) were found in the Brantian area including the greater Maliau Basin Conservation Area. There is a strong likelihood that the Tembadau also roams the project landscape although the exact density and size of the population within the project landscape remain unknown.

1.3 Long-term solution and barriers

93. The **long-term solution** to the above threats and their underlying causes is a landscape management approach which nests PAs within a matrix of conservation-compatible land uses in order to maintain biodiversity, ecosystem functions and resilience. Under any financially realistic version of this solution, the PAs and connecting landscape areas must also generate the large majority of revenues needed for their own optimal management.

94. The **barriers** described below are preventing the emergence of the above-defined long-term solution and in so doing are compromising both forest resource sustainability and biodiversity conservation:

INADEQUATE POLICY FRAMEWORK, WEAK INSTITUTIONS AND LIMITED TECHNICAL CAPACITIES AT STATE LEVEL

95. There is currently neither an adequate enabling environment for landscape-level, multiple use forest management and financing in Sabah nor sufficient qualified staff to manage such a system. Specific barriers include: (i) no regulatory or planning framework for defining a set of landscape-level conservation and sustainable use objectives, activities, budgets, indicators, etc.; (ii) no framework for managing that landscape according to the defined objectives; (iii) no policies / regulations for generating and/or reinjecting revenues from anything other than timber; (iv) no guidelines or policies for multiple use forest landscape planning, management or conservation; (v) limited technical capacities to implement multiple use strategies, and; (vi) inadequate systems of monitoring and enforcement.

Incoherent enforcement

96. Weak enforcement of forest laws is one of the root causes of failures in sustainable forest management worldwide (Poor, 1992[62]). In the context of Sabah, weak enforcement can be traced back to political pressures and interference, and a lack of necessary human, financial and managerial capacity to effectively enforce forest law compliance. Successful strategies to enforce forest laws also rely on a sound knowledge of the resource base, its utilization and market value. When forest inventories data is outdated and inadequately checked, it may lead to overestimation of annual allowable cut. Without information on industrial capacities and/or utilization efficiencies, it is difficult to judge the extent to which illegal wood is being utilized. Similarly, low rent capture entrenched through mutually exclusive concessions demoralizes staff from effectively carrying out their surveillance duties. Improving law compliance therefore requires a coherent approach to surveillance.

97. The number of reported forest offences between 2003 and 2009 averaged 259 cases. The highest occurred in 2005 with 331 cases, and the least in 2007 with 202 cases. Since 2007, the number of reported forest offences has been on the rise. In 2009, there were 276 cases ranging from breach of licences (48%), encroachment (23%), illegal possession (22%), and illegal timber harvesting (7%)

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[62] Poor, D. 1992. No timber without trees: Sustainability in the Tropical Forest. Earthscan Publicains Ltd. London. 252 pp

(Sabah Forestry Department, 2009)[63]. Total fines associated with these offences were valued at RM1.2 million. It is difficult to ascertain whether the increase in the number of reported cases implies more effective enforcement or otherwise. In view of the relatively high number of reported cases, forest law enforcement in Sabah needs to be strengthened.

INADEQUATE AND FRAGMENTED MANAGEMENT APPROACH, INCLUDING INEFFICIENT REGULATION OF TIMBER HARVESTING AT PROJECT TARGET LANDSCAPE

98. Management of the forest landscape within which the proposed project landscape is located is based on an outdated management plan developed by the Sabah Foundation nearly three decades ago. Under this plan, over-harvesting of timber resources has taken place in areas where timber extraction has been permitted, which has contributed to fragmentation of the area's landscape. The issuance of harvesting permits is often connected to a need for additional state revenues. Inefficient harvesting regimes do not provide sustainable revenue streams, resulting in further pressure for forest conversion to agriculture (e.g. oil palm). State Government regulations require a Forest Management Plan (FMP) based on Sustainable Forest Management (SFM) principles for production forest landscapes. Specific management related barriers include: (i) limited information about biodiversity distribution within the site area, needed for zoning; (ii) lack of knowledge of the implications of alternative land use combination; (iii) inadequate monitoring, needed for adaptive management, and; (iv) gaps in operating capacities and approaches needed for integrated, adaptive management of the overall landscape.

FAILURE TO ADEQUATELY MONETIZE AND RE-INVEST A BROAD STREAM OF BENEFITS ARISING FROM FOREST RESOURCES

99. Under the Federal Constitution of Malaysia, the legislative and executive authority over forest is a State responsibility (Sabah Forestry Department, 1989). The State, in turn, relies extensively on revenues generated from the forestry sector to finance its socio-economic development programs. Despite this reliance, there is a widespread failure to monetize or otherwise 'capture' an adequate portion of the economic, social and environmental benefits produced by these forests. These include both timber values as well as values associated with a range of ecosystem services.

100. In the case of timber values, timber rent appropriation is legalized through awards of timber concessions to companies by negotiated tender. These companies then harvest the timber and appropriate the difference between the cost of extracting the timber (royalties plus normal profit) and the market price. The difference between the two is typically large and represents the share of economic rent not captured by the State but rather appropriated by timber concessionaires (Brown, u.d.[64]). According to Brown, u.d., timber rent *not captured* per cubic meter of mixed tropical hardwoods in Sabah averaged USD5/m^3 (range: USD18-90/m^3) for the period 1970-1998, compared with Sarawak at USD80/m^3 (range: USD1-160/m^3) and Indonesia at USD60/m^3 (range: USD1-120/m^3). Low timber rent capture for mixed tropical hardwoods in Sabah is still prevailing, as revealed in a comparison of log prices between forest concessions managed by the Sabah Forestry Department (RM141/m^3), para-statal concessionaire (RM99/m^3) and private concessionaires (RM104/m^3; Kollert and Lagan, 2005[65]). By transferring a sizable portion of the rents to the private sector through exclusive contracts, rents become unavailable for reinvestment into projects that promote sustainable management of forests (Vincent and Gillis, 1998[66]). Low stumpage fees encourage both higher levels of harvesting, i.e., overharvesting, and higher levels of consumption of wood products because of excessive cutting (Poter, u.d.[67]).

101. While timber values, or rents, are thus only partially captured, there is also a broader failure to capture values associated with a range of ecosystem services, e.g., regulation of local and global climate,

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[63] Sabah Forestry Department, 2009. Annual Report 2009.
[64] Brown, D.W. u.d. Why governments failed to capture economic rent. Centre of Policy Initiatives. http://www.cpasia.org.
[65] Kollert, W. and Lagan, P. 2005. Do certified tropical logs fetched a market premium? A comparison price analysis from Sabah, Malaysia. XXII World Congress, Brisbane, Australia.
[66] Vincent, J. 1990. Rent capture and the feasibility of tropical forest management. Land Economics 66(2).
[67] Porter, G. u.d. Natural resources subsidies, trade and environment: The cases of forests and fisheries. Centre of International Environment Law.

aesthetics and eco-tourism, protection from natural disasters, water regulation and biodiversity. Although several innovative opportunities for generating revenues based on these values exist, including mechanisms such as REDD Plus, biodiversity banking, sustainable timber certification and NTFPs, these opportunities have yet to be fully explored or taken advantage of. Specific barriers to successfully harnessing these revenue-generating opportunities include the following: (i) lack of capacity to define, develop and manage new revenue generating opportunities; (ii) lack of mechanisms for investing financial resources generated into protected area and landscape-level conservation and management; (iii) in the case of REDD Plus, barriers include the absence of a national policy framework for generating and trading REDD or REDD Plus credits and inadequate capacities to quantify changes in carbon stocks in state forests. A critical result is that simply opening an area up to timber harvesting may end up being seen as the easier solution when additional revenues are needed.

102. The failure to tap into new revenue generating opportunities has important implications for funding of management efforts. The Sabah Forestry Department estimates that baseline management and protection of the state's Forest Reserves (totaling 3.6 million hectares) requires approximately RM27.78 (approximately US $8.00) per hectare per annum. This is equivalent to slightly more than USD2 million per annum for the project landscape. More effective management regimes will require additional resources to develop and pilot, even if they ultimately result in lower per-hectare management costs over the long term due to higher efficiency. The current funding gap is estimated to be in excess of 50%.

1.4 Stakeholder Analysis

103. The Sabah Forestry Department (SFD) will be the main agency responsible for developing and managing the implementation of the project. At the national level, the Ministry of Natural Resource and Environment (MNRE) will provide overall project governance, administrative and technical advice in line with its commitment to GEF as the Operational Focal Point in Malaysia. At the state level, the State (of Sabah) Economic Planning Unit (SEPU) shall advise on governing policy matters, regulations, procedures and budgetary matters in the facilitation and delivery of the project. The Sabah Foundation (SF) is responsible for implementing project activities at the site level with guidance from SFD. SFD will also work in partnership with local governments, NGOs, and relevant communities in strengthening their capacity as managers of a multiple-use forest landscape. The major categories of stakeholders, their roles and responsibilities and their involvement in the Project are summarized in **Table 8**.

1.5 Baseline Analysis

104. This section presents recent, ongoing and planned actions in the absence of the present project. It is organized into sub-sections according to the project's three main areas of analysis and intervention, i.e., policy, forest management and sustainable finance. These sub-sections may be read in conjunction with section 1.3 above which presents ongoing barriers in each of these areas. A final sub-section presents a baseline scenario of developments likely to occur in the absence of the present project.

POLICY

105. Recognizing the need to put in place a system of good forestry practices, the Sabah Forestry Department engaged the technical assistance of the German Government through GTZ in 1989 to develop a system to ensure sustainable management of the 2.6 million ha Class II Commercial forest reserves. This assistance is in line with the Sabah Forestry Policy to achieve sustainable management of the state's forest reserves by ensuring proper utilization of its forest resources through proper planning and forest development programmes in accordance with approved silvicultural practices to optimize productivity of the permanent forest reserves. The system includes a planning framework executed at two levels: State/Forest Sector and Forest Enterprise levels. At the State/Forest Sector level, the overall economic, ecological and social framework was evaluated and a strategic plan prepared. Implementation of this strategic plan at the Forest Enterprise level is guided by a 10-year forest management plan. The Sabah Forestry Department's approach to improving the status/condition of the 2.6 million ha production forest

was through the development of a pilot project (i.e. the Deramakot Sustainable Forest Management Model) to be replicated on a wider scale in the forest management units (FMUs). While the forest planning system has been successfully introduced and adopted by the FMU holders, the effectiveness of the system is yet to be proven by a third-party certification of the FMUs in Sabah as well-managed similar to that conferred to the Deramakot Sustainable Forest Management Project.

Table 8. Key Stakeholders, their roles and responsibilities and involvement in the project

Stakeholder	Roles and Responsibilities	Involvement in the Project
Ministry of Natural Resources and Environment (NRE)	This Ministry is responsible for the management of natural resources and environment in Malaysia. They are empowered to legislate policy and law on natural resource and environment management through nine Departments under their jurisdiction. They also monitor the implementation of these policy instruments to ensure effectiveness in application.	NRE will be represented in the Project Board (PB) as one of the Senior Suppliers, and will provide guidance on project coordination and management in line with national policies and objectives
Natural Resource Office (NRO), Sabah	NRO is under the Chief Minister Department of Sabah overseeing the planning of natural resources (Land, Forestry, Mining, Water) and development. It is headed by a Natural Resource Secretary	NRO will be the Executive Chair of the PB in facilitating and ensuring that the project activities are achieved as planned.
State Economic Planning Unit (SEPU)	SEPU is under the Chief Minister Department of Sabah, and is responsible for the planning and coordination of all State's Development Programme	SEPU will act as the extension arm of MNRE in monitoring and coordinating the implementation of the project activities.
Ministry of Finance, Sabah (MoFS)	The Ministry of Finance manages the state revenues, expenditures and funds in ensuring a healthy financial reserve.	MoFS will provide advice on financial management of the project.
Ministry of Rural and Entrepreneurial Development, Sabah (MRED)	MRED is responsible for the improvement of the standard and quality of life in the rural. Its mission is to ascertain that rural development programs are planned and implemented efficiently and effectively.	MRED will be a partner of the project, and will provide technical advice on aspects of community developments in line with national/state planned rural development programs.
Ministry of Tourism and Environment Science and Technology, Sabah (MTEST)	MTEST is in-charge of State's tourism development and environmental management. This Ministry is also in-charge of the Sabah Wildlife Department (SWD) and the State Tourism Board.	MTEST will be a partner of the Project in providing policy advice on tourism and environmental management as well as identifying opportunities for ecotourism development.
Sabah Forestry Department (SFD)	SFD is the central agency responsible for forestry in Sabah.	SFD is the Senior Supplier in the PB being the proponent and implementing agency for the Project. They will be responsible for managing the Project. SFD will be act as the executive secretary to the PB.
Sabah Biodiversity Centre (SaBC)	The central agency responsible for overall biodiversity protection and safety in Sabah.	SBC will be represented in the PB to provide policy and technical advice on biodiversity developments.
Sabah Wildlife Department (SWD)	SWD is responsible for the implementation of the Sabah Wildlife Conservation Enactment, 1997. The Department also implements the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) as well as contribute to the implementation of the International Convention of Biological Diversity (CBD) and a number of other international, regional and bilateral agreements.	SWD will provide support in terms of technical inputs on aspects of wildlife conservation and management within the project landscape.
Environment Protection Department (EPD)	EPD is a regulatory body that advises the State Government on aspects of	EPD will be an important partner in providing technical advice on aspects

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Stakeholder	Roles and Responsibilities	Involvement in the Project
	environmental management in Sabah. It also monitors environmental impacts on all land developments including forestry.	of environment policy development, process and implementation.
Department of Irrigation and Drainage (DID)	This Department is responsible for the planning of irrigation infrastructures in agricultural land development. DID's role also covers the development and management of the state's water resources under the Water Resources Enactment 1988	DID will be represented in the PB whose role will be to provide technical advice/support on water resource planning and development, in particular, PES within the project landscape.
District Forest Offices of Kalabakan	They have jurisdictions in areas where the project is located. They have existing mandates to sustainably manage their resources and promote biodiversity conservation.	They will take part in the management of multiple-use forest landscape management under their jurisdiction.
UNDP Malaysia	UNDP will be the implementing agency of the GEF and facilitates the development, review and submission of projects for GEF financing. It also monitors the implementation of the UNDP Country Program. It also catalyzes the support of other donors in fulfilling the government responsibilities under the CBD and in implementation of GEF projects	The UNDP Country Office (UNDP-CO) is responsible for the successful management and delivery of programme outcomes and monitoring of interdependencies between projects and managing changes within and among projects. They will be represented in the PB as one of the members of the Senior Suppliers.
Sabah Foundation/Yayasan Sabah (YS)	YS is a statutory body and holds a 100-year long term licence to one million hectares of forest concession in Sabah. The proposed project landscape is located within the YS forest concession.	YS is one of the senior suppliers of the PB.
National NGO such as the World Wildlife Fund – Malaysia (WWF)	WWF-Malaysia has an MoU (2010-2015) with the project proponent (SFD) to obtain credible certification for FMU23, 24 and 26 within the project landscape. They are active partner in advocacy for strengthening forest management and financing through REDD.	WWF will be a co-financier and an implementing partners of the Project in the sites. A representative of WWF will be selected to be a member of the PB.
Local NGOs • NGO HUTAN • Land Empowerment and Animals People (LEAP) • Borneo Conservation Trust (BCT) • Partners of Community Organizations (PACOS) • Borneo Rhino Alliance (BORA)	These local-based NGOs have on-going partnerships with State departments and/or international organizations in conservation efforts in Sabah with main focus in forests and people. The also undertake studies to provide scientific basis for sustaining the supply, utilization and management of natural resources.	These NGOs will be appointed as implementing partners of the Project if they have on-going activities or interests in supporting the implementation of selected activities within the project landscape. Where possible, these NGOs will provide co-financing to support project activities. A representative from these NGOs will be selected to be a member of the PB.
Local communities	The nearest communities living close to the project landscape is located 40 km from the project landscape. Most of these communities practice modern lifestyle, although they still collect and hunt for food in the forest. They get their water from rain or gravity feed from spring or rivers. Many also farm lands by practicing traditional slash and burn.	They will take an active role in providing local knowledge related to the socio-economic development and management of the project landscape.
Business and Biodiversity Offset Programme (BBOP)	BBOP is a private entity specializing in biodiversity offsets in partnership with 40+ leading organizations and individuals around the world.	BBOP will assist in the development of policies to enable the introduction of biodiversity offsets within the project landscape.
Academic and Research Institutions • Universiti Malaysia Sabah (UMS) • Swedish University of	They undertake research and other advocacy activities within or outside Sabah in sustainable forest management, forest rehabilitation and protected area management. These academic and research institutions also	They will be involved in the conduct of scientific research and/or surveys in addressing knowledge gaps on the project. They will also provide their expertise in advisory/technical support

Stakeholder	Roles and Responsibilities	Involvement in the Project
Agricultural Sciences (SUAS) • Royal Society of London (RS) • Forest Research Institute Malaysia (FRIM)	work with their respective partners in education, research and training.	to selected Project activities.

106. In recognizing the value of forests as a natural asset, the State Government of Sabah has set a target of maintaining at least 55% of the land under permanent forest reserves (Greer, 2010)[68]. As at 2009, a total of 3.6 million ha or 48% of the total landmass of Sabah was under seven classes of forest reserves (**Table 2**). As discussed above, within these seven classes of forest reserves, Class I, V, VI and VII are under strict protection and together represents 12% of the total forest reserves in Sabah.

107. Recently, a policy aimed at achieving no net loss of biodiversity from development activities has been under consideration. It follows the notion that biodiversity loss in the site developed can be conserved in an offset site with ecological equivalence. At present, no net loss and biodiversity offsets are new concepts for Sabah which would require changes in the policy framework to be implemented.

LANDSCAPE PLANNING AND MANAGEMENT SYSTEMS

108. The rapid expansion of large-scale oil palm plantations by the agriculture sector has naturally put pressure on the environment and on society, despite its apparent economic advantages. Stricter operating standards have been initiated by the Roundtable on Sustainable Palm Oil (RSPO) to help advance the production, procurement and use of sustainable oil palm products (Greer, 2010). This initiative does not, however, compensate for the fact that biodiversity is invariably lost through forest conversion due to palm oil expansion.

109. Currently, planning and management of Sabah's forest reserves is privatized to forest companies in compliance with the Malaysia Incorporated Concept and the signing of the Sustainable Forest Management Licence Agreement with the consent of the State Government. Of the 20 forest companies operating in the State, 10 hold Sustainable Forest Management License Agreements (SFMLA/97) with a tenure of 100 years starting in 1997 (**Table 9**). Each of these companies is allocated one or more FMUs ranging from 10,000 to 100,000 ha. Each FMU may cover an entire forest reserve or overlapping forest reserves. The total land holding under SFMLA/97 is 1.55 million ha, covering 58% of Class 2 Commercial forest reserves. Of the 10 SFMLA/97 holders, the Sabah Foundation (SF) or Yayasan Sabah (YS) holds the lion's share; it is responsible for 8 FMUs (15, 16, 20, 21, 22, 23, 24, and 26) containing 778,083 ha (excluding Danum, Maliau and Imbak Conservation Areas which are also under YS management).

110. The primary use within most FMUs is timber extraction. In recognizing the need to manage these production forests on a sustainable basis, the Sabah Forestry Department in 1997 made it mandatory at the state-level for all FMU holders to adopt reduced impact logging (RIL) techniques to extract timber. This paves the way for getting all FMUs in Sabah certified by a third party as well-managed forests by 2014 (Sabah Forestry Department, 2010)[69]. Fourteen years after the introduction of RIL, however, the total area that has been harvested with RIL remains low.

111. At project landscape level, several efforts have been undertaken in recent years to encourage sustainable forestry. Since 2006, YS has begun to adopt RIL techniques that require intensive mapping of the harvest area prior to harvesting. This is followed by harvesting practices that reduced incidental damages through directional felling, limiting movement of bulldozers during log skidding, and removal of temporary infrastructures after work is completed to minimize disturbances to water bodies and/or poaching. However, the practice of RIL within the project landscape covers less than 10% of the total NFM area because of frequent changes in contractors, many of whom lack experience in implementing RIL.

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[68] Greer, T. 2010. Planting paradise – is there an option? World Agriculture. Vol 2: 18-22.
[69] Sabah Forestry Department, 2010. Sabah REDD Update. http://www.gcftaskforce.org/documents.html

Table 9. Sustainable Forest Management Licensees in Sabah

FMU No.	Licence	Licensee	Area (HaO	Forest Reserve	Area (Ha)
8, 13	SFMLA.01/97	Idris Hydraulic (Malaysia) Bhd	234,552	a) Sg. Tagul	105,769
				b) Sg. Telekosang	14,560
				c) Sg. Kabu	14,280
				d) Ulu Sg Pada	14,160
				e) sg Tamalasak	10,312
				f) Sg Salilir	7,746
				Sapulut	67,725
11	SFMLA.03/97	Bornion Timber Sdn Bhd	108,665	a) Sapulut	30,877
				b) Ulu Sg Milian	77,788
14	SFMLA.04/97	Sapulut Forest Deveopment Sdn Bhd	95,300	Sapulut	95,300
4	SFMLA.07/97	TSH Resources Sdn Bhd	123,385	Ulu Tongod	123,385
2	SFMLA.05/97	Eco-Plantation Sdn Bhd	94,227	a) Paitan	70,900
				b) Sugut	23,327
3	SFMLA.06/97	Timberwell Sdn Bhd	71,293	Lingkabau	71,293
15, 16,	SFMLA.09/97	Yayasan Sabah	703,049	a) Sg. Pinangah	174,902
20, 21,				b) Kuamut	116,471
22, 23,				c) Ulu Segama	952
24, 26				d) Gunung Rara	169,626
				e) Ulu Segama1	202,856
				f) Malua	33,969
				g) Kawang Gibong	707
				h) Merisuli	552
				i) Sepagaya2	2,316
				j) Sepagaya	698
5	SFMLA.10/97	Anika Desiran Sdn Bhd	101,161	Trusmadi	101,161
18A	SFMLA.11/97	Lembaga Urusan Tabung Haji	10,117	Bongaya	10,117
18C	SFMLA.12/97	Total Degree Sdn Bhd (USIA)	4,047	Bongaya	4,047
		Sub-Total	**1,545,796**	**58.0%**	
11	SFMLA.01/2004	K.M.Hybrid Plantation Sdn. Bhd.	1,666	Sook Plain	1,666
17A	SFMLA.01/2005	Lebihasil Sdn Bhd	1,000	Sg. Pinangah	1,000
17A	SFMLA.01/2007	Maxland Sdn Bhd	1,000	Sg. Pinangah	1,000
6	SFMLA.02/2007	Borneo Sulaman Cove Sdn Bhd	488	Sulaiman Lake	488
2	SFMLA.01/2008	Jaya Kuik Sdn Bhd	1,000	Jambongan	1,000
7	SFMLA.03/2008	Borneo Eco Healing Centre Sdn Bhd	173	Pulau Berhala	173
		Sub-Total	**5,327**	**0.20%**	
18	JP(SBN)01/2007	Silam Forest Products Sdn Bhd	31,126	Bongaya	31,126
19B	JP(SLK)125/93	KTS Plantation Sdn Bhd	57,247	Segalid Lokan	57,247
7	JP(KSG)108/96	Sabah Forest Industries Sdn Bhd	276,622	a) Sipitang	245,764
				b) Ulu Padas	30,858
21, 22	JP(TKA)122/96	Benta Wawasan	176,810	a) Gunung Rara	144,310
23, 24, 26				b) Kalabakan	32,500
19		Deramakot	55,083	Deramakot	55,083
17A		Tangkulap/Pinangah	48,020	a) Tangkulap	27,500
				b) Pinangah	20,520
17B		Sg Pinangah	15,315	Pinangah	15,315
17C		Mangkuwagu	8,355	Sg Mangkuwagu	8,355
10		Trusmadi	76,692	Trusmadi	76,692
18		Timimbang-Botition	13,610	a) Timimbang	11,465
				b) Botition	2,145
22, 27		Ulu Kalumpang	54,886	a) Ulu Kalumpang	51,118
				b) Kalumpang VJR	3,768
20		Pin-Supu	4,696	Pin-Sipu	4,696
2		Bengkoka-Tambalugu	6,467	a) Bengkoka	6,270
				b) Tambalugu	197
1		Banggi	11,206	Banggi	11,206
25		Kalabakan-Sapulut	127,625	a) Kalabakan	72,095
				b) Sapulut	47,600
				c) Sg Serudong	7,930
9,13		Others	151,003		151,003
		Sub-Total	**1,114,763**	**41.8%**	
		Grand Total	**2,665,886**		

[a] Under Ulu Segama-Malua Sustainable Forest Management Project   *(Source: SFD, 2008)*

[b] Part of Yayasan Sabah Forest Concession

[c] Formally part of Yayasan Sabah Forest Concession now under Sabah Forestry Department

112. The RIL techniques developed in 1992 were linked to carbon offset. By reducing timber harvesting damage by 50%, the project reduced carbon emissions compared with the impact of conventional timber harvesting practices within the YSCA. It was estimated that RIL would reduce CO_2 emissions by 40 tonnes/ha over 60 years (Pinard and Putz, 1996). In the same year, the Sabah Foundation concluded a deal with a consortium of Utilities Companies in the Netherlands to reforest 25,000 ha of degraded forests by enrichment planting. The Innoprise-Forest Absorbing project (INFAPRO) is estimated to sequester 350,000 tonnes of CO_2 or 14 tonnes/ha, over 60 years.

113. The INIKEA rehabilitation project is a joint-venture between Yayasan Sabah and the Swedish conglomerate IKEA aimed at enriching burnt and logged forests with indigenous tree species. It is located in an enclave surrounded by ITP in the north, east, west and further south with oil palm plantation. The project adopts a phased development approach based on a renewable 3-year contract. In the case of rubber, a total of 6,235 ha (gross area) had been identified in the eastern portion of the ITP area with tenureship ranging from 15 to 30 years. The remaining area outside the rubber plantation is designated for acacia, but the tenure has not yet been determined as development has not started. Total planted area represents only 5% of the ITP area depending on funding availability. It is now in its 3rd Phase of Development since 1988. To date, a total of 10,000 ha have been successfully enriched with c. 60 species of dipterocarps and fruit trees. Planting spacing is 10 x 2m separated by a natural vegetation buffer, which results in an estimated stand density of 333 trees/ha. Planting is only necessary in the absence natural seedlings; hence, the mean number of seedlings planted per hectare is between 160-200 trees. An important component of this project is that planted seedlings will be monitored and maintained for 10 years after first planting. Planted areas remain contractually binding until harvestable age at year 60. The mean survival rate of 10-year old planting is between 60 and 70%. An important lesson learnt of from this project is that it is technically feasible to use indigenous tree species for restoring degraded natural forests in Sabah (Garcia and Falck, 2003[70])

114. While these planned landuses reflect YS's management strategy to generate revenues to sustain its operation and address a decline in future timber supply, the integration of biodiversity concerns in landscape planning and development remains weak.

115. Under the baseline, landuse planning within the proposed site lacks coherence. This weakness is clearly reflected in the absence of a consolidated management plan for the entire YSCA landscape. To date, the on-going operations in FMUs 23, 24 and 26 lacks coordination. Prior to 1997, the management of YSCA was guided by the Yayasan Sabah Forest Management Plan 1984. In the main, the Strategic Plan identified primary landuses based on biophysical features into production, conservation and plantation zones within the YSCA. The focus of the Plan, however, was on the sustainable utilization of the timber resources to be managed on an 80-year rotation. The YSFMP 1984 is now outdated because re-logging was undertaken prior to the maturity of the 80-year rotation.

116. A serious effort to bring the project landscape under sustainable management has begun in the form of a collaborative effort between the SFD and WWF-Malaysia. In an MoU signed on the 8th October 2010, the two parties agreed to participate in the WWF Global Forest and Trade Network-Malaysia (GFTN-Malaysia) initiative to create an accessible framework for certified wood from FMU23, 24 and 26 (SFD, 2010[71]). A key output from this collaborative effort will be an action plan that meets the objectives of obtaining credible certification of the FMUs through improved forest management, provisioning of market incentives and capacity building within a timeframe of five years from 2010.

SUSTAINABLE FINANCE

117. The Sabah Forestry Department has been pursuing alternative sources of revenue to support its operations. One of these sources of revenues is linked to Reducing Emissions from Deforestation and

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[70] Garcia, C. and Falck, J. 2003. How can silviculturists support the natural process of recovery in tropical rain forests degraded by logging and wild fire ? http://aseanbiodiversity.info/Abstract/52001395.pdf

[71] Sabah Forestry Department, 2010. Memorandum of Understanding between the State Government of Sabah and WWF-Malaysia Global Forest Trade Network-Malaysia.

Degradation (REDD). Early preparatory works related to REDD readiness for Sabah initiated by SFD have included formulation of REDD policy at the State level, including modalities and sources of financing. Initial work undertaken by the Sabah Forestry Department to attract REDD investment includes: (a) commissioning a third party to quantify the carbon potential in the 3.6 million ha forest reserves, which was estimated at 566 million tonnes worth US$2.8 billion (Sabah Forestry Department, 2010)[72]; (b) requesting the state cabinet to identify carbon as a forest product in order to establish ownership of carbon; (c) adopting best practices (e.g. RIL) to reduce carbon emissions linked to timber harvesting; and (d) accelerate forest rehabilitation programme in disturbed forests now reported to be 125,000 ha. In addition, Sabah has also established a bio-banking facility through the sales of Biodiversity Conservation Certificates, and to date a total of 21,500 certificates have been sold. These initiatives remain at experimental scales; their real impact would only be realized if they are replicated at state level.

118. In early 2011, the European Union (EU) indicated its willingness to support the State of Sabah through a programme addressing climate change through sustainable forest management and community development (SFD, 2011[73]). The Programme envisages intervention at policy level to complement Sabah Government activities, and to raise capacities to finalize institutional arrangements and policy reforms for REDD+. More importantly, the Programme would provide assistance to local communities and other forest-dependent communities in pilot areas in Sabah to sustainably manage forest resources through implementation of reforestation and conservation schemes, as well as alternative livelihood scheme. The long term goal is to contribute to economic development of the target beneficiary groups while at the same time contributing to reducing the rate of deforestation and associated carbon emission. The Programme will be supported by a contribution from the EU of €4 million over a period of four years (2013-2016), together with co-financing from the Sabah Government and/or local stakeholders.

119. Recognizing the importance of water services in Sabah, the State Government, through the Department of Irrigation and Drainage (DID), is preparing a payment scheme for maintaining watershed services under the provision of Water Resources Act, 2002. The proposed scheme is based on the costs of maintaining an acceptable level of water quality for consumptive and recreational uses. The watershed management costs are derived from the polluters' costs from the public and private sectors who would be adopting environment-friendly practices in their timber harvesting or farming activities over the business-as-usual approach. Potential buyers under this scheme include public sector organizations under the Agriculture, Forestry, Transportation, Tourism and Energy Ministries, as well as the private sector.

120. The potential for payment for water services in Sabah is also being pursued under the Heart of Borneo (HoB) programme involving the governments of Malaysia, Indonesia and Brunei Darussalam within the island of Borneo[74]. This tri-governmental initiative is supported by WWF-CARE-IIED under a larger mandate of securing sustainable sources of finance to move economies of the three countries to a low carbon and green foundation through strengthening of policy/legislation, provisioning of incentive schemes and building capacity. Under this initiative, payments for water use may come from hydroelectric power suppliers, large industrial users, municipal water suppliers, and irrigation water users to improve water quality and habitat restoration in the watershed.

121. Also under the HoB initiative, Sabah has featured in a "Feasibility Assessment Report for Financing the Heart of Borneo Landscape: Malaysia (Sabah and Sarawak)."[75] The report represents the first (scoping) stage of HoB's sustainable financing component, having identified donor, national/domestic and market based financing options for delivering the Heart of Borneo goals. A synthesis of the Malaysia report was combined with national reports from Indonesia and Brunei sustainable financing reports into the "Financing the Heart of Borneo: A Partnership Approach to Economic Sustainability" which was official released by the three governments at the UNCBD COP 10 in Nagoya, Japan. The priorities and

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[72] Sabah Forestry Department, 2010. Sabah REDD Update. http://www.gcftaskforce.org/documents.html

[73] Sabah Forestry Department, 2011. Information note on programme formulation process on tackling climate change through sustainable forest management and community development in Sabah

[74] Anon. *u.d.* Financing the Heart of Borneo: A partnership approach to economic sustainability.

[75] "WWF and Starling Resources. April 2010. "Feasibility Assessment Report for Financing the Heart of Borneo Landscape: Malaysia (Sabah and Sarawak)". Also see "Financing the Heart of Borneo: A Partnership Approach to Economic Sustainability"

recommendations of the "Financing the Heart of Borneo" have led to additional analysis which is currently underway, the objectives of which include: (i) strengthening the enabling conditions for financing a sustainable landscape; (ii) assessing the full costs of sustainable landscape management, and (iii) assessing feasible sources of finance. This stage will culminate in 2012 with a report on the economics of ecosystems and biodiversity, and investing in green growth, in the HoB. This latter report will include a modeling component under which various growth scenarios—including scenarios for green growth based on REDD+ and other mechanisms—are being compared. Follow up stages will support the design and implementation of financing strategies for operational plans to guide the management of an economically viable and sustainable HoB landscape.

122. As far as PA finance is concerned, while making clear progress in terms of expanding the networks of protected areas, the respective agencies are aware that effective management of these PAs requires adequate funding, along with increased attention to manage these areas sustainably. In addressing these issues, the respective agencies have initiated numerous partnerships with donors and non-governmental organizations (NGOs). For example, Sabah Parks is collaborating with the Japan International Corporation Agency (JICA) in receiving technical assistance and capacity building. Similarly, the Sabah Wildlife Department is working closely with NGOs such as WWF-Malaysia, HUTAN and Borneo Conservation Trusts (BCT) in wildlife protection and management. Thus far, coordination among these agencies has been well managed.

BASELINE SCENARIO

123. Currently, land zoned for agriculture in Sabah totals 2.2 million ha, of which about 1.33 million ha has already been converted from forest to oil palm. This massive transformation in land use is expected to continue in the years ahead within the remaining 700,000 ha of agriculture land, as long as oil palm markets remain strong.

124. By comparison to statelands, changes in the extent of forest reserves in Sabah in the last decade have been trivial. The shortfall of 7% or 0.52 million ha against the 55% target remains to be fulfilled from outside the forest reserves through gazettement and, where necessary, afforestation of Stateland. It also means that there is little room for conversion of natural forests within the forest reserves for other non-tree crops except for those already being converted. The target of 55% is set against a backdrop of a rapidly changing landscape in Sabah, particularly outside of the forest reserves. As already noted, in the last decade, land for agricultural development had expanded rapidly.

125. At this stage, the fate of Sabah's forest lies not so much with the 2.2 million ha of land either in use by, or allocated for, the agricultural sector, but primarily with the fate of the permanent forest reserves. In the short term these forests may be relatively secure, however it is the long term that is of concern. With land increasingly valued by utility, it may seem untenable to keep such a large land bank as forests unless values and sources of revenue are realized sustainably. In-roads by large-scale oil palm development have already occurred within Class II Production forest reserves, totaling about 100,000 ha and representing 3% of total forest reserve area. The scale of future intrusion is difficult to forecast other than the 500,000 ha already earmarked for conversion, but for now it is primarily constrained by the physical features of Sabah's landscape, whereby most permanent forest reserves are located in steep areas or ridges and remote areas. This fact will put a 'natural' brake on conversion, given that land preparation for oil palm development requires mechanized land clearing, which is not economically feasible in steep areas.

126. If activities in the production landscape proceed according to business-as-usual (see site-level threats description above), the ability of Maliau, Danum and Imbak conservation area systems to achieve their intended conservation outcomes will be significantly jeopardized. These areas would become ecological islands lacking appeal to a visitor whose access to these areas must pass through the conservation-incompatible production landscape. More importantly, the 261,264 ha project landscape is an important ecological corridor for plants and wildlife; thus, the predictable impacts from the business-as-usual activities are loss of biodiversity and connectivity among existing PAs.

PART II: PROJECT STRATEGY

2.1 Project Rationale and Policy Conformity

PROJECT RATIONALE

127. Sabah has been an avid proponent of Sustainable Forest Management (SFM) since 1997. This is a logical move given that 50% of its land bank is locked up as forest reserves. These forest reserves offer a variety of goods and services that will benefit future generations of Malaysians living in Sabah.

128. Based on recognition of the importance of the forest heritage in providing various goods and services, a multiple-use forest management (MUFM) approach has been adopted as one of the potential conservation and development alternatives to contemporary forest management approach that tends to focus only on a limited range of forest uses, in particular, timber benefit. A growing global population has also increased the need for food, medicine, clean air, water and recreation—the main sources of which are natural forests (Baskent and Yolasigmaz, 2000[76]).

129. An important element of an MUFM approach is a greater emphasis on, and integration of, biodiversity conservation within the management of a 'functional landscape'. A functional landscape refers to the capacity of an area to maintain healthy, viable targets and sustain key ecological processes within their natural ranges of variability over the long term (Poiani and Richter, u.d.[77]). Another key element is that of sustainable financing, which involves ensuring adequate levels of revenue generation and retention so that management of the landscape is not dependent on external subventions / subsidies.[78]

130. At the outset, the above described approach appears to be relatively simple to implement. In reality, however, managing a multiple-use forest landscape while conserving its biodiversity and ecological functions requires an enormous effort to strike an optimal balance among the competing landuses in terms of social, ecological and economic objectives[79]. Both biodiversity as well as financing goals are linked to land use choices, various combinations of which will lead to alternative financial and conservation outcomes. As a result, modeling of alternative land use choices becomes an additional, important factor in the planning process. Successful cases of MUFM in the Asia Pacific are few, and non-existent in Sabah. On the contrary, unplanned landuses within multiple-use forest landscapes are many, and likely to degrade further the inherent landscape biodiversity and ecological functions, while failing to be financially sustainable. The root causes of these ad-hoc uses are associated with a complex web of political and economic drivers.

131. The proposed project landscape of 261,264 ha exemplifies a multiple-use forest landscape that lacks the necessary synergy in mainstreaming biodiversity in terms of landscape connectivity, management control, and sustainable financing. It includes areas under a variety of management designations and uses namely: 180,426 ha of Production Forest Reserves, 43,821 ha of Industrial Tree Plantations, 18,500 ha of enrichment planting, and 18,517 ha of conservation forests. Major landuses adjacent to the proposed project landscape, and in theory under common management within the YSCA, include 132,640 of Protected Forest Reserves and 109,500 ha of oil palm plantations.

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[76] Baskent, E.Z. and Yolasigmaz, H.A. 2000. Exploring the concept of a forest landscape management paradigm. Turkish Journal of Agriculture Forest 24:443-451.

[77] Poiani, K. and Richter, B. u.d. Functional landscapes and the conservation of biodiversity. Working papers in Conservation Science #1. The Nature Conservancy.

[78] Indeed, in the case of YS holdings as a whole, the expectation is that the area will generate surpluses for investment in socio-economic programmes benefitting local populations.

[79] For a discussion of modeling of alternative land use combinations in forest landscapes, see , e.g., Polasky, Stephen, et.al. 2008. Where to put things? Spatial land management to sustain biodiversity and economic returns. Biological Conservation 141: 1505-1524. See also Nelson et. al. 2009. Modeling multiple ecosystem services, biodiversity conservation, commodity production, and tradeoffs at landscape levels. Frontiers in Ecology and the.Environment; 7(1): 4–11

132. Hence, the primary objective of the proposed project is to institutionalize a multiple-use forest landscape planning and management model which brings the management of critical protected areas and connecting landscapes under a common management umbrella, implementation of which is sustainably funded by revenues generated within the area.

133. Assistance provided by GEF will strengthen the conservation of the largest area of mostly contiguous forest in Sabah, and one of the most important remaining forest landscapes in the Heart of Borneo. Extensive global benefits are expected given the high levels of biodiversity within the project landscape. Improved management of this critical landscape will reduce pressures on three globally-recognized conservation areas located adjacent to the proposed project target landscape: Danum Valley, Maliau Basin and Imbak Canyon, which together encompass 119,390 ha of irreplaceable tropical forest. The project will lead to increased viability within the project landscape of globally threatened species such as orang-utan, proboscis monkey, sun bear, pygmy elephant and others. Threats to the globally-significant biodiversity of the area will be reduced in the following ways: (i) increased resilience of ecosystems through enhanced connectivity and reduced risk of forest fires (the threat of which is expected to increase with climate change); (ii) conservation of habitat and constituent biodiversity within landscape areas connecting PAs; (iii) reduced threats to BD in PAs that arise outside their boundaries, such as the loss of vital animal migration routes; (iv) expansion of PAs, which would bring c. 50,000 ha under enhanced protection, and; (v) enhanced management effectiveness, linked to a combination of increased financial resources and improved cost effectiveness of spending. Additional global benefits will be generated by a demonstration effect through which financial and management models developed were disseminated and adopted in other parts of the Heart of Borneo.

POLICY CONFORMITY

134. The Project is designed to respond to GEF Strategic Objective BD-SO1, which is to catalyze the sustainability of protected areas. Within this Strategic objective, the project will support biodiversity strategic programs (SP3) in strengthening terrestrial PA networks, and SP1 in sustainability financing of PA systems at the National Level. Among the planned activities, the Project will create biodiversity corridors and, if necessary, additional protected areas, to strengthen the system of PAs in the State of Sabah. The resulting improved ecological integrity of the PAs will contribute to the objectives of BD-SP3. Component 3 outputs on Sustainable Financing are consistent with BD-SP1. These will create sufficient and predictable revenue flows in the State with the approaches having the potential for replication in other PAs in the State and nationally to address system-wide concerns.

135. The project will also ensure that biodiversity conservation will be incorporated into broader forest policy and regulatory frameworks in the proposed demonstration forest landscape. The outcome and outputs specified in Component 2: Multiple-use Forest Landscape Planning and Management are consistent with SP4: Strengthening the policy and regulatory framework for mainstreaming biodiversity, which falls within GEF Biodiversity Strategic Objective BD-SO2 - to mainstream biodiversity in production landscapes/seascapes and sectors.

2.2 Country ownership: country eligibility and country drivenness

136. The proposed Project is consistent with Malaysia's National Policy on Biological Diversity (1998), in particular, Strategy 15: Establish Funding Mechanisms; Strategy 4: Strengthen the Institutional Framework for Biological Diversity Management; and Strategy 6: Integrate Biological Diversity Considerations into Sectoral Planning Strategies. The proposed Project is also anchored on Sabah's policies. The Outline Perspective Plan (OPPS), covering the period 1995-2010, aims to create a socially and politically stable environment through efficient management of the State's economy. Item 4.6 of this Plan highlights the State's intention to ensure reliable and sustainable raw material supply, implying the formulation of sensible and effective conservation strategies for natural resources such as forests, land and marine life. In pursuance of these policies and plans, the State has set aside about 3.6 million ha or 48.14% of Sabah's total land area as Permanent Forest Estates (PFE). In order to achieve the dual

objectives of economic utilization and environmental conservation, the PFE are further designated into seven classes of forest reserves, i.e., protection, production, domestic, amenity, mangrove, virgin jungle and wildlife forest.

137. The drive for SFM in Sabah followed from its successful implementation in Deramakot Sustainable Forest Management Model which was awarded an internationally recognized "well-managed forest" certificate by the Forest Stewardship Council (FSC) in 1997. The recognition provided the impetus for the State to replicate the Deramakot model in all Class II commercial forest reserves covering approximately 2.67 million ha. It has now directed all concessions to obtain certification from any credible internationally-accepted schemes by 2014.

138. With Sabah as one of the key areas for the trilateral Heart of Borneo (HoB) Initiative, the project will support the enhancement of the State's strategy for this initiative and will thereby contribute to Malaysia's strategy as a whole. The project area is considered an important component of the HoB initiative which focuses on the following three priorities: (i) maintenance of forest connectivity through the strengthening of the Protected Area Network; (ii) establishment of sustainably managed forested corridors connecting these areas; and (iii) the opportunity for enhanced transboundary co-operation. Through the HoB initiative, the project will coordinate closely with the Sustainable Forest and Biodiversity Management in (the Indonesian side of) Borneo, a project concept for Indonesia that was recently approved by GEF Council with Asian Development Bank (ADB) as the lead agency.

2.3 Design principles and strategic considerations

139. The design principles of the proposed project follow the guidance of the GEF-4 strategic framework under the biodiversity portfolio in mainstreaming biodiversity in production landscapes and sectors. This will contribute to internalizing the goals of biodiversity conservation and sustainable use of biological resources into economic sectors and development models, policies and programs.

140. GEF's intervention will focus on removal of barriers to sustainable management of the project landscape, while generating spin-off benefits to adjacent protected areas networks. Barriers were defined as the sub-optimal functioning of three components of biodiversity conservation in a multiple-use forest landscape in Sabah. Funds provided under GEF will be used to finance the incremental costs of measures to mainstream biodiversity without subsidizing the costs of enterprises in doing regular business and taking due precautions to ensure the sustainability of outcomes. As per GEF practice, no GEF funds will be used to support any form of timber harvesting.

141. Mainstreaming activities will fall under the following approaches:
- influencing the policy framework governing the forest management sector, including sustainable finance work aimed at altering incentives;
- enhancing capacity to address biodiversity management needs in forest management sector by building management expertise, tools, capacity to account for and monetise natural capital, etc.
- operationalising integrated multiple use forest land management models, working with champions in the forest management sector
- sensitizing decision makers to the need for increased investment in biodiversity-friendly production practices, etc.

142. The project design will take full advantage of the existing national and state-level linkages, set up under the Ministry of Natural Resources and Environment (NRE), State Economic Planning Unit (SEPU) and State Forestry Department (SFD). Both MRE and SEPU will act as coordinating bodies dealing with international and domestic affairs related to project approvals, coordination, monitoring and reporting. The Executing body is the SFD, which has jurisdiction over state forestry matters in accordance with the Federal Constitution of Malaysia (1957). State and National forestry objectives are streamlined under the National Forestry Council (NFC) that falls within the ambit of the National Land Council (NLC) whose chair is with the State-Federal Minister.

143. The project's scope and catalytic approach is designed to unify support to sustainable landuse in the project area, while stimulating new, additional coordinated support. The approach will be further strengthened through a strong reliance on partnerships with donors and other stakeholders across the region that are active in support to sustainable forest management of production landscapes and PAs and/or PA finance, as a means of covering more ground and stimulating further replication.

144. The project will serve as a model to catalyze innovation in processes and increase management know-how in achieving an optimal balance across potentially competing uses, one which maximizes economic, social and environmental benefits to society. Lessons from the project will be used to develop guidelines and best practices to upscale the approach in other forest landscapes within the State and in other parts of Malaysia and the Heart of Borneo.

2.4 Project Objective, Outcomes and Outputs / Activities

145. The project objective is to institutionalize a multiple-use forest landscape planning and management model which brings the management of critical protected areas and connecting landscapes under a common management umbrella that is sustainably funded by revenues generated within the area. The project proposes to achieve its objective through three interconnected and complementary components. The first component focuses on strengthening Sabah's policy framework to mainstream biodiversity and to finance its conservation within the multiple-use forest landscape, along with support to improved institutional capacity. The second component involves demonstrating how to operationalize the multiple-use forest landscape management concept, with lessons learnt to be made available for replication throughout Sabah and elsewhere. The third component focuses on developing innovative sustainable financing options appropriate to the landuses within the project landscape.

Component 1: An enabling environment for optimized, multiple-use planning, financing, management and protection of forest landscapes

146. Under Component 1, GEF support will focus on ensuring that multiple use forest landscape management systems are designed, managed and financed in ways that ensure the conservation of biodiversity. This will include support for the development and implementation of policies aimed at achieving no net loss (NNL) /net gain in biodiversity through fact-finding, evaluation of policy options, development of the necessary biodiversity information, policy formulation and system design and capacity building. The Sabah Forestry Department believes that there are merits in the adoption of NNL initiative particularly to promote conservation in the State, and capturing innovative funding through this venture (Sabah Forestry Department, 2010[80]). GEF will also support is the creation of an enabling environment to permit the introduction and implementation of innovative sustainable funding through REDD+, bio-banking and PES mechanisms. There are five inter-connected outputs under this component.

Output 1.1 New State-level policies and regulations for implementing NNL/NG and incorporating biodiversity and ecological function conservation objectives into the integrated planning and management of forest protected areas and surrounding or connecting landscapes

147. The project will support changes in the regulatory and planning framework needed to enable enhanced conservation of forest ecosystems and biodiversity. This will include support for revised policies, regulations and administrative processes needed to put in place no net loss / net gain (NNL/NG) policies. In addition, GEF will support the establishment of a landscape-level planning mechanism which incorporates and integrates biodiversity and ecological function conservation objectives into the planning and management of forest protected areas and surrounding landscapes. This output will be mainly co-financed, with a limited amount of GEF funding for the development of the policy options.

148. This output will draw upon experiences from the Sabah Biodiversity Centre, Sabah Park, Sabah Forestry Department, Wildlife Department, Environmental Protection Department and the Ministry of Science

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[80] Sabah Forestry Department, 2010. Sabah no net loss workshop. 17-18 June 2010. Sandakan, Sabah.

159. Operational manuals will be prepared for each type of planning and management arrangements, namely: (i) planning framework; (ii) technical guides for the setting up and functioning of target landscape, (iii) manuals for implementing specific mechanisms, and; (iv) toolkits for auditing M&E system. Assistance will also be provided in enabling wider understanding and support for multiple-use forest landscape planning and management by other stakeholders through preparation and dissemination of corporate leaflets and information packs.

Component 2: Demonstration of multiple-use forest landscape planning and management system

160. Under this component, the project will define and work to implement an optimal mix of production and conservation land uses within the target landscape.[84] In order to do this, GEF support will be utilized to: (i) select/develop and implement an environmental economic land use planning model that incorporates biodiversity and ecosystem function targets within the forest landscape; (ii) prepare a landscape management plan based on a combination of land uses selected using the model, and; (iii) support pilot implementation of the landscape-level management plan. As a result of project activities, species and ecosystem biodiversity will be conserved in 261,264 ha of the Kalabakan-Gunung Rara area within a sustainably managed forest landscape, and pressure on the adjacent conservation areas will be decreased.

Output 2.1 Economic model to determine optimal mix of production and conservation land uses to maximize sustainable revenues from, and conservation of, the demonstration landscape

161. Forest landscape level planning requires assessment and implicit valuation of tradeoffs among timber production, recreation, water quality, and strict habitat conservation for wildlife. GEF support will demonstrate a method that combines economic and ecological models in a dynamic and spatial analysis to evaluate land use decisions and cost-effective alternatives among competing land uses. Two candidate models were short-listed during the PPG (see **Annex** G for details of the assessment): (i) InVEST, which is being applied by WWF and partners in the Heart of Borneo project and (ii) CBioD, which is being developed with GEF support in Peninsular Malaysia.[85] A final decision regarding which of these models—or possibly some combination of the two—should be applied in the project landscape will be made during the first year of the project in consultation with a wide range of stakeholders.

162. Data collected under Output 2.1, together with values generated under Output 3.1, will be fed into the selected landscape planning tool for defining an optimal land use plan and for estimating optimal site-level expenditure levels. The planning model will include the following features: (i) spatial considerations, because species populations depend upon the spatial pattern of habitat as well as the extent of habitat; (ii) incorporate dynamics in the model because forests harvesting patterns generate timbers stands of different ages. Economic analysis will thus help to determine the trade-offs between agro-forestry expansion and the loss of forest cover, ecosystem functionality and biodiversity and to identify a set of land uses—including revenue generating conservation options—which provide an adequate and sustainable level of revenues while sharply reducing net impacts on biodiversity and ecological functions, as compared with the baseline scenario. This will help to highlight the cost to society of inaction (i.e., baseline scenario) and to inform conservation interventions in support of financial sustainability of conservation areas. A training program will be conducted to ensure sufficient understanding of the tool and to generate relevant information for analysis.

Output 2.2: Landscape-level management plan based on optimal combination of land uses including PAs and sustainable production

163. At present, Sabah Forestry Department is responsible for developing the forest management plans for individual FMUs. The plans include some targets related to biodiversity; however there is room for

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[84] SFD has confirmed during the PPG exercise that there will be no palm oil development within the project landscape, therefore this land use option will be excluded from the analysis.
[85] PIMS 1370 Conservation of Biodiversity Through Improved Forest Planning Tools Project.

improving compliance monitoring systems for biodiversity/ecosystem safeguards based on clear and robust biodiversity and ecosystem health indicators at the landscape level. The value added of landscape level management planning lies in the ability it provides to take larger-scale ecological factors into account while making land use decisions across a variety of productive and conservation units. The global biodiversity benefits of such an approach are due to the richness and significance of the target landscape and its role as a biological corridor connecting three important conservation areas.

164. The development of the target landscape-level plan will begin with assessment and mapping of biodiversity targets within the project landscape, in particular, their importance to ecological sustainability and functioning. GEF support will include a biodiversity assessment of the project landscape to identify biodiversity targets, support classification of habitat types, application of offsets and biodiversity banking, assurances for long-term outcomes that account for pressures from economic drivers and climate change, site selection and potential designation of biodiversity/carbon credit types. Based on these biodiversity overlays, and utilizing the land use model developed under Output 2.1, a set of possible alternative management interventions will be identified. The features and elements of the resulting landscape-level management plan will include a description of the landuse zones, forest resource base, management standards and programmes, organization, manpower requirements, and implementation schedule and control. In particular, it will emphasise biodiversity conservation goals and sustainable management of natural resources. Development of the plan will offer an opportunity to design and test a process for seeking consensus with key stakeholders on the management objectives of the multiple-use forest landscape.

Output 2.3: Pilot, adaptive implementation of landscape-level management plan, including new PA establishment and implementation of sustainable use management system based on sustainable off-take, monitoring and enforcement

165. Under this output, the project will demonstrate the feasibility of the multiple-use forest landscape model developed under Output 2.1 to support adaptive management of the target landscape based on the landscape-level management plan developed under Output 2.2. A first step will be development of a work plan and operational system on the ground for implementation of the management plan. This will include allocation of necessary human resources and budget for the management actions. GEF support will be used to operationalize new ideas and systems prescribed in the landscape-level management plan at a pilot scale prior to scaling-up operations to gauge lessons learnt from these pilot efforts. The pilot work will develop new technology, transfer of technology, transfer of skills and/or determine indicative costs of scaled-up operations.

166. Pilot application of enhanced M&E systems will also take place under the management plan. This will include a combination of desk and field work through which increased volumes and enhanced quality of field-level data will be gathered, analysed and compared with baseline standards in order to determine whether field-level operations are conforming to existing laws, regulations and standards. These will include both process and impact indicators aimed at assessing both compliance as well as at fine tuning the standards themselves. Thus, for example, it may be determined that despite compliance with existing standards, biodiversity and/or ecosystem function indicators were in decline; in this case, the standards themselves would need to be adjusted through an iterative, adaptive management approach. Where feasible, cost benefit considerations would be applied to such regulatory tightening efforts.

167. Finally, based on the model / management plan, the project will undertake the defined steps to legally designate at least 50,000 ha. of new conservation areas within the project landscape. The process will begin with an inventory of sites that should be designated as conservation areas. Selection of the sites will be based on biodiversity importance of the sites, connectivity, provision of ecosystem services, etc. Regional offices of SFD, including national and local NGOs, will be encouraged to nominate these areas according to existing or new procedures to be developed under Output 1.1. Selection criteria will be based on existing laws and/or lessons learnt during the process in Output 1.1. Development of a biodiversity and habitat condition monitoring system as well as development of management infrastructure will be supported. Where appropriate, habitat rehabilitation will be conducted with the aim of restoring natural wildlife habitats.

168. Support will be provided for reviewing and updating the workplan under the management plan through a participatory process. At the same time, existing guidelines and procedures for preparing management plans will be reviewed to improve the quality and the scientific basis upon which the plans were formed, as well as to enhance the quality and ownership in the plan. The latter's involvement will be secured by developing procedures for harmonizing the landscape-level management plan with the regional and State's development and physical framework plans, as well as the sectoral development plans of other government agencies. To improve the review process, the implementing agency will be supported in developing appropriate standards for review of the management plans.

Component 3: Sustainable financing of protected areas and associated forest landscape areas demonstrated at the pilot site

169. Under this outcome, the project will support the design and development of three alternative revenue generation schemes and disbursement using pilot modalities of REDD+, biodiversity offset, and PES corresponding to output 2.4 for scaling-up to the whole project landscape. A range of activities associated with pilot implementation of these instruments will be supported under this component, including: identification of exact location, buyers and sellers and stakeholders for different mechanisms; design, negotiation and formalization and operationalisation of the mechanisms; development of a robust mechanism for monitoring, reporting and verification of services, and payment distribution mechanisms; and support for communication and capacity building of decision makers, state government officials and local stakeholders, including communities.[86] A program of capacity building will be supported to develop, implement and manage these mechanisms and instruments in a systematic and transparent manner. The overall aim will be to increase the amount of funding flowing to multiple-use forest landscape authorities while also providing financial incentives for other stakeholders to participate more actively in biodiversity conservation. The outcomes and outputs for this component are described below.

Output 3.1: Environmental economic and financial analyses of actual and potential land use scenarios incorporating estimates of landscape level total economic value, including ecosystem services, conservation and other values

170. This output will investigate the economics of different land uses, their financial and socio-economic benefits and their environmental costs. These estimates will be used to calculate the environmental economic costs and benefits, as well as the revenue generation potential, associated with different mixes of land uses within the landscape, comparing trade-offs between baseline and alternative mixture of landuses with in the project landscape. It will estimate the total economic benefits of different scenarios in the landscape, including direct and indirect use values, option value and bequest value. The findings of the analysis will be used in estimating parameters for the model being developed under Output 2.1, and will thereby influence land use decisions and the content of the landscape management plan ▮▮▮▮ ▮▮▮▮▮▮▮ ▮▮ ▮▮▮▮▮▮▮▮ ▮▮▮▮▮▮▮▮▮▮▮. In physical terms, the analysis will thus support a tool for reducing the environmental economic impacts on biodiversity and ecological functions and loss of natural capital, associated with the combined set of land uses throughout the landscape, as compared with a baseline scenario. The analysis will also help to optimize the location of potential revenue generating mechanisms, ▮▮▮▮ ▮▮▮ ▮▮▮▮ ▮▮ ▮▮▮▮▮▮▮▮▮▮ ▮▮▮▮▮ ▮▮▮▮▮ ▮▮▮▮▮▮▮▮ ▮▮ ▮▮▮▮▮▮▮▮▮▮▮.As an integral part of this output, training will be provided on the application of economic and financial tools for landscape

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[86] In the target landscape, there are only a small number of resident workers. The three adjacent conservation areas have no local communities per se within the reserves except for a small number of workers. Altogether, there are approximately 2,000 people in the neighbouring communities. The nearest local communities are living in Kalabakan district, which is located 80 km from the project site. While most of the conservation actions related to the PES mechanism in the landscape are likely to be carried out by Sabah Foundation employees, there will be increased job opportunities for local communities for certain activities, e.g., planting riparian reserve. In addition, the livelihood of many communities is dependent on river water, whose upper watershed is located within the project site, as well as ecotourism resources within the three adjacent conservation areas. Therefore, the project will benefit these distant communities by significantly reducing pressure on biodiversity within the protected areas, as well as by ensuring sustainable supply of ecosystem services. During the detailed design of the PES mechanisms, the project will ensure full involvement of the local communities (beyond the target landscape where applicable) or relevant stakeholder, and ensure equitable and transparent benefit sharing.

planning. GEF funds will bring in the incremental expertise for quantifying and valuing the true economic benefits of various land uses including environmental costs and costs of conservation actions.

Output 3.2: Pilot implementation of revenue generating mechanisms

171. A preliminary environmental economic analysis has been undertaken at the project landscape level during the Project Preparation Grant (PPG) to highlight the cost of inaction (i.e. baseline scenario) and to pre-assess the feasibility of potential interventions in support of financial sustainability. Based on this work, three revenue generating options have been identified as being most promising for pilot implementation. These are: (i) biodiversity offsets / biobanking, (ii) PES, (iii) REDD+.

172. The main objective of this output will be to develop and implement a detailed, landscape-level strategy for diversifying revenue generation away from traditional sources (i.e. timber revenue). This will be achieved through a combination of innovative financing mechanisms associated with REDD+, biodiversity offsets and PES mechanisms. Detailed scoping and market studies will finalize the selection, design and matching between specific locations with the project landscape area and instruments. During the detailed design of the PES mechanisms, the project will ensure full involvement of the local communities (beyond the target landscape where applicable) or relevant stakeholders, and ensure equitable and transparent benefit sharing. Following this step, the selected schemes will be operationalized at pilot scales. A range of activities associated with pilot implementation of these instruments will be supported including: identification of exact location, buyers and sellers and stakeholders for different mechanisms; design, negotiation and formalization and operationalization of the mechanisms; development of a robust mechanism for monitoring, reporting and verification of services, and payment distribution mechanisms; and support for communication and capacity building of decision makers, state government officials and local stakeholders, including communities.

173. By the end of the project, three revenue generating mechanisms, including REDD+ / carbon, biodiversity offsets and PES, have been designed and piloted, with total annual revenues projected to reach at least 50% of optimal management costs within five years following project In addition to these site-level benefits, the results will generate lessons learnt in developing policy guidelines and scaling-up imperatives with respect to administrative, financial and operational jurisdictions (ref. Outcome 1).[87]

Output 3.3 Detailed operating and financial agreements between SFD and private sector and other partners

174. It is essential that all new arrangements made under the project are documented in legally-binding memoranda of agreement (MOA) with measurable performance indicators for future references. The scope of each MoA should include, but not be limited to the following: the parties involved, purpose, duration, parties' obligations, financial arrangements, and termination clauses. GEF support will be used to support the preparation and execution of these MoAs.

Output 3.4: Financial accounting and monitoring of agreements

175. A transparent and coordinated accounting and monitoring system will be put in place. This will include: (i) systems for receipt, record and reporting on financial performance; (ii) operational and efficient disbursement, (iii) third-party audit procedure of appropriate scale and intensity, and (iv) link measurable performance indicators to financial management. Accounting data will be packaged and presented in ways that contribute to system-level decision making, planning and budgeting. This aspect of the work will require capacity building of individuals and institutions in various areas of financial management. Training in the use of the full system will be provided.

176. A reporting and evaluation system will be developed to report on how effectively landscape managers use their finances in achieving their stated objectives. This will include both system and site-level management effectiveness assessments and will serve as an important mechanism for linking financial

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[87] Notwithstanding the above, should landscape-level data gathering determine that other revenue-generating options may be of equal or greater sustainable benefit than the three selected above, such instruments may be incorporated into the project strategy as part of an adaptive management approach.

and management performance. It will also support annual reviews in which site level re-allocations will be possible. As a result, landscape revenues and expenditures will be fully and accurately reported by landscape authorities to stakeholders.

Output 3.5 Tested and operational systems for allocation and re-injection of revenues into PAs and landscape level management

177. GEF will support the development of mechanisms for allocating and disbursing the revenues generated by activities within the project landscape. The intention is to ensure that these funds are used effectively in support of biodiversity conservation, are distributed efficiently between stakeholder groups and PA sites, and are administered and managed in a transparent and accountable manner.

178. Under this Output, training courses will be designed and delivered to relevant key stakeholders that deal with identifying, designing, marketing and implementing new PA revenue generation and disbursement mechanisms. At least one national-level course and one course at the state level will be held. These will provide valuable opportunities to communicate and share the project's approach and experiences with others from different states. At the site level, targeted training will be provided on the design and implementation of the revenue mechanisms which have been selected for development by the project.

Output 3.6: Tested and operational financial systems for benefit-sharing

179. This Output will ensure that there is in place an agreed arrangement where benefits and costs are shared among relevant stakeholders including Sabah Forestry Department, Sabah Foundation and potential investors. A first step will be to estimate budgetary requirements for effectively implementing the management plans. Resource mobilization plans will then be prepared which will consist of a combination of traditional funding sources such as contributions from Sabah Foundation, budgetary allocations from the State Government, and funds raised by NGOs working at the site, along with other innovative revenue generating mechanisms. In-kind contributions from other sources will also be harnessed. Similarly, arrangements will be made for benefit-sharing arising from revenue generation related to carbon or biodiversity offsets or other financial instruments.

Output 3.7: Adaptive financial management, including shifting balance of desired uses based on changes in ecosystem markets

180. There will be a periodic review of the financial management system put in place by the project in line with Output 3.4. The review system intended will draw lessons learnt from credible institutions in the region, national or state practices. This will serve as an important link for adapting present financial arrangements with site level re-allocations in terms of changing desired land uses. As a result, revenues and expenditures will be accurately reported by landscape authorities to stakeholders.

2.5 Key Indicators, Risks and Assumptions

180. The complete project indicators are detailed in the Result Framework in Section II of this Project Document. Key indicators and targets by components are listed in **Table 10**.

Table 10. Project indicators and targets

Project Strategy	Objectively verifiable Indicators	Target
Objective: To institutionalize a multiple-use forest landscape planning and management model which brings the management of critical protected areas and connecting	Conservation of globally and nationally significant biodiversity within project landscape	• Genetic, species and ecosystem diversity conserved in approximately 261,000 ha. of the Kalabakan-Gunung Rara area, within a sustainably-managed forest landscape of 393,544 ha, including adjacent protected areas
		• By end of project, at least 50,000 ha of project landscape established as new Class I Protected Forest
		• Increase in wildlife populations within the project landscape, together with those at adjacent protected areas;

Project Strategy	Objectively verifiable Indicators	Target		
landscapes under a common management umbrella, implementation of which is sustainably funded by revenues generated within the area		**Category**	**Baseline**	**EOP Target**
		A. Elephants	0.5-1.0	1.0-1.5
		B. Organg utan	0.5-1.0	2.0-3.5
		C. Sun Bear	<1.0 or >3.0	>2.0
		D. Clouded Leopard	<1.0 or >3.0	>2.0
		Unit: Individuals / km^2		
		• No net loss in levels of biodiversity and other ecosystem functions, i.e. full maintenance of natural capital within project landscape over project period, with plan in place for continued maintenance • No decrease in primary forest areas • A 25% increase annual increase in the budget allocation for Class I Protected Forest Reserves		
	Level of functionality of biodiversity-friendly, multiple use forest management systems in Sabah	• Project landscape is being managed in a manner that demonstrates the technical, economic and financial feasibility of the new management approach		
		• An enabling policy and regulatory environment ready to facilitate expansion / replication of the model (i) to other forest landscapes in Sabah that include (or will include) protected forest reserves, and (ii) to other PA sub-systems in Sabah.		
		• The Sabah Forestry Department and Yayasan Sabah have enhanced capacities and experience with the model needed to enable its maintenance and replication • End of Project target:		
		Category	**SFD**	**YS**
		A. Enabling environment	83	87
		B. Leadership	87	100
		C. Knowledge	75	90
		D. Accountability	66	81
		Overall Mean Score	78	90
	Sabah Forest Department investment in Class 1 forest reserve planning and management	End of project targets		
Component 1: An enabling environment for optimized multiple use planning, financing, management and protection of forest landscapes	State-level system for ensuring no net loss (NNL) of biodiversity from existing forest landscapes	• By end of Y2, state-level policies and regulations for planning and managing multiple-use forest landscape finalized • State-level system in place by end of year 6 (Y6)		
	State-level policies and regulations for generating revenues from innovative financing mechanisms and re-investing into PA and sustainable, multiple use forest management	• By end of Y5, new state-level policies and regulations in place for generating and reinvesting revenues from innovative financing mechanisms		
Component 1 (cont.): An enabling environment for optimized multiple use planning, financing, management and protection of forest	Capacities of staff within relevant state level Government departments (NROS, SEPU, SFD, YS, SBC, SWD, DID, EPD) to design, implement and manage / oversee biodiversity-friendly multiple-use, landscape-level forest management and sustainable financing	• A 30% increase in multiple-use, landscape-level forestry, forest conservation and financial management capacities of SFD, NROS, SEPU,YS, DID, EPD		

Project Strategy	Objectively verifiable Indicators	Target
landscapes	schemes, and to monitor ecosystem service markets	
	Improved law enforcement effectiveness	• Increase in the ratio of number of fines collected relative to law enforcement efforts.
	Systems for compliance, monitoring and enforcement of multiple use forest regulations.	• By end of project, a revised and updated set of regulations and guidelines for compliance monitoring and enforcement within a multiple use context that includes innovative revenue generating instruments
	State and national guidelines and operational policies for multiple-use forest landscape planning, management and conservation	• By end of Y3, policy and guidelines specific to multiple-use forest landscape established
	Development of multiple-use forest landscape planning, management and conservation systems within project demonstration area	• By end of Y1, biodiversity overlay completed • By end of year 3, economic model selected and applied in landscape planning • By end of Y3, landscape-level management plan completed
	Implementation of landscape-level management plan	• New PA establishment (ecological corridors, watershed, salt lick) • Sustainable use management system based on sustainable off-take, no net loss, monitoring and enforcement
Component 2: Multiple-use forest landscape planning and management system demonstrated at pilot site	Habitat conserved and degradation reduced under management plan	• Land use for agricultural production at least 60% lower compared with baseline scenario
	Use of innovative revenue mechanisms for revenue-generating conservation	• By end of Y2, optimal land use matrix, based on environmental economic considerations within project landscape, are determined • By end of project, three revenue generating mechanisms, including REDD+ / carbon, biodiversity offsets and PES, have been designed and piloted, with total annual revenues projected to reach at least 50% of optimal management costs within five years following project completion
	Management budgets, as % of optimal management costs	• Annual revenues available for sustainable, multiple use management and conservation equivalent to 80% of estimated optimal landscape level management costs and on upward trend
Component 3: Sustainable financing of protected areas and associated forest landscape areas demonstrated at the pilot site	Use of innovative revenue mechanisms for revenue-generating conservation	• Adaptive system in place by Y2
	Management budgets, as % of optimal management costs	• Annual revenues available for sustainable, multiple use management and conservation equivalent to 80% of estimated optimal landscape level management costs and on upward trend
	An effective financial/ accounting system for fund management and disbursement	• Adaptive system in place by Y2

181. **Table 11** presents the risks facing the project, together with risk mitigation strategies.

TABLE 11. RISKS FACING THE PROJECT AND RISK MITIGATION STRATEGY.

RISK	RISK RATING	RISK MITIGATION MEASURES
Conflicts between conservation and development in State planning. Support for multiple-use forest landscape management will be weak primarily from the private sector thereby increasing the possibility that more areas will be converted to non-forest based uses that will compromise biodiversity conservation.	Medium	The Project will collaborate closely with all stakeholders including the private sector from the start of Project inception and implementation. Stakeholders will be fully involved in the process for developing policies and regulations in support of NNL/NG as well as for the novel financing mechanisms. The general approach will be participatory with defined roles and responsibilities of the partners. Key stakeholders will include the state economic planning unit, different sector departments at the state level, the private sector that depends on land resources such as agriculture, plantation, forestry, tourism, and workers and management units in the target landscape and adjacent conservation areas, locally operating NGOs, subcontractors in the landscape, beneficiaries of ecosystem services which would include distant communities, among others.
Political pressure and interferences will prevent stakeholders from rational utilisation of natural resources compatible with biodiversity conservation goals.	Medium	In the context of the project, "political pressures and interferences" in Sabah are manifested in the subtle form of assigning management rights of landuses to political patronage. The project's strategy to mitigate this risk is to create a transparent process of forest planning and management through third party involvement. The international presence created by the UNDP/GEF supported project will be absolutely critical in this regard in raising the profile of the issue and serving this reform process. The project will act as a lever to further increase the commitment at different bureaucratic levels to improving the situation.
Site level improvement in the target landscape is causing a "leakage problem", causing additional deforestation/degradation in other areas under YS or SFD management.	Medium	This risk is considered especially significant in the case of YS, which has approximately one million ha. under management. It has been mitigated partly already by the selection of the target landscape, which is believed to be of greater biodiversity significance than other YS areas. Thus, leakage or shifting of conversion pressures would still result in net biodiversity gains. Nevertheless, it will be important for SFD to move quickly to ensure rapid uptake and replication of the model / approach, once it has been shown to be a successful one.
International REDD Plus process does not progress fast enough and loses the confidence among the project stakeholders.	Medium	The project will play close attention to the process through which a REDD+ compliance market may be expected to emerge. It will include consideration of voluntary markets as an alternative, while bearing in mind that carbon prices remain low there. It will investigate options for 'stacking' credits for multiple (carbon, biodiversity) services. Finally, the project's emphasis on adaptive management means that strategies are not written in stone.
Poor cooperation among government agencies will prevent the formulation of supporting policy reforms and institutional strengthening towards multiple-use forest landscape management.	Low	Consultations have been undertaken among the key government stakeholders in the State and their endorsement has been secured. The dialogue will continue during full project implementation. The project will maintain close ties with the HoB process, which has helped substantially, together with efforts by SFD, to raise the prominence of green growth issues. As a result, it is becoming increasingly difficult for other government agencies to pursue business as usual patterns of development.
Lack of suitable qualified personnel to act as local counterparts in planning, management and execution of project programmes	Low	This risk will be minimized by engaging key stakeholders in the selection of suitable personnel to be involved in the project planning and management. Training and on the job training / and capacity building will be a significant project activity to instill new skills and competencies among PA system staff.

RISK	RISK RATING	RISK MITIGATION MEASURES
Climate change undermines the conservation objectives of the Project	Low	The Project will work to address the anticipated negative impacts of climate change by increasing resilience of the forest landscape. The adaptive management approach will ensure project resilience to all changes (not limited to climate-related changes) that will occur in the future.
Market-based biodiversity, carbon and PES does not develop despite the development of regulations and guidelines	Low	Malaysia is a signatory to several international conventions including the Convention on biodiversity and Framework of Convention on Climate Change. There are currently strong interests to develop market-based forestry instruments in Malaysia by governmental (NRE) and non-governmental organization (e.g. WWF). It is expected that the multi-stakeholder coordination process of the project will contribute to the understanding and development of a market-based instruments. As noted above, in case market-based mechanisms are slow to emerge, the project will look to voluntary schemes.

2.6 Financial modality

182. GEF funds will be used to address the identified threats and barriers to biodiversity conservation in the wider forest landscape in the proposed project landscape by means of technical assistance. This type of financing is considered appropriate to develop system and site level capacities related to multiple-use forest landscape management. The barriers identified concern weak capacities, lack of support systems and associated mechanisms can be addressed through the development of appropriate tools, methodologies, and testing these in key policies and programs of multiple-use forest management. These would require a high degree of technical inputs, as well as training of staff in their use.

183. GEF technical funds will be closely tied to co-financed investment in policy development and technical support provided through BBOP, WWF and/or other potential partners. This will help to mainstream and synergize ongoing similar efforts towards sustainable forest management.

2.7 Cost effectiveness

184. The project is considered cost effective as it takes a landscape-level management and sustainable financing approach to addressing the challenge of PA ecological and financial sustainability. This contrasts with a more traditional, PA-centric approach which might have focused more narrowly on PA expansion, increased PA management effectiveness or PA financing. The opportunity for taking a landscape-level approach is based partly on the fact that a single managing entity, the Sabah Forest Department, is responsible for managing both PAs and surrounding landscapes. By integrating PA management within broader landscape level processes, the project enables a cost-effective approach to generating and allocating financial resources. On the revenue generation side, opportunities for innovative mechanisms like REDD Plus will be pursued in the knowledge that benefits will help to support PAs, both directly via financial transfers as well as indirectly via reduced land conversion and enhanced biodiversity management in the adjacent landscape. This greatly expands the opportunities as compared with looking at PA financing opportunities within PAs only. Expanding geographically the zone within which revenue generation can help to support PA management greatly increases the likelihood that a sustainable combination of mechanisms can be identified, compared with a situation in which PA borders also represent the borders for financial innovation.

185. In addition, the project is considered cost effective as 81% (refer to Budget and Workplan) of the GEF funding is directly linked to implementation on the ground. Cost effectiveness is assured through the combination of the state level systemic capacity enhancement for sustainability and landscape level implementation which can be applied to other landscape in the state and beyond.

2.8 Sustainability

184. <u>Environmental</u> sustainability: The project will support the long-term viability of globally significant biodiversity in Sabah by improving the regulatory, planning, institutional, and financial frameworks for an emerging multiple-use forest landscape with spin-off benefits to neighbouring protected areas. The project results would include the removal of existing barriers and the mitigation of negative impacts of key threats to sustainability of the environment. Strengthening the planning and management framework within the project landscape should result in the retention of valuable ecosystem services and significantly improved resilience to impending climate change impact. Both of these represent meaningful conributions to long-term environmental sustainability.

185. <u>Financial</u> sustainability: The project is designed to catalyze sustainable financing by capturing new sources of revenues in REDD+, biodiversity offset/no net loss and PES mechanisms by developing pilot modalities matching to existing landuses (natural forest management, industrial tree plantation, conservation forest). The main products from these mechanisms are carbon, biodiversity and water, which link to climate change mitigation/adaptation; having a much longer outlook than traditional timber product. The revenue cycles for these non-traditional commodities are also different from traditional timber products. For example, carbon benefit from wood is immediate while timber product is deferred until it matures. This helps to ensure a sustained stream of revenues throughout the lifespan of the project. A key assumption in making this a reality is that all key stakeholders have the capacity to plan, manage and monitor these revenue generating modalities in perpetuity. This anticipated gap is addressed by GEF investments in capacity building of human resources and financial management system capabilities. This will further ensure the ultimate result of a financially stable framework being replicated elsewhere.

186. <u>Institutional</u> sustainability: Building institutional sustainability through improved legislation, administration and financial processes is paramount to this project's investment. Direct capacity building will take place through training programs by mobilizing GEF fund. In-direct capacity building will result from implementation of various project activities. Much of the project's efforts are focused upon providing institutions with the tools required for long-term institutional integrity. For example, strengthening the legislation framework in Component I will alleviate current institutional inconsistences that will enhance biodiversity mainstreaming of the project. Similarly, the provision of training in administering the financial system will help ensure institutional sustainability.

187. <u>Social</u> sustainability: The project preparatory phase has benefitted from very active stakeholder involvement from the governmental and non-governmental organizations. This cooperative and inclusive approach set the stage for continued social sustainability. Additionally, the creation of a Project Board in the management arrangement comprising members from the national/state level governmental and non-governmental organizations provide an avenue for significant issues, including social issues, to be addressed at the highest level of decision-making. The proposed management arrangement will also gained from the lessons learnt by key stakeholders on related social issues outside the project boundary to be applied in the project as well as co-financing support on related activity. This will result in a much more cohesive and well-funded framework for achieving social sustainability.

2.9 Replicability

188. The alternative scenario has been designed for a wider adoption within Sabah including the YS forest concession, and elsewhere in Malaysia and possibly in the ASEAN region. More specifically, the Project has a strong element in building capacity for improved multiple-use landscape management so that appropriate technologies, tools, methods and management models can be broadcast to other sites. Thereby enhancing overall sustainable forest management in the country. Other areas where Project has high potential for replication would be in the development of sustainable financing mechanisms that will be demonstrated on site.

2.10 Coordination with Relevant Programs

189. The Project will coordinate closely with the Sustainable Forest and Biodiversity Management in Kalimantan Borneo under the HoB initiative that was recently approved by GEF Council with ADB as the lead agency. In addition, this Project will also coordinate with other relevant projects in GEF's Biodiversity and SFM portfolio, particularly those implemented by UNDP and GOM, including Enhancing effectiveness and financial sustainability of Protected Areas in Malaysia, National REDD+ Readiness in Malaysia, Conservation of Biological Diversity through Improved Forest Planning Tools, and Payment for Ecosystems Services Scoping Exercise for Malaysia.

190. The Project will collaborate with other ongoing forest management related initiatives within and adjacent to the Project landscape. The first is the Innoprise – IKEA Forest Rehabilitation Project (INIKEA), which started in 1998; the project is aimed at assisting forest recovery in a degraded part of the Kalabakan Forest Reserve totaling 18,500 ha. The Sow-A-Seed Foundation is formed by IKEA, Sweden which contributes some of the financial assistance while the Sabah Foundation manages implements the project. The second is the RBJ/Swedish University Agricultural Science (SUAS) Project which began in 1990 undertook operational experiments on directional felling and pre-felling climber cutting as a means of reducing damage to the residual forest stand during harvesting. The experimental plots have been measured every two years since the project started. The third is the RBJ/New England Power (NEP) collaborative Reduced Impact Logging (RIL) Project which commenced in 1992 is an investment project in the planning of skid trails, directional marking and felling of trees so as to reduce damage and soil disturbance to a minimum. It is meant to offset CO_2 emissions from (New England Power) NEP's coal-fired power stations.

191. The Project will also work with the biodiversity conservation-related initiatives such as those in the Maliau Basin Conservation Area (MBCA), Danum Valley Conservation Area (DVCA), virgin jungle reserves, saltlick reserves, wildlife corridors linking the conservation areas and the forest reserves managed under NFM.

192. Finally, the Project will coordinate closely with the Heart of Borneo (HoB) Initiative, including ongoing efforts supported by WWF to develop and test economic models of green growth, and to design and implement sustainable financing strategies, in the HoB landscape

2.11 Incremental Reasoning and Expected Global, National and Local Benefits

INCREMENTAL REASONING

193. Under the baseline scenario, financing for natural resource management, including management by SFD of nearly 500,000 ha. of Class I Protected Forest in Sabah, would continue to depend largely on revenues generated by large-scale forest conversion for agro-industrial uses such as oil palm, along with revenues from timber harvesting. This would result in the continued conversion or degradation of much of the remaining high-value tropical forest landscapes, including a significant proportion of the Heart of Borneo. In the absence of a sustainably managed productive forest landscape to connect them, existing protected areas would be increasingly isolated within an ecologically fragmented landscape, with substantially decreased prospects for viability of globally significant species. Under most likely climate change scenarios, increasingly isolated PAs would lack the resilience to withstand stressors such as increased frequency and severity of wildfires and changes in habitat composition and species range. The long term outlook for adjacent PAs such as Danum, Maliau and Imbak Conservation Areas would be bleak.

194. Baseline efforts to manage the target project landscape include support from WWF for forest certification and PA management, as well as management efforts of SFD and YS. While state-level efforts are underway to introduce innovative financing mechanisms, including work on REDD+, bio-banking and PES, under the baseline these efforts—which are mainly taking place outside of the target project landscape—do not appear to be sufficient to substantially alter the development trajectory and

sustainable financing challenges facing the target landscape and others like it in Sabah. The resulting impact on globally significant biodiversity found within both the connecting landscapes as well as within the still partially connected PAs, would be severe.

195. Under the alternative scenario, the outlook for globally threatened species in the target landscape and beyond will be substantially enhanced in three main respects:

- The enabling environment for optimized, multiple-use planning, financing, management and protection of forest landscapes will be markedly strengthened through incremental efforts leading to state-level policies for revenue generating mechanisms such as REDD+, NNL/NG and bio-banking, together with new systems for landscape-level, conservation-oriented planning.
- A multiple use forest landscape planning and management system will have been demonstrated within a critical 261,000 ha. landscape connecting some of Sabah's most important and biodiversity-rich landscapes. The system will be designed to optimize land use decisions—including revenue generating conservation-based land uses—to provide an adequate and sustainable level of revenues while sharply reducing net impacts on biodiversity and ecological functions, as compared with the baseline scenario.
- Sustainable financing of protected areas and connecting forest landscapes will be demonstrated through pilot implementation of three revenue generating mechanisms—REDD+, PES and bio-banking, with increased revenues contributing both to enhanced budget resources for surrounding PAs as well as reduced pressures for conversion within the landscape. Increased revenue generation from standing forests will sharply reduce the revenue gap between forest conversion and conservation, thus increasing the financial feasibility to the SFD and the State of conserving large areas of globally-significant forest landscapes.

196. Overall, as a result of the project, habitat and biodiversity within landscape areas will be better conserved. PA ecological sustainability will be enhanced though increased resilience associated with enhanced connectivity and reduced risk of forest fires, with particular benefits to migratory species. PAs will be expanded and their management effectiveness increased. In species terms, project efforts are expected to lead to increased viability within the project site of globally threatened species such as orang-utan, proboscis monkey, sun bear, pygmy elephant and others. An expected demonstration effect would result in financial and management models developed under the project being disseminated and adopted in other parts of the Heart of Borneo.

EXPECTED GLOBAL, NATIONAL AND LOCAL BENEFITS

197. The site is highly significant in terms of global biodiversity. Its lowland dipterocarp forests are particularly rich in species diversity, with 814 species of woody plants of 1 cm diameter and larger found in a 50 hectare area. Endemic, rare and threatened species within the project area include the protected gaharu timber (*Aquilaria borniensis*). About half of the pygmy elephant population in Borneo (Malaysia and Indonesia) currently lives in the central forest reserves area of Sabah. Orang-utans, numbering approximately 700, and rhinoceros also share the same habitat. The significance of these forests will be critical to the persistence of the long-term global benefits generated by the area, in particular their ability to support high levels of biodiversity while helping to mitigate climate change.

198. The global significance of the project landscape lies in the regulation of climate and water provisioning. Forests sequester carbon dioxide from the atmosphere through photosynthesis. In the process, carbon is fixed in living biomass. This phenomenon cools the earth as the presence of access concentration of carbon dioxide in the atmosphere would increase warming to the detriment of the productivity and health of the world's ecosystems that are already under stress from current levels of population and economic activity (Schlaepfer, 1993[88]). Among the greenhouse gases, carbon dioxide makes up the largest proportion accounting to 55% of the warming effect of greenhouse gases. In addition to climate regulation, the target landscape contains several major rivers (e.g. Segama River and Kuamut River) that

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[88] Schlaepfer, E., 1993. Long-term implications of climate change and air pollution on forest ecosystems. IUFRO World Series. 132 pp.

provide important source of water for livelihood further downstreams (e.g. Kalabakan village). These rivers make up the upper tributaries of larger rivers such as the Kinabtangan river on the east coast of Sabah which drains into the South China Sea that support a rich marine life. While the significance of climate regulation and water provisioning may be small taken at site level (264, 264 ha), these benefits are enlarged when considered as part of the HoB landscape, which the project site is an integral and connecting part in bringing the 200,000 km^2 into sustainable management.

199. Improved sustainable financing of the project landscape will help to harmonize and conserve biodiversity through optimize landuses. In the process, the forest ecosystems will continue to provide the goods and services (e.g. carbon sequestration) for the global society. These benefits will emerge from capacity building as well as from investments to be supported through enhanced financial mechanisms and systems being established for the project. In particular, staff trained by the project will inherit the knowledge that can be spread across regions.

PART III: MANAGEMENT ARRANGEMENTS

200. The project will be executed following the UNDP guidelines for National Implementation (NIM) and is an integral part of the UNDP Country Programme Action Plan (CPAP) 2008-2012 signed between the Government of Malaysia (GoM) and the UNDP.

201. To ensure UNDP's accountability for programming activities and use of resources while fostering national ownership, the appropriate management arrangements and oversight of UNDP programming activities will be established. The management structure will respond to the project's needs in terms of direction, management, control, and communication. The project's structure will be flexible in order to adjust to potential changes during project execution. The UNDP Project Management structure consists of roles and responsibilities that bring together the various interests and skills involved in, and required by, the project.

202. UNDP will act as the Implementing Entity (IE) for this project. As a member of the Project Board, UNDP brings to the table a wealth of experience working with the GoM in the area of biodiversity conservation, PA management, and sustainable development, and is well-positioned to assist in both capacity-building and institutional strengthening. The UNDP Country Office (UNDP-CO) and UNDP/GEF Regional Coordination Unit (RCU) in Bangkok will be responsible for transparent practices, appropriate conduct, and professional auditing.

203. The project will be executed by the Sabah Forestry Department (SFD) as the representative of the Ministry of Natural Resources and Environment, Malaysia (NRE), which is acting as the Executing Entity (EE; **Figure 5**). The SFD will work in collaboration with two governmental agencies in providing national/state level facilitation for the project namely: NRE and the State of Sabah Economic Planning Unit (SEPU). SFD will be accountable to UNDP for the disbursement of funds and the achievement of the project objective according to the approved work plan. In particular, the EE will be responsible for: (i) coordinating activities to ensure the delivery of agreed outcomes; (ii) certifying expenditures in line with approved budgets and work plans; (iii) facilitate communication and networking among key stakeholders; (iv) coordinating interventions financed by GEF/UNDP with other parallel interventions; (v) preparation of Terms of Reference (TOR) for consultants and approval of tender documents for sub-contracted inputs; and (vi) reporting to UNDP on project delivery and impact; and (vii) organize meetings.

204. At the central, the project will have a Project Board (PB), which is the steering committee for this project and will be responsible for making management decisions for the project, in particular, when guidance is required by the Project Manager (PM). The Chair of the PB will be the Natural Resource Office (NROS) under the Chief Minister Department of Sabah. The membership will include the Sabah Forestry Department, Yayasan Sabah, Ministry of Natural Resources and Environment, UNDP, WWF, the Ministry of Finance in Sabah, the State of Sabah Economic Planning Unit (SEPU), the Sabah Biodiversity Centre and University of Malaysia Sabah. The PB plays a critical role in project monitoring and evaluations by quality assuring these processes and products, and using evaluations for

performance improvement, accountability and learning. It ensures that the required resources are committed, and arbitrates on any conflicts within the project or negotiates a solution to any problems with external bodies. In addition, it approves the appointment and responsibilities of the Project Manager (PM) and any delegation of its Project Assurance responsibilities. Based on the approved Annual Work Plan (AWP), the PB can also consider and approve the quarterly plans (if applicable) and also approve any essential deviations from the original plans. Specifically, the PB will be responsible for: (i) ensuring coordination among agencies and key sectors; (ii) provide guidance to implementation to ensure consistency with national policies and strategies; (iii) complementation of the project with other initiatives of government and NGOs; (iv) provide oversight to the work progress; and (v) review financial management and annual financial reports. In order to ensure UNDP's ultimate accountability for the project results, PB's decisions will be made in accordance to standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition. In case consensus cannot be reached within the Board, the final decision shall rest with the UNDP Project Manager. Potential members of the Project Board are reviewed and recommended for approval during the Project Advisory Committee (PAC).
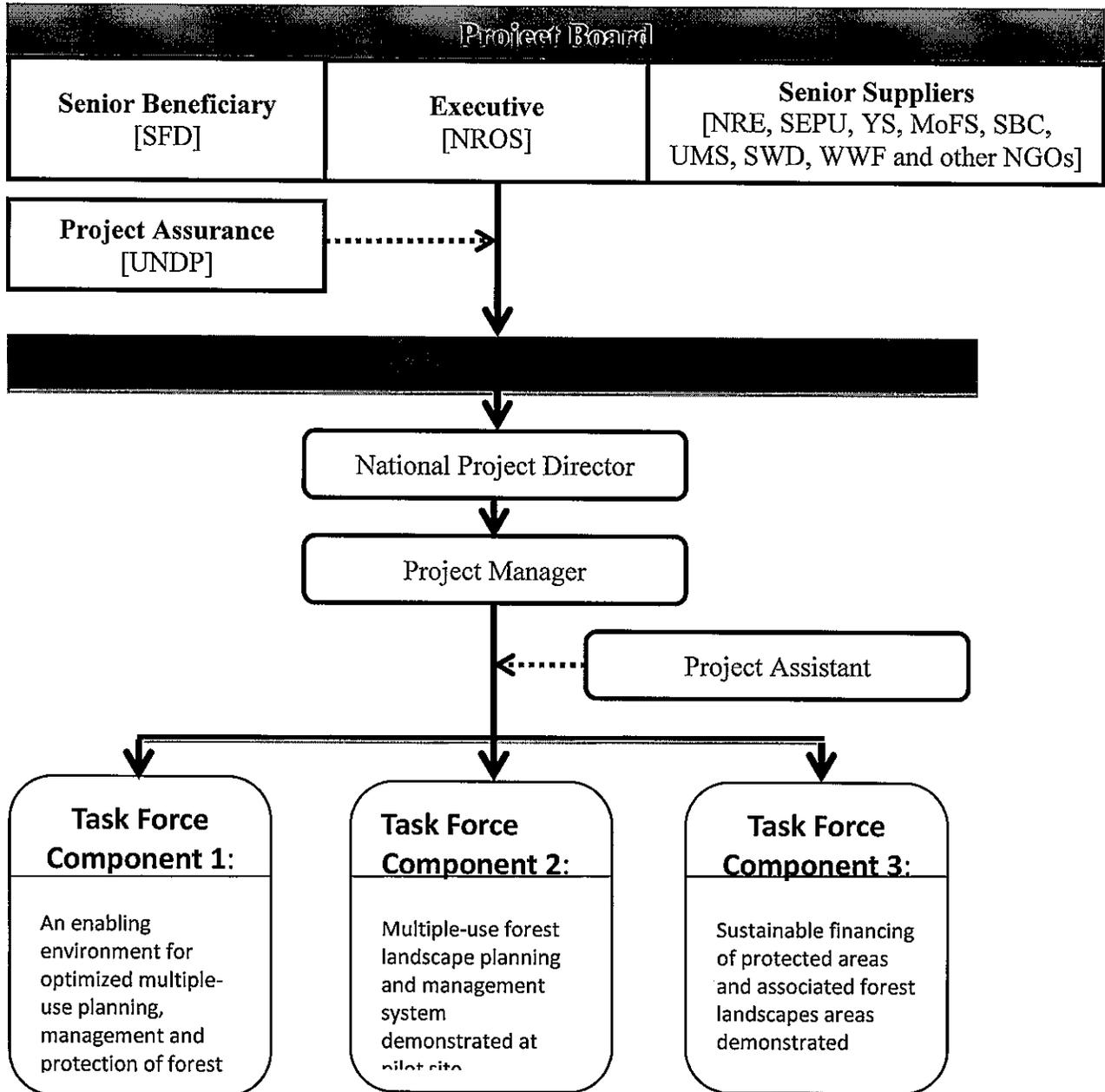
Figure 5. Project organization chart

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205. A Project Management Unit (PMU) will be responsible for directing, supervising and coordinating the project implementation. The PMU will be located in SFD. The day-to-day operations will be carried out by a management team of the Sabah Foundation. The PMU will consist of the National Project Director (NPD), Project Manager and the Project Assistant.

206. In terms of key project staff, a senior SFD staff will be appointed as the NPD whose counterpart is the Project Manager contracted to the Project. The NPD and PM will be responsible for the day-to-day project implementation, leading and managing the PMU. In addition to the PM, the PMU will be supported by one project assistant. The responsibilities of the PMU are to: (i) ensure that the work plan is implemented as planned on a timely manner; (ii) direct resources to procure and deliver the project outcomes; (iii) monitor the activities of the site coordination units; (iv) facilitate the administrative and technical requirements of the project; and (v) report work progress to the PSC on a quarterly basis.

PART IV: MONITORING AND EVALUATION FRAMEWORK

207. The project will be monitored through the following Monitoring and Evaluation (M&E) activities. The M&E budget is provided in **Table 12**.

208. **Project start**: A Project Inception Workshop will be held within the first two months of project start with those with assigned roles in the project organization structure, UNDP Country Office (UNDP-CO), and where appropriate/feasible, regional technical policy and programme advisors as well as other stakeholders. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan. The Inception Workshop should address a number of key issues including:

    a) Assist all partners to fully understand and take ownership of the project.
    b) Describe the roles, support services and complementary responsibilities of UNDP-CO and RCU staff vis à vis the project team.
    c) Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms.
    d) Finalize the first annual work plan based on the project results framework and the relevant GEF Tracking Tool.
    e) Review and agree on the indicators, targets and their means of verification (MoV), and recheck assumptions and risks.
    f) Provide a detailed overview of reporting, M&E requirements. The M&E work plan and budget should be agreed and scheduled.
    g) Discuss financial reporting procedures and obligations, and arrangements for annual audit.
    h) Plan and schedule Project Board meetings.
    i) Clarify the roles and responsibilities of all project organisation structures
    j) Determine the scheduled of meetings taking into consideration that the first PB meeting should be held within the first 12 months following the inception workshop.

209. An Inception Workshop report is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

210. **Quarterly**: Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform.

211. Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS. Risks become critical when the impact and probability are high. Note that for UNDP GEF projects, all financial risks associated with financial instruments such as revolving funds, microfinance schemes, or capitalization of ESCOs are automatically classified as critical on the basis of their innovative nature (high impact and uncertainty due to no previous experience justifies classification as critical).

Table 12. Monitoring and Evaluation (M&E) Work Plan and Budget

M&E activity	Responsible Parties	Budget US$	Time frame
Inception Workshop	▪ NPD/CTA ▪ UNDP-CO/UNDP GEF	10,000	Within first two months of project start up
Inception Report	▪ Project Team ▪ UNDP-CO	None	Immediately following IW
Measurement of Means of Verification (MoV) for Project Results	▪ NPD will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members	15,000 *(To be finalized in Inception Workshop)*	Start, mid and end of project
Measurement of MoV for Project Progress Outputs and Performance	▪ Oversight by Project GEF Technical Advisor and NPD ▪ Measurements by regional field officers, and local IAs	32,000 *(8,000/year x 5 years; To be determined as part of the AWP preparation)*	Annually prior to APR/PIR and to the definition of annual work plans
APR and PIR	▪ Project Team ▪ UNDP-CO/UNDP-GEF	None	Annually
Annual Reviews	▪ Government Counterparts ▪ UNDP-CO ▪ Project team ▪ UNDP-GEF RCU	None	Every year, upon receipt of APR
Project Meetings	▪ National Project Director ▪ UNDP CO	None	Following Project IW and subsequently once a year
Periodic status reports	▪ Project Team	5,000	To be determined by Project team and UNDP CO
Technical reports	▪ Project Team ▪ Hired consultants as needed	15,000	To be determined by Project Team and UNDP-CO
Mid-term External Evaluation	▪ Project Team ▪ UNDP-CO/UNDP-GEF RCU ▪ External Consultants	30,000	At the mid-point of project implementation.
Final External Evaluation	▪ Project team, ▪ UNDP-CO/UNDP-GEF RCU ▪ External Consultants	30,000	At the end of project implementation
Terminal Report	▪ Project Team ▪ UNDP-CO ▪ External Consultant	5,000	At least one month before the end of the project
Lessons learned	▪ Project Team ▪ UNDP-GEF RCU	15,000 *(@3,000/year)*	Yearly
Audit	▪ UNDP-CO ▪ Project Team	15,000 *(@ $2,500/year)*	Yearly
Visits to field sites (UNDP staff travel costs to be charged to IA fees)	▪ UNDP-CO ▪ UNDP-GEF RCU ▪ Government representatives	Paid from IA fees and operational budget	Yearly
TOTAL INDICATIVE COST *(Excluding project team staff time and UNDP staff and travel expenses)*		US$ 172,000	

212. Based on the information recorded in Atlas, a Project Progress Reports (PPR) can be generated in the Executive Snapshot.

213. Other ATLAS logs can be used to monitor issues and lessons learned. The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.

214. **Annually**: Annual Project Review/Project Implementation Reports (APR/PIR): This key report is prepared to monitor progress made since project start and in particular for the previous reporting period (30 June to 1 July). The APR/PIR combines both UNDP and GEF reporting requirements.

215. The APR/PIR includes, but is not limited to, reporting on the following:
    a) Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative)
    b) Project outputs delivered per project outcome (annual).
    c) Lesson learned/good practice.
    d) AWP and other expenditure reports
    e) Risk and adaptive management
    f) ATLAS QPR
    g) Portfolio level indicators (i.e. GEF focal area tracking tools) are used by most focal areas on an annual basis as well.

216. **Periodic Monitoring through site visits:** UNDP CO and the UNDP RCU will conduct visits to project landscapes based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/BTOR will be prepared by the CO and UNDP RCU and will be circulated no less than one month after the visit to the project team and Project Board members.

217. Mid-term of project cycle: The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation (insert date). The Mid-Term Evaluation will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the UNDP Evaluation Office Evaluation Resource Center (ERC).

218. The relevant GEF Focal Area Tracking Tools will also be completed during the mid-term evaluation cycle. **End of Project**: An independent Final Evaluation will take place three months prior to the final Project Board meeting and will be undertaken in accordance with UNDP and GEF guidance. The final evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term evaluation, if any such correction took place). The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF.

219. The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response which should be uploaded to PIMS and to the UNDP Evaluation Office Evaluation Resource Center (ERC).

220. The relevant GEF Focal Area Tracking Tools will also be completed during the final evaluation.

221. During the last three months, the project team will prepare the Project Terminal Report. This comprehensive report will summarize the results achieved (objectives, outcomes, outputs), lessons learned, problems met and areas where results may not have been achieved. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's results.

222. **Audit arrangement:** The Government will provide the Resident Representative with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of UNDP (including GEF) funds according to the established procedures set out in the Programming and Finance manuals. The Audit will be conducted by a special and certified audit firm.UNDP will be responsible for making audit arrangements for the project in communication with the Project Implementing Partner. UNDP and the project Implementing Partner will provide audit management responses and the Project Manager and project support team will address audit recommendations. As a part of its oversight function, UNDP will conduct audit spot checks at least two times a year

223. **Learning and knowledge sharing:** Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums.

224. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects.

225. Finally, there will be a two-way flow of information between this project and other projects of a similar focus.

226. Communications and visibility requirements: Full compliance is required with UNDP's Branding Guidelines. These can be accessed at http://intra.undp.org/coa/branding.shtml, and specific guidelines on UNDP logo use can be accessed at: http://intra.undp.org/branding/useOfLogo.html. Amongst other things, these guidelines describe when and how the UNDP logo needs to be used, as well as how the logos of donors to UNDP projects needs to be used. For the avoidance of any doubt, when logo use is required, the UNDP logo needs to be used alongside the GEF logo. The GEF logo can be accessed at: http://www.thegef.org/gef/GEF_logo. The UNDP logo can be accessed at http://intra.undp.org/coa/branding.shtml.

227. Full compliance is also required with the GEF's Communication and Visibility Guidelines (the "GEF Guidelines"). The GEF Guidelines can be accessed at: http://www.thegef.org/gef/sites/thegef.org/files/documents/C.40.08_Branding_the_GEF%20final_0.pdf. Amongst other things, the GEF Guidelines describe when and how the GEF logo needs to be used in project publications, vehicles, supplies and other project equipment. The GEF Guidelines also describe other GEF promotional requirements regarding press releases, press conferences, press visits, visits by Government officials, productions and other promotional items.

228. Where other agencies and project partners have provided support through co-financing, their branding policies and requirements should be similarly applied.

PART V: LEGAL CONTEXT

229. This Project Document shall be the instrument referred to as such in Article I of the Standard Basic Assistance Agreement (SBAA) between the Government of Malaysia and the UNDP Programme, signed by the parties on (date).

230. Consistent with the Article III of the SBAA, the responsibility for the safety and security of the executing agency and its personnel and propert, and of UNDP's propert in the executing agency's custody, rests with the executing agency. The executing agency shall:

- Put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried out;
- Assume all risks and liabilities related to the executing agency's security, and the full implementation of the security plan.

231. UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.

232. The executing agency agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via http://www.un.org/Docs/sc/committees/1267/1267 ListEng.htm. This provision must be included in all sub-contracts or susb-agreements entered into under this Project Document.

PART VI: STRATEGIC RESULTS FRAMEWORK (SRF)

Project Strategy	Objectively verifiable Indicators	Baseline	Target	Sources of Verification	Risks and Assumption
Objective: To institutionalize a multiple-use forest landscape planning and management model which brings the management of critical protected areas and connecting landscapes under a common management umbrella, implementation of which is sustainably funded by revenues generated within the area	Conservation of globally and nationally significant biodiversity within project landscape	Biodiversity is being depleted at project landscape level, due to habitat loss, degradation and fragmentation Project landscape currently contains no Class I Protected Forest Wildlife populations within the project landscape, together with those at adjacent protected areas, are currently estimated at; Category / Ind/km² A. Elephants / 0.5-1.0 B. Orang utan / 0.5-1.0 C. Sun Bear / <1.0 or >3.0 D. Clouded Leopard / <1.0 or >3.0	• Genetic, species and ecosystem diversity conserved in approximately 261,000 ha. of the Kalabakan-Gunung Rara area, within a sustainably-managed forest landscape of 393,544 ha, including adjacent protected areas • By end of project, at least 50,000 ha of project landscape established as new Class I Protected Forest Category / Ind/km² A. Elephants / 1.0-1.5 B. Orang utan / 2.0-3.5 C. Sun Bear / >2.0 D. Clouded Leopard / >2.0	Ecosystem monitoring data in M&E system Working paper and Government Gazette Ecosystem monitoring data	Clearance of fina[l] proposal by Government of S[...] Exogenous factor e.g., degradation other forest areas not driving eleph[ant] into the area
		Natural capital being lost through habitat conversion and degradation Different types of forests in the project landscape: Forest Types / Ha a. Primary forest / 18,517 b. Secondary forests / 242,747	• No net loss in levels of biodiversity and other ecosystem functions, i.e. full maintenance of natural capital within project landscape over project period, with plan in place for continued maintenance • No decrease in primary forest areas • A 30% increase annual increase in the budget allocation for Class I Protected Forest Reserves	Environmental economic reports; Landscape management plan	Site-level deforestation / degradation proce[ss] not 'leaking' into other areas under or FD manageme[nt]
	Level of functionality of biodiversity-friendly, multiple use forest management systems in	Sabah has no functional, biodiversity friendly, multiple use forest management systems	• Project landscape is being managed in a manner that demonstrates the technical, economic and financial feasibility of the new management approach	• Combined impact of outcome 2 & 3 indicators	

Project Strategy	Objectively verifiable Indicators	Baseline	Target	Sources of Verification	Risks and Assumptions
Objective (cont.): To institutionalize a multiple-use forest landscape planning and management model which brings the management of critical protected areas and connecting landscapes under a common management umbrella, implementation of which is sustainably funded by revenues generated within the area	Sabah	Capacity Scorecard: 	Category	SFD	YS
---	---	---
A. Enabling environment	64	67
B. Leadership	67	80
C. Knowledge	56	69
D. Accountability	51	62
Overall Mean Score	59	69		• An enabling policy and regulatory environment ready to facilitate expansion / replication of the model (i) to other forest landscapes in Sabah that include (or will include) protected forest reserves, and (ii) to other PA sub-systems in Sabah. • The Sabah Forestry Department and Yayasan Sabah have enhanced capacities and experience with the model needed to enable its maintenance and replication • End of Project target (30% over baseline): | Category	SFD	YS
---	---	---
A. Enabling environment	83	87
B. Leadership	87	100
C. Knowledge	75	90
D. Accountability	66	81
Overall Mean Score	78	90		• Policy and regulatory changes (see Outcome 1 indicators) • Capacity assessment scorecard	Entrenched interests associated with 'business-as-usual' are not successful in slowing the expansion of the new approach Turnover among trained staff remains minimal
	Sabah Forest Department investment in Class 1 forest reserve planning and management	RM25 million for 58 Class I Protected Forest Reserves totalling 466,757 ha	• By end of Y5, the Sabah Forest Department investment in Class 1 forest is at least 25% more than the baseline	• Financial scorecards	
Component 1: An enabling environment for optimized multiple use planning, financing, management and protection of forest landscapes	State-level system for ensuring no net loss (NNL) of biodiversity from existing forest landscapes	NNL is a new concept for Sabah	• By end of Y2, state-level policies and regulations supporting NNL finalized • State-level NNL system in place by end of year 6 (Y6)	Records of workshop proceedings and consultations	National, regional and local level support is maintained
	State-level policies and regulations for generating revenues from innovative financing mechanisms and re-investing into PA and sustainable multiple-use	No policies or regulations	• By end of Y5, new state-level policies and regulations in place for generating and reinvesting revenues from innovative financing mechanisms	Policy reports and administrative guidelines	Willingness of relevant stakeholders to incorporate the results

Project Strategy	Objectively verifiable Indicators	Baseline	Target	Sources of Verification	Risks and Assumptions
	forest landscape planning and management				
Component 1 (cont.): An enabling environment for optimized multiple use planning, financing, management and protection of forest landscapes	Capacities of staff within relevant state level Government departments (NROS, SEPU, SFD, YS, SBC, SWD, DID, EPD) to design, implement and manage / oversee biodiversity-friendly multiple-use, landscape-level forest management and sustainable financing schemes, and to monitor ecosystem service markets	Limited capacities and experience of forest managers	• A 30% increase in multiple-use, landscape-level forestry, forest conservation and financial management capacities of SFD, NROS, SEPU, YS, DID, EPD	Capacity scorecard	Project staff and counterparts are secured and retain throughout project lifespan
	Improved law enforcement effectiveness	Law enforcement in the landscape is done by SFD and YS staff by means of mobile inspection and checkpoint at point of entry to the landscape. There are 60 law enforcement staff and patrolling is conducted on a daily basis. Of these 60, half have been awarded honorary wildlife warden status with powers of arrest. In 2010, there were less than five cases of fines.	• Increase in the ratio of number of fines collected relative to law enforcement efforts.	Patrol and law enforcement record	
	Systems for compliance, monitoring and enforcement of multiple use forest regulations.	Generic M&E guidelines, no training materials	• By end of project, a revised and updated set of regulations and guidelines for compliance monitoring and enforcement within a multiple use context that includes innovative revenue generating instruments	Guidelines, regulatory updates	New regulations a fully implemented trained staff
	State and national guidelines and operational	Sustainable Forest Management License Agreement (SFMLA)	• By end of Y3, policy and guidelines specific to multiple-use forest landscape	Policy and Operational	Decision-makers : central and site le

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Project Strategy	Objectively verifiable Indicators	Baseline	Target	Sources of Verification	Risks and Assumptions
	policies for multiple-use forest landscape planning, management and conservation		established	Guidelines documents	are supportive and willing to implement policies and guidelines
Component 2: Multiple-use forest landscape planning and management system demonstrated at pilot site	Development of multiple-use forest landscape planning, management and conservation systems within project demonstration area	• No multiple use planning, management or conservation systems in use at site • Fragmented and out-dated collection of forest data in EIA reports	• By end of Y1, biodiversity overlay completed • By end of year 3, economic model selected and applied in landscape planning • By end of Y3, landscape-level management plan completed	• Technical report and maps of biodiversity concentration • Multiple-use landscape economic model • Landscape-level management plan	Processes of approval to collect satellite images Availability of resources to implement work plan
Component 2 (cont.): Multiple-use forest landscape planning and management system demonstrated at pilot site	Implementation of landscape-level management plan	No plan / implementation	• New PA establishment (ecological corridors, watershed, salt lick) • Sustainable-use management system based on sustainable off-take, no net loss, monitoring and enforcement		
	Habitat conserved and degradation reduced under management plan	Forest plantation occupies 15% of total project landscape; baseline scenario to be determined as part of model development	• Land use for agricultural production at least 60% lower compared with baseline scenario	Economic modeling output	Decision-makers are supportive of policy outcome
Component 3: Sustainable financing of protected areas and associated forest landscape areas demonstrated at the pilot site	Use of innovative revenue mechanisms for revenue-generating conservation	Only revenue generation is from timber concessions; other ecosystem services remain un-monetized, leading to over-harvesting and/or inappropriate timber harvesting methods	• By end of Y2, optimal landuse matrix, based on environmental economic considerations within project landscape, are determined • By end of project, three revenue generating mechanisms, including REDD+ / carbon, biodiversity offsets and PES, have been designed and piloted, with total annual revenues projected to reach at least 50% of optimal management costs within five years	• Technical report • Demonstration/pilot sites • Plan of Operations for pilot projects • Financial report	National, regional and local level support is maintained

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Project Strategy	Objectively verifiable Indicators	Baseline	Target	Sources of Verification	Risks and Assumption
			following project completion		
	Management budgets, as % of optimal management costs	RM11.4 million (2010) budget represents approximately 57% of optimal management costs (latter to be updated based on revised estimate of optimal management costs)	• Annual revenues available for sustainable, multiple use management and conservation equivalent to 80% of estimated optimal landscape level management costs and on upward trend	YS Annual financial reports	
	An effective financial/ accounting system for fund management and disbursement	Financial/accounting system at SFD and YS	• Adaptive system in place by Y2	Operation manuals	Specific expertise available to estab system and condu training

Total Budget

...rt Title:	PIMS 4186 Borneo Forest
...rd ID:	00080468
...rd Title:	00063217
...ness Unit:	MYS10
...ect Title:	Biodiversity Conservation in Multiple-Use Forest Landscapes in Sabah, Malaysia
...lementing Partner (...cuting Agency)	Sabah Forestry Department, Government of Sabah, Malaysia

GEF Outcome/Atlas Activity	Responsible Party/Implementing Agency	Fund Identity	Donor Name	Atlas Budgetary Account Code	Atlas Budgetary Description	Amount (USD) Year 1	Amount (USD) Year 2	Amount (USD) Year 3	Amount (USD) Year 4	Amount (USD) Year 5	Amount (USD) Year 6	Total USD	See Budget Notes
An enabling environment for optimized multiple-use planning, financing, management and protection of site forest landscapes	SFD	62000	GEF	71200	Local Consultants	4,000	4,000	4,000	0	0	0	12,000	1
				71600	Travel	0	72,000	12,000	0	0	0	84,000	2
				72100	Contractual Services -company	50,000	186,000	136,000	0	0	0	372,000	3
				72200	Equipment	5,000	5,000	5,000	5,000	5,000	5,000	30,000	4
				74200	Printing & Publications	4,000	4,000	4,000	4,000	4,000	4,000	24,000	5
				75700	Training/Workshops/Conf	19,000	19,000	10,000	10,000	10,000	10,000	78,000	6
					Total Component 1	**82,000**	**290,000**	**171,000**	**19,000**	**19,000**	**19,000**	**600,000**	
Multiple-use forest landscape planning and management system demonstrated at pilot site	SFD	62000	GEF	71200	International Consultants	0	72,000	0	0	0	0	72,000	7
				71300	Local Consultants	0	48,000	48,000	0	24,000	0	120,000	8
				71600	Travel	0	59,000	9,000	0	0	0	68,000	9
				72100	Contractual Services - company	100,000	406,500	406,500	406,500	306,500	0	1,626,000	10
				72200	Equipment	5,000	5,000	5,000	5,000	5,000	5,000	30,000	11
				74200	Printing & Publications	4,000	4,000	4,000	4,000	4,000	4,000	24,000	12
				75700	Training/Workshops/	18,000	18,000	24,000	0	0	0	60,000	13

Component 3 — Sustainable financing of protected areas and associated forest landscape areas demonstrated at the pilot site
SFD / GEF / 62000

Project Management Unit
SFD / GEF / 62000

Account	Budget Line	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total	Note#
	Conf								
	Total Component 2	**127,000**	**612,500**	**496,500**	**415,500**	**339,500**	**9,000**	**2,000,000**	
71200	International Consultants	48,000	72,000	36,000	0	0	0	156,000	14
71300	Local Consultants	48,000	0	0	0	0	0	48,000	15
71600	Travel	0	52,000	1,500	0	0	0	53,500	16
72100	Contractual Services - company	0	345,000	345,000	346,000	0	0	1,036,000	17
72200	Equipment	4,750	4,750	4,750	4,750	4,750	4,750	28,500	18
74200	Printing & Publications	4,000	4,000	4,000	4,000	4,000	4,000	24,000	19
75700	Training/Workshops/Conf	18,000	18,000	18,000	0	0	0	54,000	20
	Total Component 3	**122,750**	**495,750**	**409,250**	**354,750**	**8,750**	**8,750**	**1,400,000**	
71200	International Consultant	8,000	7,000	0	18,000	0	18,000	51,000	21
71300	Local Consultant	30,000	55,000	55,000	55,000	55,000	75,000	325,000	22
71600	Travel	2,500	500	500	2,500	500	2,500	9,000	23
74100	Audit	0	2,500	2,500	2,500	2,500	5,000	15,000	24
	Total Project MGT	**40,500**	**65,000**	**58,000**	**78,000**	**58,000**	**100,500**	**400,000**	
	PROJECT TOTAL	**372,250**	**1,463,250**	**1,134,750**	**867,250**	**425,250**	**137,250**	**4,400,000**	

Summary of Funds

	Year 1 Amount	Year 2 Amount	Year 3 Amount	Year 4 Amount	Year 5 Amount	Year 6 Amount	Total	% of Total
GEF	372,250	1,463,250	1,134,750	867,250	425,250	137,250	4,400,000	
Government of Malaysia								
TOTAL								100%

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General Cost Factors:
(a) International Consultant (IC) is budgeted at $3,000 per week.
(b) National Consultant (NC) is budgeted at $2000 per week. [89]
(c) Short-term consultancy is herein defined as work that last no more than 12 months
(d) Long-term consultancy is defined as work that requires more than 12 months of completion
(e) Unless otherwise stated, total budget allocation per item is GEF funded only

Component 1: An enabling environment for optimized multiple use planning, financing, management and protection of forest landscapes

1. Local consultancy services (*USD12,000 consisting of 6 weeks of short-term support; for travel and per diem costs, see travel budget*):
   - Training needs identification, design and step-wise approach training on all aspects of multiple-use forest landscape planning and management in support of Output 1.3 (*USD12,000 consisting of 6 weeks on a split training schedules*).

2. International airfares and per diems for international consultants; local travel for consultants, service providers, project activity implementers and participants for meetings, trainings and other stakeholder consultations in support of the outputs under component 1. All air travel provisions are budgeted on economy class. (*USD 84,000*)

3. Contractual services for firms, institutions and/or NGOs for the following (*GEF=USD372,000 + GoM=1,300,000 = USD1,672,000*):
   - Development of appropriate policy options on biodiversity offset/no net loss in support of Output 1.1. (*GEF=USD87,000 + GoM=USD270,000 = USD357,000*);
   - Development of state-level policies and regulations for generating revenues from REDD+ in support of Output 1.2 (*GEF=USD97,000 + GoM=USD 400,000 = USD497,000*);
   - Development of state-level policies and regulations for generating revenues from Bio-banking in support of Output 1.2 (*GEF=USD87,000 + GoM=USD100,000 = USD187,000*);
   - Development of state-level policies and regulations for generating revenues from PES (*GEF=USD101,000 + GoM=USD280,000 = USD381,000*) in support of Output 1.2.

4. IT equipment (LAN services, computer equipment) for the storage and delivery of digital information/data for project activity use (*USD30,000*).

5. Printing and Publications (*USD24,000*)
   - Printing and publications of reports, maps, legal documents and fees on this project component (*USD18,000 @ USD3,000 per year x 6 yrs*).
   - Printing of pamphlets, newspaper articles, and corporate brochures for public awareness building campaign (*USD6,000 @ USD1,000 per yr for 6 yrs*).

6. Training and stakeholder consultation/decision making/advocacy meetings to support the following; (*USD78,000 consisting of 15 individual sessions over 6 years including travel and per diem*):
   - Stakeholders' consultation and decision makingmeetings on REDD, biobanking and PES (*USD18,000 @ US$6,000 per session per year for 3 yrs*);
   - Site-level consultations and training sessions for field staff (*USD60,000 @ USD5,000 per session @ 2 sessions per year for 6 yrs*).

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[89] Rates are in line with the rates paid by UNDP in Malaysia as per the UNDP rate sheet.

Component 2: Multiple-use forest landscape planning and management system demonstrated at pilot site.

7. International Consultancy Services
    - Support to development of an integrated ecological-economic model for determining the optimal landuse matrix within the project site in support of Output 2.2 (*USD72,000 consisting of 24 weeks on a short-term basis*).

8. Local Consultancy Services; (*USD120,000 for a total of 60 weeks consisting of short-term support*):
    - Support to economics of landuse study (ref. Output 2.2) (*USD48,000 consisting of 24 weeks of long-term support*)
    - Evaluation of the extent of biodiversity mainstreaming covered in existing policy framework, management plans and operational plans for guidance to the preparation of the landscape-level management plan in support of Output 2.3 and 2.5 (*USD24,000 consisting of 12 weeks of short-term support*)
    - Revision of existing legal provisions, legal process and administrative procedures for the creation of new conservation areas within the project landscape, and to draft legislation or amended administrative regulations to provide enabling policy for state/national endorsement in support of Output 2.4 (*USD24,000 consisting of 12 weeks of short-term support*)

9. International airfares and per diems for international consultants; local travel for consultants, service providers, project activity implementers and participants for meetings, trainings and other stakeholder consultations in support of the outputs under component 2. All air travel provisions are budgeted on economy class. *(USD 68,000).*

10. Contractual Services for firms institutions and/or NGOs in support of the following; (*GEF=USD1,626,000 + GoM=USD4,500,000 = USD6,162,000 for site-level activities*)
    - Economic analysis of alternative landuses within target landscape in support of Output 2.1 (*GEF=USD106,000*)
    - Development of economic model for land use decision-making, including associated capacity building in support of Output 2.1 *(GEF=USD150,000)*
    - Development of landscape level management plan including landscape biodiversity mapping and digital data in support of Output 2.2 (*GEF=USD430,000*).
    - Operationalisation of on-the-ground landscape management system based on the landscape-level management plan and adaptive management to improve habitat conditions, reduce natural capital loss and to increase financing for biodiversity conservation in support of Output 2.3 (*GEF=USD440,000 + GoM=USD1,500,000 = USD1,940,000*)
    - Establishment of new PA and biodiversity corridors to enhance connectivity and habitat conditions of the target landscape in support of Output 2.3 (*GEF= USD 500,000 + GoM=USD,1,500,000 = USD2,000,000*)

11. IT equipment to to support decision making tools and biodiversity monitoring by the Sabah Forest Department, the Sabah Foundation, and other relevant partners on the ground (*USD30,000*).

12. Printing and Publications (*USD24,000*)
    - Printing and publications of reports, maps, legal documents and fees on this project component (*USD18,000 @ USD3,000 per year x 6 yrs*).
    - Printing of pamphlets, newspaper articles, and corporate brochures for public awareness building campaign (*USD6,000 @ USD1,000 per yr for 6 yrs*).

13. Training and advocacy and consultation meetings; (*USD60,000 for 10 split sessions @ USD6,000 per session*)
    - 1 stakeholder consultation and decision making fora and meetings during preparation of management plan (*USD6,000*);

- 3 training programmess to transfer skills on biodiversity mapping/analysis, landuse economic modeling and protected area management (*USD54,000*).

Component 3: Sustainable financing of protected areas and associated forest landscape areas demonstrated

14. International Consultancy Services (*USD156,000 consisting of 47 weeks of short-term support*):
     - Estimation of the Total Economic Value (TEV) of actual versus potential landuse scenarios, and scoping on optimal mix of revenue generation mechanisms for sustainable financing in support of Output 3.1 and 3.2 (*USD72,000 for 24 weeks of short-term support*);
     - Preparation of operating and financial memorandum of agreements between project partners and stakeholders in support of Output 3.3 and 3.4 (*USD12,000 for 4 weeks of short-term support*);
     - Development of a customized financial accounting and monitoring system for allocation, benefit-sharing and re-injection of revenues into PAs and landscape-level management in support of Output 3.5 (*USD36,000 for 12 weeks of short-term support*).
     - Development of benefit-sharing policy and mechanisms for new revenue generation schemes in support of Output 3.6 (*USD36,000 consisting of 12 weeks of short-term support*).

15. Local Consultancy Services
     - Assessment economic trade-offs in capping natural production area to 25% of total landscape in support of mainstreaming biodiversity under Output 3.1 (*USD48,000 consisting of 24 weeks of short-term support*).

16. International airfares and per diems for international consultants; local travel for consultants, service providers, project activity implementers and participants for meetings, trainings and other stakeholder consultations in support of the outputs under component 3. All air travel provisions are budgeted on economy class (*USD53,500*)

17. Contractual Services by firms, institutions and/or NGOs institutions and/or NGOs to support Output 3.2; (*GEF=USD1,036,000 + GoM=USD1,600,000 = USD2,636,000*):
     - Diversification of revenue sources and increase of revenue from the target landscape through the pilot scheme of new revenue generation mechanism on REDD (*GEF=USD345,333 + GoM=USD533,333 = USD878,666*);
     - Diversification of revenue sources and increase of revenue from the target landscape through new revenue generation mechanism on biobanking (*GEF=USD345,333 + GoM=USD533,333 = USD878,666*);
     - Diversification of revenue sources and increase of revenue from the target landscape through the pilot scheme of new revenue generation mechanism on PES (*GEF=USD345,333 + GoM=USD533,333 = USD878,666*)

18. Equipment to support on the ground implementation of the pilots (*USD28,500*).

19. Printing and Publications (*USD24,000*)
     - Printing and publications of reports, maps, legal documents and fees on this project component (*USD18,000 @ USD3,000 per year x 6 yrs*).
     - Printing of pamphlets, newspaper articles, and corporate brochures for public awareness building campaign (*USD6,000 @ USD1,000 per yr for 6 yrs*).

20. Training and advocacy/consultation/decision making meetings for the following (*USD54,000 for 9 sessions in split schedules*);
     - 3 operational trainings on Financial and Accounting System;
     - 2 Site-level trainings on pilot revenue schemes;
     - 2 Small local training sessions on developing managerial skills for project staff;
     - 2 Stakeholders' consultation with respect to developing pilot revenue schemes.

Project Management Unit:

21. International Consultancy Services (*51,000 consisting of 17 weeks of short-term support*):
    - Inception Support Forest Landscape Management Specialist (*USD 15,000 for 5 weeks of short-term support*);
    - Project Evaluation Expert (*USD36,000 for 12 weeks of short-term support*);

22. Project Management Staff (*GEF = USD 325,000 + GoM = USD 86,400 = USD 411,400*)
    - Project Manager (*USD252,000 @ USD3,500/month x 12 mo x 6 yrs*)
    - Project Assistant to provide overall coordination support to the Project Management Unit (*USD73,000 @ USD1,014/mo x 1 psn x 12 mo/yr x 6 yrs*)
    - Administrative/Finance Officer (*GoM=USD72,000 @ USD1,000/mo x 1 psn x 12mo/yr x 6 yrs*)
    - Administrative clerk (*GoM=USD14,400 @ USD200/mo x 1 psn x 12 mo/yr x 6 yrs*).

23. Travel and per diem for PMU staff to attend meetings and official site visits (*USD9,000*)

24. Project audits (*USD15,000 @ USD2,500 per yr x 6 yrs*)

ANNEX 1: TERMS OF REFERENCE FOR PROJECT STAFF AND CONSULTANTS

Overview of Inputs from Technical Assistance Consultants financed by GEF

Position Titles	USD/psn week*	Est. psn weeks**	Tasks to be performed
			Local
Project Management			
Project Manager	875	288	<u>Role</u>: Overall-in-charge of project operational affairs in ensuring timely and quality delivery of project activities/outputs. <u>Reporting Relationship</u>: Reports directly to the NPD, and ultimately to the Project Board (PB) <u>Duties and Responsibilities</u>: • Assist in setting technical direction to Project and its activities • Assist in overall project planning and reporting on results to stakeholders • Prepare TOR of national and international Consultants and subcontractors • Coordinate inputs of various consultants and sub-contractors to deliver desired results • Coordinate with stakeholders to secure their active participation • Review lessons and experiences of Project and present results in a forum • Prepare report of findings for wider sharing with policy makers • Assist NPD in preparing and providing technical, work and budget reports
Project Assistant	253	288	<u>Role</u>: Overall-in-charge of project administration matters. <u>Reporting Relationship</u>: Reports directly to the Project Manager, and ultimately to the NPD <u>Duties and Responsibilities</u>: • Prepare relevant Memorandum Circulars and/or other administrative regulations to improve operations and logistic support to project team • Managing schedules and project implementation Undertaking secretariat services to specific project activities • Providing limited backup support to the team • Providing financial and limited backup support to the project team • Executing financial and budgetary tasks and related activities
Component 1: An enabling environment for optimized multiple-use planning, financing, management and protection of forest landscapes			
Trainer for Institutional/Capacity Building (*National/Local*) Component 1 Output 1.3	2,000	6	<u>Role</u>: Identify, design and implement step-wise approach training programmes in support of multiple-use forest landscape goal <u>Reporting Relationship</u>: Reports directly to the Project Manager, and ultimately to the NPD <u>Scope of Work</u> • Assess capacity of SFD and key stakeholders to support management of multiple-use forest landscape management system • Prepare a capacity building program for key stakeholders in project team, and conduct consultations to engender participation and ownership • Review Project documentation, procedures, technical reports, in preparing training modules and learning guides • Prepare timetables and resource requirements to implement the plan, and monitoring and evaluation requirements to keep track of progress and evaluate outcomes
Component 2: Multiple-use forest landscape planning and management system demonstrated at pilot site			
Landuse Agronomist (*National*) Component 2 Output 2.1	2,000	24	<u>Role</u>: Undertake an economic landuse study on crop-site matching <u>Reporting Relationship</u>: Reports directly to the Project Manager, and ultimately to the NPD <u>Scope of Work</u>: • Undertake soil survey to match crops to site suitability • Determine extent of tree/agriculture plantation developments within project landscape, and draw implications on overall project objectives • Develop optimal landuse strategy to meet project objectives

Position Titles	USD/psn week*	Est. psn weeks**	Tasks to be performed
Management Plan Reviewer (*National*) Component 2 Output 2.2 and 2.3	2,000	12	Role: Review of existing management plans to determine the extent to which biodiversity mainstreaming have been considered Reporting Relationship: Reports directly to the Project Manager, and ultimately to the NPD Scope of Work • Review existing provisions (legal, administrative, technical) in existing management plans and provisions for biodiversity mainstreaming • Consult with relevant stakeholders on the legal, administrative and technical requirements for the preparation of the management plan • Identify the context, environment and gaps in the preparation of a multiple-use forest management landscape plan • Prepare a budget of the prescribed activities to prepare a multiple-use forest landscape management plan
PA Planning and Management Expert (*National*) Component 2 Output 2.3	2,000	24	Role: Develop new conservation areas within project landscape Reporting Relationship: Reports directly to the Project Manager, and ultimately to the NPD Scope of Work: • Review existing policies relevant to creation of protected areas • Consult with stakeholders on the legal, administrative and legislative process on new protected area • Prepare working papers for approval by the State Cabinet in creating new PA within project landscape
Component 3: Sustainable financing of protected areas and associated forest landscape areas demonstrated at the pilot site			
Natural Forest Planning Expert (*National*) Component 3 Output 3.1	2,000	24	Role: Assess feasibility of capping harvesting within natural forest management area in mainstreaming biodiversity Reporting Relationship: Reports directly to the Project Manager Scope of Work: • Review existing forest rules and regulations on harvesting licensing, permits and rights, practices and impacts within project landscape • Review existing timber pricing, sales and marketing structure at project landscape • Assess the economic implications of placing a harvesting cap by area of less than 25% or as appropriate within the project landscape • Prepare a policy paper on best modality and scenarios that offers the optimal timber rent capture at project landscape
International			
Project Management			
Inception Support Forest Landscape Management Specialist	3,000	5	Role: Support the SDF and the PMU during the inception phase of the project Reporting Relationship: Reports to the NPD Duties and Responsibilities: Provide technical guidance during the inception phase of the project, including: support for development of the Inception Report, establishment of baselines and M&E mechanisms; development of the annual workplan; development of terms of reference for technical consultancies and contractual services, initial awareness raising and capacity development of stakeholders.
Evaluation Experts	3,000	12	Role: Undertake evaluation of project physical progress, achievements and impacts in accordance to UNDP/GEF standard procedures Reporting Relationship: Reports to the Project Board Duties and Responsibilities: • Work with local evaluation consultants to assess the mid-term and final project progress, achievement of results and impacts. • Prepare evaluation reports, discuss with project team, government and UNDP personnel, and participate in discussions to extract lessons
Component 2: Multiple-use forest landscape planning and management system demonstrated at pilot site			
Economic Landscape	3,000	24	Role: Develop landuse matrix model within the project site

Position Titles	USD/psn week*	Est. psn weeks**	Tasks to be performed
Modeler (*International*) Component 2 Output 2.1			<u>Reporting Relationship:</u> Reports directly to the Project Manager, and ultimately to the NPD <u>Scope of Work</u> • Develop a landscape planning tool that incorporates biological and economic parameters in modeling scenarios that offers the best optimal landuse matrix within project landscape • Undertake/coordinate data collection for enabling modeling • Communicate findings to local and national stakeholders through workshops • Develop and conduct training to enhance existing capacity
Component 3: Sustainable financing of protected areas and associated forest landscape areas demonstrated at the pilot site			
Environmental Economist (*International*) Component 3 Output 3.1	3,000	24	<u>Role:</u> Compare the environmental economic trade-offs between baseline and alternative landuses within the project landscape <u>Reporting Relationship:</u> Reports directly to the Project Manager <u>Scope of Work:</u> • Assess the total economic value of baseline versus alternative landuse scenarios • Scoping on optimal mix of revenue generation mechanisms • Indicate the funding gaps to be leveraged against investments to be raised internally, co-finance and/or through the market
Legal Expert (*International*) Component 3 Output 3.3	3,000	4	<u>Role:</u> Ensuring all MoUs/MoAs to be executed are in accordance with proper procedures <u>Reporting Relationship:</u> Reports directly to the Project Manager <u>Scope of Work:</u> • Prepare legal document for all new arrangements under the project • Vet third-party memorandum of understanding/agreements to ensure appropriateness • Provide legal advice on matters concerning project arrangements
Financial/Accounting System Specialist (*International*) Component 3 Output 3.4 and 3.7	3,000	12	<u>Role:</u> Develop a transparent and coordinated accounting and monitoring system <u>Reporting Relationship:</u> Reports directly to the Project Manager <u>Scope of Work:</u> • Prepare guidelines on tendering procedure • Develop a system of recording financial receipts and expenditure • Develop an effective financial system of disbursing funds • Develop a financial reporting system that links to measurable performance indicators to aid decision making, planning and budgeting • Specify a periodic review schedule of the financial management system • Provide training in the use of the full system
Benefit-sharing Stewardship Specialist (*International*) Component 3 Output 3.6	3,000	12	<u>Role:</u> Develop an operational financial systems for benefit-sharing <u>Reporting Relationship:</u> Reports directly to the Project Manager <u>Scope of Work:</u> • Prepare budgetary requirements for implementing management plans • Prepare a resource mobilization plans from internal and external sources • Prepare guidelines for a benefit-sharing arising from revenue generation.

ANNEX 2: STAKEHOLDER INVOLVEMENT PLAN

Stakeholder Identification

The Sabah Forestry Department (SFD) is the project proponent, and the implementing agency of the Project. Its role as implementing agency will be supplemented by the UNDP-Country Office (UNDP-CO) in Malaysia, Ministry of Natural Resources and Environment (NRE) at the National level, State Economic Planning Unit (SEPU) and Natural Resources Office (NROs) of the Chief Minister Department at the State level. It will also work in partnerships with the Sabah Biodiversity Centre (SBC), Sabah Foundation/Yayasan Sabah (YS) and appointed NGOs to strengthen its capacity as implementing agency. These institutions will be represented at the Project Board (PB). In addition to these key stakeholders, SFD will work in partnerships with State Ministries State Departments, District Offices, Academic/Research institutes and local NGOs and communities in meeting the project objectives. **Table A** below describes the major categories of stakeholders, their roles and responsibilities and their involvement in the Project.

Table A. Key Stakeholders, their Roles and Responsibilities and Involvement in the Project.

Stakeholder	Roles and Responsibilities	Involvement in the Project
Ministry of Natural Resources and Environment (NRE)	This Ministry is responsible for the management of natural resources and environment in Malaysia. They are empowered to legislate policy and law on natural resource and environment management through nine Departments under their jurisdiction. They also monitor the implementation of these policy instruments to ensure effectiveness in application.	NRE will be represented in the Project Board (PB) as one of the Senior Suppliers, and will provide guidance on project coordination and management in line with national policies and objectives
Natural Resource Office (NRO), Sabah	NRO is under the Chief Minister Department of Sabah overseeing the planning of natural resources (Land, Forestry, Mining, Water) and development. It is headed by a Natural Resource Secretary	NRO will be the Executive Chair of the PB in facilitating and ensuring that the project activities are achieved as planned.
State Economic Planning Unit (SEPU)	SEPU is under the Chief Minister Department of Sabah, and is responsible for the planning and coordination of all State's Development Programme	SEPU will act as extension of MNRE in monitoring and coordinating implementation of the project activities in line with State's development plan and policies.
Ministry of Finance, Sabah (MoFS)	The Ministry of Finance manages the state revenues, expenditures and funds in ensuring a healthy financial reserve.	MoFS provide advice on financial management of the project.
Ministry of Rural and Entrepreneurial Development, Sabah (MRED)	MRED is responsible for the improvement of the standard and quality of life in the rural. Its mission is to ascertain that rural development programs are planned and implemented efficiently and effectively.	MRED will be a partner of the project, and will provide technical advice on aspects of community developments in line with national/state planned rural development programs.
Ministry of Tourism and Environment Science and Technology, Sabah (MTEST)	MTEST is in-charge of State's tourism development and environmental management. This Ministry is also in-charge of the Sabah Wildlife Department (SWD) and the State Tourism Board.	MTEST will be a partner of the Project in providing policy advice on tourism and environmental management as well as identifying opportunities for ecotourism development.
Sabah Forestry Department (SFD)	SFD is the central agency responsible for forestry in Sabah.	SFD is the Senior Supplier in the PB being the proponent and implementing agency for the Project. They will be responsible for managing the Project. SFD will be act as the executive secretary to the PB.
Sabah Biodiversity Centre (SaBC)	The central agency responsible for overall biodiversity protection and safety in Sabah.	SBC will be represented in the PB to provide policy and technical advice on biodiversity developments.

Stakeholder	Roles and Responsibilities	Involvement in the Project
Sabah Wildlife Department (SWD)	SWD is responsible for the implementation of the Sabah Wildlife Conservation Enactment, 1997. Under the provision of the Enactment, the Department is entrusted to manage wildlife habitat and utilization in Sabah. The Department also implements the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) as well as contribute to the implementation of the International Convention of Biological Diversity (CBD) and a number of other international, regional and bilateral agreements.	SWD will provide support in terms of technical inputs on aspects of wildlife conservation and management within the project landscape.
Department of Irrigation and Drainage (DID)	This Department is responsible for the planning of irrigation infrastructures in agricultural land development. DID's role also covers the development and management of the state's water resources under the Water Resources Enactment 1988	DID will be represented in the PB whose role will be to provide technical advice/support on water resource planning and development, in particular, PES within the project landscape.
District Forest Offices of Kalabakan	They have jurisdictions in areas where the project is located. They have existing mandates to sustainably manage their resources and promote biodiversity conservation.	They will take an active role in the management of multiple-use forest landscape management under their jurisdiction.
UNDP Malaysia	UNDP will be the implementing agency of the GEF and facilitates the development, review and submission of projects for GEF financing. It also monitors the implementation of the UNDP Country Program. It also catalyzes the support of other donors in fulfilling the government responsibilities under the CBD and in implementation of GEF projects	The UNDP Country Office (UNDP-CO) is responsible for the successful management and delivery of programme outcomes and monitoring of interdependencies between projects and managing changes within and among projects. They will be represented in the PB as one of the members of the Senior Suppliers.
Sabah Foundation/Yayasan Sabah (YS)	YS is a statutory body who holds a 100-year licence to one million hectares of forest concession in Sabah. The project landscape is located within the YS forest concession.	YS is one of the senior suppliers of the PB.
National NGO such as the World Wildlife Fund – Malaysia (WWF)	WWF-Malaysia has an MoU (2010-2015) with the project proponent (SFD) to obtain credible certification for FMU23, 24 and 26 within the project landscape. They are active partner in advocacy for strengthening forest management and financing through REDD.	This NGO will provide co-financing for the Project, and as implementing partners of the Project. A representative of WWF will be selected to be a member of the PB.
Local NGOs • NGO HUTAN • Land Empowerment and Animals People (LEAP) • Borneo Conservation Trust (BCT) • Partners of Community Organizations (PACOS) • Borneo Rhino Alliance (BORA)	These local-based NGOs have on-going partnerships with State departments and/or international organizations in conservation efforts in Sabah with main focus in forests and people. The also undertake studies to provide scientific basis for sustaining the supply, utilization and management of natural resources.	These NGOs will be appointed as implementing partners of the Project if they have on-going activities or interests in supporting the implementation of selected activities within the project landscape. Where possible, these NGOs will provide co-financing to support project activities. A representative from these NGOs will be selected to be a member of the PB.
Local communities	These local communities are living within or in the fringes of the project landscapes. While most have modern living lifestyle, some groups still collect and hunt for food in the forest. They get their water from rain or gravity feed from spring or rivers. Many also farm lands by practicing traditional slash and burn.	They will take an active role in providing local knowledge related to the socio-economic development and management of the project landscape.

Stakeholder	Roles and Responsibilities	Involvement in the Project
Business and Biodiversity Offset Programme (BBOP)	BBOP is a private entity specializes in biodiversity offsets subscribing to the 'no net loss' principle in partnership with 40+ leading organizations and individuals around the world.	BBOP will assist in the development of policies to enable the introduction of biodiversity offset within the project landscape.
Academic and Research Institutions • Universiti Malaysia Sabah (UMS) • Swedish University of Agricultural Sciences (SUAS) • Royal Society of London (RS) • Forest Research Institute Malaysia (FRIM)	They undertake research and other advocacy activities within or outside Sabah in sustainable forest management, forest rehabilitation and protected area management. These academic and research institutions also work with their respective partners in education, research and training.	They will be involved in the conduct of scientific research and/or surveys in addressing knowledge gaps on the project. hey will also provide their expertise in advisory/technical support to selected Project activities.

Stakeholder consultation

During the project preparation stage, several consultations were held with these key stakeholders via:

- Official meetings hosted by the implementing agency (SFD) in the presence of representatives from UNDP-CO, NRE, SEPU, YS and WWF-Malaysia. The purpose of the meeting were to seek their views on how the Project will complement existing initiatives; assess site related issues that need to be addressed; identify other stakeholders who will benefit and/or may influence the Project. Commitments in principle were also sought on the co-financing for implementation.
- Private consultations with FRIM, BBOP and New Forests Asia Sdn. Bhd. to introduce the Project, and discuss their potential roles and contributions with respect to landuse modeling, biodiversity offset and bio-banking.
- Site visits and meetings with project staff, contractors and local communities to examine the site baseline and concerns of various parties.
- Validation workshop attended by key stakeholders to validate the facts presented in the Project Document; seek consensus in the Project Strategy, Project Design, Project Outcomes/Outputs; seek additional inputs to their roles in implementation, and develop consensus on the Project's management arrangements.

Stakeholders' involvement and participation

Stakeholder involvement will be structured in three management levels according to their roles and responsibilities (**Table B**):

- Project Board (PB): The PB will provide overall guidance for the execution of the project activities and will include selective representatives from the Table A. In addition, the PB shall inspect and follow-up the implementation of the project and provide coordination among relevant ministries. The PB will be led by SFD and will meet biannually or as necessary.

- Project Management Unit (PMU): The project administration and coordination will be carried out by a PMU under the overall guidance of the PB. The PMU shall be headed by a National Project Director (NPD) whose nomination will come from within SFD. The PMU will be responsible for the administrative and technical coordination of the project and report progress upon feed-back received from the project partners.

- Task Force (TF): Project activities will be coordinated through three TFs corresponding to the three project components. The coordination among the TF will be provided by the PMU facilitated by the local implementing agency (SFD). The project component activities shall be implemented in partnerships with

the relevant partner institutions listed in Table B to achieve a broad-based stakeholder participation. The TFs will meet at least once a year or at appropriate frequency.

PB and PMU will be located in Sandakan to ensure coordination among stakeholder organizations at central level during the project period. The PMU and the PB will be instrumental in conveying the messages/outcomes of actual site work to relevant central bodies and make use of them in developing new policies. The TFs will be locally based at the project landscape and directly responsible for overseeing the activities on the ground.

Table B: Members of PB, PMU and TFs.

Project Board (PB)	Project Management Unit (PMU)	Task Forces Partners (TFPs)
1. Natural Resource Office, Sabah (NROS) 2. Sabah Forestry Department (SFD) 3. UNDP-Country Office (UNDP-CO) 4. Ministry of Natural Resources and Environment (NRE) 5. State Economic Planning Unit (SEPU) 6. Ministry of Finance, Sabah (MoFS) 7. Sabah Biodiversity Centre (SBC) 8. Sabah Foundation/Yayasan Sabah (YS) 9. Universiti Malaysia Sabah (UMS) 10. World Wildlife Fund for Nature-Malaysia (WWF-Malaysia) 11. Local NGO (*To be appointed*)	1. National Project Director 2. Project Manager 3. Project Coordinator 4. Project Assurance Manager	1. Ministry of Rural and Entrepreneurial Development, Sabah (MRED) 2. Ministry of Tourism and Environment Science and Technology, Sabah (MTEST) 3. Sabah Wildlife Department 4. Environment Protection Department (EPD) 5. Department of Irrigation and Drainage (DID) 6. Local communities 7. NGO HUTAN 8. NGO Land Empowerment and Animals People (LEAP) 9. NGO Borneo Conservation Trust (BCT) 10. NGO Partners of Community Organizations (PACOS) 11. NGO Borneo Rhino Alliance (BORA) 12. Business and Biodiversity Offset Programme (BBOP) 13. Swedish University of Agricultural Sciences (SUAS) 14. Royal Society of London (RS) 15. Forest Research Institute Malaysia (FRIM)

Terms of Reference of the Project Board/National Steering Committee

The NSC will meet semi-annually to oversee the implementation of the Project and has the following responsibilities:

1. Provide Policy guidance on matters pertaining to the implementation of the project

2. Monitor and evaluate the implementation of the project towards fulfilment of the objectives stated in the project document

3. Coordinate and manage overall project activities and budget

4. Review and comment on each years proposed work plan and budget

5. Initiate remedial actions to overcome all constraints in progress of the project

6. Review and approve relevant changes to the project design

7. Coordinate the roles of the various organizations involved in the execution of the project and ensure harmony with related activities.

8. Review and approve progress and technical reports

9. Establish Technical Committees to oversee technical details related to the project

10. The NSC operates and makes decision by consensus.

The proposed management arrangement is designed to harness the strengths and synergies of existing institutions in overall project guidance, coordination and management. The composition of the institutional members was chosen on the basis of shared goals in sustainable forest management; possessing on-going activities within the project landscape to build synergy and avoid duplication of efforts. An important consideration is deriving co-financing benefits from prospective institutional partners from the government sector, private sector and/or international/national/local NGOs. The proposed arrangement is deemed to be effective in resolving issues arising from within or outside the project, and in communicating the project achievements to affiliates of member institutions. The PMU will enter into a Memorandum of Agreement with these project partners specifying the purpose, duration, and other obligations to be performed during the agreed period.

Stakeholders will benefit from their participation through capacity building provided by the project. This opportunity is a key strategic intervention of the project in enabling and smoothen the process of project scaling-up to state, national, regional or international levels.

ANNEX 3: SUMMARY INPUTS OF STAKEHOLDERS' VALIDATION WORKSHOP

Component 1: An enabling environment for optimized, multiple-use planning, financing, management and protection of forest landscapes.

General	Outputs	Baseline	Targets
Group members: 1. Yap Siew Fah (DID) 2. Hajah Shamsiah Hj Jirat (SEPU) 3. Hazlyn Liaw (EPD) 4. Mohd Nizam Bin Awang (LSD) 5. Ivy Any (WWF) 6. Javin Tan (WWF) 7. Diana Anthony (WWF) 8. Juswinder Kaur Kler (LEAP)	**Output 1.1:** • Generally OK (√) • Is this output suggests a review of the existing policies? (*Yes*) • Timeframe (Y2) is too short to seek cabinet approval (*As per SFD/BBOP work plan*) • para 140 needs further clarification on the NGOs who have signed MoA on co-financing of output 1.1 (√) • New policies and regulations may not solve real issue (?) **Output 1.2:** • May face resistance due to 'killer assumption' that State will adopt this output (*See assumption on NNL/REDD/BioD offset/PES in Strategic Results Framework*) • Suggest to establish a National Steering Committee on REDD in view that natural resources (land, water and forests) in Sabah are under State's purview (*To be taken-up at project implementation*) • Need clarification on transparency (?) **Output 1.3:** • Assumes sufficient resources are provided (*Included in assumption*) • How to solve if Departments do not have sufficient/competent staff? (*included in assumption*) • List of stakeholders to include Ministry of Finance (MoF), SEPU, NRO, SWD, EPD, DID (√) **Output 1.4:** • Replace 'cost-effective' system with 'effective system' because an effective system may be costly (*Retain as is – the aim is to strive for cost-effective system*) • Suggest to use other tools in addition to METT to measure baseline for multiple-use forest landscape management (√) : SFMLA, Environmental Compliance Report (ECR) for EIA, RIL, TLAS, FSC • Clarify M&E in para 144 & 145 (√) **Output 1.5:** • Annotations 81 & 82 should reflect further explanation and not co-financing (√)	• Define NNL and its relation to BioD offsets (√) • Define "Multiple-use forest landscapes" (*re-para 120*) • Town & Country Planning have no role in forest reserve management (√) • Lacks in number and competent human capital (√)	• Time commitment of partners is not taken into account (*included in assumption*) • Too optimistic on time frame (*Policy gaps will be identified by Y1. By Y2, policy options on NNL, REDD, Biod offset, etc determined. Submit for cabinet's approval by Y3. These policies will be the basis of writing the management plan deemed ready by Y3*) • Why 30% for staff capacity building ? (*Based on capacity scorecard guideline*) • Correlate description in para 142 and 143 with the target (√)

Component 2: Demonstration Of Multiple-Use Forest Landscape Planning and Management System

General	Outputs	Baseline	Targets

			Replace "Agroforestry" to "Tree Plantation" product (√). • RIL is practiced in 100% in NFM area since 2011 (√)	• BioD overlay to be comple... Y2 instead of Y1 (Retaine... biodiversity overlay must b... completed in Y1 for landsc... planning) • Economic Model to be completed by 3½ years (Re... – economic model to be completed sooner for lands... planning) • Landscape-level Managem... plan by end of year 4 (Reta... based on original work pla... biodiversity overlays and economic modeling) • New PAs (PA and/or ecolo... corridors, watershed, salt l... etc) • Sustainable use manageme... system • Replace 'agricultural' with plantation (√) • Practice of RIL – 100% wi... NFM area

Group members:
 1. Dr. Arthur Chung (SFD)
 2. Chia Fui Ree
 3. Andrew Garcia (YS)
 4. Charles Garcia (YS)
 5. Isabelo Garcia (BRL)
 6. Andy Hatfield (WWF)
 7. Kennesh Manokaran (Hutan)
 8. Raymond Alfred (BCT)
 9. Dr. Mathew Potts (FRIM)
 10. Jason Lim (GFS)
 	
 • para 34: Include Malua Bio-Banking in the project document (*See para 89*)
 • para 46: Working with local and international NGOs e.g. WWF (*Added HUTAN and BCT*)
 • para 52: Suggests to use Co-operative Act 1993 instead of Co-operative Societies Ordinance (1958) (√)
 • para 62: Update forest plantation data (*As per latest data in SFD's annual report 2010*).
 • para 62: Revert rehabilitation and forest plantation (√)
 • para 149 (ii): Suggests to change "landuse planning model" to "mitigation measure" (*Retain - the project will adopt a landscape planning tool to determine the optimal landuse matrix within the project*)
 • Is it possible to change the landuse (e.g ITP area) within the project area? (*It is possible according to SFD with valid justifications*)
	Output 2.1:
	 • Suggest to strengthen monitoring and enforcement to achieve this output (*Captured in output 1.4*)
	 • Include work on HCVF by WWF (√)
	 • Related issues in this output ;
	   • Connectivity (*Captured in para 113*)
	   • Lack of expertise (*Captured in output 1.3*)
	   • Lack of resources (*Captured in output 1.3*)
	   • Policy and funding issues (*Capture in Components 1 and 3*)
	
	 Output 2.2:
	 • Careful with the use of "maximize" in the title whereby limiting level from stakeholders (√)
	 • para 152: change "agriculture" to "tree plantation" (√)
	 • Concern about feasibility and practicality in para 152 (*Addressed during project Implementation*)
	 • Need data from reliable sources i.e. ITP, BioD Credit, Ecotourism, Timber Harvesting (*Addressed during project implementation*)
	 • Inaccurate data partly because of limited funding (*Addressed during project implementation*)
	 • Lack of data (*Addressed during project implementation*)
	
	 Output 2.3:
	 • FMP a pre-requisite to landscape management plan (√)
	 • More stakeholder consultations (*captured in output 1.3*)
	
	 Output 2.4
	 • Suggest to change 'PA' to 'Conservation Area' (*PIF provides for PA and/or Ecological Corridors*)
	 • Inconsistent definition for 'protected areas' on para 41 and 45 (*Retained - para 41 gives an overview of PAs in Sabah while para 45 defines protected areas within forest reserves*)
	
	 Output 2.5
	 • Includes the following documents in this output:
	   • FMP, AWP, PDP, FD quarterly report, SEIA for timber harvesting/plantation, Auditing report, HCVF report, SWD/ BCT report on Sabah Ecological Corridor for Wildlife (*Captured in output 1.4*)
	 - Illegal settlement near Luasong i.e. Kg Mukangdut (*To be addressed during project implementation*)		

Component 3: Sustainable financing of protected areas and associated forest landscape areas demonstrated at the pilot site

General	Outputs	Baseline	Targets
Group Representatives:	Output 3.1	• Includes adaptive financial	• Ensure targets of outcome

		based on environmental economic consideration at state level not just project landscape. Target should show the benefit of this project to the economy of Sabah (*Outcomes 1.1, 1.4 and 1.5 are state-level processes*) • Targets reflect actual changes of natural capital stock on the ground (CO_2, Bio-D, H2O, tc.)(*Addressed in output 2.4*) • Assumes that decision makers are supportive of policy outcome (*Captured in Strategic Results Framework*) • Assumes that stakeholders include local communities benefit sharing arrangement (*Captured in Strategic Results Framework*)

1. Masturah Sulaiman (YS)
2. Dr. Anna van Paddenburg (WWF)
3. Cynthia Chin (WWF)
 	
• para 10 & 32: statistics on fauna are inconsistent (√)
• Component 3 needs to:
  • build on SFD's initiatives on sustainable financing for HoB (√)
  • include sustainable financing approach as UNDP Project only supports assessment for the most appropriate economic model(√)
  • includes SFD's Initiative on REDD+ framework (√)
• Stakeholders' to include (*Capture in Table 9*):
a) Government – SFD, EPD, SWD, SEPU, JKM/Finance, SEDIA/ IDS, District Office (√)
b) Private sectors – YS, production forest contractors, Biobanking investors, REDD + Finance Investors
c) NGOs – PACOS, WWF, HUTAN, LEAP (√)
d) Local communities – JKKK
e) International Aid agencies
	• para 158: Clarify whether funding gap is opportunity costs (?)
	• para 158: The assessed scenario is RIL, what about other landuses? (*Captured in output 2.2*)
	• Include social values in output 3.1 (*Integral part of economic analysis*)
	
	Output 3.2
	• para 159: should not be limited to revenue generating mechanism but also to include fiscal and economic instruments i.e. provides incentives to Green Business who maintain natural capital stock (*Captured in output 1.1*)
	
	Output 3.3
	• para 160: MOA should include measurable performance indicator (√)
	
	Output 3.4
	• para 161: Add to (iv) Link measurable performance indicators to financial management (√)
	
	Output 3.5
	• tested and operational systems for allocation, re-injection and scaling up of revenues into PES include degraded areas, landscapes level management (*Retained-degraded areas is part of the project landscape*)
	
	Output 3.6
	• Does output 3.6 include local community forest management in the financing agreements? (*There is no local community residing within the project landscape*)
	• Will local communities on the site receive incentives? (*There is no local community residing within the project landscape*)
	
	Output 3.7
	• Link output 3.7 to performance indicators on the ground (*To be addressed at project implementation*)
		management based on changes in enabling policies (√)

ANNEX 4: BASELINE METT SCORES

| | | Sabah, Malaysia | | |
		Danum	Maliau	Imbak
A	Location			
B	Name of Protected Area			
C	Date of establishment	1995	2009	2010
D	Size (Ha)	43,800	58,840	16,750
E	Baseline Assessement (Score of 0 to 3)			
1	Legal status: Does the protected area have legal status (or in the case of private reserves is covered by a covenant or similar)?	3	3	3
2	Protected area regulations: Are appropriate regulations in place to control land use and activities (e.g. hunting)?	3	2	2
3	Law Enforcement: Can staff (i.e. those with responsibility for managing the site) enforce protected area rules well enough?	2	2	3
4	Protected area objectives: Is management undertaken according to agreed objectives?	3	3	3
5	Protected area design: Is the protected area the right size and shape to protect species, habitats, ecological processes and water atchments of key conservation concern?	2	2	2
6	Protected area boundary demarcation: Is the boundary known and demarcated?	3	3	1
7	Management plan: Is there a management plan and is it being implemented?	3	3	1
7a	Planning process: The planning process allows adequate opportunity for key stakeholders to influence the management plan	1	1	1
7b	Planning process: There is an established schedule and process for periodic review and updating of the management plan	1	1	1
7c	Planning process: The results of monitoring, research and evaluation are routinely incorporated into planning	1	1	1
8	Regular work plan: Is there a regular work plan and is it being implemented	3	3	3
9	Resource inventory: Do you have enough information to manage the area?	3	3	2
10	Protection systems: Are systems in place to control access/resource use in the protected area?	3	3	3
11	Research: Is there a programme of management-orientated survey and research work?	3	3	3
12	Resource management: Is active resource management being undertaken?	2	2	1
13	Staff numbers: Are there enough people employed to manage the protected area?	3	3	3
14	Staff training: Are staff adequately trained to fulfill management objectives?	2	2	2
15	Current budget: Is the current budget sufficient?	2	2	2
16	Security of budget: Is the budget secure?	2	2	2
17	Management of budget: Is the budget managed to meet critical management needs?	2	2	2
18	Equipment: Is equipment sufficient for management needs?	2	2	1
19	Maintenance of equipment: Is equipment adequately maintained?	3	3	2
20	Education and awareness: Is there a planned education programme linked to the objectives and needs?	3	3	3
21	Planning for land and water use: Does land and water use planning recognise the protected area and aid the achievement of objectives?	2	2	2
21a	Planning and management in the catchment or landscape containing the protected area incorporates provision for adequate environmental conditions.	1	1	1
21b	Land and water planning for habitat conservation: Management of corridors linking the protected area provides for wildlife passage to key habitats outside the protected area.	1	1	0
21c	Planning adresses ecosystem-specific needs and/or the needs of particular species of concern at an ecosystem scale	1	1	1
22	State and commercial neighbours:Is there co-operation with adjacent land and water users?	2	3	2
23	Indigenous people: Do indigenous and traditional peoples resident or regularly using the protected area have input to management decisions?	1	1	1
24	Local communities: Do local communities resident or near the protected area have input to management decisions?	1	1	1
24a	Impact on communities: There is open communication and trust between local and/or indigenous people, stakeholders and protected area managers	1	1	1
24b	Impact on communities: Programmes to enhance community welfare, while conserving protected area resources, are being implemented	1	1	1
24c	Impact on communities: Local and/or indigenous people actively support the protected area	1	1	0
25	Economic benefit: Is the protected area providing economic benefits to local communities, e.g. income, employment, payment for environmental services?	2	3	2
26	Monitoring and evaluation: Are management activities monitored against performance?	3	3	2
27	Visitor facilities: Are visitor facilities adequate?	3	3	1
28	Commercial tourism operators: Do commercial tour operators contribute to protected area management?	3	3	3
29	Fees: If fees (i.e. entry fees or fines) are applied, do they help protected area management?	3	3	3
30	Condition of values: What is the condition of the important values of the protected area as compared to when it was first designated?	3	3	3
30a	Condition of values: The assessment of the condition of values is based on research and/or monitoring	1	1	1
30b	Condition of values Specific management programmes are being implemented to address threats to biodiversity, ecological and cultural values	1	1	1
30c	Condition of values: Activities to maintain key biodiversity, ecological and cultural values are a routine part of park management	1	1	1
	Percent of total :	87	88	74

ANNEX 5: CAPACITY SCORECARDS

(A) Summary of scores by percentage

Category	SFD	YS	SaBC	DID	UMS	Hutan	Leap	BCT	FRIM	Mean
Institutional Code	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	All
A. Enabling environment	64	67	38	33	62	100	96	53	44	62
B. Leadership	67	80	67	33	82	100	100	67	69	74
C. Knowledge	56	69	64	33	82	100	96	73	78	72
D. Accountability	51	62	64	33	24	100	98	71	73	64
Overall Mean Score	59	69	58	33	63	100	97	66	66	68

(B) Detail score by institution

Item	Strategic Area of Support	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)
A. Enabling environment										
1.	Capacity to engage domestic and external stakeholders in the process of developing policies, legal, regulatory frameworks and mechanisms that ensures multi-stakeholder participation	2	1	2	1	2	3	3	1	2
2.	Ability to lead stakeholders through the process of developing policies and legal and regulatory frameworks and mechanisms that ensure multi-stakeholder participation in MUFLM	2	2	2	1	2	3	3	2	1
3.	Capacity to frame, manage and interpret a comprehensive analysis of the policy and legal environment related to MUFLM	2	3	1	1	3	3	3	2	1
4.	Capacity to develop policies, frameworks and mechanisms that support an integrated approach to budgeting and implementation	2	3	1	1	2	3	3	2	1
5.	Capacity to budget, manage and implement programmers to develop policies and legal and regulatory frameworks and mechanisms (including the capacity to monitor)	2	2	1	1	1	3	3	2	1
6.	Capacity to develop and manage a financial/accounting system to capture innovative funding (e.g. REDD, Bio-banking, PES)	2	1	1	1	1	3	3	1	1
7.	Capacity to mobilize external resources	2	1	1	1	1	3	3	1	1
8.	Capacity to mobilize internal resources		2	1	1	1	3	3	2	1
9.	Capacity to introduce innovative approaches and systems of budgetary planning related to REDD, biobanking and PES	1	2	1	1	3	3	3	1	1
10.	Capacity to report on status of financial plan	2	3	1	1	2	3	3	2	2
11.	HR capacity to undertake analytical work related to MUFLM	2	2	0	1	3	3	1	2	2
12	Capacity to leverage HR in the designing, planning and management of MUFLM	2	2	0	1	2	3	3	2	2
13	Monitor the development, use and improvement of employee competencies in MUFLM	2	2	1	1	3	3	3	1	2
14	Capacity to systematically embed lessons learned into new programme and project design?	2	2	2	1	1	3	3	2	1
15	Implement adaptive financial management system	2	2	2	1	1	3	3	1	1
	Mean Score:	1.93	2.00	1.13	1.00	1.87	3.00	2.87	1.60	1.33
	Mean Score (%):	64	67	38	33	62	100	96	53	44
B. Leadership										
1.	Does the organization's leadership have the capacity to develop and maintain regular relations with political authorities of the appropriate executive and legislative areas?	3	2	2	1	1	3	3	2	2
2.	Capacity to translate strategic and operational objectives into appropriate plans, priorities, tasks and timelines	2	3	2	1	3	3	3	2	2
3.	Capacity to develop, agree upon and evaluate measurable objectives and goals for all levels of the organization?	2	3	2	1	3	3	3	2	2
4.	Capacity to set output and outcome targets, balancing the organization's resources and expectations of stakeholders?	2	2	2	1	2	3	3	2	2
5.	Capacity to create environment that is conducive to achieving progress?	2	2	2	1	2	3	3	2	2
6.	Capacity to plan, manage and encourage modernization and innovation?	2	2	2	1	3	3	3	2	2
7.	Capacity to steer change process efficiently (i.e., using milestones, benchmarks, steering groups, follow-up reporting)?	2	3	2	1	2	3	3	2	1
8.	Does the organization have the capacity to involve management and employees in discussions on the knowledge policies and programmes of the organization?	2	2	2	1	3	3	3	2	2
9.	Does the organization have the capacity to translate the findings of this analysis into a long-term, shared, vision for knowledge generation and retention within the organization?	2	1	2	1	3	3	3	2	2
10.	Capacity to understand the importance of knowledge and learning for	2	3	2	1	3	3	3	2	2

Item	Strategic Area of Support	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)
	the success of the organization/organizational development?									
11.	Capacity to identify which type of knowledge or training would be most appropriate to meet its vision?	2	3	2	1	3	3	3	2	2
12.	Capacity to mobilize and manage the resources needed to implement their knowledge/skills development strategy?	2	3	2	1	3	3	3	2	2
13.	Capacity to develop a training plan based on current and future organizational and individual needs?	2	3	2	1	3	3	3	2	2
14.	Does the organization have the capacity to ensure that new hires are supported and assisted, e.g., through coaching, tutoring?	2	2	2	1	2	3	3	2	3
15.	Does the organization have the capacity to ensure that leadership skills are developed throughout the organization?	1	2	2	1	1	3	3	2	3
	Mean Score:	2.00	2.40	2.00	1.00	2.47	3.00	3.00	2.00	2.07
	Mean Score (%):	67	80	67	33	82	100	100	67	69

C. Knowledge

Item	Strategic Area of Support	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)
1.	Does the organization have the capacity to engage stakeholders throughout the process of developing and managing policies and reforms for knowledge generation and retention, through education, training and learning?	2	2	2	1	3	3	3	2	2
2.	Capacity to engage in exchanges with other organization to benefit from the sharing of ideas	2	3	2	1	3	3	3	2	3
3.	Promote an ongoing dialogue between management and staff on knowledge, training and learning needs	2	2	2	1	3	3	3	2	3
4.	Capacity to frame, manage and interpret a comprehensive stock-taking and analysis of its knowledge and training assets and needs	1	2	2	1	2	3	2	2	2
5.	Capacity to priorities knowledge and learning and integrate it into its organizational vision?	2	2	2	1	2	3	3	2	2
6.	Capacity to mobilize and manage the resources needed to implement their knowledge/skills development strategy	2	2	2	1	3	3	3	3	2
7.	Capacity to incorporate knowledge/skills development activities into its budget	2	2	2	1	3	3	3	2	2
8.	Capacity to manage the budget for knowledge/skills development	2	3	2	1	3	3	3	2	3
9.	Capacity to identify opportunities for partnership and develop partnerships	2	3	2	1	2	3	3	2	2
10.	Capacity to evaluate the outputs and outcomes of its knowledge development/skills strategy	1	1	2	1	2	3	2	3	2
11.	Does the organization have the capacity to design and use feedback systems (ensure link between M&E findings and decision-making processes)	1	1	1	1	1	3	3	3	1
12.	Develop a training plan based on current and future organizational and individual needs	2	2	2	1	3	3	3	2	2
13.	Capacity to ensure that new hires are supported and assisted, e.g., through coaching, tutoring	2	2	2	1	2	3	3	2	3
14.	Capacity to leverage modern training methods, e.g., multi-media approach, on the job training, eLearning	1	2	2	1	3	3	3	2	3
15.	Capacity to ensure that training and development plans are developed and monitored for all employees	1	2	2	1	2	3	3	2	3
	Mean Score:	1.67	2.07	1.93	1.00	2.47	3.00	2.87	2.20	2.33
	Mean Score (%):	56	69	64	33	82	100	96	73	78

D. Accountability

Item	Strategic Area of Support	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)
1.	Do authorities have the capacity to develop clear and transparent policies, legal and regulatory frameworks and mechanisms that ensure accountability (e.g., of national government, local government, policies for procurement of goods and services)?	3	2	3	1	2	3	3	2	2
2.	Do authorities have the capacity to comply with international agreements, frameworks, norms, standards related to public sector accountability?	2	2	3	1	1	3	3	2	2
3.	Do authorities have the capacity to strengthen national and/or local accountability organizations?	1	2	2	1	0	3	3	3	2
4.	Capacity to develop and manage accountability mechanisms to ensure formulation of clear and transparent policies and strategies	2	1	2	1	0	3	3	3	2
5.	Capacity to design and use systems for recording and processing sector-relevant data	1	1	1	1	1	3	2	2	3
6.	Capacity to frame, manage and interpret a comprehensive analysis of the accountability mechanism environment	1	1	1	1	0	3	3	2	1
7.	Capacity to design a financial accounting system for MUFLM	1	2	1	1	0	3	3	1	3
8.	Capacity to develop accountability mechanisms that ensure multi-stakeholder participation	1	2	2	1	0	3	3	2	2

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Item	Strategic Area of Support	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)
9.	Capacity to lead stakeholders through the process of developing accountability mechanisms for MUFLM	2	2	2	1	0	3	3	2	2
10.	Capacity to manage accountability mechanisms regarding programme budgeting, management and implementation	2	2	2	1	0	3	3	3	2
11.	Capacity to monitor accountability mechanisms for evaluation	1	2	2	1	1	3	3	1	3
12.	Do authorities have the capacity to evaluate the development and implementation of accountability mechanisms?	1	1	2	1	1	3	3	2	2
13.	Capacity to undertake independent audits of accounting system	2	3	2	1	1	3	3	2	2
14.	Capacity to publish procedures and criteria for administrative decisions in local language(s)	1	3	2	1	2	3	3	2	2
15.	Ensure transparency of the organization, including decision-making and developments, e.g., by publishing annual reports, holding press conferences, posting information on the internet	2	2	2	1	2	3	3	3	3
	Mean Score:	1.53	1.87	1.93	1.00	0.73	3.00	2.93	2.13	2.20
	Mean Score (%):	51	62	64	33	24	100	98	71	73
	Overall Mean Score:	1.78	2.08	1.75	1.00	1.88	3.00	2.92	1.98	1.98
	Overall Mean Score (%):	59	69	58	33	63	100	97	66	66

Note: Scored from 0 to 3 (Worst=0, Marginal=1, Satisfactory=2, Best=3)

SFD=Sabah Forestry Department; YS=Yayasan Sabah; SaBC=Sabah Biodiversity Centre; DID=Department of Irrigation and Drainage; UMS=Universiti Malaysia Sabah; Hutan=Hutan NGO; Leap: Land Empowerment and Animals People (NGO); BCT=Borneo Conservation Trust (BCT); FRIM=Forest Research Institute Malaysia

ANNEX 6: DEVELOPING A LANDSCAPE MODEL

Objective of the model

The objective of the proposed landscape-level land use model is to determine for the demonstration site as a whole the optimal mix of land uses after taking into considering the full range of benefits provided by each parcel of land. The model to be adopted for the site will provide managers and decision makers with a sophisticated management tool, which can be used to compare different land use and management options for the landscape.

'Optimal' land use can be defined in different ways and the decision criteria (objectives) against which different land uses are assessed should be developed collaboratively with stakeholders during project implementation. To provide some examples, 'optimal' could be defined as the land use mix with the highest net present values (NPV), or be the most cost-effective way of reaching some determined standard (e.g., setting aside x % of the area for biodiversity conservation), or the land use mix with the highest NPV subject to x% of area set aside for biodiversity protection; or the land use that maximises biodiversity protection.

It is assumed that the project would not build a model from scratch but rather develop existing models as appropriate. There would therefore be a budget for model development, which would be used to customise the model selected to the particular needs of the demonstration site and for Sabah and Malaysia generally.

The model developed is expected include the following features:
- The model will take into account all of the key ecosystem services identified for the area – namely timber, carbon, water flow regulation and quality provision, biodiversity, tourism (see Section 3 which provides an initial assessment of the ecosystem services provided by the demonstration site).
- The model will allow the users to analyse the trade-offs between different land uses – for example carbon versus timber.
- The model will be able to analyse options for managing the site that account for the area's biodiversity, and account for the impact of the demonstration site on the biodiversity within the protected areas that surround the site. This requires the model to incorporate external costs into the analysis.
- The model will include oil palm for comparative analysis and to facilitate its replications and use in other parts of Sabah.
- The model will be user friendly
- The model will be developed with its replication to other sites in Sabah and the region in mind.

Other final features for the model should be agreed with key stakeholders at the outset of the project.

Review of existing landscape land use models and their suitability to the site

A review of five existing landscape models was undertaken to assess their applicability to the demonstration site (Polansky *et al*, 2007, Koh and Ghazoul 2010, The Landscape Management System project, the Integrated Valuation of Ecosystem Services and Tradeoffs model (InVEST) and the CBiod model). A table summarising these studies is presented in Appendix 1. This table provides a high level description of each model, an overview of how the model works and its data requirements and a statement on its applicability to the study site. Following this review the two models considered to be the strongest candidates for application at the site were selected for more detailed analysis:
- InVEST, which is being applied by WWF in the Heart of Borneo (HoB) and
- CBioD, which is being developed in Peninsula Malaysia.

This are both model that have a broad focus (i.e. they can potentially assess the full range of forest ecosystem services and are being tested in the region. The other models are either focussed on temperate forest (Polansky *et al*, 2007 and The Landscape Management System project), have a narrow focus (e.g. Koh and Ghazoul 2010 is focussed on oil palm production and Polansky *et al* 2007 only covers marketed goods) or lack desirable features for the model to be adopted at the site (e.g., Polansky *et al* 2007 only offer a static analysis).

InVEST

Integrated Valuation of Ecosystem Services and Tradeoffs (InVEST) was developed out of the Natural Capital Project, which is a joint venture among Stanford University's Woods Institute for the Environment, University of Minnesota's Institute on the Environment, The Nature Conservancy, and the World Wildlife Fund. It is a family of software-based tools that enables decision-makers to quantify natural capital and to assess the tradeoffs. InVEST has been applied to a number of demonstration sites around the world.

InVEST could help to answer the following question:

- Where would reforestation or protection achieve the greatest downstream water quality benefits? Timber companies and water utilities can use InVEST to decide how and where to make investments to protect their water supply chains.
- Which parts of a watershed provide the greatest carbon sequestration, biodiversity, and tourism values? Government agencies can use InVEST to help determine how to manage lands and waters to provide an optimal mix of benefits to people or to help design permitting and mitigation programs that sustain nature's services.

The main steps for implementing InVEST are presented in Figure 1. InVEST starts with stakeholder consultations to identify management choices, and/or policy options. Stakeholders develop spatial "scenarios" to show, for example, several alternative areas where wildlife might be protected, where natural forest land might be converted ITP, or where climate change is expected to affect precipitation and temperature patterns. Scenarios typically include maps of potential future land use/land cover.
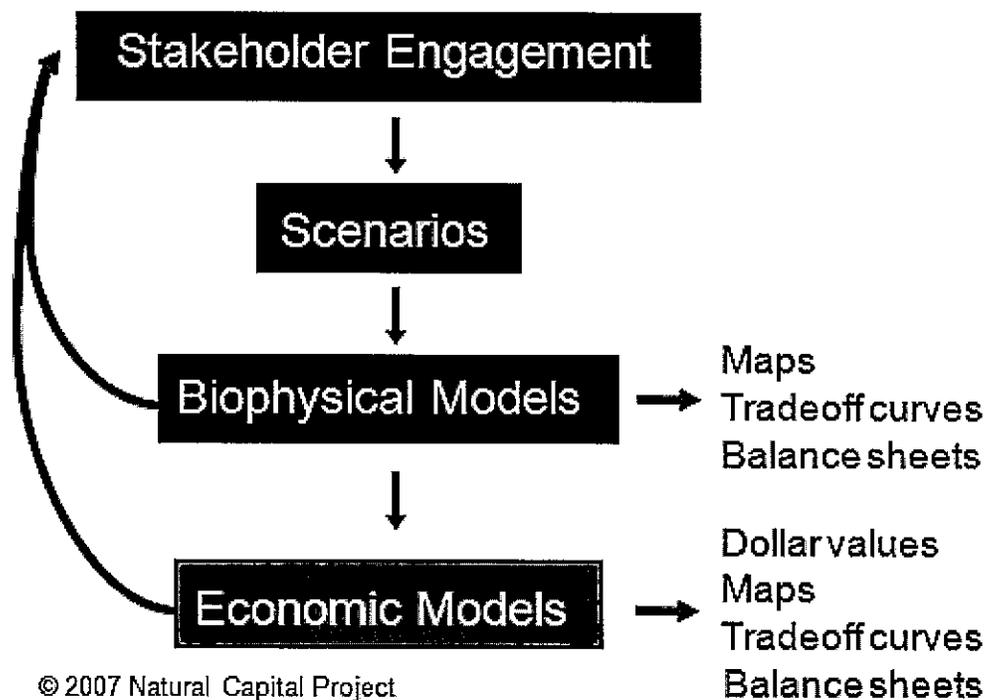
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Figure 1. Steps to using InVEST

Following scenario development, InVEST can estimate how the current location, amount, delivery, and **value of relevant services** are likely to change in the future. InVEST models are spatially-explicit, they use maps as information sources and produce maps as outputs. Results are either presented in biophysical terms (e.g., tons of carbon sequestered) or economic terms (e.g., net present value of that sequestered carbon). The spatial resolution of analyses is also flexible, allowing users to address questions at the local, regional or global scales.

The models are based on **production functions** that define how an ecosystem's structure and function affect the flows and values of ecosystem services. The models account for both service supply (e.g. forests as water flow regulators) and the location and activities of people who benefit from services (e.g. location of people and infrastructure potentially affected by floods).

To run InVEST the following software is required: ArcGIS 9.2 (at least service pack 2); an ArcInfo level license to run one of the hydrology modules; installation of Spatial Analyst extension; and Python 2.4 or higher, which is typically installed automatically as part of ArcGIS. Running InVEST requires skills in ArcGIS.

A User's Guide is available on line which takes the user through the steps required to install and run the tools, provides some of the theory behind each model and describes the input data requirements and how to interpret output results.

Application in the HoB. WWF are applying the InVEST model in the HoB to analyse where services exist, such as water regulation, carbon and biodiversity provision, to support development of financing mechanisms and to promote the implementation of a 'green economy' in the area. They have undertaken a high level assessment of the whole area using a 250m satellite image.

They are currently working in a site in Kalimantan at a 25m x 25m scale, where they are simulating what the landscape would look like in 20 years under a Business as Usual Scenario compared to a scenario that factors in green economy policies. In Sabah they have selected the demonstration site as their study area. Work to date for the demonstration site includes a rapid assessment of different watersheds in Sabah to outline different basins and identify potential PES type schemes. The next phase of the work includes a proposed workshop in July/August 2011 to explain their work in Indonesia and seek agreement for the application of InVEST at the demonstration site.

This work could feed into the proposed GEF project. It would build the foundation for further assessment. WWF intend to feed the outputs of InVEST into a separate economic model, due to the fact that InVEST is foremost a geo-spatial model and not suited to detailed economic analysis. The economic models that they will use are yet to be identified.

The CBioD Project

The Conservation of Biodiversity through improved forest planning tools (CBioD) project is developing a **forest landscape optimisation tool**. The project is addressing the issue of biodiversity, landscape and the loss of forest services in **production forests**. This is in recognition of the fact that effective biodiversity conservation strategies must integrate biodiversity considerations into the management of timber production forests—especially those that are adjacent to protected areas or include species that are not well-represented elsewhere. The context within which the model is being developed therefore matches well with the context of the demonstration site and the objective of the proposed GEF project to ensure management at the landscape scale protects biodiversity both within the demonstration site and in existing protected areas near to the demonstration site.

The study will produce decision making tools and methods to ensure biodiversity is given optimal consideration in production forest and is due to complete around May 2013. The CBioD Project site is located in the Temenggor Forest Reserve's Perak Integrated Timber Complex (PITC) concession area.

The project is funded by the International Tropical Timber Organisation (ITTO) and the Global Environment Facility (GEF) through the UNDP. Project partners include the Ministry of Natural Resources and Environment, Malaysia (executing agency) and the Forest Research Institute of Malaysia (FRIM). The Federal Forestry Department and the Malaysian Timber Certification Council play a major role in the CBioD Project as tools and methods created through this project will be implemented by these agencies.

It is envisaged that at the end of the CBioD Project the following objectives will be achieved i) methods of assessing biodiversity and economic valuation of the forest; ii) better understanding of harvesting impacts on biodiversity; iii) decision making models for policy makers in the management of production forests with due consideration given to biodiversity; iv) capacity building of local counterparts and forest managers in the use of such tools; and, v) the dissemination of knowledge to other tropical countries enhancing Malaysia's role as a pioneer in tropical forests management (FRIM, 2007).

It is not possible to fully review this model as it is still in the development phase. However, The CBioD project will develop and evaluate a range of decision making tools and methods for (i) assessing biodiversity, (ii) valuing goods and services associated with biodiversity, and (iii) evaluating spatial tradeoffs between timber production and biodiversity conservation.

In the case of biodiversity assessment, the project will develop and evaluate new sampling methods for estimating the biodiversity in a region from a small number of forest inventory plots. This system will include guidelines for establishing the plots and statistically analysing their data.

Economic models are being developed for watershed services, recreation and passive use that can be integrated into the forest management model. The **watershed services** study consists of three related studies: econometric modeling of the impacts of forests on watershed services; analysis of the opportunity cost of supplying watershed services; and, the analysis of the benefits of watershed services. The objectives of the studies on **recreation and passive use** are to demonstrate the application of state-of-the-art research methods and to investigate the impacts of deviations from first-best practices on the accuracy and precision of benefit estimates and the costs of applying the methods. The data is based on in-person surveys of nearly 1,300 households in Kuala Lumpur and the surrounding state of Selangor. The passive use module adopted a Choice Experiment as its valuation approach and is focused on a specific site, the 300,000-hectare Belum-Temengor forest complex in northern Peninsular Malaysia. One of the recreation modules also uses choice experiments. A second recreation module collected information on the number and cost of actual household visits to existing forest parks and other outdoor recreation sites during the past 12 months. This information was used to develop a multiple-site travel-cost model. The value estimates from the two recreation modules are best viewed as estimates of the benefits of protecting forests against timber harvesting, which is prohibited in forest parks in Malaysia.

In recognition of the variability across tropical developing countries in terms of forest characteristics, available ecological and economic data, and forest planning and management procedures the CBioD Project is proposing a hierarchy of tools, ranging from complex (and more data and human-resource demanding) to the simpler. The research aims to quantify the accuracy and precision lost when the simpler methods are adopted. This will provide forestry departments and conservation organisations with a larger menu of tools to chose from and information on their reliability.

At the end of the CBioD Project the tools listed below are to be available for relevant government agencies, notably FRIM, the Forestry Department and MTCC and the industry notably PITC.
> I. Computerised system and database for recording and managing biodiversity
> II. Efficient statistical methods for estimating biodiversity from small samples
> III. Improved methods for assessing biodiversity
> IV. Improved understanding of the overall impacts of timber harvesting on biodiversity
> V. Models that relate economic values associated with biodiversity to ecological and socioeconomic factors that influence them
> VI. Improved models for predicting biodiversity taking into account timber harvesting systems and locations
> VII. Harvesting protocols and technology that would conserve or protect biodiversity
> VIII. Improved forest planning model for allocation of lands between protection and production taking into consideration biodiversity and economic benefits and costs
> IX. Increased skills and capacity of local counterparts in all aspects of the research
> X. Dissemination of the tools and methods to other countries

The forest planning model combines scenario analysis and an optimisation tool in order to encourage use. The scenarios could be analysed quickly, while an optimisation exercise would be more complex. The model can be used to ask how to meet constraints and maximise objectives. For example it could be used to meet an economic objective such as a timber commodity target, or to maximise NPV subject to constraints such as meeting a biodiversity objective or to maximise biodiversity subject to a timber threshold. The model will also include a gold programme – where the user can set targets and see how possible it is to achieve the targets. The model will be most suitable for large areas of 10,000-100,000 ha.

Limitations of the model are:
- It does not look at different types of timber harvesting, for example different types of RIL. Therefore if this is important at the proposed study site the model would need to be adapted to do this
- It does not consider the tradeoffs between forest and other types of land use (housing, industrial development). This is due to the fact that the forest estate is fairly stable in Peninsular Malaysia, and

therefore the key question is where to log and where to protect, and what you need to protect from (i.e. unsustainable harvesting or poaching).

- Valuation is done from the point of view of Malaysia (for example the value of ecotourism to Malaysians, not to foreigners). The model does not include global values. These are likely to be important in the proposed study site therefore model would need to be adapted to account for this.

The tools will be web based, so only depend on internet access. The style is very map orientated so that the information is easy for people to visualise. It will be possible to open the map of an area and see what is happening in each compartment. It is understood that it would be easy to customise the model for use at the demonstration site.

Data requirements for the model include: current land use, timber stock, age of timber, topography, elevation, rainfall, location of protected areas, carbon stock, on the ground biodiversity assessment if possible otherwise general ecological principles can be applied.

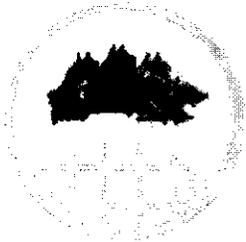The expertise needed to implement the CBioD model is likely to include:
- An excellent GIS Modeller (analyst) / database administrator with a strong understanding of data models and how to work at spatial scales.
- PhD trained ecologist
- Economist
- A trainer to provide front end user support
- An implementer (computer science expert) to deep code the tool as appropriate.

Conclusion

The choice of model to be adopted for the demonstration site should be agreed with stakeholders at the outset of the project, based on a common understanding of the features of each tool and the priority requirements for the demonstration site. The following table presents an overview of the pros and cons of the two models.

Table 1. Overview of the Pros and Cos of InVEST and CBioD

| InVEST		CBioD	
Pros	Cons	Pros	Cons
Good for scoping broad policy issues, and for linking analysis to financing options, which is an important aspect of proposed GEF project	Only runs in Arc map, and all data layers are required to run the model	Web based and only internet access required for use.	Not possible to fully review model as still in development
Good for spatial analysis	InVEST is hard coded and therefore hard to customise	Would be possible to customise for the demonstration site	Has limitations -- not focussed on different types of timber harvesting, and does not consider global values, but could be adapted to do so
Good for carbon, biodiversity and agroforestry analysis	Not an optimisation tool, therefore may not achieve the goals of the project as laid out in the Project Identification Form (PIF)	An optimisation tool, also capable of analysing scenarios (tradeoffs)	
Flexibility in terms of scale – can be used to analysis 250m or 1m parcels.	Economic models need development.	Economic models being developed which can be generally applied and which assess reliability of results	
Has been applied in a number of demonstration sites	Additional hydrological model needed to map sediment deposits		
	Data intensive InVEST developed in the US and spatial data may be hard to come by in developing countries, although data has apparently not been a problem in Indonesia.		
	Not good for undertaking detailed analysis		

SABAH FORESTRY DEPARTMENT
Forestry Headquarters
KM11, Jalan Utara, Locked Bag No.68
90009 Sandakan, Sabah, Malaysia
Tel: 6089-242500   Fax: 6089-671303
Website: www.forest.sabah.gov.my

CERTIFICATION

This is to certify that the **Sabah Forestry Department**, as the executing agency of the project "Biodiversity Conservation in Multiple-Use Forest Landscapes in Sabah, Malaysia", will provide co-financing of US$ 15 Million, or equivalent to RM45,325,500.00*, through counterpart staff time for project management and project activities, as well as financing for baseline activities including administration of the State's forest reserves, including the protected areas and sustainable forestry management.
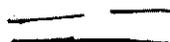
DATUK SAM MANNAN
Director of Forestry, Sabah

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* *Based on an exchange rate of 1 US$ = RM3.0217, as at February 22, 2012*

CERTIFICATION

This is to certify that **Yayasan Sabah Group, Forestry Division** as principle partner in the project "Biodiversity Conservation in Multiple-Use Forest Landscapes in Sabah, Malaysia", that will be executed by Sabah Forestry Department, will provide co-financing of US$ 4.4 Million, or equivalent to RM13,851,200.00*, through counterpart staff time for project management and project activities as well as budget for complementary activities to ensure successful implementation of the project.

GREGORY MOSIGIL
Acting Group Manager
Forestry Division

Based on an exchange rate of 1 US$ = RM3.1480, as at November 11, 2011

WWF *for a living planet*

From: Dato' Dr Dionysius S.K. Sharma, D.P.M.P.
Executive Director/CEO

Our ref: D/Prog/Support_UNDP

31st January 2012

Y Bhg Datuk Sam Mannan,
Sabah Forestry Department,
KM11, Jalan Utara,
90009 Sandakan,
Sabah

Dear Datuk Sam,

Re: Support Letter as Co-Financier in the UNDP-GEF Biodiversity Conservation in Multiple Use Forest Landscapes Management in Sabah, Malaysia

As a partner to move responsible forestry within the FMU 23, 24 & 26 in Sabah as stated in the GFTN MOU between Sabah Forestry Department and WWF-Malaysia in November 2011, we are proud to be included in this Project entitled *Biodiversity Conservation in Multiple Use Forest Landscapes in Sabah, Malaysia to be executed by Sabah Forestry Department* and funded by UNDP GEF.

In total, WWF- Malaysia would have contributed a rough estimate value of RM300, 000 or the equivalent to USD100, 000 to implement responsible forestry in the said area. This contribution covers GFTN project management and project activities costs including WWF- MY participation as well as funding parallel conservation activities to ensure successful implementation of the UNDP-GEF project above.

Thank you

Yours truly,

1. *Overview of financing mechanism*

A key component of the proposed project is to identify new and innovative financing arrangements for the demonstration site and to trial them within the project period. Underpinning the identification of appropriate financing mechanisms is a clear scientific understanding of the services being provided by the forest, a quantification of this service (in biophysical terms) and an understanding of its economic value and of the beneficiaries. Potential services provided at the demonstration site are (in addition to timber) – provision of clean water, regulation of water flows, carbon sequestration, biodiversity benefits, tourism benefits and cultural services.

A typology of potential financing mechanism is provided in Table 1. This categorises potential mechanisms into external flows, mechanism for generating funding such as taxes, and market based charges. At present the site is financed through budget allocations from the Malaysian government, donor support for specific projects and revenue from timber charges such as royalties.

Table 1. Typology of potential financing mechanisms.

External flows	Generating funding	Market based charges
Domestic government / donor assistance Private voluntary donations Environmental funds & debt for nature swaps.	*Licensing and Royalty fees* Fiscal instruments Benefit & revenue sharing Cost sharing Investment, credit & enterprise funds	Tourism charges Resource-use fees Payments for Ecosystem services (PES) Mitigation banking and biodiversity offsets REDD

Source: Adapted from IUCN, 2006

The PIF identifies the following barriers to the successful harnessing of revenue-generating opportunities: (i) lack of capacity to define, develop and manage new revenue generating opportunities; (ii) lack of mechanisms for investing financial resources generated into protected area and landscape-level conservation and management; (iii) in the case of REDD Plus, barriers include the absence of a national policy framework for generating and trading REDD or REDD Plus credits and inadequate capacities to quantify changes in carbon stocks in state forests.

The sections below discuss some of these potential financing options and their applicability to the demonstration site. The focus is on REDD, Biodiversity offsets and PES, as innovative approaches that may present new and innovative financing for the site.

Additional information may be found in a report by WWF on the financing in the Heart of Borneo (HoB) (WWF, 2010).

2. REDD

Background

Reducing emission from deforestation and forest degradation (REDD) is a payment scheme designed to compensate landowners for the value of carbon stored in their forest that would otherwise be released into the atmosphere. REDD+ additionally recognises efforts for reforestation and sustainable forestry. Examples of REDD+ programmes include payments to landowners who reduce their carbon emissions from logging natural forests through sustainable forest management, reduced impact logging, or forest restoration and conservation. REDD+ currently operates via the voluntary carbon markets, however, efforts are underway to formalise an international mechanism for REDD+.

The forests and peat lands of Borneo are very effective carbon stores, with an average of 230 tonnes per ha in above ground biomass, and 2,400 tonnes per ha in below ground peat soils; most of this is released by deforestation and land degradation (Paoli *et al.* 2010).

Initiatives in Malaysia

Sabah is leading the way on REDD in Malaysia. The State Government of Sabah is in the process of developing a **state-wide REDD+ framework.** They are working with WWF to develop carbon accounting methodologies, design the institutional framework and develop financing mechanisms. In November 2010, WWF and the State Government of Sabah co-hosted an international conference entitled: *Forest and Climate Change: Decoding and Realising REDD+ in the Heart of Borneo.* The conference was attended by nearly 500 participants from government, the private sector and civil society. The aim of the conference was to raise awareness of the forest's role in mitigating climate change and how mechanisms such as REDD can add tangible value to forest protection and sustainable development efforts.

There are two REDD+ pilot projects in Sabah set up by YS in 1992:

- The Innoprise Forest Absorbing (INFAPRO) project involves a consortium of Utilities Companies in the Netherlands and is rehabilitating 25,000 ha of degraded forest through enrichment planting. The project is estimated to sequester 350,000 tonnes of CO_2 over 60 years. Following restoration the forest will be sustainably managed for timber and other forest products. It also serves as a buffer for the adjacent Danum Valley Conservation Area. The sale of carbon credits has been slow to date, however the site has recently been approved under the Voluntary Carbon Standard (VCS) and it is anticipated that carbon credits will now be much easier to sell. Carbon credits on the voluntary markets are currently selling for around US$11 ton/ha.

- An agreement with the New England Power Companies of USA to reduce logging damage by 50%, thereby gaining incremental carbon. This reduced impact logging (RIL) project is estimated to reduce emissions of CO_2 by 40 tonnes over 60 years.

In addition there is the **Rimba Raya Conservation project** covering 91,000 ha in Central Kalimantan that is currently selling carbon credits through the voluntary market to Gazprom Marketing & Trading. The area was purchased by Infinite EARTH to avoid forest clearance.

The EU has pledged 4 million Euros for REDD development and implementation (it is not clear if the fund is for Sabah or for Malaysia in general). This funding should become available in 2013, with bidding open to consultants in 2012.

Applicability to demonstration project

In order to claim REDD payments, the benefits of alternative management have to be projected against the current activity at the site (the baseline). For example if the baseline is conventional logging a move to RIL could qualify for carbon credits. The opportunities are therefore limited for forests that are already reported to be sustainably managed.

In the NFM area the site is already practicing RIL, so it is likely to be hard to claim REDD credits. However it may be possible to qualify under the Voluntary Carbon Standard for the introduction of improved forest management against the current baseline; this approach is also being explored for Malua. The demonstration site could benefit from the lessons learnt at the INFAPRO, which has recently been through the process of VSC approval. Any areas designated as protected areas in the NFM could qualify for REDD+ finance.

In the ITP area carbon credits could be claimed if plantation forestry was stopped and the area rehabilitated.

Further study of the site and the results of the state-wide REDD+ framework may lead to the identification of further opportunities for the site, which are not apparent at this stage.

3. *Biodiversity Offsets*

Background[90]

Biodiversity markets are a potentially powerful tool for internalising traditionally externalized costs and compensating good practices. For example, if a business has to pay to mitigate its residual impact on a rare animal or plant, it either has to bear the cost of mitigation or develop elsewhere to avoid this cost. Conversely, if landowners can be compensated financially for protecting or enhancing a rare animal or plant habitat there will be an economic incentive to protect habitat.

Payment systems for biodiversity compensation include: biodiversity offsets, mitigation banking, conservation banking, habitat credit trading, fish habitat compensation, BioBanking, complementary remediation, conservation certificates. Some are based on compliance with regulation while others are done voluntarily for ethical, competitive, or pre-compliance reasons. They all aim to reduce biodiversity loss and build the cost of biodiversity impacts into economic decisions through markets or market-like instruments and payments

While an offset that attempts to achieve **no net loss** is preferable from an ecological and social standpoint, less comprehensive forms of impact compensation, in which funds are set aside for biodiversity management or valuable biodiversity is protected elsewhere, can be a first step towards better biodiversity footprint management or even eventually a regulated offset system.

There are around 39 existing compensatory mitigation programs around the world, ranging from programs with active mitigation banking of biodiversity credits to programs channeling development impact fees to policies that drive one-off offsets. There are another 25 programs in various stages of development or investigation. Within each active offset program, there are numerous individual offset sites, including over 600 mitigation banks worldwide.

The global annual market size is at least US$1.8-2.9 billion. It is likely to be much more than this, as 80% of existing programs are not transparent enough to estimate their market size. There are at least 86,000 hectares of land under some sort of conservation management or permanent legal protection per year.

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[90] This section is based on Marsden *et al* 2010.

Four offset programs exist in Asia, with another four in early development. Annual payments equal $390 million and roughly 26,000 hectares are protected or restored annually. Asian offset-like programs come mostly under the Environmental Impact Assessment, with EIA laws in Japan, South Korea, China, Mongolia, Pakistan, Thailand, Malaysia, Russia and India.

Box 1 presents definitions for commonly used biodiversity offset terms.

Box 1. Biodiversity Offsets - Definitions

Compensatory Mitigation– the restoration, creation, enhancement, and/or in certain circumstances preservation of natural resources for the purposes of offsetting adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved. Compensatory mitigation represents a spectrum of practices that range from rigorous and measurable biodiversity offsets to less direct efforts to compensate for impacts through financial donations and land protection.

Mitigation Hierarchy – avoidance, minimization, rehabilitation / restoration (sometimes termed mitigation), offset.

One-off offset – 'do-it-yourself' offsetting conducted by the developer or a subcontractor. Known as 'permittee responsible mitigation' in the United States.

Compensation Fund – a third-party mechanism that collects and administers fees from developers to offset their impacts to biodiversity. The money may go directly towards compensating biodiversity loss, or to more indirect biodiversity-related projects (i.e. funding protected area management, research).

Mitigation Bank ("bank")–a site, or suite of sites, where resources (e.g., wetlands, streams, habitat, species) are restored, established, enhanced and/or preserved for the purpose of providing compensatory mitigation for impacts. In general, a mitigation bank sells compensatory mitigation credits to developers whose obligation to provide compensatory mitigation is then transferred to the mitigation bank sponsor.

Credit – a unit of measure representing the environmental commodity that is able to be traded (this can be functional or measure of area), based on the environmental activity.

No Net Loss - A target for a development project in which the impacts on biodiversity caused by the project are balanced or outweighed by measures taken to avoid and minimize the project's impacts, to undertake restoration and finally to offset the residual impacts, so that no loss remains. Where the gain exceeds the loss, the term 'net gain' may be used.

Like-for-Like - conservation (through the biodiversity offset) of the same type of biodiversity as that affected by the project. Also referred to as in-kind.

Environmental Impact Assessment - a formalized process, including public consultation, in which all relevant environmental consequences of a project are identified and assessed before authorization is given.

Marsden *et al* 2010. Adapted from BBOP, 2009,5 Gane, 2009,6 US EPA, US ACE 20087

There is evidence that Biobanks are a better solution for biodiversity conservation than protecting small fragmented areas. Edwards *et al* (2010) report on the abundance and diversity of birds within oil palm plantations, fragments and contiguous forest based on field work conducted in the **Ulu Segama-Malua Forest Reserve** and oil Palm estates in Sabah. Abundance of imperilled bird species were 60 times lower in fragments and 200 times lower in oil palm than in contiguous forest. Forest fragments also did not increase bird abundance in adjacent oil palms, had lower species richness than contiguous forest, and had avifanunal composition that was similar to oil palm than to contiguous forest. Only birds were studied as a reasonable indicator across taxa. The data suggests that retaining contiguous forest wherever possible in southeast Asia would be the most effective strategy for conserving biodiversity. Furthermore if forest fragments are to be preserved within plantations (or other forest landscape) then larger fragments are more beneficial than smaller ones. For palm-oil companies, who are currently expending funds to make existing oil palm plantations more wildlife friendly, funding should be directed toward bio-banking schemes that protect contiguous forest outside of the agricultural matrix

Initiatives in Malaysia

In 2008, the government of Sabah, Malaysia collaborated with the Eco Products Fund, a private equity investment vehicle jointly managed by New Forests Inc. and Equator Environmental, LLC, to invest up to US$10 million in the restoration and maintenance of 34,000 hectares of rainforest in a project called the **Malua BioBank**. The project aims to enable the long-term (and potentially permanent) protection of biodiversity via a voluntary purchase.

The Malua BioBank sells Biodiversity Conservation Certificates (BCCs) at US$10 each representing 100 m^2 of forest, which is used to finance rainforest restoration and protection. A proportion of the revenues from BCCs (20%) are used to endow a trust fund (Malua Trust), thereby providing finance for ongoing investment. At the end of the 50 years when the endowment is fully capitalized, it could be used to renew the conservation lease or, if the area is no longer at risk, the money could be allocated to priority areas for conservation.

If all BCCs are sold for the 34,000 ha area the project has the potential to earn US$34million. The initiative aims to attract private / voluntary capital. Credit buyers are expected to be companies that use palm oil in their products, including soap and biofuel producers. To date credits have been sold to logging companies that logged Malua and to retail e.g., Tetley tea which offers tokens to customers buying its tea that can be used to claim a square metre of Malua forest.

At present the demand for credit is driven by voluntary interest, however, there is interest in implementing no Net Loss Legislation in Sabah. This includes interest in exploring a third-party mitigation system. Such a program could be based on the Environmental Protection Enactment (EPE) of 2002, which includes the first steps towards creating a habitat mitigation banking market by requiring mitigation for environmental impacts. If implemented, such legislation would create a strong market for biodiversity credits in Sabah.

The Government likes the idea of biodiversity offsets, but there are some concerns regarding costs. Extensive stakeholder consultation (including government departments, companies, conservation organisation) will be needed before any program is implemented. They are keen to implement a pilot biodiversity offset project ahead of legislation. This would inform the legislative process and test how the approach could work both biologically and financially.

The Business and Biodiversity Offsets Programme (BBOP), a sister initiative of Forest Trends, is an international partnership of more than 40 leading conservation and civil society organizations, companies, governments and financial institutions. BBOP is developing and trialing best management practices at a portfolio of biodiversity offset pilot sites; disseminating guidelines, methodologies and ultimately standards for biodiversity offsets; and supporting governments in the development of policy on biodiversity offsets[91]. A workshop on biodiversity offsets was held in Sabah in June 2010 and attended by BBOP.

The Sabah Government is entering into a 2 year MOU with BBOP to develop the 'No Net Loss' policy in the State. The demonstration site is considered a potential pilot study site. In addition to WWF and BBOP, New Forest Asia[92] has also expressed interest to be a party to the development of a 'Non Net Loss' policy in the State.

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[91] BBOP's toolkit for biodiversity offset design and implementation can be found at http://bbop.forest-trends.org/guidelines/.

[92] New Forest Asia Sdn Bhd is a forestry investment and advisory company incorporated in Malaysia and part of the International New Forests group. It manages the Malua Biobank and is seeking to develop credible compensatory mitigation solutions for the oil palm and other industries.

Applicability to project site

It is not evident at this stage that the market is strong enough to support a second BioBank in Sabah, and what part of the demonstration site could be allocated for this purpose if up for discussion. The Maliua Basin buffer zone could be considered, as this would support / increase conservation efforts within the MBCA. The InIkea project may also be able to sell biodiversity credits. However, no baseline assessment was made of the level of biodiversity before the project, so it may be difficult to state the level of biodiversity improvement. Protecting fragmented areas are unlikely to maximise biodiversity conservation efforts within the demonstration site landscape.

One option is to support the Malua BioBank in the first instance, perhaps through the purchase of credits to offset biodiversity impacts in the ITP area. Within the ITP area, areas of high conservation could be set aside, while unavoidable impacts could be offset through the purchase of credits from Malua BioBank. This would be a flow of revenue *out* of the area, and effectively a redistribution of revenue as the ITP area is managed by YS. However, on a State wide scale strengthening the protection of existing sites may be preferable to designating new conservation areas. The role of the project would then be to quantify the unavoidable impacts in order for them to be offset.

If biodiversity offsetting becomes a statutory requirement in Sabah the market could be much developed within the next 5 years as oil palm and other companies seek avenues to offset their impacts on biodiversity (see Box 2). This could mean that it would be economically viable to conserve more areas within the demonstration site, as there would be a strong market for the purchase of offset credits.

BBOP do not have a concrete proposal or funding at the moment but plan to start with policy alignment. The SFD are supportive of BBOP being involved in the proposed GEF project.

Box 2. Innovative financing of Oil Palm

The Princes Rainforest Project recently released two reports on how the palm oil sector could benefit from **REDD+** credits in the future through either swapping concessions granted on idle lands or through productivity gains. These proposals are at an early stage of development but may provide interesting alternative revenue opportunities for palm oil companies. www.rainforestsos.org/wp-content/uploads/pdfs/REDD-and-Agriculture-Proposed-Solutions-from-Private-Sector.pdf

A large palm oil producer in Sabah is working to develop a **Clean Development Mechanism (CDM)** project at one of their palm oil mills. The project hopes to avoid the equivalent of 130,000 tonnes of carbon emissions over 7 years through wastewater treatment and biogas generation, at current carbon prices this would be worth more than US$ 2 million.

There is also a project proposal to design and pilot test a compensation mechanism based on **Biodiversity Banking**. The Round tables on Sustainable Palm Oil (RSPO) has established a certification schemes for growers. Certified plantations must not have been established on areas providing High Conservation Value (HCV) after November 2007. The period between November 2005 and November 2007 is recognised as a transition period. HCV cleared during this period can potentially be certified but only if acceptable compensation for the conservation value loss is provided. The RSPO estimates that hundreds of thousands of hectares of forest were converted in Malaysia and Indonesia during this period. The project partners (led by New Forest Asia) intend to work together to develop and test a biodiversity offset-type compensation mechanism to enable RSPO members to fully compensate for clearance in the 2005-2007 period.

4. PES

Background

Payments for Ecosystem Services (PES) are contractual and voluntary transactions where a 'buyer' agrees to pay a 'seller' conditional on delivery of an ecosystem service, or implementation of a land use or management practice likely to secure that service.

For example a PES might create a financial incentive to protect, restore, or sustain ecosystem services provided by watersheds. Hydrological services include flood control, regulation of water supply, water purification, and erosion control. Establishing PES often takes years, requiring detailed studies to define the service being provided (this is crucial for a credible PES), estimate its value and undertake extensive stakeholder engagement to build trust and commitment.

Initiatives in Malaysia

There is a growing interest in PES in Peninsular Malaysia where a PES scoping study is currently underway by UNDP with the Government's Economic Planning Unit (EPU). This study will set out a policy for the development of PES in Malaysia and outline site's providing concrete examples, sites with good potential and sites offering longer term opportunities. This study should be completed by the end of 2011, and there would be scope for a similar study to be undertaken in Sabah under the proposed GEF project.

WWF commissioned a study to scope out possible watershed services in Sabah and Sarawak (Witteveen Bos Indonesia, 2011). They identified seven basins as potential pilot sites to test the business case for implementing payments for watershed services. These include the Labuk and Kintabatagan river basins in Sabah.

Applicability to project site

A first step in developing a PES type mechanism at site level will be to assess the ecosystem services provided by the site and their beneficiaries. This data will in any case be gathered as part of the development of the economic model and landscape-level management plan for the demonstration site.

5. Others

Non-wood forest products (NWFPs)

Non-wood forest products (NWFPs) are a second significant use value associated with forested lands, and are an important source of income for rural communities in Sabah. The most significant NWFP is rattan. Seven of the world's 13 genera of rattan, comprising some 50 species, are found in the natural forests of Sabah. The most important genera of commercial value are *Calamus, Kortalsia, Daemonorops* and *Plectocomia* (Dransfield, 1984[93]). Rattan has multiple uses, including for making furniture parts, fish traps, baskets, mats, hats and walking sticks (Dransfield and Manokaran, 1993[94]). In 1987, Sabah exported 6,340 tonnes of rattan worth RM22 million. By 2008, however, the production of rattan from natural forests had been dramatically reduced to 141 tonnes—a collapse associated with the reduction in primary forests. Nevertheless, rattan continues to play an important role in the livelihood of local communities.

Medicinal plants remain an important category of NWFPs for Sabah's population. In a survey of 22 village households living adjacent to the Crocker Range along the west coast of Sabah, 21 of the households collected and used wild medicinal plants for healthcare needs (Anderson et al., 2003[95]). A total of 110 specimens representing 40 families were identified, most of which come from secondary

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[93] Dransfield, J. 1984. The rattans of Sabah. Forest Record no. 13. Sabah Forestry Department, Malaysia. 182 pp.

[94] Dransfield, J.and Manokaran, N. 1993. Ratans. Plant resources of Southeast Asia. Wageningen. 137 pp.

95 Andersen, J., Nilsson, C., de Richelieu, T., Fridriksdottir, H., Gobilick, J., Mertz, O. and Gausset, Q. 2003. Local use of forest products in Kuyongon, Sabah, Malaysia. ASEAN Review of Biodiversity and Environmental Conservation.

forests. Another study on the traditional use of medicinal plants in Lower Segama reported that the Tidong communities collected medicinal plants from forests that include sambung (*Blumea balsamifera*), tongkat Ali (*Eurycoma longifolia*), daun ular (*Cratoxylum* sp.), lampuyang (*Zingeber* sp.), asuk-asuk, kacip Fatimah, lampunis, imbakawan, kengei and lasing to treat gastritis, stomach ache, light injury, snakebite, fever, headache, and hypertension (Poukin et al., 2006[96]). The value of these medicinal plants has not been estimated, but the world trade in raw materials for botanical medicines, vitamins and minerals was estimated at US$8 billion, and most of these come from tropical forests (Ten Kate and Laird, 1999[97]).

As far as the project site is concerned, people in Kg Fajar Harapan Luasong reportedly use the forest for building materials, fishing and medicine. While this service is present, the level of NTFP collection activity is considered to be low. A survey of households in the village would be helpful to provide more information regarding these activities and their associated values.

Bioprospecting

Bioprospecting involves searching for, collecting, and deriving genetic material from samples of biodiversity that can be used in commercialized pharmaceutical, agricultural, industrial, or chemical processing end products. Since 1991, the Convention on Biological Diversity (CBD) has embodied the principles of compensated bioprospecting globally.

While it is possible that the site may have products of high commercial medicinal value (given its high biodiversity), there is a long lead time in bringing these products to market etc. and thus to generate a revenue stream. For this reason, it is not being prioritised in the case of the site landscape.

Timber concessions and royalties

Timber royalties and other payments are already formalised within the area and will continue to provide a source of revenue. However there is scope to improve rent capture by the SFD, who according to Brown, *u.d.*, did not capture on average US$5/m^3 of mixed tropical hardwoods for the period 1970-1998, compared with US$80/m^3 in Sarawak and USD60/m^3 in Indonesia. The failure to capture a sizable portion of the economic rent means there is less money for the SFD to reinvestment in projects that promote sustainable forest management (Vincent and Gillis, 1998), while low stumpage fees encourage higher levels of harvesting and consumption of wood products through excessive cutting (Poter, *u.d*).

Accessing price premiums through certification bodies.

Certification is one of the eventual aims for the area and the SFD is already working with the FSC to develop certification schemes for well managed plantation areas. Certified sites may be able to enjoy a price premium. WWF-Malaysia has an MoU (2010-2015) with the project proponent (SFD) to obtain credible certification for FMU23, 24 and 26 within the project landscape

[96] Poukin, E., Maryati, M., Sofian Abu Bakar and Intan Azirah Abdul Rahman. 2006. Traditional use of medicinal plants among the Tidong Communities in Lower Segama. In Maryati, M., Bernard, H., Sofian Abu Bakar, Matsunaga, R. (eds.): Lower Segama Scientific Expedition. Universiti Malaysia Sabah.

[97] Ten Kate, K. and Laird, S.A. 1999. Commercial use of Biodiversity: Access to genetic resources and benefit sharing. Earthscan Publication Ltd.

Biodiversity / Conservation Fund

EPU is considering a generic biodiversity fund, through which state government's can ask for money to support biodiversity if they have a management plan and strategy for a site.

Tourism revenues

It should be possible to derive some revenue from tourist fees and charges at the proposed tourism developed area. This is considered to be highly feasible given that a tourism development area has already been designated for the site, and its proximity to the Maliua Basin Research Area which currently attracts around 2,500 visitors a year, as discussed in section 3.2.3. The facilities and tourism experience to be offered by the area are not yet defined, so pending development of a tourism plan for the designated site, and potentially other sites, it is not possible to predict the scale of tourism revenues.

6. *Benefit sharing*

An important aspect of forest management at the demonstration site is the introduction of mechanisms for the disbursement of revenue among local communities such that the benefits derived from the site are shared equitably. This is often a key issue in the management of protected areas, and may be relevant in this respect if a part of the demonstrated site is protected. The ethos of YS is very much one of benefit sharing given its remit to fund improvements in socio-economic welfare in Sabah through the sale of timber within its concessions areas. To date it has supported programs in rural health care and education. Existing programs within the demonstration site also have a strong social focus, such as the INIKEA project (see section 2). PES mechanism can promote benefits sharing, although their feasibility at the demonstration site is yet to be determined. Other benefit sharing mechanism may be identified by the project.

7. *Conclusions*

The potential for incremental, sustainable financial flows from the demonstration landscape remains potentially significant, though difficult to quantify precisely without further investigation. There are various avenues to explore and the site is well placed to develop sustainable financing options given the existing precedents in Sabah and the Government's demonstrated support for REDD+, biodiversity offsets, etc . Additional work in this area will be conducted during the full project as part of the work to develop an economic model, landscape management plan and, of course, revenue generating instruments. This will include consideration of alternative land use options which build in realistic financial flows based on concrete scientific and economic evidence.

Based on present knowledge, it is recommended that the project focus its efforts on three potential instruments within the landscape, namely REDD+, PEW/PWS and biodiversity offsets / banking. However, should landscape-level data gathering determine that other revenue-generating options may be of equal or greater sustainable benefit than the three selected above, such instruments should be incorporated into the project strategy as part of an adaptive management approach.

Table 2. Opening the discussion on alternative land uses and their potential financing

Current Forest Land Use		Alternative use / management	Potential Financing
Natural Forest Management (180,426ha) RIL	Non-buffer zone areas	Silviculture or other improved forest management (likely to be expensive) It is estimated that the natural forest will all be logged by 2014 and therefore there is a need to identify alternative revenue sources. Logging the area for a third time could be considered, although the economics of the second time logging have already been described as 'marginal'.	May qualify for Voluntary Carbon Market
	Buffer Zone 1	Class 1 Forest reserve. Rehabilitate and protect from harvesting	Community using the forest in the north, which may help to achieve REDD+ Biodiversity offsets
	Buffer Zone 11	More intervention (planting) to restore area degraded by two rounds of logging	REDD+ ?
Industrial Tree Plantations (43,821hs) Acacia, Rubber & Teak		(i)Set aside areas of high conservation and offset unavoidable impacts (i) Stop plantation forest and rehabilitate area to natural forest	(i) Offset unavoidable impact (from Malua biobank). However this would be a financial flow out of the area. ITP is managed by YS, who would be responsible for paying the offset, therefore a redistribution in revenue, but means land uses are correctly priced. (ii) Stop plantation forestry and claim carbon credits
Rehabilitation area / Enrichment planting (18,500 ha) INIKEA		Not clear what will happen to the site after the project. Could be used as a research area or for research tourism Doesn't qualify for REDD, as set up to improve biodiversity. Biodiversity offsets could be explored	Biodiversity offsets Research grants Tourism revenue
Conservation forests (18,517ha)	Water catchment	A lot more information required to define hydrological services, which are very site specific	PES ??
	Virgin Jungle	Currently small fragmented areas	

Reserve		
Research plots (SUAS, RIL)	On-going research areas	Donor funding
Wildlife Corridors	Is there scope for providing connectivity between Imbak Canyon Conservation Area and MBCA, or Danum Valley Conservation area and MBCA? Current designated areas are small and fragmented	REDD + Biodiversity offset credits
Tourism development Area	Tourism offering needs to be defined	Tourism revenue