United Nations Development Programme
Country: MALAYSIA
PROJECT DOCUMENT

Project Title: Mainstreaming of Biodiversity Conservation into River Management

UNDAF Outcome(s): N/A – Malaysia does not have an UNDAF

UNDP Strategic Plan 2014-2017 Primary Outcome: 2.5. Legal and regulatory frameworks, policies and institutions enabled to ensure the conservation, sustainable use, and access and benefit sharing of natural resources, biodiversity and ecosystems, in line with international conventions and national legislation

UNDP Strategic Plan 2014-2017 Secondary Outcome: Output 1.3. Solutions developed at national and sub-national levels for sustainable management of natural resources, ecosystem services, chemicals and waste

Expected CP Outcome(s): Priority 2: Sustainable and resilient development: Implementation of a national development agenda that enables green growth through climate-resilient measures, sustainable management of energy and natural resources, and improved risk governance

Expected CPAP Output (s): Priority 2b: Value natural capital, reduce environmental impacts and improve access to quality ecosystem services for low income households

Executing Entity/Implementing Partner: Ministry of Natural Resources and Environment

Implementing Entity/Responsible Partners: Ministry of Natural Resources and Environment, Department of Irrigation and Drainage Malaysia; and Global Environment Centre (GEC)

Brief Description

Malaysia has some 157 river systems, as well a variety of tropical wetlands, forests and marine ecosystems, representing several Global 200 Ecoregions, and it is recognized as one of 17 mega-diverse countries in the world. Its river systems as well as riparian and catchment forests support an immense diversity of aquatic and terrestrial biodiversity, including more than 600 freshwater fish species. River and floodplain wetland systems occupy some 3.9 million ha or 10% of the country's land area. These river systems provide ecosystem services benefiting both rural communities and urban societies, including water supply, artisanal fisheries, the aquarium fish industry, transport routes, tourism and recreation. However, Malaysia's rivers face threats from a wide range of pressures that threaten their biodiversity and ecological stability, with ongoing loss of genetic resources, ecosystem services and national and local socio-economic benefits.

As called for in Malaysia's Common Vision on Biodiversity, **the long term solution** that this project will pursue is to maintain the integrity of aquatic ecosystems through mainstreaming biodiversity considerations into river basin management. Accordingly, federal and state agencies concerned with river basin management will have effective collaborative arrangements in place, and riverine biodiversity will be managed according to an integrated river basin and ecosystem-based approach. However the following **barriers** constrain the achievement of the vision and plan: (1) Sub-optimal enabling framework and capacity for riverine biodiversity management; and (2) absence of successfully demonstrated experiences in integrated river management. **In the baseline situation**, the majority of river sections and associated biodiversity are found outside the protected area system in Malaysia. Therefore, it is critical for the conservation of riverine biodiversity that clear strategies and plans are developed to conserve riverine biodiversity in productive landscapes covering more than 80% of Malaysia's land area. The government agencies and other stakeholders responsible for management of these areas do not normally have biodiversity conservation as one of their main objectives. The Government's principal focus in river management remains flood mitigation, water supply and pollution control with little consideration for riverine biodiversity and habitat management. Uncoordinated management of riverine areas will continue to put pressure on biodiversity from habitat conversion, degradation and pollution. A lack of inter-agency coordination, strategy, capacity and resources will mean that threats to riverine biodiversity will continue to grow, and will likely lead to further habitat fragmentation and destruction. It is therefore imperative to mainstream biodiversity conservation principles into their work and responsibilities, as well as in the practices of other stakeholders.

In the alternative scenario enabled by the GEF, the institutional barriers to integrated and coordinated riverine landscape management will be removed at the national and state levels, backed by development and adoption of an inter-agency strategy to mainstream biodiversity into river management, which provides the foundation for coordinated planning, management including enforcement and compliance monitoring mechanisms. The capacity of key institutions responsible for river management will be strengthened. Integrated riverine biodiversity management will be demonstrated for three different situations in Peninsular Malaysia and Sabah. The GEF financing will also help catalyze support from both private and public sectors as well as communities towards conservation objectives in the project areas, and provide a mechanism to use such support to generate sustained long-term improvements in riverine biodiversity. **The Project Objective** is to mainstream biodiversity conservation into riverine landscapes through improved river planning and management practices. **Component 1** addresses the need for an operational national institutional framework and capacity for a more integrated and holistic approach to river management that takes riverine biodiversity into account, while **Component 2** will demonstrate best management practices for riverine habitats in three different situations (a forested water supply reservoir catchment area, an urban river, and a rural river impacted by plantation development and smallholder land uses). **The global environmental benefits** that will be secured by the overall project will result from strengthened sustainable management of Malaysia's river systems and associated riverine buffer zones and catchment areas that specifically takes into account biodiversity conservation. The areas covered by major river basins include several Global 200 Ecoregions in East and West Malaysia, including tropical lowland, mangrove, peat and freshwater swamp-forests, submontane and montane forests. A wide range of globally threatened species occur in the project demonstration sites' riparian forests as well as rare and endemic riverine species.

The project supports the objectives of 10th Malaysia Plan, National Wetlands Policy 2004, National Integrated River Basin Management Plan and Malaysia's Common Vison on Biodiversity, 2008. It also benefits from 3 on-going UNDP projects in Malaysia, namely, PA, NBSAP, IC-CFS projects.

Programme Period:	2016-2020	**Total resources required (USD): $ 8,984,000** Total allocated resources (USD): • ***GEF: $1,404,000***
Atlas Award ID:	00087899	***Other (in-kind & in-cash):***
Project:	00094781	***Other (partner managed resources): $7,580,000***
PIMS:	# 5281	• National Government (NRE): $5,850,000
Start date:	September 2016	• Selangor State Government: $250,000
End Date:	August 2019	• Perak State Government: $250,000
Management Arrangements:	NIM	• Sabah State Government: $250,000 • GEC: $720,000
PAC Meeting Date:	10 April 2015	• UNDP: $200,000 • Cost Sharing: $60,000
		GEF GMS 9.5% of USD 1,404,000 = USD 133,380

Agreed by Economic Planning Unit:

DATUK SERI DR. RAHAMAT BIVI YUSO
Director General
Economic Planning Unit
Prime Minister's Department

Agreed by UNDP:

Michelle Gyles-McDonnough
Resident Representative

Agreed by Implementing Partner:

DATO' Ir. HJ ZULKEFLI BIN HASSAN
Ketua Pengarah
Jabatan Pengairan Dan Saliran
Malaysia

10 Nov 2016

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Acronyms

APR	Annual Progress Report
ARR	Annual Review Report
ASEAN	Association of South East Asian Nations
AWP	Annual Work Plan
BFMD	Biodiversity and Forestry Management Division of NRE
BMP	Best Management Practice
CBD	United Nations Convention on Biological Diversity
CBO	Community-based Organisation
CDR	Combined Delivery Report
CFS	Central Forest Spine
COAC	Centre for Orang Asli Concerns (CSO)
CP	Country Programme
CPAP	Country Programme Action Plan
CSO	Civil Society Organisation (used interchangeably with NGO)
DBKL	Kuala Lumpur City Hall
DID	Department of Irrigation and Drainage (also JPS)
DoE	Department of Environment
DoFM	Department of Fisheries Malaysia
DWNP	Department of Wildlife and National Parks (PERHILITAN)
EA	Executing Agency
EIA	Environmental Impact Assessment
EPD	Environmental Protection Department (state level)
EPU	Economic Planning Unit, Prime Minister's Department
ESSCOM	Eastern Sabah Security Command
FDPM	Forest Department of Peninsular Malaysia
FR	Forest Reserve
FRIM	Forest Research Institute Malaysia
GEC	Global Environment Centre (CSO)
GEF	Global Environment Facility
IA	Implementing Agency
ILCs	Indigenous and local communities
INTAN	National Institute of Public Administration
IRBM	Integrated River Basin Management
IWRM	Integrated Water Resource Management
JAKOA	Orang Asli Development Department
JKKK	Village Development and Security Committee
JPSM	Department of Forestry Peninsular Malaysia
KKLW	Ministry of Rural and Regional Development
KPPK	Ministry of Plantation Industries and Commodities
MNS	Malaysian Nature Society (CSO)
MOA	Ministry of Agriculture
MOF	Ministry of Finance
MOU	Memorandum of Understanding
MPAJ	Ampang Jaya Town Council
NBC	National Biodiversity Council
NCAP	National Capacity Action Plan

NCSA	National Capacity Self-Assessment
NEA	National Executing Agency
NGO	Non-Governmental Organisation (used interchangeably with CSO)
NIM	National Implementation Modality
NPBD	National Policy on Biological Diversity
NPD	National Project Director
NRE	Ministry of Natural Resources and Environment
NSC	National Steering Committee
PACOS	Partners of Community Organizations Sabah (CSO)
PES	Payment for Environmental Services
PIR	Project Implementation Report
PM	Project Manager
PMU	Project Management Unit
R&D	Research and development
RELA	Peoples Volunteer Corps (Malaysia)
RSPO	Round Table on Sustainable Palm Oil (certification scheme)
RTA	Regional Technical Advisor
SAFE	Stability of Altered Forest Ecosystems Project (Danum Valley, Sabah)
SBAA	Standard Basic Assistance Agreement
SEEN	Sabah Environmental Education Network
SESP	Social and Environmental Screening Procedure
SRF	Strategic Results Framework
TOR	Terms of Reference
TWG	Technical Working Group
UN	United Nations
UNDP	United Nations Development Programme
UNDP-CO	UNDP Country Office
UNDP/GEF RCU	UNDP/GEF Regional Coordination Unit
UNEP	United Nations Environment Programme
UPEN	State Economic Planning Unit
WWF Malaysia	World Wide Fund for Nature Malaysia

1. SITUATION ANALYSIS

1.1 Country Context and Global Significance

a) Introduction

1. Located in the humid tropics with abundant rainfall, Malaysia has over 150 major rivers, as well a variety of tropical wetland, forest, coastal and marine ecosystems, representing several Global 200 Ecoregions, and it is recognized as one of 17 mega-diverse countries in the world[1]. Its extensive river systems as well as associated riparian, floodplain and catchment forests support an immense diversity of aquatic and terrestrial biodiversity, including more than 600 freshwater fish species. The river systems provide ecosystem services benefiting both rural communities and urban societies, including water supply, artisanal fisheries, the aquarium fish industry, transport routes, tourism and recreation. However, Malaysia's rivers face threats from a wide range of pressures including habitat loss and fragmentation, pollution, over-exploitation and invasive alien species that threaten their biodiversity and ecological stability, with ongoing loss of genetic resources, ecosystem services and national and local socio-economic benefits.

2. The majority of river sections and associated biodiversity are found outside the protected area system in Malaysia. Therefore, clear strategies and plans are required to conserve riverine biodiversity in the productive landscapes that cover more than 80% of Malaysia's land area. Most government agencies and other stakeholders responsible for management of these areas do not have biodiversity conservation as a main objective. The Government's principal focus in river management remains flood mitigation, water supply and pollution control with little understanding or consideration of riverine ecosystem services, biodiversity and habitat management. Uncoordinated sectoral management of riverine areas will continue to put pressure on biodiversity from habitat conversion, degradation and pollution. The lack of a holistic approach towards integrated river basin management that includes a science-based understanding of riverine resources, inter-agency coordination, strategy towards harmonized development and environmental goals, adequate technical capacity, and resources for implementation will mean that threats to riverine biodiversity will continue to grow and cause further habitat fragmentation and destruction, including exacerbated impacts of floods, droughts and climate change.

3. As called for in Malaysia's Common Vision on Biodiversity, the long term solution that this project will pursue is to maintain the integrity of aquatic ecosystems through mainstreaming biodiversity considerations into river basin management. Specifically, the project aims to contribute towards reduced rates of biodiversity loss in Malaysia through integrating biodiversity conservation into the policies and practices of key sectoral agencies. It aims to increase know-how through Best Management Practices (BMPs) for land uses impacting rivers, riparian zones and catchment areas. It will raise awareness of the social and economic values of riverine biodiversity and ecosystem services among key audiences, and enhance civil society engagement in

[1] http://www.biodiversitya-z.org/content/megadiverse-countries. Accessed 3-12-2014

sustainable river and riparian zone management by demonstrating public-private partnerships. Overall, it will promote an integrated river basin and ecosystem-based approach towards the management of Malaysia's riverine biodiversity resources.

b) Biodiversity context

4. The Global 200 Ecoregions were developed by WWF scientists and regional experts around the world, representing the first comparative analysis of biodiversity covering major habitat types, spanning five continents and all the world's oceans. The aim is to ensure that the full range of ecosystems is represented within regional conservation and development strategies, so that conservation efforts around the world contribute to a global biodiversity strategy. Malaysia is represented through some of the Global 200 Ecoregions[2][3] i.e. Kayah-Karen/Tenasserim Moist Forests, Peninsular Malaysian Lowland and Mountain Forests, Borneo Lowland and Montane Forests and Sundaland Rivers and Swamps. Currently, there are six Wetlands of International Importance listed under the Ramsar Convention (Ramsar Sites) in Malaysia of which three include freshwater conditions. These are Tasek Bera, Sungai Pulai and the Lower Kinabatangan-Segama Wetlands, with areas of 38,446 ha, 9,126 ha and 78,803 ha respectively. While Malaysia has only 0.2% of the land mass of the world, it has one of the richest fauna and flora in the world, second only to Indonesia in South East Asia. Malaysia is one of the 17 mega-diversity countries in the world, hosting more than 170,000 fauna and flora species. Riverine[4] biodiversity in Malaysia is of global significance. Malaysia has an estimated 616 species of freshwater fish (Zulkafli *et al.*, 2010)[5]. Other riverine biodiversity includes invertebrate fauna, such as insects (more than 30,000 species, JPS, 2009)[6], freshwater crabs (102 species, NRE 2009)[7], mollusks (150 species, Yang, 1990)[8] as well as an unknown number of leeches, oligochates, rotifers, branchiopoda, nematomorpha, nemerteans, nematods, turbilarians and sponges (Yule, 2004)[9]. In addition, Irrawaddy Dolphins (*Orcaella brevirostris*)[10] frequently occur in estuarine areas in Malaysia and Dugongs *Dugong dugon* occur in coastal waters with seagrass beds which may be associated with river mouths. Estuarine crocodiles *Crocodylus porosus* still occur in the lower reaches of

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[2] Wikramanayake, E., E. Dinerstein, C. Loucks, D.M. Olson,J. Morrison, J.L. Lamoreux, M. McKnight and P. Hedao. 2002. Terrestrial Ecoregions of the Indo-Pacific: A Conservation Assessment. Washington, DC: Island Press.

[3] World Wildlife Fund (WWF). 2001. Terrestrial Ecoregions of the World. <http://www.worldwildlife.org/wildworld/profiles/terrestrial_nt.html>.

[4] Riverine biodiversity is defined here as biodiversity associated with or influenced by rivers including aquatic biodiversity of rivers, tributaries and water bodies, biodiversity of river corridors and riparian zones, as well as upper catchments.

[5] Zulkalfli, A.R., P.C. Chew and I. Johari. 2010. Conservation of Freshwater Fishes and Enhancement Programmes in Peninsular Malaysia. 2nd National Conference on Agrobiodiversity Conservation and Sustainable Utilization (NAC2)-Agrobiodiversity for Sustainable Economic Development, 11-13 May 2010, Tawau, Sabah. Pp 48-50.

[6] Jabatan Pengairan dan Saliran (JPS). 2009. Panduan Penggunaan Makroinvertebrata untuk Penganggaran Kualiti Air Sungai. Published by Jabatan Pengairan dan Saliran Malaysia, Kuala Lumpur, Malaysia. 116p.

[7] Ministry of Natural Resources and Environment (NRE). 2009. Managing Biodiversity in the Landscape: Guideline for Planners, Decision-Makers and Practitioners. Best Practice Series. 86p.

[8] Yang, S.L. 1990. Record of a Freshwater Bivalve, *Pseudodon vondembuschianus* (Mollusca: Unionidae) in Singapore. Raffles Bulletin of Zoology, 38: 83-84.

[9] Yule, C.M. 2004. Freshwater Invertebrates. Pp23-31 *In*: Yule, C.M. and H.S. Yong. (eds). Freshwater Invertebrates of the Malaysian Region. Published by Academy of Sciences Malaysia, Kuala Lumpur, Malaysia.

[10] Ponnampalam, L.S., J.H. Fairul Izmal, G. Minton and A.J. Saifullah. 2010. Marine Mammals in Malaysia—Diversity, Threats, Conservation and Management. Specialist Paper for the National Ocean Policy of Malaysia. October 2010. 38p

some rivers, while the False Gharial *Tomistoma schlegeli* is a very scarce and localized inhabitat of freshwater rivers and swamps.

5. In addition to aquatic biodiversity, rivers provide important habitats and serve as feeding and breeding grounds within the their fringing vegetation. Thus riverine biodiversity includes the flora and fauna which occur along the river corridor (riparian species) and upper catchment. Totals of 567 species of reptiles, 242 species of amphibians and 742 species of avifauna have been recorded in Malaysia (NRE, 2009), an unquantified – but large - number of which occur in riparian corridors and catchment areas. Key species for biodiversity conservation associated with riparian zones include the Malayan Tiger (*Panthera tigris jacksoni*) EN, a tiger subspecies found only in Peninsular Malaysia. According to WWF Malaysia, only 250 – 340 individuals of Malayan Tiger are currently extant, mostly in Pahang, Perak, Kelantan and Terengganu. In Sabah and Sarawak, the Kinabatangan, Segama and Rajang river floodplains amongst others are home to endangered species such as the Bornean orangutan (*Pongo pygmaeus*) and Proboscis Monkey (*Nasalis larvatus*). Moreover, the lower Kinabatangan river is also one of two areas in the world that supports ten primate species i.e. two prosimians (tarsier and slow loris); six old world monkeys (pig tailed macaques, proboscis monkey, silvered langur, maroon langur and grey langur); one lesser ape (Bornean gibbon); and one great ape (orangutan), as reported by WWF Malaysia. The lower Kinabatangan floodplain is particular importance for conservation of the orangutan – for instance, a study by Ancrenaz et al. (2005)[11] reported 1,700 individuals on the north side of the upper Kinabatangan river and 1,100 individuals in Kinabatangan Wildlife Sanctuary. Conservation areas Further species are listed for the demonstration sites in **Table 4** below and in **Annex 1: Additional Information on Project**.

6. The length of each habitat sub-system varies from river to river, but it is important to note that all freshwater aquatic organisms have evolved to adapt to specific niches in each sub-system. Thus, there is a river-specific gradation in diversity along the length of all rivers from source to estuary. This had led to a degree of endemicity that is characteristic of each river system. For instance, the Perak River supports substantial populations of the Jullien's Golden Carp or Temoleh (*Probarbus jullieni*), while the Pahang River is characterised by several Pangasid species or Patin (*Pangasius pangasius, Pangasius micronemus*) (Mohsin and Ambak, 1983)[12]. The Borneo River Shark (*Glyphis fowlerae*) is endemic to the Kinabatangan while the Rajang is famous for its mahseer populations[13].

7. Malaysia has a broad range of aquatic ecosystems including rivers, lakes, swamps and man-made wetland habitats such as reservoirs and rice-fields, which together cover between 12-15% of the country's land area. The freshwater and peat swamp forests are usually associated with rivers and feature vegetation adapted to the freshwater environment, experiencing seasonal flooding as part of natural river

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[11] Ancrenaz, M., O. Gimenez, L. Ambu, K. Ancrenaz, P. Andau, B. Goossens, J. Payne, S. Azri, A. Tuuga and I. Lackman-Ancrenaz. 2005. Aerial Surveys Give New Estimates for Orangutans in Sabah, Malaysia. PLOS Biology 3(1): 30-37.

[12] Mohsin, A.K.M. and M.A. Ambak. 1983. Freshwater Fishes of Peninsular Malaysia. Universiti Pertanian Malaysia Press, UPM, Serdang, Selangor. 284p.

[13] Tuen, A.A. 2004. A Faunal Study of Rajang River Basin. Institute of Biodiversity and Environmental Conservation. Universiti Malaysia Sarawak, Sarawak, Malaysia.

floodplain systems. Peat swamp forests feature blackwater streams with characteristic fish communities. Riparian vegetation in the country can be categorised into three groups, namely emergent aquatic and semi-aquatic plants, terrestrial overstorey (canopy) and terrestrial understorey (cover). The plant species within riparian zones in lowland forests of Peninsular Malaysia consist of a limited number of water loving species, most being species that can tolerate the high amount of moisture in the soils (Azliza *et al.*, 2012)[14]. A study by Turner (1995)[15] reported 24 species and 10 species of true riparian plants in Pasoh Forest Reserve and Ayer Hitam Forest Reserve respectively.

8. Riverine ecosystems and their associated biodiversity also have significant socio-economic value – in terms of commercial and subsistence fishery; ornamental fish culture and trade; recreational fishery (a US$300 million/year industry in Malaysia) as well as playing important roles in water supply, flood control and ecotourism. The degradation of riverine ecosystems leads to increased floods, decreased fisheries as well as loss of potential recreation and tourism revenue. While systematic information is lacking on this at the national level, a number of economic valuation studies have been conducted for different ecosystems, services and uses in Malaysia (see examples below[16]).

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[14] Azliza. M., M. Nazre, M.K. Mohamad-Roslan and K. Shamsul. 2012. Characterization of Riparian Plant Community in Lowland Forest of Peninsular Malaysia. International Journal of Botany, 8(4): 181-191.

[15] Turner, I.M. 1995. A Catalogue of the Vascular Plants of Malaya. Gardens Bulletin Singapore, 47: 1-757.

[16] Kumari, K. 1995. An environmental and economic assessment of forest management options: A case study in Malaysia. The World Bank. *Environment Department paper No. 026.* Washington, D.C.: The World Bank.
Tan-Soo, J.S. 2010. Economic valuation of flood mitigation services provided by tropical forests in Malaysia. MS project, Duke University.
UNEP. 2007. *Guidelines for Conducting Economic Valuation of Coastal Ecosystem Goods and Services.* UNEP/GEF/SCS Technical Publication No. 8. http://www.unepscs.org/remository/startdown/1958.html

UNEP, 2007. Procedure for Determination of National and Regional Economic Values for Ecotone Goods and Services, and Total Economic Values of Coastal Habitats in the context of the UNEP/GEF Project Entitled: *"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand".* South China Sea Knowledge Document No. 3. UNEP/GEF/SCS/Inf.3

DiRocco, T.L. 2012. A thorough quantification of tropical forest carbon stocks in Malaysia. Carbon Stocks of Tropical Forests. Univ California, Berkeley Environmental Sciences 2012. 18pp. http://nature.berkeley.edu/classes/es196/projects/2012final/DiRoccoT_2012.pdf

c) River management context

9. There are over 150 major rivers in Malaysia, of which 100 rivers are in Peninsular Malaysia and 57 in East Malaysia (JICA, 1982[17]; Yap, 1991[18]; Ho, 1992[19]). In Peninsular Malaysia, the largest (from the viewpoint of river basin size) are the Pahang (drainage area 29,300 km^2, length 430 km), Perak (drainage area 14,700 km^2, length 400 km) and Kelantan Rivers (drainage area 13,100 km^2, length 355 km). In Sabah, there are 16 rivers, the largest of which is the Kinabatangan (16,581 km^2, 365km), while in Sarawak, there are over 13 rivers, including the Rajang (51,315 km^2, 560km) and Baram (22,325 km^2, 402 km). Malaysian rivers show clear differentiation in morphology and environmental character from the upstream source areas down to the estuaries. Upstream areas are generally reflected by rapid water flow, sandy bottoms and low nutrient and sediment levels, while lowland stretches are recognised by opposite conditions – slow flows, muddy bottoms, high nutrient status and high sediment loads. Mid-stream environments are intermediate between the two.

10. The national river system consists of three large geographical units – Peninsular Malaysia, Sabah and Sarawak, as illustrated in **Figs 1-3** respectively, including their water quality status in 2008[20].

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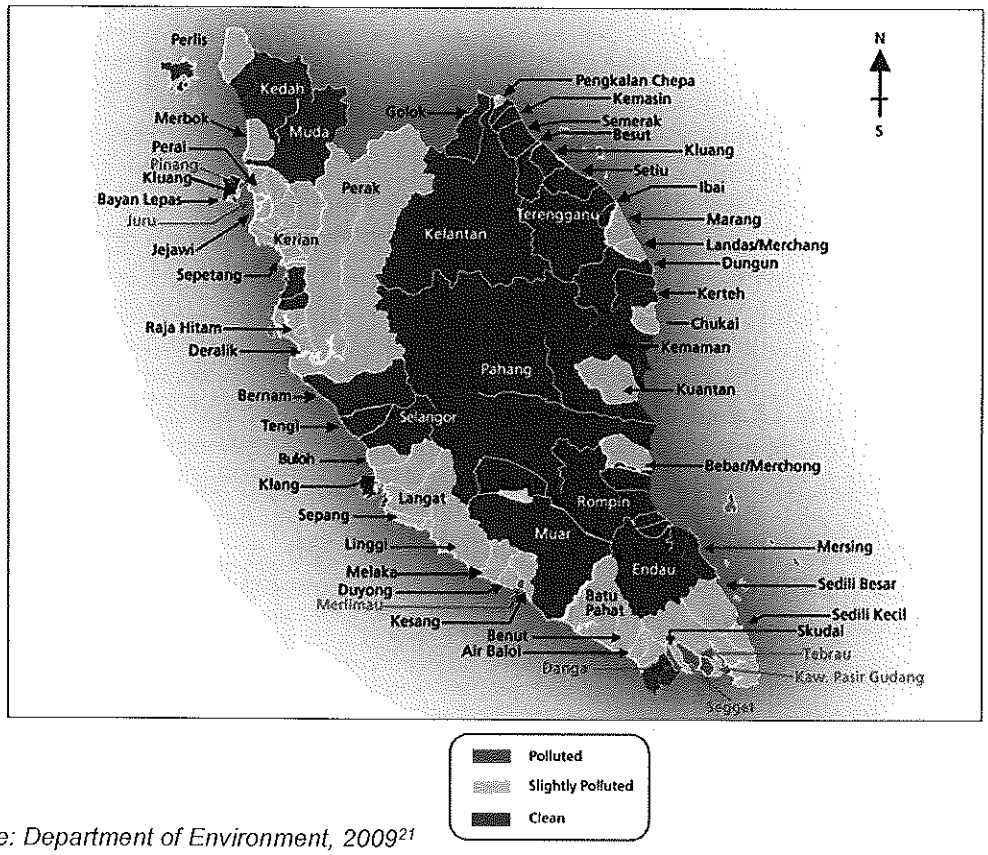
[17] Japan International Cooperation Agency (JICA). 1982. National Water Resources Study - Sectoral Report Vol. 5. River Conditions. The Government of Malaysia, Kuala Lumpur. Unpublished.

[18] Yap, S.Y. 1991. Recent Developments in Reservoir Fisheries Research in Tropical Asia. Archiv für Hydrobiologie–Beiheft Ergebnisse der Limnologie, 28: 295-303.

[19] Ho, S.C. 1992. Status of Freshwater Ecological Research in Malaysia. Pp 3-14 *In:* M.Y. Hussien, A.S. Sajap and S.B. Japar (eds.). Prosiding Persidangan Ekologi Malaysia, 1: Status Ekologi Semasa Menjelang 2020. Ecological Association of Malalaysia, Serdang, Malaysia.

[20] More recent water quality maps are not available. See data in the Dept of Environment's 2013 Environmental Quality Report for more recent published information. *https://enviro.doe.gov.my/view.php?id=15791*

Figure 1: Major River Basins in Peninsular Malaysia and their water quality status (2008)



Source: Department of Environment, 2009[21]

[21] Department of Environment. 2009. Malaysia Environmental Quality Report 2008. Department of Environment, Ministry of Natural Resources and Environment, Malaysia. 156p.

Figure 2: Major River Basins in Sabah and their water quality status (2008)

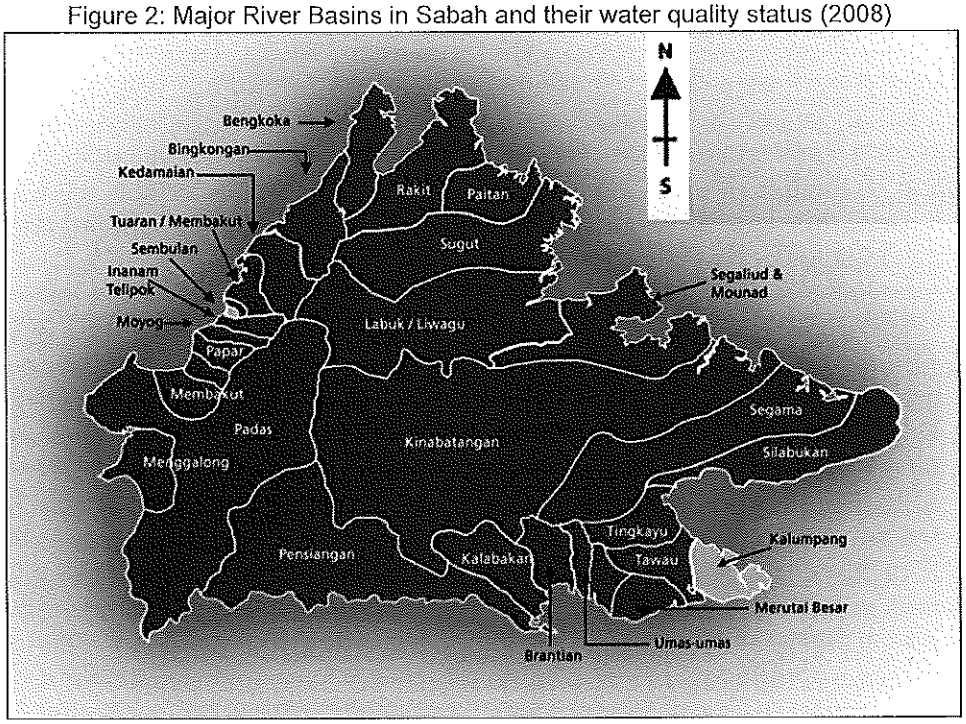
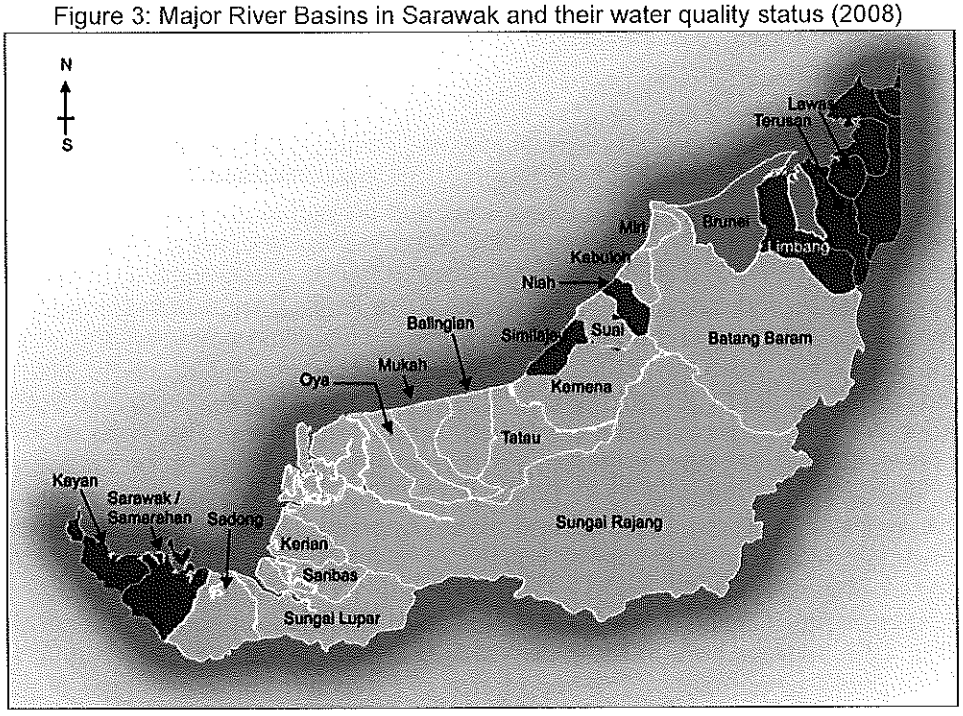


Figure 3: Major River Basins in Sarawak and their water quality status (2008)



11. Despite the implementation of water quality standards under the Environmental Quality Act 1974, observations made in the mid 1980's and 1990's clearly indicated an increasing level of pollution in the river systems. Based on the Department of Environment's (DoE) Water Quality Index (WQI) (computed based on pH, dissolved oxygen, biological oxygen demand, chemical oxygen demand, ammoniacal nitrogen and suspended solids), in 2013, there were 275 rivers classified as Clean, of which 16 rivers were in Class I and 187 rivers in Class II (Department of Environment,

2014[22]). The cleanest rivers were located in Johore (Jasin), Melaka (Tampin), Selangor (Inki, Lui), Perak (Nyior, Trong), Kedah (Janing, Kisap, Pegang), Sabah (Kinipir). Polluted rivers were found in Penang (Jelutong, Pertama), Malacca (Merlimau), Johore (Danga, Buloh, Tukang Batu, Sebulung, Sengkuang, Kempas, Ayer Merah, Air Baloi), and Selangor (Untut). However, most of the big rivers such as the Perak, Pahang, Selangor, Muar, Terengganu, Rajang and Kinabatangan were considered clean (Department of Environment, 2014). It is significant to note that of the 473 major rivers in Malaysia, 58.1% are in an unpolluted condition.

12. However, the index used by the DoE often masks the true state of affairs. For instance, in 1997, reduction in rainfall and prolonged drought in many parts of the country due to the effects of El Nino reduced the dilution capacity of many rivers (MIER, 2000[23]). As a consequence, only 24 rivers could be categorised as clean, 68 slightly polluted and 25 rivers polluted (Department of Environment, 1998[24]). In short, almost half of the rivers classified as clean in 1996 were determined to be actually polluted a year later. In addition, the index itself is inadequate in appraising the true health of the ecosystem, especially where it relates to fish. The index relies on six sensitive parameters (pH, DO, BOD, NH_3, TSS) all of which admittedly can seriously impinge on fish health. However, it is important to note that deleterious changes in any one of these parameters is sufficient to affect fish, even if the other five are within the optimum range. The WQI does not take into account a wide range of other parameters (such as heavy metals and pesticides) that have serious acute and chronic implications where fish health is concerned. In short, a low WQI reading may imply high pollution levels, but the actual conditions may still be highly deleterious to fish and other aquatic life.

13. Another index, the Malaysian Quality of Life Index (MQLI) was developed in 1999 to quantitatively measure the nation's progress in improving the quality of life. The MQLI comprises 45 indicators from 11 components that constitute the well-being of a community. The environment is among the important components, and takse into consideration the measurement of Water Quality Index, Air Quality Index, percentage of forested land, solid waste per capita and maximum mean temperature level. Beside environment, the other 10 components are income and distribution, working life condition, transport and communication, health, education, housing, family life, social participation, public safety and culture and leisure. In 2012, the MQLI recorded at 125.4, which increased 25.4 points from 1999. The environment component contributed 6.2% of the total index value. The major contributors were improvements in water and air quality and increased percentage of forested land area. The water quality index improved 43.4 points in 2012. The percentage of clean rivers increased 28.3% in 2000 to 58.3% in 2012 due to the implementation of pollution prevention and improvement programmes as well as continuous enforcement undertaken to control pollution. The air quality index also showed an increase level (0.7 points). The percentage of stations that recorded Air Pollution Index (API) of less than 50 increased from 73.4% in 2000 to 73.9% in 2012. The improvement in air quality mainly contributed by continious enforcement and increase public awareness of the importance of clean air. The percentage of forested land index increased by 4.0 points in 2012, mainly contributed by implementation of various initiatives such as the "Planting 26 Million Trees" campaign, Central Forest Spine to establish

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[22] Department of Environment. 2014. Malaysia Environmental Quality Report 2013. Department of Environment, Ministry of Natural Resources and Environment, Malaysia. 156p.

[23] Malaysian Institute of Economic Research (MIER). 2000. Sectoral Development Plan for the Malaysian Fisheries Industry. Malaysian Institute of Economic Research (MIER). Report to the Economic Planning Unit, Malaysia (Unpublished).

[24] Department of Environment. 1998. Malaysia Environmental Quality Report 1998. Ministry of Science Technology and the Environment Malaysia. Kuala Lumpur. 96p

ecological connectivity between the four major forest complexes in Peninsular Malaysia and the Heart of Borneo for managing and conserving the trans-boundary highlands of Borneo.

14. Despite the development of the index by a central agency (the Economic Planning Unit),, application of the index in planning has been limited. Index based targets are not set in the various 5-Year Plans or, for that matter, any other national regional plans. At lower level of government, the broad-base nature of the index has not proved useful for agencies mandated with specific manaagment objectives.

15. In addition, in 1998, the Malaysian Urban Indicators Networks (MURNInet) programme[25] was introduced by the Federal Department of Town and Country Planning, Peninsular Malaysia (FDTCP) to assess the performance and levels of sustainability of Malaysian cities. MURNInet pilot projects were launched in six Malaysian cities include Georgetown, Johor Bahru, Kuantan, Kuching, Pasir Mas and Batu Pahat. In 2011, MURNInet was reviewed and rebranded as the Malaysian Urban-Rural-National Indicators Network on Sustainable Development (MURNInets) and introduced 6 dimensions, 21 themes and 36 indicators in their programme. Out of six dimensions introduced in this programme, i.e competitive economy, sustainable environmental quality, sustainable community, optimal use of land and natural resources, efficient infrastructure and transportation and effective governance, the sustainable environmental quality dimension is most closely related to this project. Under sustainable environmental quality, there were three themes, and five indicators are introduced (**Table 1**). However, while river management is a large component of the MURNInets index, its focus on urban sustainability has limited its application in the management of larger riverine landscape.

Table 1: Themes and Indicators for Sustainable Environmental Quality under MURNInets Programme

Themes		Indicators	
ST1	Environmental Quality	ST1-P1	Cleanliness level of the river
		ST1-P2	Environmental air quality conditions
ST2	Risk Management	ST2-P1	Percentage of population living in flood prone area
ST3	Environmental Management	ST3-P1	Percentage of per capita solid waste generation
		ST3-P2	Total programme/ environmental campaigns carried out in the local authority area

16. To enable a more comprehensive approach to river management, the Department of Irrigation and Drainage adopted Integrated River Basin Management (IRBM) so as to enable management of rivers in a more comprehensive manner, involving participation from all relevant stakeholders both government and private. IRBM, when applied to water systems involved integration between freshwater and coastal zones; land and water; surface water and groundwater; quantity and quality and upstream and downstream. The principles adopted include economic efficiency, equity and environmental sustainability. IRBM deals with issues of water allocation, pollution control as well as flood control (a subset of Integrated Water Resource Management (IWRM) that addresses the broader issues such as food self-sufficiency, tariffs, cross subsidies and institutional roles). In 1999, the Selangor Waters Management Authority was established in order to manage the river basin and water resources in the State of Selangor. The IRBM programme was later included in the 8th Malaysia Plan (2001-2005), Third Outline Perspective Plan (OPP3) 2001-2010 (approved by Parliament in April 2001), and the National Spatial Plan. For instance, the IRBM programme for the Selangor River was a cooperative project between Malaysia and Denmark, carried out from October 2002 to October 2006 and costing around RM16 million (50:50 cost-sharing). Elements of the IRBM programme in the Selangor River included institutional arrangements,

[25] http://murninet.townplan.gov.my/murninets/ ,
http://www.epu.gov.my/documents/10124/08c7bff5-52cb-4e8c-a362-7ef9ce66d12d

human resource management, monitoring and development of information system, awareness programme and information dissemination, planning and river basin management and increase in best practice in environmental management. River basins that have been managed through initial IRBM programmes include the Langat River and Klang River in Selangor and the Kinabatangan River in Sabah.

17. However, the implementation of IRBM principles and practices in Malaysia has been hampered by the absence of an enabling environment due to several factors including unwillingness of states to take ownership, lack of institutional capacity to support IRBM implementation, lack of public participation in river basin management, lack of a uniform water law to support IRBM implementation and financial support to states as well as absence of Best Management Practices (BMPs) in integrated river management in wider structural and area development plans.

18. The Environmental Impact Assessment (EIA) instrument has also been used to reduce the impacts of development projects on the environmental integrity of river systems, although the effectiveness of its application in mitigating environmental impacts is very limited at best (for example in the case of huge areas of catchment, riparian and peat swamp forests converted for oil palm estate development, and impacts of major dams[26] and highways), and it remains unsupported by wider Strategic Environmental Assessment of sectoral policies and programmes.

d) Protected Areas System coverage of riverine biodiversity

19. The conservation of riverine biodiversity embraces both integrated management of river systems in production landscapes as well as the representation of the diversity of riverine ecosystem types and key areas for aquatic and riparian species in the national protected area system. While the focus of this project is largely on the former aspect, it is clear that more systematic attention towards riverine biodiversity needs to be included in planning for the strengthening and expansion of the PA system. Generally, riverine biodiversity has not been given specific attention in the design of the national PA system – it focuses on forested landscapes including their river systems, so riverine biodiversity coverage has not been systematically assessed or represented, for instance to include geographic variation in riverine biological communities. As freshwater fish conservation is the legal concern of the Fisheries Department, there has been little attempt to conserve specific river stretches or systems for fish conservation in protected areas under the purview of other agencies (see next subsection on fish conservation management). The project's mainstreaming strategy will aim to mobilize action towards improved representation of riverine ecosystems and aquatic species in the protected area system.

20. The protected area system deserves brief description here as it is of great significance for the protection of the upper catchment areas of rivers in particular, recognized in the National Physical Plan as being Environmentally Sensitive Areas. The upper catchments of all three project demonstrration sites are included in the protected area system through various designations.

21. The terrestrial PAs in Peninsular Malaysia can be divided into two broad categories:

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[26] See: Latifah, A.M. and Les Met. An Ecological Evaluation Approach For Dam Project Development In Malaysia. Life Sci J 2014;11(7):225-237]. (ISSN:1097-8135). http://www.lifesciencesite.com.

A) Wildlife PAs: PAs established primarily for wildlife protection and biodiversity conservation (National Parks, State Parks, Wildlife Reserves, Wildlife Sanctuaries, Nature Reserves). These areas are mostly enacted under parks and wildlife related laws such as the National Parks Act 1980, the Wildlife Conservation Act 2010, National Land Code 1965, and the state level enactments such as the National Parks (Johor) Corporation Enactment 1989 and Perak State Parks Corporation Enactment 2001. The Wildlife PAs include 35 PAs managed by the DWNP, 6 PAs managed by the two state park corporations.

B) Permanent Reserve Forests (PRFs): PAs established under the National Forestry Act 1984 are primarily for forest protection to ensure climatic and physical conditions of the country, for instance safeguarding of water resources, soil fertility, environmental quality, and minimization of flood damage and erosion to rivers and agricultural lands. The PRFs are classified under four major functions: a) Production Forest; b) Protection Forest; c) Amenity Forest; and d) Research and Education Forest. In addition, some States have taken measures to amend their State Forestry Enactments to include provision for creation of State Parks, where biodiversity conservation is the main objective for such establishment. Around 42% of the PRFs covering an area of 2.09 million ha are classified under the non-production categories, as per the National Forestry Policy of 1978. These PRFs are typically assigned with the IUCN protected area categories of I (a), II IV, V and VI.2 Currently there are 148 protection forest areas within the PRF in Peninsular Malaysia, covering 1.93 million hectares, as well as four state parks covering 160,000 hectares.

22. In Peninsular Malaysia the current PA system is shown in **Annex 1: Additional Information on Project, Fig A1-1**. At the federal level, there are two departments within the Ministry of Natural Resources and Environment i.e. Department of Wildlife and National Parks and Forest Department Peninsular Malaysia that are responsible for the management of terrestrial PAs, with biodiversity conservation being a main objective. In addition to the Wildlife Protected Areas and Protection Forests under Permanent Reserved Forests (PRFs), a further 750,923 hectares have been gazetted for water catchment areas, while another 90,685 hectares await to be gazetted formally. Water Catchment Forest Rules have also been developed and approved for the planning, management, development, protection, preservation, conservation and control of water catchment forests (NRE, 2014[27]). The upper catchment of the Kinta River in Perak (the first demonstration site) was gazetted as a 'Water Catchment Area' by Perak Forestry Department in 2007, while the upper catchment of the River Klang (the second demonstration site) is largely covered by the Selangor State Park.

23. Sabah has an extensive and well-established protected area system (see **Annex 1: Additional Information on Project, Table A1-1** and **Fig A1-2**). In the Segama River basin (the third project demonstration site), an area of unusual biodiversity richness, protected areas include the Danum Valley Conservation Area (a

[27] Ministry of Natural Resources and Environment (NRE). 2014. Malaysia's 5th National Report to Convention on Biological Diversity. Ministry of Natural Resources and Environment, Putrajaya, Malaysia. 98p.

Class 1 Forest Reserve managed by the Sabah Foundation) (43,800 ha) linked to a complex of forest reserves in Ulu Segama, and the Tabin Wildlife Reserve (122,539ha) in the lower reaches. The Lower Kinabatangan Wildlife Sanctuary (27,800 ha) occurs nearby on the adjacent Kinabatangan floodplain, and the Lower Kinabatangan – Segama Ramsar Site (**Annex 1: Additional Information on Project, Fig A1-3**) embraces a complex of floodplain wetlands, forests and mangroves including Trusan Kinabatangan Forest Reserve, Kulamba Wildlife Reserve, and Kuala Maruap and Kuala Segama Forest Reserve. This 78,803 ha site is located within the largest forest-covered floodplain in Malaysia, and possibly in Southeast Asia.

24. The Forest Department of Sarawak is responsible for the management of 35 Totally Protected Areas (TPAs). In 2012, the Totally Protected Areas covered an area of 774,799.70 hectares, which consisted of twenty five National Parks, six Nature Reserves and four Wildlife Sanctuaries (Forest Department Sarawak, 2014[28]). Further information is given in **Annex 1: Additional Information on Project, Table A1-2 and Fig. A1-4**.

25. Overall, there are at least four PA networks managed by different agencies at Federal and State levels. PAs under different networks are governed by different laws with varying degrees of protection status and gazetting and de-gazetting procedures. All these networks can be characterized as sub-optimally managed and severely underfinanced, the resolution of which is the subject of another UNDP/GEF Project (Enhancing effectiveness and financial sustainability of Protected Areas in Malaysia).

e) Management and conservation of freshwater fish resources

26. Specific conservation efforts for fish are *ad hoc* and very limited, with very localized sanctuaries for Mahseer or Kelah (*Tor tambroides, Tor douronensis*) and Carp or Tengas (*Acrossocheilus* spp.) established in Lubuk Tenor (Sg. Tahan) in Pahang, Sg. Petang in Terengganu, Sg. Chiling in Selangor and Sg. Ruk in Perak. More recently, Perbadanan Putrajaya and Deparment of Irrigation and Drainage also proposed to develop Sg. Chua in Putrjaya as a sanctuary for Malaysian Mahseer or Kelah (*Tor tambroides*).

27. In terms of freshwater fishery management, the Department of Fisheries Sabah has undertaken a community based fisheries management system called '*Tagal*', where, as part of the management, any fishing or angling activities are prohibited for a certain period as agreed by the community. Within the '*Tagal*' system, there are three zones i.e. red (forever untouchable), green (annual communal harvesting allowed) and orange (fishing once a year) zones. The main objective of this system is to protect and conserve aquatic resources, particularly fish species such as Mahseer or Kelah (*Tor tambroides, Tor douronensis*). The '*Tagal*' system has been implemented in many areas such as Terusan Sugut, Kg. Baba and Kg. Kapuron in Beluran District; Kg. Luanti Baru in Ranau District and Kg. Babagon in Penampang District.

28. In a similar way, the Department of Agriculture Sarawak has introduced the '*Tagang*' system in Sarawak state. This system is originates from the '*Tagal*' system

[28] Forest Department Sarawak. 2014. Annual Report 2012. Forest Department Sarawak, Sarawak. 66p.

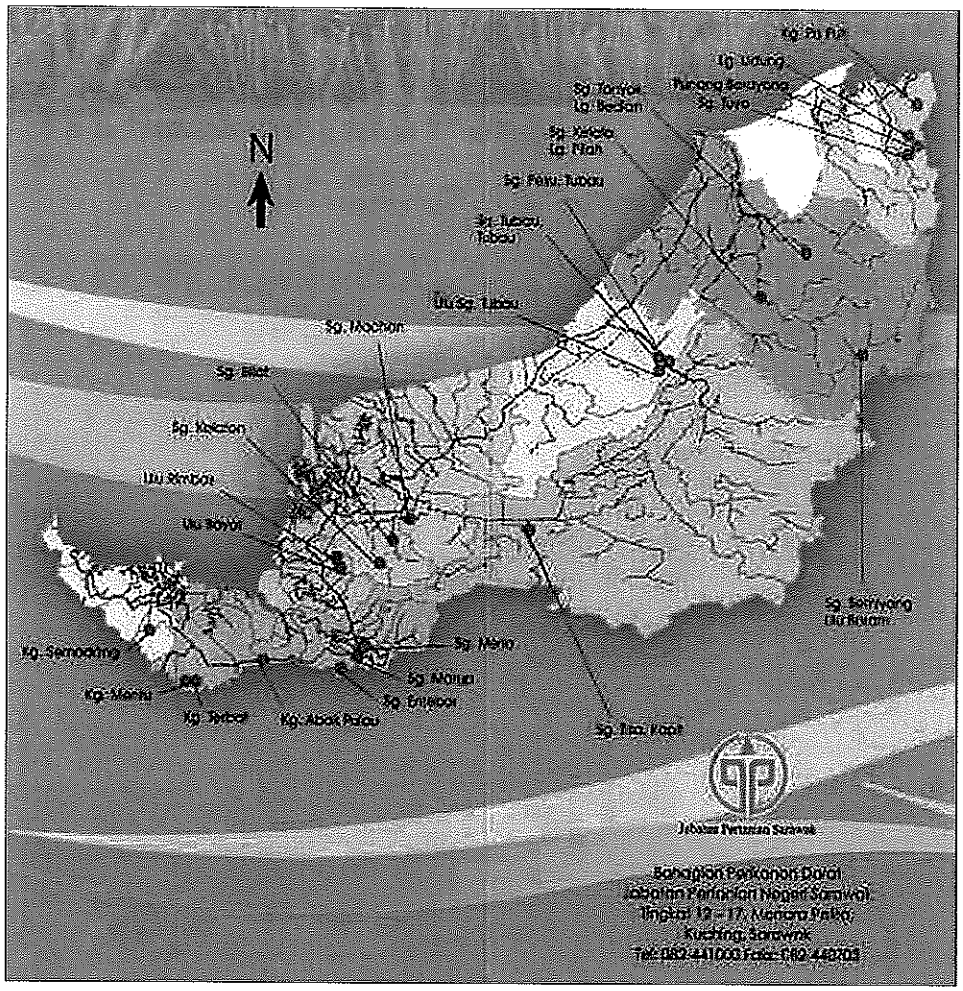
in Sabah. In '*Tagang*' system, the local communities are prohibited to undertake any fishing or angling activities within two years after fish fingerlings have been released into the river. Among the fish species reared in Tagang systems are Mahseer or Kelah *(Tor douronensis, Tor tambroides)*, Tinfoil Barb or Lampan Sungai *(Puntius schwanenfeldii)* and Sultan Carp or Jelawat *(Leptobarbus hoevenii)*. A total of 23 '*Tagang*' systems have been recorded in Sarawak (**Table 2 and Fig. 4**).

Table 2: List of 'Tagang' Systems in Sarawak

Division	Area
Kuching	Kg. Semadang
	Kg. Mentu
Sri Aman	Kg. Terbat
	Kg. Abok Pulau
	Sg. Entebar
	Sg. Marup
	Sg. Merio
Betong	Ulu Bayor
	Ulu Rimbas
Sarikei	Sg. Kelaton
	Sg. Bilat
Mukah	Sg. Machan
Kapit	Sg. Tisa
Bintulu	Ulu Tubau
	Sg. Tubau, Tubau
	Sg. Pesu, Tubau
Miri	Sg. Kelata, Lg. Pilah
	Sg. Tanyok, Lg. Bedian
	Sg. Semiyang, Ulu Baram
Limbang	Kg. Pa Puti
	Lg. Lidung
	Punang Berayang
	Sg. Tuyo

Source: Department of Agriculture Sarawak

Figure 4: Locations of 'Tagang' Systems in Sarawak



Source: Department of Agriculture Sarawak

29. Although Malaysia has a rich and diverse freshwater fish resource base, eutrophication, pollution and habitat modification have seriously compromised much of this resource. The situation is critical particularly in lowland areas, where increasing urbanisation and economic development have impacted negatively on aquatic ecosystems. Though upper reaches of most rivers have been relatively unscathed in this respect, logging and dam construction have decimated fish populations in many river systems. This poor state of affairs has been further exacerbated by diluted resource management policies that have given scant attention and funding towards conserving and managing indigenous freshwater biodiversity resources. Though there are agencies that have been empowered to undertake the management and conservation of freshwater biodiversity, the overlapping administrative and legislative functions of Federal and State Governments and the various agencies that are in charge of water management means that there is a plethora of conflicting ground rules, a situation that clearly works to the disadvantage of the resource.

30. Research in the field has been sporadic and inadequate, and there are significant gaps in our understanding of the biology of many animal species and the ecosystems that support them. A preliminary list of related research by national universities is given in **Annex 1: Additional Information on Project**. The lack of an

adequate, systematic and coordinated science base for the conservation and management of riverine environments and biodiversity is a considerable institutional weakness.

31. Though commercial fishing is insignificant, the pressure exerted on the standing stock by the sport fishing industry is expected to grow in the future. The absence of a comprehensive licensing regime does not enable cogent control and comprehensive data collection while the lack of manpower prevents effective enforcement of the sparse legislation that is currently in place.

It is clear that a systematic conservation strategy framework is required in the present circumstances. The strategy framework would provide direction and emphasis in the management of freshwater biodiversity resources, particularly in the conservation of the indigenous fish stocks, on a localised and site-specific basis. While the application of the framework to specific programmes and projects would essentially be a State prerogative, technical support and funding would need to come from the Federal government. Thus, there is a clear need for concerted efforts that would transcend traditional State-Federal boundaries at the top of the implementation hierarchy and administrative and legislative boundaries among implementing agencies underneath. Suggested elements of such a strategy framework are provided in **Annex 1: Additional Information on Project,** for consideration in the project's intervention towards an inter-sectoral strategy for mainstreaming riverine biodiversity conservation. The implementation of these strategies would be necessarily for the long term since they cover much ground in terms of administration, manpower and finance. However, an action plan to initiate measures in the direction set by the strategy framework should be implemented with its passage and approval. Some proposed elements of such an action plan, focusing on freshwater fish conservation, are also included in **Annex 1: Additional Information on Project**.

f) Institutional Context

32. The river and its biodiversity in Malaysia are under several government agencies. The river and water resources in Peninsular Malaysia are managed by Department of Irrigation and Drainage (DID), which is under Ministry of Natural Resources and Environment. Their main functions are to undertake river management in an integrated manner, including policy making and legislation, and to ensure river basin is managed for the conservation of water resources. Additionally, the roles of DID are implement Integrated River Basin Management (IRBM) nationwide to support sustainable development. These include study and preparation of IRBM plans, implementation of river management programmes including riverine conservation, river beautification, awareness campaigns and One State One River programmes, river rehabilitation and conservation programmes including mitigation of river bank erosion problem and restoration and improvement of rivers as well as the management and storage relevant river information and data. In Sabah and Sarawak, the DID comes under jurisdiction of their respective State Governments.

33. In Selangor, Selangor Waters Management Authority (LUAS) was established in 1999, with the purpose to manage the river and water sources in an integrated manner. They are responsible to ensure the sustainability of the state's water resources, including including both surface runoff and groundwater. These functions

and responsibility are executed taking an IRBM approach. LUAS works with the Department of Environment (DOE) to regulate and monitor water quality monitoring program as well as implement and monitor river research and prevention programs inland water pollution control.

34. Terrestrial biodiversity conservation in Peninsular Malaysia comes under Forest Department Peninsular Malaysia (FDPM) and Department of Wildlife and National Parks (DWNP) and come under Ministry of Natural Resources and Environment. The FDPM is responsible for the management, planning, protection and development of the Permanent Reserved Forests (PRF). The DWNP, however, more focused on the protection of wildlife and management of National Parks, Wildlife Reserves and Ramsar sites. The management includes planning and implementation of environmental friendly activities that give benefit to reserved areas. Additionally, there are biodiversity inventory programmes that have been conducted with the main aim of collecting and updating data on the fauna of Peninsular Malaysia. The programmes also enable DWNP to detect encroachments into protected areas. The Institute of Biodiversity (IBD) has also been established to provide training to DWNP staff and to develop research on the nation's biodiversity resources. The establishment of IBD is a long term strategy under the National Biodiversity Policy.

35. In Sabah, there are two agencies that have an authority on biodiversity, namely Sabah Forestry Department (SFD) and Sabah Parks (SP). The SFD are more focus to manage forests and regulate forestry activities, while SP are responsible to manage the three terrestrial parks i.e. Kinabalu Park, Crocker Range Park and Tawau Hills Park. Similarly, in Sarawak, the Forest Department of Sarawak is also involved in management of forest resources, constituted by Forest Reserves, Protected Forests, Communal Forests, National Parks, Nature Reserves and Wildlife Sanctuaries and implements the official Ordinances.

36. In terms of fisheries, under the Federal Constitution, inland fisheries management is basically a State responsibility (except for the Federal territories of Kuala Lumpur, Putrajaya and Labuan) while freshwater fish are considered state subjects. However, all the states in Peninsular Malaysia have largely surrendered administration and management of inland fisheries resources to the Department of Fisheries Malaysia (DoFM) while retaining overall legislative control. In Sarawak, freshwater fish comes under the Inland Fisheries Branch of the Department of Agriculture, while in Sabah, it comes under the state Department of Fisheries.

37. Provision for States to legislate appropriate regulations for the management of inland fisheries is provided for in the Fisheries Act 1985 (Amended 1993). So far, some 8 states (Johor, Perak, Pahang, Perlis, Kedah, Terengganu, Kelantan and Negeri Sembilan and Sarawak) have enacted the appropriate legislation. However, outside freshwater aquaculture, the DoFM does not regard inland fisheries management as a priority.

38. This is because of the lack of sufficient manpower and expertise to cover all freshwater bodies. Freshwater habitats are scattered and discontinuous, requiring substantial manpower to effectively implement management regulations. As a consequence, problems of overfishing and use of destructive methods such as insecticides, cyanides, electricity and explosives to catch fish continue to persist in

many rivers, resulting in serious decline in fish stocks damaging riverine and lacustrine ecosystems.

39. Another major issue is the overlapping administrative jurisdiction of other agencies such as the Drainage and Irrigation Department, Land Office, river boards, etc., who also have a mandate where the development and management of freshwater bodies are concerned. The complex web of management functions by those different agencies has worked to the overall detriment of freshwater resources. For instance, there have been no initiatives in habitat rehabilitation or the setting aside of reserve areas for indigenous fish though there are provisions to enable this in the Fisheries Act 1985 (Amended 1992).

40. Provisions for riverine biodiversity conservation in major planning documents are minimal and scanty. The National Physical Plan, for instance, does discuss river management in the context of catchment management. However, the focus is on water resource management rather than aquatic biodiversity. The National Physical Plan draws considerably from precursor documents like the Central Forest Spine Study Report. However, that study did not look at freshwater biodiversity on the arguable assumption that simply sustaining the forest spine would de facto ensure the health of the biodiversity that lives in the rivers that emanate from it. There are no specific projects under the 10th Malaysia Plan that relate specifically to river biodiversity conservation, though sanctuaries for the conservation of Kelah (*Tor tambroides*) using locally available funds. The kelah has come to be iconic of Malaysian indigenous fish, but the emphasis of spending money setting up sanctuaries for the fish is a peverse incentive for conservation, giving the impression that saving the kelah automatically translates into a comprehensive conservation regime for all species of riverine fish. The fact remains that the kelah can be bred in captivity and there are farms now producing the fish. In meantime, there are scant funds to study other, far more endangered fish such as the Freshwater Skate (*Dasyatis* sp.) and the Borneo River Shark (*Glyphis fowlerae*).

41. Research and development inputs into inland fisheries are primarily contributed by the Fisheries Research Institute (FRC) at Gelami Ami, Jelebu. The Centre's efforts have been supplemented by universities, particularly in the areas of captive breeding and aquatic ecology. At present, captive breeding of a number of indigenous species, using both natural as well as induced spawning techniques, is well known and well documented (Mazuki and Gopinath, 1995). These include the Sultan Carp or Jelawat (*Leptobarbus hoevenii*), Hampala Carp or Sebarau (*Hampala macroleptidota*), Jullien's Golden Carp or Temoleh (*Probarbus jullieni*), Marble Goby or Ketutu (*Oxyleotris marmoratus*), Clarid Catfish or Keli (*Clarias* spp.) and the Malayan Boneytongue or Kelisa (*Sclerophages formosus*). Despite this, research into riverine fish is extremely limited. There are only two officers in the FRI centre in Gelami Ami that are dedicated to riverine ecology studies, while among the universities, only Universiti Sains Malaysia has an active riverine ecology programme.

42. At the core of it, riverine biodiversity is not a thrust area for fisheries research. The emphasis in freshwater fish research is in aquaculture, not ecological or conservation, and thus funding and manpower is hard to come by, It is pertinent to note that a significant amount of research into Malaysian aquatic biodiversity has been undertaken by Singaporean researchers from National University of Singapore and Raffles Museum. Both these institutes represent major referral centres for the

identification of Malaysian freshwater fish, a distinction that is not shared by any local institute.

43. Outside of the DoFM, there are no other agencies actively involved in freshwater fish conservation and management in Peninsular Malaysia. The Department of Wildlife and National Parks (Perhilitan) and State Park Boards do impose regulatory controls on fishing but only within the confines of parks that they manage.

44. The situation in Sarawak and Sabah is similar, in that the emphasis on research in freshwater biodiversity is limited by funds and policy environment. In Sarawak, freshwater fish research is undertaken by the Inland Fisheries Branch of the Department of Agriculture, while in Sabah by the Sabah Fisheries Department. Though state organs, they take their cue from the Agri-Food Policy (described below) that emphasises only marine fisheries and aquaculture.

g) Policy and Legislative context

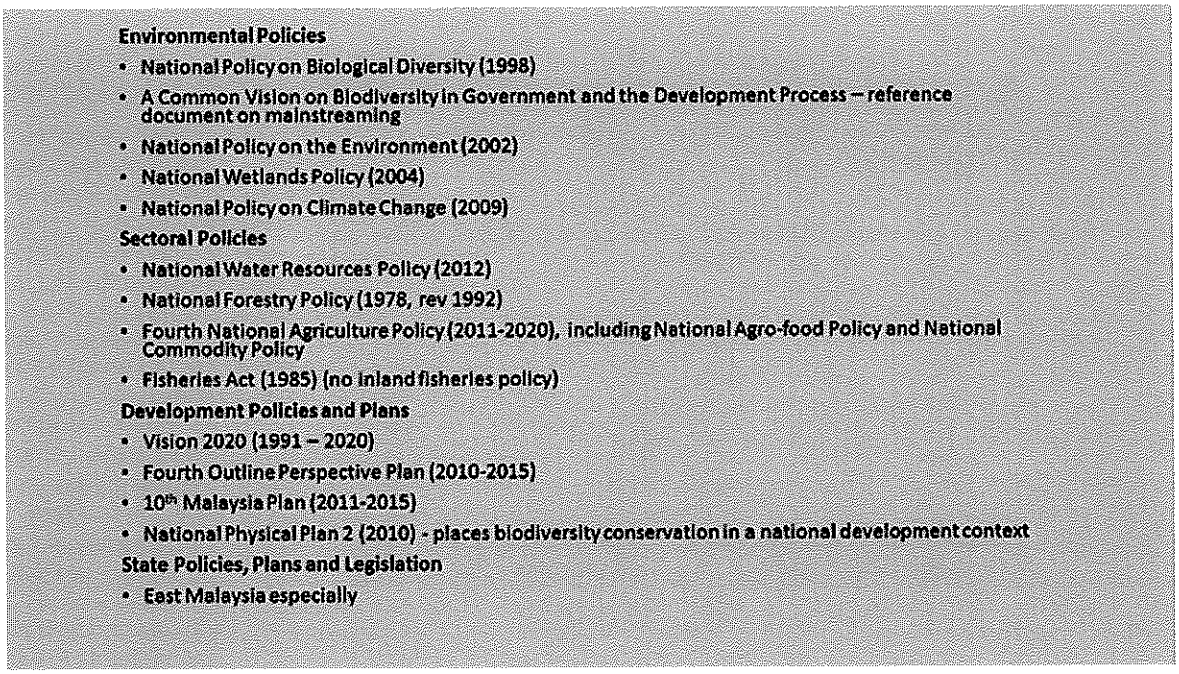
45. The wide range of policies relating to the management of Malaysia's riverine environment are summarised in **Figure 5**. Of greatest significance to the project, Malaysia's National Policy on Biological Diversity was endorsed in 1997. The policy recognises, among others, the importance of freshwater and riverine ecosystems in providing ecological services such as improvement of water quality, maintenance of hydrological regime and the need for watershed protection. The policy identifies freshwater and riverine ecosystems as inadequately protected ecosystems that require increased efforts for *in situ* conservation. Fifteen strategies are defined, nearly all of which are relevant to the current project in some way (see the section on consistency with national policies and plans for details).

46. The Common Vision on Biodiversity (2008) specifically calls for the maintenance of integrity of aquatic systems and the mainstreaming of biodiversity into river basin management. The Vision largely constitutes a three-pronged implementation approach that consists of: i) Strengthening the Protected Areas System; ii) Land/Seascape Management for Biodiversity; and iii) The Mainstreaming of Biodiversity.

47. Malaysia's National Wetlands Policy 2004 - (currently under revision) aims to ensure conservation and the wise-use of the wetlands to benefit from its functions, as well as fulfil Malaysia's obligations under the Ramsar Convention. Rivers and associated riverine wetlands are included under the Ramsar Convention. The policy's objectives include:

a) protection and conservation of different types of wetlands;
b) integration of wetlands conservation interests into overall natural resource planning;
c) increase scientific and technical knowledge and public appreciation of wetlands functions and benefits; and
d) restoration of degraded wetlands.

Figure 5. List of national policies associated with riverine biodiversity conservation



48. Various steps have been taken by the government in recent years to facilitate a more integrated approach to the management of rivers and water resources such as:

- Implementation of the National Physical Plan 2, whose objective is to "optimise utilisation of land and natural resources for sustainable development and biodiversity conservation". Of particular relevance, the establishment and implementation of provisions for "Environmentally Sensitive Areas (ESAs) shall be integrated in the planning and management of land use and natural resources" under Policy item 22; as well as the establishment of the Central Forest Spine to form the backbone of the ESA network (Policy item 23), including the upper catchment areas of two of the project demonstration sites; and all surface and groundwater shall be safeguarded and managed sustainably (26) includes the adoption of IWRB and IRBM approaches.
- Approval and initial implementation of the National Water Resources Policy (2012) to manage water resources sustainably.
- To expand the implementation of IWRM and IRBM Under the 9th and 10th Malaysia Plans.
- River basin management/rehabilitation plans have been established for several key river basin such as Sg. Langat, Sg Muar and Sg. Klang.
- Economic Region plans, e.g. the Sabah Development Corridor and the Northern Corridor Economic Region, emphasise environmentally sustainable development
- National Action Plan for the Prevention, Eradication, Containment and Control of Invasive Alien Species (IAS) in Malaysia (2013)

49. A summary of legislation related to the biodiversity at the national and state levels in Malaysia is presented in **Table 3**.

Table 3: Summary of Key Legislation Related to Riverine Biodiversity in Malaysia

Government Agency	Act/Policy	Description
Department of Irrigation and Drainage (DID)	Waters Act 1920	• The Act is applies in N. Sembilan, Pahang, Perak, Selangor, Malacca, Penang and Federal Territory. • Among important elements stated in the Act is restoration of river banks, prohibition of acts affecting rivers, except under license, prohibition of diversion of water from rivers, except under license, prohibition of pollution of rivers.
Department of Irrigation and Drainage (DID Sabah)	Sabah Water Resources Enactment 1998	• This Enactment have highlighted several elements such as control of the use and flow of water, private rights to water, authorisation of water activities and application or objections or approval for water activity licenses as well as catchment management plans, water protection areas, water conservation areas and river and shore reserves.
Selangor Waters Management Authority (LUAS)	Selangor Waters Management Authority Enactment 1999	• This Enactment is take into account all component related to protection and development of water sources, declaration of river basins, ground water and water body, resource use efficiency and conservation, mitigative measures, protection of the environment, privatization, activities on the surface of water bodies and powers of enforcement.

Department of Environment (DOE)	Environmental Quality Act, 1974.	• The principal legislation governing the quality of the environment including rivers and coastal areas. • EIA is required under section 34A of this Act. Activities subject to EIA are prescribed under the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order, 1987.
Department of Forestry Peninsular Malaysia	National Forestry Act 1984	• This Act provide administration, management and conservation of forests and forestry development within the States of Malaysia and for connected purposes. Among major elements includes permanent reserved forests, forest management and development and enforcement.
Department of Wildlife and National Parks (DWNP)	Wildlife Conservation Act 2010	• This Act only applies in Peninsular Malaysia and Federal Territory of Labuan, which cover all wildlife species, wildlife derivatives, hybrid species and invasive alien species. The Act also has the jurisdiction to address issues on wild animal welfare and cruelty e.g. poaching, keeping and using protected species without permit. • The new penalties include fines of up to RM500,000 with jail term of not more than five years, while the minimum penalty imposed for several offences is not less than RM5,000. Moreover, this Act provides mandatory jail sentence for a term not exceeding five years and a fine not less than RM100,000 and not more than RM500,000 for offences involving protected wildlife such as tigers, rhinoceros, leopard, clouded leopard and false gharial. • Moreover, the General Director of Department of Wildlife and National Parks has the right to appoint any

		public officer to undertake the enforcement.
Sabah Forestry Department (SFD)	Wildlife Conservation Enactment 1997	• The enactment provides declarations of three protected areas i.e. Wildlife Sanctuaries (section 9(6)), Conservation Areas (section 21) and Wildlife Hunting Areas (section 64(2)). • Moreover, according to the enactment, every protected animal or plant or animal product shall be the property of the government, and if any person who hunts, or obtain possession of those animals without proper licensing are presumed to commit an offence and shall be liable on conviction to a fine of RM50,000 or five years imprisonment or both.
Sabah Parks (SP)	Parks Enactment 1984	• The enactment covers elements such as control of parks or nature reserves, prohibition of certain acts except with permission of Board, trophies deemed property of the Board, protection against legal proceedings and penalties.
Forest Department of Sarawak	Wildlife Protection Ordinance 1998	• This ordinance is open only for purpose of conservation and research of wildlife. The wildlife (both flora and fauna) are categorized into two types i.e. 'Totally Protected' and 'Protected'. However, only for 'Protected' wildlife, licenses to hunt or ownership can be retrieved upon payment with respective amount of fees.
Department of Fisheries Malaysia	Fisheries Act 1985 (Amended 1993)	• The Fisheries Act 1985 (Amended 1993) apply in Malaysian fisheries waters and, subject to subsection, in riverine waters within the jurisdiction of each of the States in Malaysia and of the Federation in respect of the Federal Territories of Kuala Lumpur and Labuan. The Act covers element such as fisheries plan, offences, turtles and inland fisheries and enforcement.

Department of Fisheries Sabah	Sabah Inland Fisheries and Aquaculture Enactment 2003	• The Enactment has highlighted major elements such as riverine fishing and fisheries, control of fish, control of fish diseases, fish habitat protection, fish sanctuary, enforcement and offences and penalties.

Note: This table is not exhaustive, for example excluding most legislation outside the main demonstration states of Selangor, Perak and Sabah.

50. In terms of coverage of the main elements of riverine biodiversity, the following observations can be made:

Fish populations

51. There are no specific policy strictures for riverine conservation. The DoFM is guided by the Agro-Food Policy, which covers marine fisheries and aquaculture production, but does not make any mention of riverine fisheries. In short, riverine biodiversity is caught in a policy vacuum and this largely accounts for insignificant attention that is paid to it.

52. Existing regulations enacted by the various State governments under the Fisheries Act 1985 (Amended 1993) are directed mainly at the management of inland capture fisheries. The standardised rules were first framed in the 1980s during very different economic and environmental conditions, when the major priority was managing fishing effort rather than sustaining biodiversity. Their continued relevance is thus eroded by changes in the nature of the fishing effort as well as the growing need to look at the resources from all perspectives.

53. In terms of fishing effort, regulations must be redrafted to reflect the growing presence of recreational fishing and the demands these fishers would have on the resource. Aspects relating to conservation and management of indigenous freshwater fish, even in areas where inland fishing is not undertaken, should also be expanded and strengthened. Provisions relating to the declaration and protection of spawning grounds should take priority in this exercise.

54. Other areas that such a legislative review would address include:

- Identification of centralised collection and distribution centres for inland fisheries catch.
- Pre-empting potential conflict between recreational and commercial fishermen.
- Licensing of anglers. Regulations for licensing of marine anglers are in the pipeline.
- Regulations and enforcement (size limits, closed seasons, closed areas).

Other terrestrial and aquatic vertebrates

55. The Department of Wildlife and National Parks has enforced Wildlife Conservation Act 2010 (Act 1976) on 27th December 2010. This Act only applies in Peninsular Malaysia and Federal Territory of Labuan, which cover all wildlife species, wildlife derivatives, hybrid species and invasive alien species. The Act also has the jurisdiction to address issues on wild animal welfare and cruelty e.g. poaching, keeping and using protected species without permit. The new penalties include fines of up to

RM500,000 with jail term of not more than five years, while the minimum penalty imposed for several offences is not less than RM5,000. Moreover, this Act provides mandatory jail sentence for a term not exceeding five years and a fine not less than RM100,000 and not more than RM500,000 for offences involving protected wildlife such as tigers, rhinoceros, leopard, clouded leopard and false gharial. Moreover, the General Director of Department of Wildlife and National Parks has the right to appoint any public officer to undertake the enforcement.

56. In Sabah, the wildlife and its habitat are protected under Wildlife Conservation Enactment (No. 6 of 1997), which is gazette on 24th December 1997. The authority that has been responsible on this enactment is Sabah Wildlife Department. The enactment provides declarations of three types of protected areas i.e. Wildlife Sanctuaries (section 9(6)), Conservation Areas (section 21) and Wildlife Hunting Areas (section 64(2)). Moreover, according to the enactment, every protected animal or plant or animal product shall be the property of the government, and if any person who hunts, or obtain possession of those animals without proper licensing are presumed to commit an offence and shall be liable on conviction to a fine of RM50,000 or five years imprisonment or both.

57. In Sarawak, the Wildlife Protection Ordinance 1998 has been implementing for the purpose to protect the wildlife and their habitat. The ordinance is fall under jurisdiction of Sarawak Forest Department and Sarawak Forestry Corporation. This ordinance is open only for purpose of conservation and research of wildlife. The wildlife (both flora and fauna) are categorized into two types i.e. 'Totally Protected' and 'Protected'. However, only for 'Protected' wildlife, licenses to hunt or ownership can be retrieved upon payment with respective amount of fees.

Riparian vegetation

58. A study by Azliza *et al.* (2012)[29] stated that the riparian zone is legally protected in Malaysia, where buffer zone should be built along the permanent watercourses, however, the size of buffer zones depending on individual states' laws and the width of the stream. Generally, the buffer zone is 10 m wide in Peninsular Malaysia (Chappell and Thang, 2002)[30]. Buffer zone regulations are rarely – if ever – enforced however. Thus, logging and land clearing activities for plantation development commonly deplete the riparian vegetation and contribute to high suspended sediments and nutrients in water bodies, directly impacting aquatic flora and fauna. See the draft Round Table on Sustainable Palm Oil (RSPO) manual on riparian reserves[31] for more detailed information.

59. Riparian vegetation is covered by the National Forestry Act 1984, which is applied throughout Peninsular Malaysia and managed by the Forestry Department Peninsular Malaysia. According to the Act, the State authority has the right to excise land from permanent reserved forest and need to replace land excised, where it should takes into account the need for water conservation, biodiversity and other

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[29] Azliza. M., M. Nazre, M.K. Mohamad-Roslan and K. Shamsul. 2012. Characterization of Riparian Plant Community in Lowland Forest of Peninsular Malaysia. International Journal of Botany, 8(4): 181-191.

[30] Chappell, N.A. and H.C. Thang. 2007. Practical Hydrological Protection for Tropical Forests: The Malaysian Experience. Unasylva, 229: 17-21.

[31] Barclay H, Gray CL, Luke SH, Nainar A, Snaddon JL and Turner EC. RSPO Manual on Best Management Practices (BMPs) for Management and Rehabilitation of Riparian Reserves. Draft report.

environmental consideration. State Forestry acts in Sabah and Sarawak govern the use of vegetation resources in those states.

1.2 Threats, Root Causes and Impacts

60. Riverine biodiversity is serious decline in Malaysia with most rivers being affected by high silt loads from land clearing and development or urban or industrial pollution. The rivers largely occur outside the formal protected area system – so are affected by a broad range of land use and industrial impacts as well as direct over-exploitation. The current threats are summarised in the following table under five threat categories.

a) Habitat Modification and Clearance of Riparian Corridors:

61. Many rivers in the lowland areas of Malaysia have been negatively affected by the clearance of riverine and riparian forests. Most of the lowland catchments have been developed for plantations, agriculture and urban areas. Remaining unprotected riverine forests are degraded and fragmented and associated biodiversity has seriously declined. Although guidelines exist for the protection of riparian zones and such sensitive environments are meant to be protected, a large proportion of the riparian zone has been cleared for the development of plantations, smallholder agriculture or urban development. In Sabah, recent studies at the proposed project sites along the Segama River have indicated that oil palm plantations have been mostly developed up to the river banks with the conversion of forests or other natural vegetation in the riparian zone. The Klang River (another pilot site) passes though urban areas in its mid catchment and most of the river corridor has been converted for urban development – leaving little space for riverine habitats and biodiversity.

62. In Malaysia, 80 dams have been built[32] and 12 hydropower dam projects have been planned for construction in Sarawak during the period 2008 until 2020[33]. Dams generally have extensive impacts on rivers, water catchments and aquatic ecosystems. The ecosystem impacts are more negative than positive and they have led, in many cases, to irreversible loss of species and ecosystems. To date, the efforts to counter the ecosystem impacts of dams have met with limited success, owing to the lack of attention on the anticipation and avoidance of impacts, the poor quality and uncertainty of predictions, the difficulty of coping with all impacts, and the only partial implementation and success of mitigation measures[34]. Ecological impacts include the blocking of natural fish migration and spawning routes and the destruction and fragmentation of large areas of natural forest habitats, in some cases accompanied by significant social impacts on indigenous populations. Aquatic habitats including fish spawning habitat are also destroyed by sand mining, dredging and modification of river banks for flood protection, bank stabilization and channel re-alignment.

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[32] Department of Water Supply, 2012. Dams distribution in Malaysia, Resource Centre, Minister of Energy, Green Technology and Water, Putrajaya, Government of Malaysia.

[33] Sarawak Energy Berhad, 2008. Assess suitable site for hydropower development. Sarawak hydroelectric feasibility studies, Sarawak.

[34] Latifah, A.M. and Les Met. An Ecological Evaluation Approach For Dam Project Development In Malaysia. Life Sci J 2014;11(7):225-237]. (ISSN:1097-8135). http://www.lifesciencesite.com

b) Pollution:

63. More than 40% of river systems in Malaysia are classified as slightly or heavily polluted. Pollution represents one of the most pervasive threats facing indigenous fish populations. The most important pollutants are eroded sediment (from land clearing activities) and organic loadings from sewage and agriculture / livestock production. In industrial areas, heavy metal contamination represents a serious issue (Husin and Tan, 1997). The impact of pollution can be acute, resulting in mass die-offs of fish and other aquatic organisms. However, its impact can also be insidious, with chronic impacts on reproduction, growth and disease resistance. Other main pollution types are industrial waste and sewage in urban areas such as Kuala Lumpur where the proposed pilot river Klang is seriously polluted by domestic sewage, organic waste from food stalls and restaurants (which leads to depletion of oxygen levels) as well as waste from small and medium scale industries. High silt loads from land clearing and development for agriculture, plantations and infrastructure (especially cutting hillslopes for road development in highland areas) lead to siltation of rural rivers in many parts of the country. In the Upper Kinta river, for example, the construction of a highway across erodible soils on steep slopes in the upper catchment has caused serious large scale erosion over the past 10 years leading to extreme silting of the upper section of the Sg Kinta and seriously affecting downstream water supply reservoir as well as aquatic biodiversity. Similar issues have impacted tributaries of the River Klang in the past, such as the River Gombak. High silt loads block the gills of fish, stifling oxygen exchange and resulting in death. High levels of silting also smother gravel beds and fill up the deep riverine pools important for breeding of large fish species. Pollution arising from the mining of limestone, aggregates, gold and other minerals may have a significant impact on the water quality of affected river systems.

c) Alien Invasive Species:

64. The introduction of alien invasive species (AIS) is a serious problem for riverine biodiversity in Malaysia. Many exotic species have been introduced into the country for culture and some carry with them serious risks of corrupting or eradicating indigenous fish communities through predation, competition and disease (Ang *et al.*, 1989[35]). Introduced species such as the Suckermouth Catfish, *Hypostomus plecostomus*, (from South America) or Tilapia *Oreochromis* spp. (from Africa) are able to survive in the polluted and degraded habitats found in urban rivers such as the Klang River and displace local species. In some riverine habitats, such as the mid-stream of the Sg Gombak in Kuala Lumpur, recent studies showed that invasive species form up to 100% of the fish present and have displaced indigenous fish communities. This problem is compounded by the regular release of additional AIS which are introduced to the country through the trade in ornamental fish. Such fish may be released to the wild for religious purposes or because aquarium owners no longer wish to continue maintaining them. Aquatic plant AIS also pose a significant threat to freshwater habitats, with *Salvinia molestans*, *Eichhornia crassipes* and *Cambomba* spp. all impacting Malaysian rivers and other wetland types.

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[35] Ang, K.J., N. Gopinath and T.E. Chua. 1989. The Status of Introduced Fish Species in Malaysia. P. 71-82 *In* S.S. de Silva (ed.). Exotic Aquatic Organisms in Asia. Proceeding of the Workshop on Introduction of Exotic Aquatic Organisms in Asia. Asian Fisheries Society Special Publication No. 3, Asian Fisheries Society, Manila, Philippines. 154p.

d) Overexploitation and Deleterious Fishing Practices:

65. Overfishing and deleterious fishing practices are another major problem for fish populations in Malaysia. The use of *Derris* spp. root extracts (and pesticides) for catching fish is illegal, but still practised in rural areas, where enforcement is not always possible. For instance, the widespread use of traps and fishing stakes (ambai) along the Muar River seriously impacted on fisheries resource to the point where their operatives have come in conflict with traditional net fishers (Hydec, 2000[36]). The problem is not confined to rivers alone. Yusoff et al. (1995[37]), for instance, reported declines in the fish stock in Kenyir dam due to the illegal use of explosives, poison, small mesh nets and fish traps. Overfishing represents yet another major issue in fisheries conservation, though detailed studies are lacking. Khoo (1991[38]) reported excessive fishing pressure to be central to the decline in fish stocks in the Temenggor and Chenderoh reservoirs. Anecdotal reports also suggested that stocks of the Malayan Boneytongue (Ikan Kelisa, Sclerophages formosus), a highly valuable ornamental, may have been seriously diminished by excessive fishing.

e) Climate Change:

66. As described in the National Climate Change Policy (2009), climate change and extreme weather have intensified the occurrence of natural disasters in Malaysia, including sea-level rise, floods, landslides, coastal and land erosion, drought, forest fires and haze, which have impacted human safety and health, threatened the fabric of the nation's economy and caused changes to natural and built landscapes. In addition, disruption of ecosystems undermines water and food security. Catastrophic floods in December 2014 have intensified the realization that climate change can exacerbate natural disasters with devastating consequences, and that the protection of watersheds and sustainable management of both forests and river systems has an important role to play in mitigating such impacts. In addition to such extreme effects, global warming is predicted to result in a progressive increase in surface air and water temperatures, which will affect both water availability and the structure and composition of natural ecosystems. Aquatic species such as invertebrates, amphibians and fish are highly sensitive to changes in ambient temperatures that can have significant effects on their life cycles (eg viability of eggs). The clearance of riparian forests also removes shading with similar impacts. Long term problems are anticipated in the preservation of species diversity in the protected area system through changes in pest and disease risks, changes in forest composition as well flora and fauna due to changing rainfall and temperature patterns. Finally, sea level rise will increase saline intrusion in the lower reaches of river systems.

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[36] Hydec Engineering Sdn. Bhd. 2000. Master Plan Study on Flood Mitigation and River Management - Muar River Basin - Vol. 1. Drainage and Irrigation Department, Kuala Lumpur. 536p.

[37] Yusoff, F.M., M.Z. Zakaria and M.A. Ambak. 1995. Fisheries and Environmental Management of Lake Kenyir, Malaysia. Paper Presented at the Regional Symposium on Sustainable Inland Fisheries under Environmental Constraints. Bangkok, 19-21 Oct. 1994.

[38] Khoo, K.H. 1991. Fishery in Malaysia: A Case Study of the Sport Fishery Potential in Tasik Temenggor. Pp 16-22 *In*: Tarlochan, S. (ed.). Angling and Recreational Fisheries. Another Avenue in Fisheries Development. Malaysian Fisheries Society, Malaysia.

67. The threats facing aquatic biodiversity in the country largely originate from the fact that no one body is empowered to champion the policy and institutional intiatives required for effective conservation. Though the mandate of the DoFM does cover aquatic biodiversity (specifically fish), departments such as Wildlife and National Parks, Forestry, and Drainage and Irrigation are institutional co-stakeholders. Located within different ministries, having different mandates and lacking a common coordination and working platform, the agencies are challenged to work together to ensure the health of riverine biodiversity. This situation is compounded by the absence of a legal and policy framework that compels them to do so, in addition to their limited technical experience of integrated ecosystem and species management. This underlying policy and institutional problem is what the project aims to resolve in order to mitigate the above-mentioned more immediate anthropogenic threats to riverine biodiversity.

1.3 Barrier Analysis

a) Long-term solution and barriers to achieving the solution

68. As called for in the Malaysia's Common Vision on Biodiversity (2008), the country aims to maintain the integrity of aquatic ecosystems through mainstreaming biodiversity considerations into river basin management. Accordingly, federal and state agencies concerned with river basin management will have effective collaborative arrangements in place, and riverine biodiversity will be managed according to an integrated river basin and ecosystem-based approach. However there are a number of barriers preventing the achievement of the vision and plan. These include:

69. *Sub-optimal enabling framework and capacity for riverine biodiversity management:* One of the other factors that lead to rapid degradation of the rivers and its ecosystem is the lack of appropriate institutional frameworks and capacity for integrated river basin management and the lack of institutional focus on the conservation of riverine biodiversity. The current management of river basins is not holistic. Holistic management requires coordination among multiple government agencies. Relatively weak interagency coordination coupled with unclear jurisdiction and regulations as well as poor enforcement and monitoring has resulted in continuing pollution of rivers, undesirable development along the riverine areas and on-going degradation of protected areas and loss of riparian corridors. The current institutional framework is mainly sector focused and not interlinked. For instance, the main focus of the Department of Irrigation and Drainage and is primarily on flood mitigation and river engineering while the Department of Fishery focuses on commercial fish production and the Forestry Department focuses on management of forest resources. Industrial pollution issues are considered by the Department of the Environment while the local government has responsibility for soil erosion and solid waste. There is no single river-related government body which focuses on integrated river basin management or the conservation of biodiversity or ecosystems of rivers.

70. There is increasing recognition that the biodiversity of freshwater and riverine ecosystems will only be conserved in the long term if their management is integrated with river basin management plans and practices. However, the understanding and practical experience for this is still low among government agencies, private sector and the community in Malaysia. Moreover, while even stakeholders may agree in

principle to better management or conservation of riverine biodiversity – a significant barrier to action is the lack of practical guidance and manuals to undertake river management in a biodiversity friendly manner. Riverine biodiversity conservation as well as the integration of biodiversity concerns into river basin management in Malaysia is also hampered by inadequate efforts on biodiversity assessment and monitoring in rivers. Another important barrier is the lack of effective mechanisms for engaging local communities as well as the private sector in managing rivers and the biodiversity that balances maintenance of riverine biodiversity and associated ecosystem services and allows for sustainable livelihood opportunities.

71. *Absence of successfully demonstrated experiences in integrated riverine management:* A significant barrier to integrated management and conservation of riverine biodiversity is the lack of well-documented practical experiences which can be promoted as best practice to key stakeholders. There are also significant barriers to the collaboration between different stakeholder groups such as between the government, private sector and the local community. In many cases the government acts in an enforcement modality and therefore is normally working in an adversarial way with communities and the private sector. In a complex situation such as the management of rivers - with fragmented government jurisdictions among many agencies – the current situation is one where there is little effective control by the government and often conflicting inputs by the other stakeholders. In order to promote a more integrated and successful approach to conservation of riverine biodiversity it is necessary that there are clear demonstrations of how such approaches can be undertaken by showcasing in different riverine environments and institutional settings a range of workable solutions to problems. Successful practical experience in conserving or rehabilitating riverine habitats is scattered and poorly documented and agencies responsible for river management at local level are frequently not aware of good practices elsewhere.

b) Introduction to Project site interventions

The second component of the project will pilot actual operationalization of integrated riverine area management, mainstreaming biodiversity conservation and habitat management in land use decision making and practices. The component will provide targeted support for demonstration activities at sites with significant riverine biodiversity in three selected river basins. The three demonstration sites have been selected based on a range of criteria, including biodiversity significance, involvement of multiple stakeholders including civil society, government priorities and associated baseline projects, and different elements for generating experiences and lessons based on various local conditions and circumstances. The basic features of the the demonstration sites are summarized in **Table 4** below. Refer to **Annex 1: Additional Information on Project** for full site profiles.

Table 4. Summary of the key features of the project demonstration sites

River Basin	State	River Length & Basin Area Size	Biodiversity significance	Main Threats	Baseline Projects	Demonstration Objective	Key Stakeholders
Kinta	Perak	100 km 2,540 km²	Catchment is part of Central Forest Spine, supporting globally important forest and aquatic biodiversity: key species include Malayan tiger, Asian elephant, Malayan tapir, Sun Bear, False Gharial. Fish species include the Copper Mahseer or Tengas.	Pollution and siltation caused by severe soil erosion from highway development, highland agriculture / tourism development, and low-level impacts of shifting cultivation by local *Orang asli* communities	DID's 1S1R/Living River Programme (solid waste and pollution management in mid-section of the river in Ipoh City.) GEC's River Care Programme (collaboration management with stakeholders in mid-catchment)	Mainstreaming of biodiversity in the management of the upper catchment of a river currently managed for water supply purposes through establishment of measures to control erosion and enhance protection of catchment forests.	Perak EPU, DID, Perak Water Board, Agriculture, Forestry and Fisheries Depts., Public Works Dept., GEC, Local communities
Klang	Selangor/Kuala Lumpur	120 km 1,288 km²	Upper catchment is part of Central Forest Spine and is included in the Selangor State Park, supporting globally important forest and aquatic biodiversity: 95 mammal species including serow, Malayan tiger, leopard; 250 bird species, 63 reptiles, 20 amphibians, 363 butterflies. 20 new endemic species of aquatic insects described at	Conversion of habitats in river corridors for urban development; urban encroachment into sensitive catchment forests; fragmentation of catchment	The major ROL Programme as part of the Government's Economic Transformation Programme. DID river awareness programmes. Community	Mainstreaming of biodiversity into river management in urban and semi-urban areas including protection and enhancement of riparian habitats, strengthened community	DID, Selangor Water Management Authority, Kuala Lumpur City Hall, Fishery Department, GEC, local communities

			one small site in the catchment in recent years. Rare fish species recorded include the Malaysian Mahseer (Kelah).	forests by infrastructure development; industrial and domestic waste pollution; invasive alien fish species	river conservation programmes run by GEC.	participation and increased awareness and control measures regarding alien invasive fish species	
Segama	Sabah	330 km 4,744 km²	The Segama basin includes some of Sabah's most biodiversity rich areas, including Danum Valley Conservation Area, Malua forest complex, Tabin Wildlife Reserve and part of the Lower Kinabatangan-Segama Ramsar Site. Its riparian biodiversity includes key mammal species, such as the Bornean elephant, Sumatran rhinoceros, Bornean banteng, Sunda clouded leopard, proboscis monkey, Bornean orang-utan and Bornean gibbon. Estuarine crocodile occurs. Diverse fish communities include the freshwater whipray and the endemic Borneo river shark	Clearance and fragmentation of riverine forests by oil palm plantation development. High levels of soil erosion, and pollution from agrochemicals and palm oil mills. Sediments from sand-mining. Sewage from riparian villages.	Sabah State Government's Strategy and Action Plan to Enhance Water Quality in Selected Rivers in Sabah, EU supported Sabah REDD+ Programme. JICA support for lower Kinabatangan-Segama Ramsar site.	Expansion and improved effectiveness of riparian corridors in plantation and smallholder agricultural landscapes	Sabah DID, Environmental Protection, Wildlife, Forestry, Fishery, Land Survey Depts., Sabah Biodiversity Centre, oil palm companies, GEC, CSOs and local communities

1.4 Key Stakeholders

a) Stakeholder analysis

72. The main stakeholders in the project are listed below. Further information on key stakeholders, their roles and influence is given in the Stakeholder Involvement Plan, **Tables 13 and 14,** and see also **Annex 1: Additional Information on Project** for socio-economic information on the project sites.

Table 5. List of stakeholders and their anticipated roles in the project

Stakeholders	Mandate and Relevant roles in the project
Ministry of Natural Resources and Environment (NRE)	Federal Government Ministry which is to be the national executing agency for the project. It is responsible for natural resources management, conservation and management of environment especially biodiversity conservation, river basin, wildlife and forest management and includes key divisions such as Biodiversity and Forestry Management; and Water Resources Drainage and Hydrology and key departments such as: Department of Irrigation and Drainage (the proposed government project implementing agency), Department of Wildlife and National Parks, Department of Environment, and Department of Forestry
Department of Irrigation and Drainage (DID)	The Department of Irrigation and Drainage (DID) is the key government agency managing water resources management in Malaysia esp. on river management, with the vision to lead and provide world class services in water resources management especially river and coastal zone management to enhance quality of life by ensuring water security and environmental sustainability. DID Malaysia will be the lead government implementing agency of the project
Global Environmental Centre	Global Environment Centre (GEC), local leading non-profit organisation working on water resource and river management in Malaysia with active involvement at national, regional and global level. It has undertaken field projects in more than 15 countries and has more than 15 years hands-on experience in water resource, river and biodiversity conservation especially through local stakeholder participation. It will act as a co-implementer with DID.
Economic Planning Unit (Federal/State)	Federal/State Government Agency responsible for national economic and development planning, as well as development of strategies and policies in determining financial allocations for the various sectors of the national economy and as well as coordinate cross-cutting socio-economic. All three state-level EPUs of the demonstration states: the Economic Planning Units of Selangor, Perak and Sabah will be playing key roles in facilitating state governments' engagement in the project.
Forestry Department	The Forestry Department of Peninsular Malaysia is responsible for overseeing the management of forests in particular in Forest Reserves. It is a lead implementing agency in the associated GEF supported project on the central Forest Spine. State Forestry Departments in Selangor, Perak and Sabah are responsible for the management of forests in the respective targeted basins and can support activities to rehabilitate riparian zones.
Department of Fisheries Malaysia (DoFM)	The federal Department of Fisheries Malaysia is responsible for the management of fish and other aquatic resources in the country. The main focus is on marine fisheries, but a Freshwater Fishery Research Centre looks at freshwater fish from the perspective of aquaculture and to some extent management and conservation. The department also has an office dedicated to freshwater fish taxonomy. State Fishery Departments are responsible for management of riverine and lake fisheries – but are more active in those states with large river systems (eg Sabah, Sarawak and Pahang) or large water bodies/lakes (eg Perak, Terengganu)
State Governments and agencies	State Governments in the project pilot implementation states are critical stakeholders in ensuring the security of the priority areas and corridors in their respective states, as land management, water catchment and forestry policy formulation and implementation are the responsibility of the state agencies. Among the agencies are : State Departments for drainage and irrigation, wildlife, forestry, fisheries, agriculture and land management; water resources agencies like Selangor Waters Management Authority and Perak Water Board, and Environment Protection Department of Sabah (EPD).
Ministry of Housing and Local Government	Key Ministry responsible for planning, coordinating and implementing sustainable living environment for Malaysian people. The local authorities for the proposed demonstration sites as well as the Department of Town and Country Planning, the initiator of the National Physical Plan, falls under this Ministry.

Ministry of Agriculture and Agro-Based Industry	Federal Government Ministry responsible for planning and implementation of policies, strategies and agricultural development programmes and houses two departments relevant to biodiversity conservation: Department of Agriculture and Department of Fisheries.
Ministry of Plantation Industries and Commodities	Ministry responsible for the plantation sector including forests, rubber and oil palm plantations and related downstream activities. Agencies under the Ministry include the Malaysian Palm Oil Board responsible to promote best management practices in the plantations.
Ministry of Works	Federal Government Ministry responsible for infrastructural development and providing policy and regulatory framework for the construction sector and construction and management of federal roads through Department of Works.
Private Sector: Oil Palm	Some oil palm plantations in the Segama project site play a significant role on integrating biodiversity conservation into their land management activities and as well as supporting the project through their CSR programmes. The project will also collaborate with the Roundtable on Sustainable Palm Oil to promote best management practices for riparian buffer zones by their various member companies.
Tourism business	Tourism operators, concessionaires, lodge owners near one of the targeted demonstration sites (Perak) are stakeholders with potential to contribute towards alternative livelihoods based on community based eco-tourism. Communities near the mouth of the Segama river also have some ecotourism experience, and there are numerous small ecotourism operators along Sungai Kemensah in the Klang River demonstration site.
Civil society organizations & Local communities	Local communities are key users and beneficiaries of the riverine biodiversity and water resources. They are the affected parties of human wildlife habitat conflict, and play a major role in local habitat conservation. Important co-implementers of demonstration level activities including dissemination of project information and awareness programme, community monitoring/stewardship, designing and implementation of socio-economic measures to establish biodiversity conservation sites, as well as participatory biodiversity and ecosystem service monitoring and protection activities. Among the key CSOs likely to be involved are HUTAN, Kinabatangan River Spirit Initiative (Kinabatangan River), Sabah Environmental Education Network (SEEN) and Roundtable on Sustainable Palm Oil (RSPO). National level environmental and social CSOs including WWF Malaysia, Malaysian Nature Society (MNS), Wetlands International and WildAsia have experience of river conservation activities. Similarly, Angling Association Malaysia, provides not only support to conserve local fish stock and flow in Malaysia but also helps to increase awareness of river biodiversity protection.
Indigenous community organisations	Organisations working with indigenous communities will be important stakeholders in biodiversity conservation demonstration level activities including forest and fishery resources monitoring and management. They are holders of traditional knowledge on land and water management and will be involved in implementation of relevant activities like "Tagal" system of fisheries and ecotourism, as well as being represented in the project implementation committees at local / state level.
Universities and research organizations	A number of national and international universities and research bodies are involved in research related to river, riparian zone and watershed management, as well as the assessment, monitoring and management of biodiversity. Examples include the University Malaya field station on Sg Gombak, and the international SAFE project at Danum Valley (Segama basin). There is a need for a coordinated and systematic programme of research to underpin policy development and science-based management of riverine resources. See **Annex 1: Additional Information on Project** for preliminary list of related research.

1.5 Baseline Analysis

a) National Institutional Framework and Capacity for Riverine Biodiversity Conservation (Component 1)

73. The national institutional framework for the management of water resources and rivers is described earlier in this situational analysis section. Accordingly, NRE has the mandate for policy and management of natural resources including water, forests and biodiversity at national level, implemented through related departments including the Department of Irrigation and Drainage, Department of Forestry, Department of Environment and Department of Wildlife and National Parks. The Department of Fisheries Malaysia is also a key agency partner for this project, falling under the Ministry of Agriculture. The capacity of these agencies is briefly discussed in the earlier section. Importantly, land and water resource management falls under the respective State governments, thus the State level offices of these agencies have the primary responsibility for implementing management of riverine resources on the ground, with their human and financial resources funded mainly through the State budgets. In many cases, these resources are very limited, significantly constraining the capacity and effectiveness of these State departments.

74. Current approaches towards protected area system development and species conservation are not systematic and do not address the specific needs of key elements of riverine biodiversity, such as representation of the full range of riverine ecosystems and ecological communities in the PA system, protection of critical habitats and life cycle requirements for species of fish, turtles, amphibians and crocodiles, as well as riverine birds and mammals, and sustainable use of riverine resources through controlled resource management regimes (eg application of licensing and quotas).

75. While significant resources are often allocated for aspects of river management such as flood mitigation, water supply and pollution control (for example the national government budget for 2014 included RM1.2 billion (c.US$ 375 million) for building and upgrading dams and water treatment plants), at present there are little or no dedicated resources or focused activities at national level specifically to address the problems of conservation of riverine biodiversity. Even the major River of Life programme (see below) focuses on urban redevelopment, pollution control and beautification rather than restoring ecological conditions. Some initial steps have been taken to initiate IRBM, for instance, the IRBM programme for the Selangor River was a cooperative project between Malaysia and Denmark, carried out from October 2002 to October 2006 and costing around RM16 million (50:50 cost-sharing).

76. Flood mitigation, water supply and HEP infrastructure development can have major negative impacts on riverine biodiversity despite environmental impact assessment (EIA) requirements, through changes in hydrological regimes and fragmentation of river corridors with little consideration of biodiversity concerns. However, pollution control addresses a key driver of aquatic biodiversity loss and investment in this field directly contributes towards biodiversity conservation. The proposed project will build on these baseline actions and will leverage increased funding directed towards riverine biodiversity management.

77. Overall, while the Federal government has a range of agencies involved in river management and biodiversity conservation, management of river systems remains sectorally based, with divided responsibilities, overlaps in jurisdiction, weak regulations, monitoring and enforcement, and an overall weak understanding of riverine ecosystem services and biodiversity values. Activities are fragmented between different agencies, un-coordinated and generally with a small level of resource allocation. There is little information available on riverine biodiversity for planning and management purposes as a result of a lack of systematic survey, monitoring and evaluation schemes and centralized data management.

b) Riverine Habitat Management (Component 2)

78. In 2005, the Department of Irrigation and Drainage (DID) under the NRE launched the One State One River (1S1R) / Living River Programme[39], which aims to support the State DID in organising a river restoration and water quality improvement programme for one river in their state, with full stakeholder participation. The Programme works to involve everyone in the management of just one river in each state and pool all resources into the rehabilitation and protection of that river. Objectives include: to ensure clean, living and valuable rivers with a minimum water quality of Class II by the year 2015. To make rivers and surroundings a natural recreation area; to ensure rivers are free of rubbish and do not flood. The annual budget of the programme is about US$3 million per year or about US$300,000 per state per year.

79. Since 2000, the Global Environment Centre (GEC), a Malaysian non-profit organisation has been implementing the River Care Programme[40] to support the engagement of local communities in the protection and rehabilitation of riverine ecosystems. GEC has worked with DID, NRE and local government in six states in Malaysia to undertake assessments of river ecosystems and develop pilot activities for the community based protection and clean-up of rivers. It has developed successful models of river clean-up in conjunction with local authorities and other partners and has built sustaining, multi-stakeholder and community groups in some areas. Projects undertaken have led to documented improvements in water quality and riverine habitat as well as riverine biodiversity. However due to limited resources it has been focused mainly on relatively small project areas. It has worked in all of the proposed project sites and has on-going activities in the Kinta and Klang Basins which will complement and support the proposed project. GEC River Care programme has a planned budget of US$ 2 million for the next five years which will include work in project sites and other areas.

80. Other national and local NGOs are also involved in freshwater conservation, including WWF Malaysia[41], the Malaysian Nature Society, Wetlands International – Malaysia programme (all participants in the Malaysian Environmental NGO (MENGO)

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[39] http://www.1s1rcommunity.net/index.cfm?&menuid=2

[40] http://www.gec.org.my/index.cfm?&menuid=54

[41] http://www.wwf.org.my/media_and_information/publications_main/

forum[42]). While their projects and programmes are constantly evolving, it is likely that collectively these amount to at least US$1 million annually. Examples of NGO-led initiatives include WWF's partnership with Coca-Cola which began in 2011 through the three-year "Protect Our Water, Protect Our Lives" project, aimed at protecting critical water catchments and freshwater habitats, promoting ecosystem services, and educating and raising awareness on water conservation. WWF-Malaysia has also established numerous partnerships in promoting conservation of water resources in the Ligawu sub-catchment in Tambunan, Sabah, which is a site located within the Heart of Borneo (HoB). A partnership between WWF-Malaysia and HSBC involved the provision of a three-year funding that enabled the implementation of freshwater conservation efforts in the Liwagu sub-catchment area since 2010. The Environment Action Centre (EAC) partnered WWF-Malaysia to promote river environmental education. In Sabah, The Tambunan district level River Environmental Education Programme (REEP) in 2012 resulted in further collaboration in the development of the micro-hydro documentation featuring a renewable energy option dependent on river ecosystem suitable for rural community. PACOS Trust (Partners of Community Organizations) and WWF-Malaysia have collaborated to engage with local communities and further develop the understanding of the community on water catchment issues in the Ligawu area. In addition, the Angling Association of Malaysia generates public interest and strong membership with great interest in the conservation of national species. The Association have done some programmes with the Department of Fisheries in the past on an *ad hoc* basis but do not have a long term engagement. The Association is willing to share its knowledge and experience in achieving some of the outputs related to Component 2.

81. MNS[43] is the national CEPA focal point for the Ramsar Convention and has significant programmes supporting mangrove forest conservation and rehabilitation, as well as a major initiative for the Belum-Temenggor Forest Complex – the catchment area for the Temenggor reservoir in northern Perak State. In southern Perak, MNS has been supporting a community-based ecotourism programme with orang asli villages in Ulu Geroh based around Rafflesia flowers, as well as Raja Brooke's Birdwing butterflies occurring along stream courses. Wetlands International – Malaysia Programme supports a variety of peat swamp forest and mangrove conservation initiatives, including fish conservation and community-based ecotourism at Tasek Bera in Pahang as well as the lower Sedili Kechil River in Johor.

c) Riverine Habitat Management Demonstration 1 – Upper Kinta River (Perak)

82. This project demonstration area is a largely forested catchment with limited economic activities. The water supply management by Lembaga Air Perak (LAP – Perak Water Board) at the Sultan Abdul Aziz Shah dam is the over-riding economic priority for the area, as a main water supply source for Ipoh City. Currently, LAP is investing several million Malaysian Ringgit annually in removing silt at the reservoir inlet from upstream slope erosion – a cost that could be significantly reduced through

[42] http://www.mengo.org/

[43] http://www.mns.my/section.php?sid=16&pb=Tier

the introduction of improved watershed protection and sustainable land uses with assistance from the project.

83. One of the rivers supported under the One State One River (1S1R) / Living River Programme is the Kinta River[44]. The main activities supported at present are related to infrastructure for pollution control in the urban areas (e.g. GPT, oil and grease traps) as well as a rubber dam to raise the water level in the mid-section of the river. There are, however, currently no activities supported on the upper section of the Kinta River or specifically to address riverine biodiversity, so the project will complement existing baseline work in this respect.

84. In 2013, GEC completed a rapid assessment of the Upper Kinta Catchment[45] supported by the Institute Darul Ridzuan (IDR) and in collaboration with DID Perak and Kinta, Lembaga Air Perak, Malaysian Public Works Department (PWD), Perak Forestry Department, Jabatan Kebajikan Orang Asal (JKOA) and Orang Asli community. This aimed to conduct a rapid assessment on existing river basin condition and current environment issues, towards conserving natural resources, assessing local community livelihood practices and building the capacity of the local communities to assess current the situation, monitor changes and alert relevant authorities. The Kinta River Education & Rehabilitation Project (2012-2015)[46] supported by the GAB Foundation target local communities, schools and businesses in partnership with DID Perak. It aims to develop a river education and monitoring programme, develop BMPs for local businesses and share experience from project work on Sungai Way in Selangor.

d) Riverine Habitat Management Demonstration 2 – Upper Klang River (Selangor / Federal Territory)

85. In 2011, the Prime Minister launched the River of Life Initiative (ROL) for the Klang River[47]. The ROL is an ambitious initiative being implemented over a period of nine years (2012-2020) to enhance the quality of the Klang River in the centre of Kuala Lumpur with a total budget of some US$ 1.2 billion. The main elements are beautification and upgrading or urban infrastructure along a 10 km river corridor in the centre of Kuala Lumpur (budget US$300 million); upgrading of Kuala Lumpur's Sewage System (budget US$600 million); pollution reduction and river corridor management (budget US$300 million). A pilot ROL public outreach programme[48] was initiated in 2012 with a budget of US$ 600,000 to explore options to enhance engagement of local communities in reducing pollution of sections of the river. This Initiative is mainly focused on pollution reduction to bring the water quality to Class IIb

[44] http://www.1s1rcommunity.net/index.cfm?&menuid=51

[45] http://www.gec.org.my/index.cfm?&menuid=310&parentid=54

[46] www.waterproject.net.my

[47]http://etp.pemandu.gov.my/Greater_Kuala_Lumpur_Klang_Valley-@-Greater_Kuala_Lumpur_-_EPP_5-;_Revitalising_the_Klang_River_into_a_Heritage_and_Commercial_Centre.aspx

[48] http://www.myrol.my/index.cfm?&menuid=21

– making it suitable for recreational use but does not specifically target ecological functions or the maintenance or enhancement of biodiversity.

86. GEC has been involved in delivery of the River of Life Public Outreach Programme (ROL-POP)[49] funded by DID Malaysia and in partnership with DID Selangor, MPAJ and local communities over the period 2012 to 2015. The programme aims to foster partnerships and to improve attitudes and behaviours of target groups to reduce pollution, as well as to promote a sense of ownership towards the river and initiating long term and sustainable change in behaviour towards preserving the river. In Selangor, improvements on the Penchala River are is being supported by the One State One River (1S1R) / Living River Programme involving DID, GEC and other partners. This is a mid-river tributary of the Klang River, downstream of the project demonstration sites.

87. The HSBC Water Programme (HWP) is a global flagship environment programme created to tackle water risks in river basins, bring safe water and improved sanitation to over a million people and raise awareness about global water challenge. The USD100 million five-year programme is delivered in partnership with WWF, WaterAid and Earthwatch. In Malaysia, HSBC partners with Earthwatch, and GEC to train HSBC employees to be Citizen Science Leaders (CSLs) to raise water awareness in Malaysia, using the Klang River as the data monitoring site. Through voluntary engagement with employees, GEC contributes significantly towards the research and learning process that will deepen our understanding on the importance of freshwater as an essential resource and provide valuable data on local freshwater quality.

e) Riverine Habitat Management Demonstration 3 – Segama River (Sabah)

88. The Sabah State Cabinet adopted the comprehensive Strategy and Action Plan to enhance Water Quality in Selected Rivers in 2012 with the indicative budget of US$ 132 million over 10 years. The Strategy and Action Plan was developed under the Sabah Development Corridor Initiative, following a two year study looking at five key river basins in eastern Sabah where pollution from oil palm plantations and mills, sand mining and settlements have led to deterioration of river water with negative impacts on biodiversity, water supply and fisheries. A similar plan for the Kinabatangan River has also been developed. The Strategy and Action Plan specifies a number of measures to enhance riverine biodiversity including reducing erosion and agrochemical run-off from plantations through promotion of Best Agricultural practices, controlling pollution from oil palm mills, and enhancing integrated river basin management and catchment protection. Specific recommended actions include protection of all remaining riverine forests, re-establishment of riparian forests to link conservation areas, enhancement of community and private sector engagement in river management and introduction of aquatic biodiversity monitoring programmes. Resources are not currently available to implement the Plan.

89. The European Union is investing 4 million Euro in a project to support community based REDD+ implementation in Sabah. The project support will include

[49] www.myrol.my

capacity building and support for REDD+, as well as three pilot projects. One of them provides target support for government and community to reduce the degradation/forest loss in selected portions of the Kinabatangan river corridor.

90. Based in Sabah, the Bornean Biodiversity and Ecosystems Conservation (BBEC) Programme[50] was a joint technical cooperation among the Sabah State Government, Malaysian Federal Government and Japan International Cooperation Agency (JICA) under Japan's Official Development Assistance (ODA). The BBEC Programme assists the development of an integrated and durable system for biodiversity and ecosystems conservation in Sabah. The BBEC consists of two phases, of which Phase I focused on technical support between February 2002 and January 2007, and Phase II emphasises policy support, running from October 2007 through September 2012. This initiative provided major support for the designation of the Lower Kinabatangan – Segama Wetlands Ramsar Site in October 2008. A third phase is now in progress, focusing on the Ramsar Site through Sabah Forest Dept as well as the Crocker Range.

91. The Lower Kinabatangan has been a focus of conservation activities, including conservation of key species such as orang-utans and Bornean pygmy elephants, involving a wide range of partners such as WWF Malaysia (Corridor of Life Programme[51] which evolved from the Partners for Wetland Programme[52]). In 1998, Hutan[53] together with the Sabah Wildlife Department (SWD) established the Kinabatangan Orang-utan Conservation Project, which led to an orang-utan conservation strategy, first for the Lower Kinabatangan region and later on for Sabah. Recently, the SPaCES Project led by the Living Landscape Alliance (LiLA), a spatial planning project that aims to provide solutions to the state government on how to promote sustainability, biodiversity conservation, and maintenance of ecosystem services for local communities, whilst meeting its development targets, has identified 15,000 ha of flood-prone oil palm estate lands which the Sabah Wildlife Dept has called to be returned to the State for other uses. This has highlighted that certain areas within the Lower Kinabatangan and Segama are not suitable for conversion into oil palm cultivation as that would result in financial losses for smallholders or companies, and raising the question of how to handle the use of such lands[54] [55].

92. Some oil palm companies are actively investing in restoring riparian buffer zones and unproductive flood-prone parts of their estates. On the Kinabatangan, Sawit Kinabalu Sdn Bhd has been restoring forest on such lands since 2003, and invested some RM2 million (c.US$ 625,000) in 2013-2014 to plant 250,000 trees in a 500m buffer zone along 20km of riverbank (1150 ha) as well as 300 ha of flood-prone land, with significant potential for further rehabilitation work for wildlife conservation.

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[50] http://www.bbec.sabah.gov.my/index.php

[51] http://www.wwf.org.my/about_wwf/what_we_do/forests_main/kinabatangan___corridor_of_life/

[52] http://www.gwp.org/Global/ToolBox/Case%20Studies/Asia%20and%20Caucasus/Malaysia-kinabatangancasestudy_256.pdf

[53] http://www.worldlandtrust.org/news/2013/02/hutan-presses-plans-vital-wildlife-corridor

[54] http://www.therakyatpost.com/news/2014/08/08/bodies-urge-oil-palm-companies-donate-flood-prone-land-conservation/#ixzz3LOCyosa1

[55] http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0095388

93. Located in the project's Segama river basin demonstration area, there are three contiguous oil palm plantations managed by SabahMas covering 10,000 ha in total. SabahMas (a RSPO member) is under PPB Oils, which is part of Wilmar Group. Wilmar has a recent zero deforestation policy, which they are introducing to their supply chains and subsidiaries. The estate is entirely on the south side of the Segama River, with the replanting of a 50m wide buffer zone for a 47km stretch of river to be completed by the end of 2014, using native riparian species collected locally and reared in a nursery at their plantation HQ with SFD support. The rehabilitation work started in June 2010, with SabahMas committing 3 million RM (c.US$900,000) for planting 150,000 trees. This work will be extended to a small tributary of the Segama as well as other plantations in Sabah in future. The plantation also employs some 13 rangers responsible for wildlife conservation, including anti-poaching checks on the river, night-time patrols and monitoring of key wildlife species like Proboscis Monkeys with technical support from Hutan. The project plans to support the dissemination of these approaches to other plantations as part of its demonstration efforts in the Segama River Basin.

94. In the upper reaches of the Segama River basin, the Ulu Segama Malua Sustainable Forest Management Project covers 12,000 ha of heavily degraded forest on the north side of the Segama River. It is a Class II Forest Reserve, except for the VJR (Class VI) – but now re-categorized as Class I in view of its importance for wildlife (still outstanding for orang-utans in particular, despite the poor forest condition). Restoration work started in 2007, with some blocks more recently planted. It is split into three blocks: Compartments 103-108 Sabah Foundation; 109-111 WWF Malaysia (Senheng consumer electrical and electronics retail chain store in Malaysia is supporting WWF to restore up to 46 hectares over 3 years); 112-122 Sabah Forest Dept with Sime Darby Foundation financing (RM25 million over 10 years from 2008-2018, c.US$7.8 million) totalling 5400 ha[56], and Mersuli VJR #121 under Sabah Forest Dept. The forest restoration work will benefit the Segama River watershed, but a corridor of small oil palm estates occurs along the riverside through this section, thus it will not directly improve riparian habitat for wildlife.

95. Also located in the upper catchment of the Segama River, the Stability of Altered Forest Ecosystems (SAFE) Project[57] will research the effects of different widths of riparian buffer strips of forest on waterways as part of its Watersheds component. The SAFE Project is a long-term research project collaboration between Sime Darby Foundation and South East Asia Rainforest Research Programme (SEARRP), an overseas research programme of the Royal Society (The UK and Commonwealth Academy of Science), with RM30 million financing over 10 years (2010-2020)[58]. SAFE is slated to be the world's largest ecological experiment both in terms of size and breadth of ecological processes. The project will allow insights into the minimization of biodiversity impacts while maximizing ecosystem services. It will contribute towards

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[56] http://www.yayasansimedarby.com/1203090443%C2%BBUlu_Segama.aspx

[57] http://www.safeproject.net/

[58] http://www.yayasansimedarby.com/1009221008%C2%BBStability_of_Altered_Forest_Environments_(SAFE).aspx

sustainable plantation management, the implementation of the Roundtable on Sustainable Palm Oil (RSPO) guidelines and the conservation of biodiversity in agricultural landscapes.

96. Substantial environmental education activities are being conducted across the state by a range of government and civil society organizations. The Sabah Environmental Education Network (SEEN)[59], is a network of people wanting to work together to enhance environmental education programmes or activities in Sabah, with members from interested government agencies, educational institutions and NGOs.

[59] http://www.sabah.gov.my/seen/frame_pages/main_fr.htm

2 STRATEGY

2.1 Project Rationale and Policy Conformity

a) Fit with the GEF Focal Area Strategy and Strategic Programme

97. The project conforms closely to the GEF5 Operational Strategy, the objectives and the eligible activities under the Biodiversity Focal Area (FA) Strategy; supporting directly Strategic Objective 2, *To mainstream biodiversity conservation and sustainable use into production landscapes, seascapes and sectors*, mainly through Outcome 2.1: *Increase in sustainably managed landscapes and seascapes that integrate biodiversity conservation*, and Outcome 2.2: *Measures to conserve and sustainably use biodiversity incorporated in policy and regulatory frameworks*. The project will contribute to the GEF Biodiversity objective and outcomes through strengthening the institutional environment and capacity for riverine biodiversity management, catalysing improved management of riverine habitats in Malaysia, and through demonstrating integrated riverine area planning and management in three riverine areas in different environmental and socio-economic settings. It will result in a national inter-agency strategy as a framework for riverine biodiversity conservation, and improved land use plans for the demonstration areas.

98. In addition, the project will strengthen implementation of Malaysia's National Policy on Biological Diversity, thereby contributing towards achievement of the CBD's Aichi Targets, in particular under the Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use, Target 5: the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced; Target 7: areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity; Target 8: reduction of pollution to levels that are not detrimental to ecosystem functions and biodiversity; and Target 12: preventing extinction of known threatened species.

b) Rationale and summary of GEF Alternative

99. **The incremental approach can be summarised as follows:** The government of Malaysia has clearly identified the critical nature of riverine biodiversity management in its efforts to conserve the outstanding array of biodiversity in the country. However, despite strong commitment from the government, concrete actions are seldom taken to remove the barriers to improvement of riverine area management for biodiversity conservation at federal or state levels.

In the baseline situation, the majority of river sections and associated biodiversity are found outside the protected area system in Malaysia. Therefore, it is critical for

the conservation of riverine biodiversity that clear strategies and plans are developed to conserve riverine biodiversity in productive landscapes. These landscapes include regions being developed or managed for agriculture and plantations, urban and semi-urban development, production forests as well as for water resources management, which together cover more than 80% of Malaysia's land area. The government agencies and other stakeholders responsible for management of these areas do not normally have biodiversity conservation as one of their main objectives. The Government's principal focus in river management remains flood control and water supply with little consideration for riverine biodiversity and habitat management. Uncoordinated management of riverine areas will continue to put pressure on biodiversity from habitat conversion, degradation and pollution. A lack of inter-agency coordination, strategy, capacity and resources will mean that threats to riverine biodiversity will continue to grow, and will likely lead to further habitat fragmentation and destruction. It is therefore imperative to mainstream biodiversity conservation principles into their work and responsibilities, as well as in the practices of other stakeholders.

100. **In the alternative scenario enabled by the GEF**, a set of institutional barriers to integrated and coordinated riverine landscape management will be removed at the national and state levels, backed by the development and adoption of an inter-agency strategy to mainstream biodiversity into river management, thus providing the foundation for coordinated planning and management including enforcement and compliance monitoring mechanisms. The capacity of key institutions responsible for different aspects of river management will be strengthened. Integrated riverine biodiversity management will be demonstrated in three different settings in Peninsular Malaysia and Sabah. The GEF financing will also help to catalyze support from both private and public sectors as well as local communities towards conservation objectives in the project demonstration areas, and provide a mechanism to use such support to generate sustained long-term improvements in riverine biodiversity.

2.2 Country Ownership: Country Eligibility

a) Country Eligibility

101. Malaysia ratified the CBD in June 1994, and has implemented its national obligations through a variety of national policy and legislative instruments (see above section), most recently described in its Fifth National Report to CBD (2014). Malaysia's commitment to biodiversity conservation is also evident from the country's participation in other biodiversity related conventions including the Ramsar Convention on Wetlands (since 1994), and CITES (since 1978). Malaysia's recent commitment to the conservation of wetlands (including rivers) is described in its National Report to Ramsar COP12 (2014).

b) Project consistency with national priorities/plans:

102. Malaysia's National Policy on Biological Diversity was endorsed in 1997. The policy recognises, among others, the importance of freshwater and riverine ecosystems in providing ecological services such as improvement of water quality, maintenance of hydrological regime and the need for watershed protection. The policy identifies freshwater and riverine ecosystems as inadequately protected ecosystems

that require increased efforts for *in situ* conservation. Fifteen strategies are defined, nearly all of which are relevant to the current project in some way, for example: Strategy 1 – Improve the scientific knowledge base (there is a serious lack of information on riverine biodiversity status, distribution and character); 2 - Enhance sustainable utilisation of the components of biological diversity (such as riverine fisheries); 4 – Strengthen the institutional framework for biological diversity management (this is particularly weak and uncoordinated for riverine biodiversity); 5 – Strengthen and integrate conservation programmes (especially through government – CSO partnerships); 6 – Integrate biological diversity considerations into sectoral planning strategies (a key issue for riverine biodiversity that this project seeks to address); 7 – Enhance skill, capabilities and competence (capacity building is a key project component); 12 - Enhance institutional and public awareness (which this project will also address); and 15 – Establish funding mechanism (the project will deliver a financing plan for riverine biodiversity conservation).

103. The Common Vision on Biodiversity (2008) specifically calls for the maintenance of integrity of aquatic systems and the mainstreaming of biodiversity into river basin management. The Vision largely constitutes a three-pronged implementation approach that consists of: i) Strengthening the Protected Areas System; ii) Land/Seascape Management for Biodiversity; and iii) The Mainstreaming of Biodiversity. This project will directly support implementation of the second and third strategies, as applied to riverine biodiversity, and it will also promote strengthened representation of riverine habitats within the national protected area system.

104. Addressing inland water biodiversity conservation is also one of the key areas emphasized in the Malaysia's 5th National Report (2014) to CBD, and in the National Report to Ramsar Convention COP12 (2014). Malaysia is currently in the process to update the 1998 National Biodiversity Strategy and Action plan which is expected to be completed by the middle of 2015.

105. Malaysia's National Wetlands Policy 2004 - (which is currently under revision) aims to ensure conservation and the wise-use of the wetlands to benefit from its functions, as well as fulfil Malaysia's obligations under the Ramsar Convention. Rivers and associated riverine wetlands are included under the Ramsar Convention. The policy's objectives include:

a) protection and conservation of different types of wetlands;
b) integration of wetlands conservation interests into overall natural resource planning;
c) increase scientific and technical knowledge and public appreciation of wetlands functions and benefits; and
d) restoration of degraded wetlands.

106. Various steps have been taken by the government in recent years to facilitate a more integrated approach to the management of rivers and water resources such as:

- Implementation of the National Physical Plan 2, whose objective is to "optimise utilisation of land and natural resources for sustainable development and biodiversity conservation". The project has particular relevance to the establishment and implementation of provisions for "Environmentally

Sensitive Areas (ESAs) shall be integrated in the planning and management of land use and natural resources" under Policy item 22; as well as the establishment of the Central Forest Spine to form the backbone of the ESA network (Policy item 23), including the upper catchment areas of two of the project demonstration sites; and all surface and groundwater shall be safeguarded and managed sustainably (26) includes the adoption of IWRB and IRBM approaches.

- Approval and initial implementation of the National Water Resources Policy (2012) to manage water resources sustainably.
- To expand the implementation of IWRM and IRBM Under the 9th and 10th Malaysia Plans.
- River basin management/rehabilitation plans have been established for several key river basin such as Sg. Langat, Sg Muar and Sg. Klang.
- Economic Region plans, e.g. the Sabah Development Corridor and the Northern Corridor Economic Region, emphasise environmentally sustainable development
- National Action Plan for the Prevention, Eradication, Containment and Control of Invasive Alien Species (IAS) in Malaysia (2013)

2.3 Country Drivenness

107. In the riverine biodiversity conservation context, NRE has demonstrated a strong commitment to mainstreaming biodiversity into related sectors through a range of policies and strategies including the National Policy on Biological Diversity, the Common Vision on Biodiversity, National Wetland Policy, National Physical Plan 2, and the National Action Plan for Peatlands. The inter-sectoral strategy on riverine biodiversity conservation that is planned through this project will contribute directly towards the implementation of these policies and plans in line with national government priorities.

108. Malaysia has actively participated in GEF supported biodiversity projects and programmes at national, regional and global levels. See www.thegef.org/gef/country_profile/MY for further information.

2.4 Design Principles and Strategic Considerations

109. **The incremental approach** can be summarised as follows: The government of Malaysia has clearly identified the critical nature of riverine biodiversity management in its efforts to conserve the outstanding array of biodiversity in the country. However, despite strong commitment from the government, concrete actions are seldom taken to remove the barriers to improvement of riverine area management for biodiversity conservation at federal or state levels.

110. **In the baseline situation**, the majority of river sections and associated biodiversity are found outside the protected area system in Malaysia. Therefore, it is critical for the conservation of riverine biodiversity that clear strategies and plans are developed to conserve riverine biodiversity in productive landscapes. These landscapes include regions being developed or managed for agriculture and

plantations, urban and semi-urban development, production forests as well as for water resources management, which together cover more than 80% of Malaysia's land area. The government agencies and other stakeholders responsible for management of these areas do not normally have biodiversity conservation as one of their main objectives. Despite substantial baseline investments, the Government's principal focus in river management remains flood control, water supply and pollution control with little consideration for riverine biodiversity and habitat management. Even the major River of Life programme focuses on urban redevelopment and beautification rather than restoring and enhancing ecological conditions. Management of river systems remains sectorally based, with divided responsibilities, overlaps in jurisdiction, weak regulations, monitoring and enforcement, and an overall weak understanding of riverine ecosystem services and biodiversity values.

111. Overall, there is little information available on riverine biodiversity as a result of a lack of systematic survey, monitoring and evaluation schemes, and what data that does exist is often not easily accessible or presented in a manner that is useful for planning and decision-making purposes. Development of infrastructure such as highways and urban areas, as well as large plantations takes little or no account of their impacts on river systems despite environmental impact assessment requirements, with sediment control often being inadequate and unmonitored, while such developments frequently encroach into riparian buffer zones with impunity. Smallholder agriculture and village development frequently takes place in riparian zones and is similarly poorly regulated, resulting in the loss and fragmentation of riparian habitats, and increased social and economic damage from flood events.

112. **Without GEF investment in the proposed project**, this fragmented sectoral approach to the governance and management of riverine and catchment areas is expected to continue. Uncoordinated management practices promoting sectoral interests at the expense of shared public benefits will continue to put pressure on riverine ecosystem services and biodiversity through habitat conversion, degradation and pollution. The lack of a holistic approach towards integrated river basin management that includes a science-based understanding of riverine resources, inter-agency coordination, strategy towards harmonized development and environmental goals, adequate technical capacity, and resources for implementation will mean that threats to riverine biodiversity will continue to grow and cause further habitat fragmentation and destruction. It is therefore imperative to mainstream biodiversity conservation principles into the mandate and practices of the relevant government agencies, as well as into the practices of other stakeholders.

2.5 Alternative Scenario

113. **In the alternative scenario** enabled by the GEF, a set of institutional barriers to integrated and coordinated riverine landscape management will be removed at the national and state levels, backed by the development and adoption of an inter-agency strategy to mainstream biodiversity into river management, thus providing the foundation for coordinated planning and management including enforcement and compliance monitoring mechanisms. The project complements baseline programmes and projects by supporting the development of a national framework for the

conservation of riverine biodiversity, addressing this at a national level and putting in place supporting capacity to enable its implementation. This will facilitate the transition towards a fully integrated approach towards river basin management in line with national policy including the Common Vision for Biodiversity and National Physical Plan 2.

114. At the national level, the institutional framework for riverine biodiversity management will be strengthened, catalysing improved management of riverine habitats in Malaysia with increased government investment and active uptake of best practices. This will be accomplished through the development of an inter-agency strategy to mainstream biodiversity into river management, including an interagency coordination mechanism, coordinated enforcement and compliance monitoring mechanisms, mainstreaming of riverine biodiversity management into key sectors, a collaborative operational modality, and a financing plan for increased Federal and state budget allocations for riverine biodiversity management. Best Management Practice guidelines for management of riverine biodiversity will be developed with input from the pilot demonstration sites and their application promoted elsewhere. Capacity building actions will be undertaken for targeted stakeholders including government agencies, private sector and CSOs. The outcomes of the capacity building will include enhanced agency capacity for the conservation of riverine biodiversity in DID, strengthened biodiversity management capacity in other key national agencies, and the introduction of enhanced practices for biodiversity conservation in river management by key stakeholders in selected states.

115. The second project component will demonstrate best management practices for critical riverine habitats in three river basins, enhancing their biodiversity conservation status and reducing key threats. Each pilot addresses issues of national significance, with the aim that lessons learned from these approaches can subsequently be applied elsewhere. These interventions include the upper Kinta River Basin in Perak State, a forested catchment in the central forest spine which provides water via a key reservoir to Ipoh City, the upper Klang River Basin on the eastern edge of Kuala Lumpur city, and the Segama River in eastern Sabah, a rural area under mainly agricultural use by oil palm plantations and smallholders. In each case, the project aims to demonstrate integrated approaches that involve a range of stakeholders in order to improve the sustainability of river and catchment management, and to directly improve conditions for riverine biodiversity. It also seeks to tackle specific issues, such as sedimentation from road developments and urban redevelopment planning, through a mainstreaming approach that combines specific stakeholders. Existing best practices for plantation and community-based protection and rehabilitation will be transferred and documented.

Table 8. Comparison of current practices with planned actions under the GEF Project Alternative.

Current Practice	Project Alternative
Component 1	
Unclear national agency responsibilities and capacity for the management of riverine biodiversity. Current activities are largely ad-hoc and sectoral >>	Nationally agreed strategy to enhance the conservation of riverine biodiversity, with multi-stakeholder collaboration and allocation of responsibilities to different agencies to enhance riverine biodiversity
Experiences and lessons learned from biodiversity conservation in river management are not documented and shared >>	Best management practices for riverine biodiversity conservation collated, reviewed, documented and disseminated through outreach and training programmes and integrated into agency practices.
Investments in river management mainly focused on flood control or water supply with little or no focus on riverine biodiversity >>	Riverine biodiversity issues mainstreamed into river management planning and practices by national and state agencies

Component 2	
Riverine biodiversity in the upper Kinta River catchment will continue to deteriorate due to erosion and sedimentation as agencies and local communities work in isolation >>	Strengthened partnership between government agencies as well as local communities addresses reservoir catchment management in an integrated manner, reducing erosion-siltation and enhancing the protection of watershed forests and riverine biodiversity.
River of Life Project in the Klang River Basin focuses mainly on pollution control and enhancement of amenity value >>	ROL integrates biodiversity considerations and helps to conserve and rehabilitate riparian habitats.
Riparian zones along the Segama River are protected only by selected land owners while others clear and degrade them >>	Protection and rehabilitation of riparian zones is enhanced through collaboration and exchanges between government, private sector and local communities, strengthening connectivity of the local protected area system.

116. The **global environmental benefits** that will be secured by the overall project will result from strengthened sustainable management of Malaysia's river systems and associated riverine buffer zones and catchment areas that specifically takes into account biodiversity conservation. The areas covered by major river basins include several Global 200 Ecoregions in East and West Malaysia, including tropical lowland, mangrove, peat and freshwater swamp-forests, submontane and montane forests. Malaysia's six Ramsar Sites include parts of river systems, mainly focusing on coastal and estuarine areas dominated by mangrove forests, but also an inland riverine swamp system (Tasek Bera). Globally threatened species occurring in the project demonstration sites' riparian areas include Tiger (EN), Malayan Tapir (EN), Sun Bear (V), Asian Elephant (EN), Bornean Pygmy Elephant (EN), Bornean Orang-utan (EN) and Proboscis Monkey (EN). A wide variety of rare and endemic fish occur including Kelah (*Tor tambroides*), Temoleh (*Probarbus jullieni*) (EN), Giant Freshwater Whip Ray (*Himantura polylepis*) and the endemic Borneo River Shark (*Glyphis fowlerae*). Reptile and amphibian species occurring in riverine habitats include the Estuarine Crocodile, False Gharial (V), turtles such as the Southeast Asian narrow-headed softshell turtle (CR), Three-striped Batagur (CR), Malaysian giant turtle (EN), and amphibians such as the Giant Asian River Frog (NT).

117. The project will also yield **national and local socio-economic benefits**. The improved likelihood of ecosystem conservation through more integrated river management that proactively seeks to conserve biodiversity will help to secure the socio-economic benefits provided by ecosystem services, to the advantage of local communities who are often most dependent upon NTFPs and aquatic resources, and who will also benefit from ecosystem-based adaptation (such as hydrological buffering from highland forests). As women among the local communities are more often engaged with gathering natural resources and collecting water, they are the primary beneficiaries of sustainable and quality supply of these resources. National level benefits will accrue through ecosystem services underpinning the national economy (such as hydrological regulating services, water purification and soil protection, for example), and global environmental benefits will include carbon sequestration and maintenance of globally significant biodiversity. While systematic information is lacking on this at the national level, a number of economic valuation studies have been

conducted for different ecosystems, services and uses in Malaysia (see examples below[60]).

118. At local level, the economic benefits derived from riverine resources have changed over the last few decades owing to social, economic and environmental changes. For indigenous communities along the Ulu Kinta and both indigenous and local communities in Kemensah area and wider upper reaches of the Klang river area, the river is no longer a primary source of goods for consumption (ie fish and drinking water). See **Annex 1: Additional Information on Project** for further information.

119. In RPS Ulu Kinta, the Orang Asli get their water from a gravitational system and have latrines. They also work in different sectors, no longer relying on the river to provide for subsistence or as a source for commercial enterprise.

120. In the upper reaches of the Klang, such as in Kemensah, the river is an important resource for commercial activity, especially small-scale eco-tourism (chalets and services for day trippers) and fish rearing in ponds situated along the river course. However, similar to Ulu Kinta, the people here rarely rely on the river for fulfilling their subsistence or hygiene needs.

121. While local residents do not claim direct benefits from the river they do derive other services from the wellbeing of the river. For the Ulu Kinta communities, the benefits include exploiting the forest areas in the water catchment area for NTFPs as well as for cultivating their orchards. In the upper reaches of the Klang, the most obvious service is the eco-tourism business, which is heavily reliant on continuing natural and clean conditions of the river and waterfalls as the main attraction.

122. Along the Segama river, particularly in the lower reaches, the river remains an important part of the village economy. Many continue to work as fishermen practicing small-scale fisheries. There are also thriving cottage industries that relate to the fisheries economy, such as making crab and prawn traps. In the middle reaches of the

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[60]Kumari, K. 1995. An environmental and economic assessment of forest management options: A case study in Malaysia. The World Bank. *Environment Department paper No. 026.* Washington, D.C.: The World Bank.

Tan-Soo, J.S. 2010. Economic valuation of flood mitigation services provided by tropical forests in Malaysia. MS project, Duke University.

UNEP. 2007. *Guidelines for Conducting Economic Valuation of Coastal Ecosystem Goods and Services.* UNEP/GEF/SCS Technical Publication No. 8. http://www.unepscs.org/remository/startdown/1958.html

UNEP, 2007. Procedure for Determination of National and Regional Economic Values for Ecotone Goods and Services, and Total Economic Values of Coastal Habitats in the context of the UNEP/GEF Project Entitled: *"Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand".* South China Sea Knowledge Document No. 3. UNEP/GEF/SCS/Inf.3

DiRocco, T.L. 2012. A thorough quantification of tropical forest carbon stocks in Malaysia. Carbon Stocks of Tropical Forests. Univ California, Berkeley Environmental Sciences 2012. 18pp. http://nature.berkeley.edu/classes/es196/projects/2012final/DiRoccoT_2012.pdf

Segama, commercial activities such as sand mining from the river are practised. Also, communities open up areas along the riparian zone for small holder oil palm plantations. There is some fishing, mostly for subsistence. Most residents however, buy their fish and other marine produce from the market. There appears to be less dependency on the river for consumption and other subsistence needs in general. It was reported that one family continues to fish further upstream and sells his produce at the village.

123. Women have unique ways of producing and transmitting knowledge, but face barriers to participating in decision-making processes, both traditional and contemporary, that favor men in positions of power. For instance, the importance of gender and the essential role of women in developing and using community protocols (one of the demonstration project themes) have long been considered[61]. Key lessons that will be integrated into this project include providing spaces for separate meetings and trainings with women to build their technical skills and capacities, supporting female champions and facilitators to complement (not threaten) traditional leadership, and using the strengths of customary laws (e.g. social norms of honor, pride, and reciprocity) as the basis for culturally appropriate and representative decision-making processes both within communities and in multi-stakeholder settings. For the rural communities in Sabah and Perak, special attention will be given to develop spaces for womens' participation. For the urban landscape of the Klang River basin, particularly in JKK AU3 and Eco-Melawati, women have started to play a role in educating children against littering in the river and on the organization as a whole. In Kg. Kemensah, women are active as traders supporting the chalet operations. These women often open restaurants or food kiosks next to the river. However, there appears to be a gap in their voice as men who operate the chalets represent the group as a whole. Working closely with both men and women in this sector, the project aims to address the challenge of unregulated eco-tourism development along the Kemensah river and to develop and socialize guidelines for more sustainable use of the river. Women participate in the Eco-Melawati CBO, playing an important role in the organization.

124. The pilot projects will work closely with community facilitators, community-based organizations, and NGOs to ensure that the partner communities are integrally involved in all aspects of the project and in locally appropriate ways. This will include, among other things, regular meetings and discussions (in-person, phone, email), group reflection and revision of the project to date, focused workshops and peer training sessions (including community reporting, monitoring, and consolidation workshops), and support for community outreach and communication tools. Community organizations will be encouraged to register themselves with the Registrar of Societies (ROS) to facilitate formal relationships between community and government. These are part of the efforts and initiatives of Malaysia towards achieving the CBD's Aichi Biodiversity Targets. Communities' roles in the project implementation and their capacity needs for fulfilling the roles were assessed through an extensive consultation process.

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[61] See, for example, Köhler-Rollefson, I., 2012. *Invisible Guardians – Women manage livestock diversity.* FAO Animal Production and Health Paper No. 174. FAO: Rome, Italy; Shrumm, H., and H. Jonas, 2011. *Asia Regional Initiative on Biocultural Community Protocols: Inception Meeting Report(2-4 April, 2011: Digana, Sri Lanka).* Natural Justice: Malaysia/India.

125. For a community to participate, they must feel they have a stake and they must see benefits from the project. Hence, the project will facilitate the creation of employment opportunities such as auxiliary river rangers as a means of involving the indigenous and local communities in protection of the riverine areas. Developing local enforcement and monitoring capacity addresses two issues; firstly, the lack of manpower from enforcement agencies, and secondly, to help develop a sense of ownership among the communities themselves. The auxiliary rangers can work closely with JPS, Local Municipal authorities, Fisheries Department, Wildlife Department and Forestry Department.

126. For communities to participate in any form of auxiliary enforcement such as river rangers or enlisted as homeguards (RELA) applicants must have a minimum qualification requirement (usually an equivalent to O levels). Most indigenous stakeholders would not have the basic requirements, therefore the project may suggest that this requirement be reduced for the admission of Orang Asli members. A different admission requirement can be developed to match the skills required to specific tasks. The auxiliary river rangers can be based on existing auxiliary bodies such as the Community Forest Rangers in Sabah, the Homeguards (RELA), the WATANIAH[62] or the auxiliary police.

127. Additionally, a joint committee or task force to manage and enforce riverine biodiversity can be set up to include local representatives as board members. There is a joint agency task force but it does not include indigenous or local communities.

128. There are local capacities that can be advantageous depending on the landscapes. In the Ulu Kinta, Kemensah and Segama there are indigenous groups that can develop handicrafts, and who can act as tour guide operators and homestay operators. However, there are not many and opportunities to develop their programs have been limited. They can, however, be supported to participate in: monitoring and enforcement, tree-planting and fence construction, documentation of local resource sites and local knowledge. The capacity required includes: access and benefit sharing mechanism needs to be developed, employment opportunities need buy-in from government agencies, and training in documentation processes, curating and archiving.

2.6 Project Goal, Objective, Outcomes and Outputs/Activities

129. **The project's goal** is to contribute to the conservation and sustainable use of globally significant biodiversity in Malaysia. **The project objective** is to mainstream biodiversity conservation into riverine landscapes through improved river planning and management practices in Malaysia.

130. While the baseline activities are significant, the aforementioned barriers inhibit the actual realization of the global objective of ensuring that riverine biodiversity is

[62] See: http://wataniah.mod.gov.my/

effectively conserved and the accomplishment of the related Aichi targets. This project aims to remove the barriers mentioned above through two inter-related outcomes. To accomplish this, the Government of Malaysia is requesting support from the GEF and UNDP to conserve its globally significant biodiversity.

131. In order to achieve the above objective, and based on a barrier analysis (see Section I, Part I), which identified: (i) the problem being addressed by the project; (ii) its root causes; and (iii) the barriers that need to be overcome to actually address the problem and its root causes, the project's intervention has been organised into two components (in line with the concept presented at PIF stage). **Component 1** addresses the need for an operational national institutional framework and capacity for a more integrated and holistic approach to river management that takes riverine biodiversity into account, while **Component 2** will demonstrate best management practices for riverine habitats in three different situations (a water supply reservoir catchment area, an urban river, and a rural river impacted by plantation development and smallholder land uses). The two components will result in the following project outcomes:

Outcome 1: An operational institutional framework and capacity are established for strengthened management of riverine biodiversity in production landscapes.

132. This component has two sets of outputs – the first focusing on developing an enabling institutional framework and the second focusing on capacity development for key agencies responsible for managing rivers and riverine biodiversity. First, the institutional framework for riverine biodiversity management will be strengthened, catalysing improved management of riverine habitats in Malaysia with increased government investment and active uptake of best practices. This will be accomplished through the development of an inter-agency strategy to mainstream biodiversity into river management, including an interagency coordination mechanism, coordinated enforcement and compliance monitoring mechanisms, mainstreaming of riverine biodiversity management into key sectors, a collaborative operational modality, and a financing plan for increased Federal and state budget allocations for riverine biodiversity management. Best Management Practice guidelines for management of riverine biodiversity will be developed with input from the pilot sites in Outcome 2, and their application promoted at appropriate sites. Secondly, capacity building actions will be undertaken for targeted stakeholders (including government agencies, private sector and CSOs, including the development of modules and materials, training courses, workshops, and public awareness programmes. Outcomes of the capacity building will include enhanced agency capacity on riverine biodiversity; strengthened biodiversity management capacity in other key national agencies; and introduction of enhanced practices for biodiversity conservation in river management by key stakeholders in selected states.

Outcome 2: Best management practices for critical riverine habitats are demonstrated, enhancing biodiversity conservation status and reducing threats.

133. The second project component aims to demonstrate best management practices for critical riverine habitats, enhancing their biodiversity conservation status

and reducing key threats. The first pilot demonstration is located in the upper Kinta River Basin in Perak State, a forested landscape in the central forest spine which provides water for the Sultan Azlan Shah Dam, a main water supply for Ipoh City. The pilot aims to improve the status of riverine biodiversity through strengthened watershed management, especially involving reduction of sediment loading from highway and agro-tourism developments, and strengthening communication between the dam operator, relevant government agencies and local communities to ensure sustainable land uses. The second pilot demonstration is in the upper Klang River Basin, on the eastern edge of Kuala Lumpur city. This pilot will seek to integrate riverine biodiversity management into the planning and implementation of the major Klang River of Life Programme, including adoption of key river stretches by local communities, the physical enhancement of riverine habitats, improvements in water quality and the introduction of measures to help control alien invasive aquatic species. The third pilot is on the Segama River in eastern Sabah, focusing on the management of riparian zones through the engagement of palm oil companies and smallholders.

134. The project will work with these local stakeholders to support protection and rehabilitation of additional riparian forests and associated biodiversity in Sabah, expanding and strengthening the existing riparian corridors, especially where these can add value to existing protected areas. Existing best practices for plantation and community-based protection and rehabilitation will be transferred from other areas (such as the lower Kinabatangan) and documented. Improvements in aquatic and riparian conditions will be monitored through the piloting of a holistic biophysical river monitoring methodology.

135. The project's **Stakeholder Involvement Plan** (see **Section IV Part IV**) provides details of stakeholder organizations and their roles in project implementation, including mechanisms for participation. This includes federal government agencies concerned with the governance of the riverine environment (NRE, DID, Fisheries Department, PERHILITAN, others); State Economic Planning Units and other responsible authorities for river management at state level (DID, DOE, Fisheries Dept, Wildlife Dept, etc); water management operators, ILC representatives and social and environmental NGOs involved in river conservation; institutions involved in riverine biodiversity research (eg freshwater fishery research institute, universities); technical experts; and private sector organizations and businesses involved in riparian land management (eg palm oil companies) and uses of river resources (tourism, aquaculture, sand-mining, etc).

Outcome 1: An operational institutional framework and capacity are established for strengthened management of riverine biodiversity
(Total cost: 862,000 US$; GEF 462,000 US$; Co-financing 400,000 US$)

136. The first component will develop the national institutional framework and capacity for a strengthened, more integrated approach for the management of riverine biodiversity. This will be accomplished through two sets of outputs – the first focusing on developing an enabling institutional framework and the second on capacity development for key agencies responsible for managing rivers and riverine biodiversity. The outputs necessary to achieve this outcome are described below.

Output 1.1: Inter-agency strategy, national action plan and financing plan to mainstream biodiversity into river management developed and adopted

137. A key result of the project is an inter-agency strategy for mainstreaming biodiversity into river management. This will be developed through a consultative process facilitated by a technical expert on biodiversity mainstreaming and strategic planning.

138. The process will start with a comprehensive review of the existing legal, policy and institutional set up for river management, analysing the current strengths and weaknesses of policies, agencies and practices in different sectors to conserve or address the threats to riverine biodiversity. The review will also analyse and assess the effectiveness of existing mechanisms or inter-agency cooperation for environmental management, including river basins, catchment areas and estuaries.

139. Taking into account the conclusions and recommendations of this review, a small task force will formed to draft an inter-agency strategy to mainstream riverine biodiversity considerations into the work of the respective agencies and other stakeholders (including private sector and local communities). The work of the task force will be facilitated by an expert in biodiversity mainstreaming and strategic planning, and the strategy will be developed through a participatory process, involving stakeholders at different levels as well as in different sectors. The strategy will identify required measures to improve the conservation of riverine biodiversity through multi-stakeholder mechanisms. These measures will include (i) an inter-agency coordination mechanism with clear jurisdictions of concerned agencies (including coordination between different divisions within the same agencies in some cases); (ii) modalities for coordinated enforcement and compliance monitoring mechanisms; (iii) priorities for mainstreaming riverine biodiversity management into the operations of related sector agencies, private sector and communities; (iv) a collaborative mechanism for riverine biodiversity assessment, monitoring, evaluation and information management; (v) a collaborative operational modality, and (vi) a biodiversity specialised unit within DID to facilitate all the above.

140. Key issues that should be addressed at national level (see **Annex 1: Additional Information on Project** for further information) include:

a. Strengthening representation of riverine biodiversity and its geographic variations within Malaysia in the national PA system as part of national commitments to CBD/PoWPA and the Ramsar Convention;
b. Strengthening systematic conservation of fish;
c. Strengthening systematic conservation of freshwater turtle species, many of which are globally threatened – including increased regulation and enforcement of trade;
d. Strengthening controls on the introduction of aquatic IAS, especially within the aquaculture and aquarium industries;

141. Implementation of the inter-agency strategy will be supported by the development of two related plans: (i) a national action plan for the conservation of riverine biodiversity; and (ii) a financing plan to secure increased Federal and state budget allocations as well as financing from other sources in support of riverine biodiversity management. The development of the national action plan will also follow a participatory process, led by the same task force responsible for development the inter-agency strategy. The financing plan should be strongly based on both the inter-agency strategy and national action plan (and could be incorporated into the latter), including the prioritization of budget items. Socialization of the inter-agency strategy and national action plan will take place under **Output 1.4** to build the constituency for their implementation.

Output 1.2: Best Management Practice guidelines developed and adopted

142. The project will support the development of Best Management Practice (BMP) Guidelines on the integration of biodiversity conservation into river management. The project will document best management practices on riverine biodiversity conservation in Malaysia and neighbouring countries through an initial literature review which will be written up as a series of case studies organized around relevant themes. The BMP guidelines will then be elaborated from the case studies and the practical experiences of a wide range of stakeholders through a series of workshops, dialogues and field visits in Peninsular Malaysia, Sabah and Sarawak. The final guidelines will be endorsed by NRE/DID and promoted for use by a range of stakeholders. The guidelines and case studies would also provide an important technical basis for the development of training materials in **Output 1.3** and education and awareness materials in **Output 1.4**.

143. Potential themes for inclusion in the BMP Guidelines are as follows:

i. River processes and form
ii. River ecology and biodiversity conservation
iii. Key drivers for maintaining riverine biodiversity – hydrological regime, water quality, diversity of aquatic habitats, integrity of riparian habitats
iv. Threats to the existence of riverine biodiversity – river regulation, erosion and siltation, industrial and domestic pollution, habitat loss, urbanization, over-exploitation of fish and other species, alien invasive species

b. Technical guidelines

i. Channel design (flood storage areas, multi-stage channels, maintaining riffles and pools, meander conservation, etc)
ii. Bank management (bank stabilization, islands for wildlife habitats, diversity of bank profiles)
iii. Management and restoration of riparian vegetation
iv. Management of forested watersheds
v. Community-based fishery management
vi. Community-based management of riparian zones
vii. River-based ecotourism and recreation
viii. River-based aquaculture
ix. Dredging and sandmining
x. Monitoring and evaluation of riverine biodiversity

Output 1.3: Institutional capacity of NRE, DID and other related Federal and state agencies and key non-governmental stakeholders enhanced for riverine biodiversity management

144. A baseline capacity assessment for riverine biodiversity management was conducted during project preparation using a customized national scorecard, involving the key national agencies responsible for river management - NRE (Biodiversity and Forest Management Division; Water Resources, Drainage and Hydrology Division) and Federal DID, as well as Kuala Lumpur City Hall, and GEC. The customized UNDP Capacity Development Scorecard baseline scores can be seen in the SRF and full results in **Annex 1: Additional Information on Project**. The project aims to elevate current capacity to the target scores indicated in the SRF through a process of in-depth capacity needs assessment, training, awareness-raising and linkage of agency priorities to the inter-agency strategy, national action plan and BMP guidelines. This would involve both the mentioned national agencies plus state agencies involved in riverine biodiversity management.

145. Taking into account the baseline assessment during project preparation, an in-depth capacity needs assessment of the identified agency units will be conducted by a capacity building expert with technical expertise in biodiversity conservation and river management during Year One of the project, with specific recommendations for human resource management, training needs and procedural changes. These

recommendations will be taken into account during the development of training modules and programmes for long term capacity development.

146. This output will support the development of a training programme on riverine biodiversity conservation that will provide the basis for continued capacity development for key agency staff after the project lifetime in order to sustain and further develop national capacity for implementation of biodiversity conservation in line with national policies, as well as CBD and Ramsar Convention obligations. This will aim to develop a cohort of trained key agency staff at both federal and state levels. The training programme will be developed with the aim of producing locally appropriate, practical materials that provide both a solid foundation for integrated river basin management taking into account biodiversity and ecosystem services, and a sound understanding of specific local conditions and techniques based on the BMP guidelines and case studies. It is proposed that the training programme will be hosted by a government facility[63] in the long term, with technical support from GEC and other experts as needed for the delivery of materials. The selection of the training provider should take into account its capacity and motivation to provide training services in the long term, with appropriate institutional arrangements in place with NRE and any other concerned agencies.

147. The project will support the following activities during the implementation period:

1. Development of the institutional basis and contractual arrangements for long term training provision hosted by a government facility.
2. Development of a training programme and modules. The materials will be developed by technical experts in the relevant subjects and compiled by an education / training specialist. They should be delivered in both hard copy form and as PowerPoint presentations. The draft materials will be peer-reviewed to check for their relevance and technical level. The detailed structure of the training modules will be developed during project implementation, but potential subjects that should be considered include:
    - Introduction to riverine ecology and biodiversity
    - Watershed management / catchment protection
    - Restoration and rehabilitation of riverine habitats
    - Conservation management of aquatic communities and species
    - Monitoring and evaluating riverine biodiversity
    - Community involvement in river management
    - Integrated river basin management
3. Training of trainers to conduct the training courses. At least 10 qualified training facilitators will be produced at national and regional levels.
4. Initial pilot delivery of training programme to train at least 20 key agency staff involved in project implementation and to test and adapt the materials and methods of training delivery.

[63] Potential facilities include the National Institute of Public Administration (INTAN) http://www.intanbk.intan.my/i-portal/ms.html and the Environment Institute of Malaysia (EIMAS) under NRE http://www.doe.gov.my/eimasv2/

Output 1.4: Awareness programmes delivered targeting policy makers and practitioners

148. In order to reach specific audiences, the project will develop and deliver an awareness programme (addressing knowledge, attitudes and practices through a variety of awareness and educational activities) that will increase understanding of the nature and values of riverine biodiversity and ecosystem services, the approach needed for a holistic and integrated approach for effective river management, and the responsibilities of different stakeholders in making this come about. Activities conducted under this output will target national level stakeholders such as policy-makers. Government agencies at state level, and stakeholders involved in the pilot demonstrations under Component 2 are covered by activities in Outputs 2.1 – 2.3. The following activities will be undertaken as part of this programme.

149. A communications and awareness raising strategy will be developed for the project during the project inception phase. The communications and awareness raising strategy will be updated each year, taking into account experience gained during project implementation. This will take account of the baseline assessment of awareness levels for key target groups (see below, in this output).

150. A targeted research study on the economic values of riverine biodiversity and ecosystem services in Malaysia to provide an updated source of information for raising the awareness of policy-makers on the socio-economic importance of managing riverine biodiversity effectively. While the direct value of riverine biodiversity per se may not be high, the associated riverine ecosystem services that support the presence of biodiversity will be highly significant. Therefore, this study should cover the full range of ecosystem services provided by rivers and their catchment areas, such as their role in the hydrological cycle (water supply, flood mitigation, water purification and more), carbon sequestration in forested catchments (eg building on baseline studies in Malua Forest Complex, Sabah), ecosystem based adaptation to climate change, as well as more direct productive services such as fisheries, and cultural and social values including leisure and tourism. Where information is not available from Malaysia, the study should draw on similar situations in other countries. The study should highlight the economic values of river ecosystems to both the national economy and local communities. The outcomes in the final report should be technically sound but presented in simple language that allows their easy incorporation into awareness materials. This study will be contracted out to an expert in the economic valuation of natural resources. To demonstrate further the value of riverine biodiversity to national economy, a study on riverine based tourism will be done to provide the Ministry of Tourism and the Economic Planning Unit with information on the direct benefits and future potential for preserving riverine ecosystems.

151. The project will support the development of awareness raising materials according to priorities defined in the communications and awareness raising strategy. Key subjects are expected to include the nature and values of riverine biodiversity and ecosystem services, the need for a holistic and integrated approach for effective river management, and the responsibilities of different stakeholders. Awareness materials should also support project intervention on specific technical issues, such as

watershed protection, rehabilitating biodiversity in urban river environments, management of invasive alien species, and management of riparian buffer zones. These materials will be in Bahasa Malaysia and/or English, and if possible and relevant, other local languages. These materials will draw on the above-mentioned economic valuation study, as well as the case studies and BMP guidelines covered under **Output 1.2**.

152. A programme of awareness raising activities will also be developed in line with the communications and awareness raising strategy, with specific activities adapted for different target groups, including national level policy-makers, relevant national agencies, other national stakeholders (CSOs, business sector) and key state government agencies including socialization of the inter-agency strategy and action plan. Awareness actions at the site/local level will be supported through the pilot demonstration outputs in Component 2.

153. As part of the project's monitoring and evaluation system, knowledge, attitudes and practices (KAP) assessment surveys will be conducted targeting specific groups involved in riverine management and use to determine the project's impact on awareness levels. These would include baseline surveys at the startup of the awareness raising activities for specific target groups, and repeat surveys following the same methodologies at project completion. This work will be contracted to a service provider, with requirements to liaise closely with the project's implementing partners in the design and implementation of activities. The methodological approach is outlined in **Annex 1: Additional Information on Project**.

Outcome 2: Best management practices for critical riverine habitats are demonstrated, enhancing biodiversity conservation status and reducing threats
(Total cost: 7,295,000 US$; GEF815,000 US$; Co-financing 6,480,000 US$)

154. The second component will pilot actual operationalization of integrated riverine area management, mainstreaming biodiversity conservation and habitat management in land use decision making and practices. The component will provide targeted support for selected pilot sites with significant riverine biodiversity in three river basins (see **Table 4** and **Annex 1: Additional Information on Project**). The pilot sites have been selected based on a range of criteria, including biodiversity significance, involvement of multiple stakeholders including civil society, government priorities and associated baseline projects, and different elements for generating experiences and lessons based on various local conditions and circumstances. The following outputs have been developed according to the needs and opportunities in the selected river basins as follows. The management arrangements for each pilot demonstration are described in **Section I Part III** (Management Arrangements).

Output 2.1: Biodiversity management strengthened and habitat enhanced through improved water reservoir catchment management in Upper Kinta River Basin (Perak)

155. The first pilot project aims to integrate biodiversity conservation into catchment management planning for the Sultan Azlan Shah Dam on the Kinta River in Perak. The dam is a major source of water supply for the state capital city of Ipoh and

therefore the maintenance of a secure supply of high quality water is a priority for the state government, as well as a Rank 1 Environmentally Sensitive Area[64]. The upper catchment of the Kinta River is heavily forested, forming part of the Peninsula's Central Forest Spine (which is the subject of another UNDP/GEF Project – see **Table 15**) and being of outstanding importance for biodiversity conservation. However, some developments at the top of the watershed (on the edge of Cameron Highlands) are a major cause for concern, resulting in severe slope erosion and siltation of one tributary and the main reservoir. In addition, local *orang asli* communities have traditional lands above the dam which are used mainly for orchards, with limited small-scale forest clearance.

156. Building on the results of a rapid assessment of the Upper Kinta catchment in 2013, the project will support a detailed assessment of the distribution and status of biodiversity in the Upper Kinta Catchment. The assessment will construct a GIS map indicating the topography, hydrological network, condition of catchment forest cover and current land uses (including roads and settlements), and locations of key threats. It will document human settlements and livelihoods, as well as the distribution and status of threats (eg land clearing, soil erosion, pollution, etc). The outputs will be a GIS map and database, and a technical report detailing the findings.

157. Taking into account the findings of the assessment report, a multi-disciplinary team will develop a multi-stakeholder management strategy and action plan for the catchment through a participatory process, facilitated by a technical expert in catchment management planning. The strategy and action plan will confirm the objectives of catchment management (e.g. water supply, biodiversity conservation, sustainable *orang asli* livelihoods) and identify the range of actions required to strengthen catchment management effectiveness, prioritized, with key result indicators and identified budget sources. It will also lay out the multi-stakeholder management arrangements for the catchment area, with provisions for review and revision.

158. The project will support the implementation of a range of priority actions through collaborative arrangements with key stakeholders. It is envisaged that government cofinancing will be applied for significant inputs (eg slope protection). Key issues and proposed project interventions are as follows.

159. Development of strengthened inter-agency coordination mechanisms to address major environmental impacts of highway development and highland agro-tourism development on reservoir catchment integrity and river water quality. The continued erosion impacts of trunk road 185 on steep slopes up to Cameron Highlands are significant, and it is proposed that the Public Works Department be engaged together with national agencies with expertise in slope protection to work with the project's technical committee in order to develop long term solutions that integrate environmental protection, water quality protection and infrastructure sustainability. Lessons learned should be documented and made available to national agencies responsible for planning and managing road developments impacting Environmentally Sensitive Areas. Similarly, the State Agriculture Department and private company

[64] National Physical Plan 2, pages 5-54 and 5-56

responsible for developing the agro-tourism project in the upper catchment should be engaged together with slope remediation experts in order to mitigate the severe erosion impacts resulting from this project. The One Stop Centre (OSC) in Ipoh City under the Town and Country Planning Department for planning advice and applications is also likely to be an important stakeholder for catchment protection.

160. In line with the above concerns, the project will support the demonstration of slope erosion control through community based forest rehabilitation, and facilitate the piloting of experimental soil bio-engineering options along the road in question.

161. While the indigenous *orang asli* communities have been using ancestral lands in the reservoir catchment for generations, concerns exist about the clearance of small forest areas for orchards affecting river water quality (although almost insignificant compared to the impacts of the road development and agro-tourism project at the top of the watershed). Most importantly, the project will aim to establish a mechanism for regular dialogue between the orang asli communities and the dam operator within the framework of the catchment management strategy and action plan, so that any concerns can be discussed. The project will support the development of sustainable livelihood options for *Orang asli* communities linked to forest protection such as ecotourism or forest rehabilitation in the reservoir catchment, and review land management practices in order to identify ways to mitigate impacts on water quality.

162. The lessons learned from this pilot project will be presented as a case study for reservoir catchment management, with the aim of making the approach available for replication for other reservoir catchments (Rank 1 ESAs) in the country.

163. It is envisaged that this project output will lead to the enhanced conservation of globally significant aquatic and terrestrial biodiversity through erosion control and improved protection of 17,000ha of biodiversity- rich catchment forests and in the upper Kinta Basin, indicated by improved river water quality and catchment forest status. This will also contribute directly towards the integrity of the forests and biodiversity of the Central Forest Spine.

Output 2.2: Riverine biodiversity and habitat management integrated into planning and implementation of urban river management programmes in the Klang River Basin (Selangor/Federal Territory)

164. The second pilot demonstration is located in the upper Klang River Basin, on the eastern edge of Kuala Lumpur city. The Klang River is impounded as the Klang Gates Reservoir just outside the city, as a major potable water supply. The catchment area above the reservoir is protected and consists of forested slopes leading up to the Main Range (part of the Central Forest Spine) that are included within the Selangor State Park. This upper catchment area is largely forested and supports high levels of biodiversity. This pilot project will focus on the Klang River and its tributaries as they enter the urban area, where some biodiversity values remain. It aims to integrate riverine biodiversity management into the planning and implementation of the major Klang River of Life (RoL) Programme, including adoption of key river stretches by local communities, the physical enhancement of riverine habitats and the introduction of measures to help control alien invasive aquatic species. Under the RoL Programme, DID as the lead agency for the river clean-up component will work with the project to incorporate biodiversity considerations into the future implementation of the programme.

165. The project will work at the following sites in the upper Klang River Basin, which are included in the RoL programme area: the Upper Klang River below Klang Gates Dam, Kemensah River, and parts of the Gombak River.

166. On the Upper Klang River, the project will focus on working with communities in localities where baseline activities led by DID Malaysia with GEC have established a presence and interest in river conservation. These include Taman Warisan, where an Open Classroom facility is being operated for hands-on environmental education and participatory monitoring activities; Riverview park, where local schools and neighbouring communities have been engaged and are in the process of developing a community environmental centre; and Taman Melawati, AU3 and AU2 housing areas downstream, where there are possibilities for developing riverside parks. The emphasis in the Taman Warisan area furthest upstream will be on strengthening the integrity of riparian habitats and securing their connection to the larger forest block of the Bukit Tabor Forest Reserve to enhance the river corridor. Possibilities exist for small-scale wetland habitat creation and community co-management of the river corridors.

167. On the Kemensah River, land uses in the upper reaches include traditional orang asli forest plots (*kebun*) used by Temuan from Hulu Kemensah village, significant small scale ecotourism development based on the river environment (chalets, day-shelters, bathing and fishing etc), as well as small-scale aquaculture ponds alongside much of the river channel. The project will undertake selective interventions in this area, engaging with the orang asli village to ensure sustainable use of the forest in the upper catchment area, and with the Village Development and Security Committee (Malay acronym JKKK) for Kemensah Village as an entry point to demonstrate sustainable land uses in the river valley. Further information on this approach is given in the Stakeholder Involvement Plan section.

168. Taking into account experiences from the different neighbourhoods, the project will support the development of a network of community-based river protection groups and facilitate the exchange of experiences and approaches between groups to promote learning, sharing, advocacy and systematic action.

169. On a wider level, the project will raise public awareness of the effects of alien invasive species (especially *Tilapia* sp.) on the indigenous fauna of the river system, and promote measures to prevent the introduction of such species to the upper reaches of the river system where native aquatic biodiversity persists as well as through working with the Fishery Department (responsible for aquaculture and capture fisheries) and promoting controls on the sale and release of alien invasive fish species (in view of the large local aquarium fish industry).

170. Importantly, the pilot project will seek to introduce community participation and biodiversity mainstreaming considerations into the RoL programme through empowerment, training and awareness programmes for key government and community stakeholders on issues such as pollution control, habitat rehabilitation, participatory monitoring, re-introduction of native species, recreational fishery development, etc.

171. The expected outcomes will include riverine biodiversity conservation being incorporated into the Klang River of Life Programme with some 20km of natural river stretches better protected and 4 km of river adopted by local stakeholders with enhancement of riverine and riparian habitats.

Output 2.3: Riparian habitat protected and enhanced in partnership with the private sector and local communities in the Segama River Basin (Sabah)

172. The focus of the pilot activity in Sabah will be to mainstream biodiversity into implementation of the strategies and action plans to enhance water quality in selected rivers in Sabah[65], which was endorsed by the State Government Cabinet in late 2012, together with the guidelines for minimizing impacts of oil palm plantations and palm oil mills on quality of rivers in Sabah[66], which set out recommended Best Management Practices.

173. The project will focus primarily on those elements related to the establishment, management and rehabilitation of riparian buffer zones along rivers in landscapes dominated by oil palm plantations[67], following the Sabah Environmental Protection Department guidelines the guideline for managing biodiversity in the landscape

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[65] Environmental Protection Department, Ministry of Tourism, Culture and Environment, Sabah and Envsolve August 2011. The strategies and action plans are set out in the report: Impact study of palm oil mills, oil palm plantations and other pollutants on the quality of selected rivers in Sabah (3 vols).

[66] Environmental Protection Department, Ministry of Tourism, Culture and Environment, Sabah. August 2011.

[67] Strategy Goal 1 – reduction of impacts from oil palm plantations, Strategy 1.2 – promote and implement sustainable and best agricultural practices, Thrust 1.2.4 – establish, manage and enhance HCV areas including riverine reserves; Strategy Goal 5 – Enhance IRBM and catchment protection, Strategy 5.2 Enhance the protection rehabilitation and sustainable use of remaining forest and wetlands, Thrust 5.2.4 Establish and rehabilitate wildlife corridors and river reserves to link protected areas;

published by the NRE in 2009[68], as well as the draft RSPO manual on riparian buffer zone management[69]. In doing so, the project will work with state and local stakeholders to manage and expand riparian corridors along the Segama River. Existing best practices for plantation and community-based protection and rehabilitation of riparian zones along the Kinabatangan and Segama rivers will be documented and promoted. These include some existing good practices of riverine habitat management by the private sector (e.g. SabahMas under PBB Oils/Wilmar Group) and communities in some parts of these river basins such as replanting of the riparian buffer zone in plantations with indigenous forest species; development of community-based tree nurseries and forest rehabilitation projects. The project will support replication and up-scaling of the good practices over larger areas of the riverine landscapes. The expected outcomes will include protection and enhancement of a targeted 50km of riparian zone along the middle - lower reaches of the Segama River through public-private-community partnerships. This will extend the habitat available to proboscis monkeys *Nasalis larvatus* EN, silvered langurs *Trachypithecus cristatus* NT, and other globally significant riparian species (Borean elephant, Bornean orang-utan and Sunda clouded leopard all occur in Tabin WS).

174. Secondly, the project will contribute towards the strategy and action plan goals regarding riverine settlements and stakeholder engagement for river basin management by raising awareness and engaging local stakeholders (especially village smallholders), with emphasis on improving riparian habitat protection[70] and piloting auxiliary river rangers for potential upscaling by DID.

175. Thirdly, technical assistance will be provided to DID and SWD in line with the goal to enhance IRBM and catchment protection[71] in order to implement biophysical river monitoring procedures as a means of tracking progress towards riverine biodiversity management and riparian habitat rehabilitation objectives.

176. The demonstration activities will be undertaken in collaboration with Sabah DID and Sabah Environmental Protection Department (together responsible for preventing negative impacts of oil palm plantations on rivers in the state), as well as other relevant state government agencies including the Wildlife and Forestry Departments, local authorities and riparian communities (see the **Stakeholder Involvement Plan** for details). This pilot project will also collaborate with the Roundtable on Sustainable Palm Oil (RSPO) and NGO coalitions working to conserve the Kinabatangan River

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[68] NRE 2009. Guidelines for managing biodiversity in the landscape. https://www.hcvnetwork.org/resources/folder.2006-09-29.6584228415/Guideline_Man_BioD_landscape_090519.pdf

[69] Barclay H, Gray CL, Luke SH, Nainar A, Snaddon JL and Turner EC. RSPO Manual on Best Management Practices (BMPs) for Management and Rehabilitation of Riparian Reserves. Draft report.

[70] Strategy Goal 3 – enhance environmental management of riverine settlements to minimize pollution, Strategy 3.2 Raise awareness amongst riverine settlers and engagement of stakeholders, Thrust 3.2.1 Awareness programme related to river protection and management, and Thrust 3.2.2 Engagement of stakeholders; Strategy Goal 5 – Enhance IRBM and catchment protection, Strategy 5.1 Strengthening institutional framework to implement IRBM and catchment protection, Thrust 5.1.2 Establish stakeholder coalitions for each river basin

[71] Strategy Goal 5 – Enhance IRBM and catchment protection, Strategy 5.1 Strengthening institutional framework to implement IRBM and catchment protection, Thrust 5.1.2 Establish stakeholder coalitions for each river basin; Strategy 5.2 Enhance the protection rehabilitation and sustainable use of remaining forest and wetlands, Thrust 5.2.4 Establish and rehabilitate wildlife corridors and river reserves to link protected areas;

Corridor (see baseline analysis section for further information). The proposed pilot interventions on the Segama River are described below.

1. Riparian Buffer Zone Development linking Conservation Areas

177. The main focus of this output is to manage and enhance riparian forest and floodplain wetland habitats in the lower reaches of the Segama River in order to strengthen connections between the Lower Segama Wildlife Conservation Area (North bank of the Segama River) with Tabin Wildlife Sanctuary (on the South bank) and to strengthen management of riparian buffer zones. The biodiversity in this area remains outstanding, and there is an important need to support the integrity of the riparian zone and its connections with the complex of protected areas through improved management of adjacent production landscapes through the engagement of oil palm plantations, and local communities (see below). The project will therefore collaborate closely with Sabah Wildlife Department in identifying key areas for rehabilitation activities, and in working with oil palm companies with land holdings in this area to implement these activities. This planning work will include focus group meetings with DID, SWD, SFD, DO, Plantation Companies, RSPO, CSOs, the analysis of remote sensing imagery and GIS mapping of potential areas for restoration, field visits, the development of detailed rehabilitation implementation plans, and subsequent technical assistance for the implementation of rehabilitation works.

178. The project intervention will focus on extending the rehabilitation of the riparian zone in lands owned by both oil palm plantation companies and smallholders, with special attention to key sites that are likely to add significant value to biodiversity conservation efforts (e.g. small tributaries of the Segama that connect the river to protected areas, floodplain wetland habitats that are unproductive for plantations and offer potential as fish breeding and nursery areas). Accordingly, the project will draw on existing good practices of riparian zone management in oil palm estates such as the SabahMas Plantation adjacent to Tabin WS (which has restored riparian buffer zone along 47km of the Segama River)[72], and other estates involved in the Corridor of Life initiative[73] along the lower Kinabatangan (e.g. Kinabalu Sawit – see baseline analysis section). These will be consolidated through a BMP workshop (linked to Output 1.2) and e-Forum/knowledge hub for the Kinabatangan and Segama basins. The project will aim to share this experience with other strategically located plantations in the middle-lower reaches of the Segama, such as Hap Seng near Tomanggong (downstream from SabahMas on the right bank of the Segama) and Tamaco (on the

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[72] *Biodiversity in Plantation Landscapes*- part of the Biodiversity for Busy Managers (B4BM) initiative by the Malaysian Palm Oil Council and Wild Asia. See:

https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=9&ved=0CFMQFjAI&url=http%3A%2F%2Fgreenpalm.org%2Fcontent%2F1728%2FLive%2Fdownload%2FB4BM-Training-Manual-Final_28Aug2012-web-pg74-to-end.pdf&ei=Jj2NVNH7FNSOuATn94CYBA&usg=AFQjCNEOyXAezZmGiDybelCjyb6U9vlYyg&sig2=h49tWhU9W3RIZjUFt1DZqw&bvm=bv.81828268,d.c2E&cad=rja

[73] The "Corridor of Life" is a joint initiative launched in 2002 by the Chief Minister of Sabah with the goal of establishing a forest corridor from the upland forests to the coastal mangrove swamps, where people, wildlife, nature-based tourism and local forest industries can thrive and support each other. WWF-Malaysia has been working with the Sabah Wildlife Department, local communities, several oil palm companies and other stakeholders to re-establish continuous forest along the banks of the

river.

left bank), with the aim of supporting them in adopting riparian buffer zone rehabilitation for their own land-holdings.

179. In collaboration with RSPO and appropriate CSOs that have been leading on providing technical guidance to oil palm companies on environmental issues, the project will develop a training programme that incorporates materials based on the draft RSPO manual on BMPs for the management and rehabilitation of riparian reserves[74], as well as other relevant guidelines and BMPs[75]. This would be offered to the concerned oil palm companies in order to assist them in achieving RSPO BMPs, together with visits to BMP demonstration sites and technical assistance on planning the initial riparian zone steps. The project will support training of trainers to facilitate long term delivery, piloting and reviewing the training programme, running an initial training course and study visits to BMP sites.

2. Riverine Community and Smallholder Engagement and Awareness Raising

180. In the middle reaches of the Segama River basin, there is a cluster of riparian villages some 15km NE of the district centre, Lahad Datu, namely Kampung Belacon, Buang Sayangand Kg. Lituk Pulau. The landscape here is undulating with a limited river corridor, however it does include ox-bow lakes, cut-off channels, small islands and other floodplain features. The main land uses are smallholder plantations, minor subsistence crops (maize, fruit trees) and small-scale businesses such as sand-mining. In this area, the main issues are smallholder encroachment into the riparian zone, degradation of associated habitats such as oxbow lakes, and water pollution from sand-mining. See **Annex 1: Additional Information on Project** for further information on socio-economic background.

181. During project preparation, site visits and consultations were held with village heads and other key stakeholders, agreeing on a collective approach to community engagement (see Stakeholder Involvement Plan and **Annex 1: Additional Information on Project**). The focus of the project intervention here will be on the piloting of a government-community engagement mechanism, including recruitment, training and initial support for auxiliary River Rangers by DID Sabah (similar to existing honorary wildlife and forest rangers), who will monitor riverine and riparian land uses (eg sand-mining), pollution, solid waste disposal and flooding events at local level in order to support more effective responses from DID and other agencies, for evaluation and potential upscaling by DID – further piloting at the other demonstration sites will be considered. The project will raise awareness of the values of riverine biodiversity and the importance of maintaining an adequate riparian buffer zone, and support the demonstration of riparian zone habitat management at the local level. The East Malaysian Planters Association will be involved in approaching oil palm smallholders, with potential for upscaling the results of this demonstration to other smallholders.

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[74] Barclay H, Gray CL, Luke SH, Nainar A, Snaddon JL and Turner EC. RSPO Manual on Best Management Practices (BMPs) for Management and Rehabilitation of Riparian Reserves. Draft report.

[75] Environmental Protection Department, Ministry of Tourism, Culture and Environment, Sabah. August 2011. Guidelines for minimizing impacts of oil palm plantations and palm oil mills on quality of rivers in Sabah.

Biodiversity in Plantation Landscapes- part of the Biodiversity for Busy Managers (B4BM) initiative by the Malaysian Palm Oil Council and Wild Asia. See:

182. In the lower reaches of the Segama River, there is a cluster of three villages located between the new Lower Segama Wildlife Conservation Area connecting Kulamba (North bank) with Tabin Wildlife Sanctuary (South bank), namely Kampung Parit, Dagat and Tidung. These villages have been exposed to wildlife conservation and ecotourism development through earlier completed work under the JICA supported Bornean Biodiversity & Ecosystems Conservation Programme and DANCED supported project on the management of Tabin WS. The project will work with these villages to raise awareness of biodiversity conservation and to engage their support in wildlife monitoring and protection work with SWD. This will involve identifying suitable individuals, providing the necessary training, and initial financial support for their roles as Honorary Wildlife Rangers. There is potential to develop ecotourism, handicraft production and food processing (especially by women), although security concerns and difficulty of access are constraints.

3. Capacity building for piloting biodiversity monitoring within a wider river basin management framework

183. Technical assistance will be provided to DID in order to build capacity for implementing biophysical river monitoring procedures as a means of tracking progress towards riverine biodiversity management and riparian habitat rehabilitation objectives. This will support training and the piloting of a river management framework and protocols for monitoring the condition of riparian habitats and aquatic biodiversity.

184. Some senior staff of DID Sabah have received previous basic training in the River Styles® river management framework[76] and are positive towards testing this progressive approach to assist DID in achieving its mandate for IRBM in Sabah. River Styles is a geomorphic approach for examining river character, behaviour, condition and – most relevant in this project – the recovery potential for riverine habitats. This provides a physical template for river management and rehabilitation. Initial training will be provided in Sabah to DID and EPD staff (and other appropriate agency staff) by a qualified international expert in the River Styles approach, tailored to the local situation (i.e. limited resources and a focus on riparian zone restoration). This will be followed immediately by the design and implementation of pilot demonstrations at selected sites on the Segama River, with limited international technical assistance inputs. The project will specifically aim to develop and integrate aquatic biodiversity and riparian vegetation monitoring as part of this framework, and training and piloting for biodiversity monitoring will be integrated with the River Styles capacity building. The results will be incorporated as part of the project M&E system for these pilot sites. An evaluation of the usefulness of the approach will be conducted towards the end of the project, and recommendations made for its extended application as appropriate.

[76] http://www.riverstyles.com/index.php

2.7 Financing Modality (co-financing)

The project utilises GEF funding of USD1,404,000. However, GEF funds do not cover all costs. The Malaysian government will provide cash co-financing of 5,850,000 USD, and UNDP will also providing cash co-financing of USD260,000 (USD200,000 through UNDP-Government of Malaysia Cost-Sharing Fund and USD60,000 through UNDP TRAC funds). The local government (Selangor, Perak and Sabah state governments) and CSO will provide in-kind support of USD750,000 and USD420,000 respectively, whereas CSO will provide cash co-financing of USD300,000.

2.7.1 Project Indicators

185. The project indicators contained in Section II / Part II (Strategic Results Framework) include only impact (or 'objective') indicators and outcome (or 'performance') indicators. They are all 'SMART'[77].

186. The project may however need to develop a certain number of process-oriented indicators to compose the 'M&E framework' at the demonstration project level. For this reason, M&E requirements will be included for each of the demonstration projects as an integral part of their implementation arrangements. These indicators are expected to feed into the project's overall M&E framework. It is envisaged that the project's overall M&E framework will build on UNDP's existing M&E Framework for biodiversity programming.

187. The organisation of the logframe is based on the general assumption that: *if* (Outcome 1) an operational institutional framework and capacity are established for strengthened management of riverine biodiversity in production landscapes; and *if* (Outcome 2) best management practices for critical riverine habitats are demonstrated, enhancing biodiversity conservation status and reducing threats; *then* (Project Objective) biodiversity conservation will be mainstreamed into riverine landscapes through improved river planning and management practices in Malaysia. This logic is based on the barrier and root-cause analysis carried out during project preparation (refer to Section I, Part I, chapter '*Barrier Analysis*
188.
189. *Long-term solution and barriers to* achieving the solution').

190. In turn, the choice of indicators was based on two key criteria: (i) their pertinence to the above assumption; and (ii) the feasibility of obtaining / producing and updating the data necessary to monitor and evaluate the project through those indicators. The following are therefore the project's key indicators:

[77] Specific, Measurable, Achievable, Relevant and Time-bound.

Table 6. Elaboration on Project Indicators

INDICATOR	EXPLANATORY NOTE
At objective level: biodiversity conservation will be mainstreamed into riverine landscapes through improved river planning and management practices in Malaysia	
O.1 Riverine biodiversity conservation is mainstreamed into river management policies, regulations and plans involving related sectors, as indicated in the GEF Biodiversity 2 Tracking Tool	▪ See the GEF Biodiversity Tracking Tool in The baseline has been established at project preparation stage (December 2014), and will be repeated at midterm and project completion.
At outcome 1 level: an operational institutional framework and capacity are established for strengthened management of riverine biodiversity in production landscapes	
1.1 Development of a formalized mechanism for inter-agency collaboration to mainstream biodiversity into river management	▪ Inter-agency Strategy, Action Plan and Financing Plan endorsed by NRE.
1.2 Availability of Best Management Practice (BMP) guidelines that systematically address the management of riverine biodiversity in the Malaysian context	▪ BMP Guidelines for riverine biodiversity management endorsed by NRE. ▪ Riverine biodiversity valuation study report ▪ Riverine biodiversity-based tourism study report
1.3 Federal government budget allocated for implementation of riverine biodiversity management strategy and action plan including establishment of a Biodiversity/ecosystem unit within DID	▪ NRE and DID annual budget / financing reports. NRE should officially announce the financing allocated for the implementation of the strategy and action plan. ▪ A Biodiversity/Ecosystem Unit is established within DID, complete with its roles and responsibilities, organization chart, staff requirement, and annual budget. This will facilitate the increased mandate of DID for riverine biodiversity conservation.
1.4 Improved capacities of key national agencies responsible riverine biodiversity conservation as shown by an increase in the Riverine Biodiversity Capacity Development Scorecard	▪ A draft Riverine Biodiversity Capacity Development Scorecard was developed and used to provide indicative baseline scores based on inputs from senior experts from NRE, DID, Fisheries Department, Kuala Lumpur City Hall and GEC (CSO) (see **Annex 1: Additional Information on Project**). ▪ Scores for each question were summed and divided by the total possible score (some questions may not be applicable) in order to reach the total percentage score. ▪ The same scorecard should be completed including explanatory notes at project midterm and completion in order to assess progress.
1.5 Percentage of key agency staff and other national and state level stakeholders targeted by the campaign whose knowledge, attitudes and practices change in relation to riverine biodiversity and ecosystem	▪ The end of project target is that 60% of stakeholders targeted by the campaign exhibit positive changes in knowledge, attitudes and practices in relation to riverine biodiversity and ecosystem services, the approach needed for a holistic and integrated approach for effective river management, and the responsibilities of different stakeholders.

INDICATOR	EXPLANATORY NOTE
services, the approach needed for a holistic and integrated approach for effective river management, and the responsibilities of different stakeholders. See **Annex 1: Additional Information on Project** for methodology.	▪ See **Annex 1: Additional Information on Project** for the proposed methodology to be used to establish baselines for each awareness activity, and to assess progress by the end of the project.
At outcome 2 level: best management practices for critical riverine habitats are demonstrated, enhancing biodiversity conservation status and reducing threats	
2.1 Pilot demonstration 1 in upper Kinta Basin improves status of riverine biodiversity through strengthened watershed management, indicated by: (i)percentage of cleared / eroding slopes in the upper catchment area that have been effectively treated. (ii)reduced rates and eventual phasing out of land clearing for orchards in traditional orang asli lands in the dam catchment (iii) mainstreamed approach applied in implementing catchment management plan (CMP), with inter-agency task forces tackling specific problems and all stakeholders engaged in CMP implementation. (iv)improved local status of selected globally significant species such as Copper Mahseer *Neolissochilus hexagonolepis*	(i) GIS mapping of the area (in ha) and status of cleared/eroding slopes in catchment. This should make use of existing GIS land cover maps prepared during baseline work by GEC for Perak State Government, and updated based on satellite image analysis and ground truthing conducted at annual intervals. (i) The biodiversity and land use assessment conducted at the start of this project output will include the development of GIS maps of forest cover and land uses in the catchment which will provide a baseline. Perak Forestry Department are responsible for monitoring and managing the catchment forests and will be approached for supporting information on changes in forest cover. (ii) The project's catchment management planning initiative will work towards a complete cessation of all other land clearing in the catchment (eg for agriculture projects and other developments) in order to protect water supply. Official documents issued by the Perak State Government in support of catchment protection and reports on forest status will provide evidence of such commitments. (iii) Participatory monitoring conducted with assistance of Orang Asli in order to determine distribution of Copper Mahseer and other suitable indicator species in all tributaries of the river system above the Sultan Azlan Shah dam, with special focus on those tributaries most affected by sediment loading from land clearance and slope erosion. Standardized monitoring protocol to be determined and applied to provide baseline in Year 1.
2.2 Riverine biodiversity management integrated into planning and implementation of the Klang River of Life Programme, indicated by: (i)adoption of river stretches by local stakeholders	(i) Stakeholder agreements for adoption of river stretches (DID / Project reports) within the ROL project area. An indicative 4km of river (estimated 40 ha) is being targeted for such adoption based on baseline activities by DID and GEC. (ii) Project reports will indicate the extent to which engineering practices have been influenced within

INDICATOR	EXPLANATORY NOTE	
through partnership agreements with responsible authorities, (ii)physical enhancement of riverine and riparian habitats in the River of Life (ROL) are of the upper Klang River benefiting riverine biodiversity such as globally threatened Kelah *Tor tambroides* (iii)awareness levels concerning aquatic alien invasive species (AIS)		the ROL area targeting some 20km (100ha) of river, and the area and quality of physical enhancement of riverine and riparian habitats achieved in at least 4 locations (c.10 ha) in the upper Klang River system benefiting riverine biodiversity. The specific enhancement proposals will be defined through community engagement efforts in Y1 and Y2 and implemented in Y3 and Y4 of the project. The presence of *Tor tambroides* and/or other appropriate species, will be monitored in specific locations using participatory monitoring protocols to be determined in Year 1.
	(iii)	The end of project target is that 60% awareness of AIS risks among aquarium and aquaculture industries targeted by the campaign is aware of the risks posed by aquatic alien invasive species (AIS). See **Annex 1: Additional Information on Project** for the proposed methodology to be used to establish baselines for each awareness activity, and to assess progress by the end of the project (as for indicator 1.5).
2.3: Riparian habitat protected and enhanced in partnership with the private sector and local communities in the Segama river basin, indicated by: (i) Length of biodiversity rich riparian zone protected through public-private-community partnerships along the Segama River in Sabah (ii) Engagement of local communities in river monitoring and protection (iii)Riverine biodiversity monitoring capacity developed and protocols established for implementation (iv)Increase in local extent of riparian distribution of key species such as *Pongo pygmaeus*, *Nasalis larvatus* and *Presbytis cristata*	(i)	An additional 50km (c.500 ha) of riparian habitat over baseline will be protected and enhanced through partnership agreements in strategically important areas for biodiversity conservation. The exact areas for rehabilitation will be determined through detailed assessment and planning work in Y1-Y2, in combination with focus group discussions involving the key stakeholders. The MoV will be Private-public partnership agreements for protection and rehabilitation of riparian buffer zones (DID, project reports)
	(ii)	The project aims to recruit, train and provide initial support for 10 honorary river rangers and 10 honorary wildlife rangers from local communities, through direct support from DID and SWD, for evaluation and potential upscaling by DID. This will be reported in project reports and official DID and SWD documents.
	(iii)	The project will train at least 20 DID, EPD, SWD and other relevant agency staff in riverine biodiversity monitoring methods. It will also develop protocols for the application of biodiversity monitoring to the Segama River for endorsement by DID (and other relevant agencies). This will be reported in project reports and official DID documents.
	(iv)	Documented expansion of riparian distribution of key species where habitat restoration has been conducted. This will follow standard protocols being applied by existing baseline activities supported by local operating CSOs with expertise such as HUTAN.

191. The project strategy, described in detail within this project document, makes the following key assumptions in proposing the GEF intervention:

- Baseline conditions in the selected areas can be extrapolated with high confidence level to other biodiversity rich areas and lessons learnt can be successfully disseminated.

- Increased awareness and capacity will lead to a change in behaviour with respect to the conservation of riverine biodiversity in Malaysia.

- Conservation of riverine biodiversity will gradually become a national priority for Malaysia as knowledge and information is made available.

192. During the PPG phase, project risks were updated based on those presented at the PIF stage. They were further elaborated and classified according to the UNDP/GEF Risk Standard Categories, and assessed according to criteria of 'impact' and 'likelihood' (see **Box 1** and **Table 6** below). These risks and the mitigation measures will be continuously monitored and updated throughout the project, and will be logged in ATLAS and reported in the PIRs. The UNDP Social and Environmental Screening Procedure (see **Annex 1: Additional Information on Project**) has been applied during project preparation and did not identify any significant (high) environmental or social risks associated with the proposed project. The main risk is of limitations on riverine resource use affecting local and indigenous communities as a result of more systematic regulations and enforcement. However, if local resource uses are adequately considered and monitored, and allowances made for resource-dependent indigenous communities, such risks should be effectively managed without imposing undue hardships on riverine communities. In general, the project will contribute positively towards the conservation of biodiversity and maintenance of ecological stability, as well as towards an improved policy and planning framework for the conservation of riverine biodiversity through which indigenous and local communities have increased potential to contribute towards river management and to benefit from the sustainable use of riverine resources.

193. During the PPG phase, projects risks were updated from that presented at the PIF stage. They were further elaborated and classified according to UNDP/GEF Risk Standard Categories[78], and assessed according to criteria of 'impact' and 'likelihood' (**Box** 1):

[78] Includes the following eight categories: environmental; financial; operational; organizational; political; regulatory; strategic; and other.

Box 1. Risk Assessment Guiding Matrix						
	Impact					
Likelihood		CRITICAL	HIGH	MEDIUM	LOW	NEGLIGIBLE
	CERTAIN / IMMINENT	Critical	Critical	High	Medium	Low
	VERY LIKELY	Critical	High	High	Medium	Low
	LIKELY	High	High	Medium	Low	Negligible
	MODERATELY LIKELY	Medium	Medium	Low	Low	Negligible
	UNLIKELY	Low	Low	Negligible	Negligible	Considered to pose no determinable risk

For further explanation on Risks, do refer to Annex 3: Risk Analysis

2.8 Cost-effectiveness

194. The lack of a national framework and adequate capacity for riverine biodiversity conservation are significant barriers impeding the development of a sustainable management regime to maintain the biological resources, environmental quality and ecosystem services provided by Malaysia's river systems. These barriers negatively affect conservation efforts, as the full value of Malaysia's bio-diverse river systems together with the associated catchment forests, wetlands and coastal ecosystems cannot be realized and sectoral land uses such as plantation development take priority over the maintenance of biodiversity and ecosystem services. The project's intervention aims to remove these barriers, allowing environmentally sustainable industries such as bio-prospecting, tourism and recreation, water supply, and local livelihoods to develop, providing benefits to the state, commercial sector and ILCs, while maintaining environmental quality and ecological security.

195. The project takes the approach of addressing barriers to the achievement of effective biodiversity conservation for Malaysia's riverine environment, characterized as a sub-optimal policy and institutional framework and capacity for riverine biodiversity management, and the absence of successfully demonstrated experiences in integrated river management. This approach is cost-effective in that it will have broad applicability at state and national levels, with impacts throughout the 150 major river systems across Malaysia in the long term. As such, the project contributes directly towards national policy, regulatory, fiscal, data management and communications goals in support of biodiversity conservation and an effectively managed river system.

196. The project strategy also focuses on demonstrating best practices for riverine biodiversity conservation in specific landscapes and documenting these, as well as others from experience elsewhere in Malaysia (on the Kinabatangan River for example) for replication and upscaling in order to extend their impact and raise overall standards through capacity building and systematization, which is highly cost-effective and low risk. The project's second component aims to build support for biodiversity conservation in the target landscapes through building partnerships across multiple sectors (involving government, CSOs, private sector and other stakeholders) for more effective implementation of river biodiversity conservation, building on some useful baseline experience.

197. At a technical level, the streamlining of progressive approaches into key agencies for river management for application across the country for watershed management, riparian buffer zone rehabilitation, pollution control, community engagement, biophysical monitoring and information management will be a cost-effective investment in terms of project impact.

198. The project's development of an inter-agency strategy for riverine biodiversity conservation, with an associated action plan and financing plan will secure the government resources needed to initiate the implementation of the strategy, including associated ongoing capacity development. In addition, the development of public-

private partnerships will support biodiversity-friendly land uses in riparian zones and catchment areas and reduce key threats to wildlife, enabling the application of financing from the private sector and CSO operational sources to complement government support. Collectively, these approaches will secure and extend financing for riverine biodiversity conservation beyond existing levels.

199. The total GEF investment of US$1,404,000 for this project will leverage a minimum of US$7.58 million in cofinancing, a highly cost-effective ratio of 5.4 with additional associated financing inputs anticipated during project implementation. The overall GEF investment in strengthening biodiversity conservation for an estimated 3.9 million ha of river and associated wetland habitats nationally in the long term will average around US$ 0.36 per hectare per year, a small fraction of the estimated value of the ecosystem services provided.

200. Finally, the recognition associated with involvement in an international project and receipt of GEF resources channeled through a UN implementing agency is a source of pride for national, state and local project partners, which can provide a much strengthened position in addressing critical threats to key biodiversity areas such as catchment forest conversion, mining, channelization of rivers, and hydro-electric schemes. The increased awareness, capacity and improved communications between different government sectors that the project will also enable will facilitate the political commitment to take difficult decisions on issues such as expanding the representation of river habitats in the protected area system, strengthening of regulations and enforcement to control riparian development, and the adoption of more environmentally friendly practices in related sectors. These all represent significant cost-effective project impacts.

2.9 Sustainability, Replicability, and Impacts

161. The Social and Environmental Screening Procedure (SESP) was followed during project preparation, as required by UNDP. Accordingly, the environmental and social sustainability of project activities will be in compliance with the Social and Environmental Screening Procedure for the project (please see **Annex 1: Additional Information on Project** for the full SESP summary). The SESP identified no significant issues for this project that would result in negative environmental and social impacts, only the need for safeguards in the development and implementation of a national inter-agency strategy for riverine biodiversity conservation in order to ensure that indigenous and local communities are not adversely impacted by stronger controls on riverine resources usage. Overall, the project is expected to result in major long term positive impacts for biodiversity conservation in Malaysia and for the improved recognition and protection of ILCs' traditional knowledge and biological resources.

162. The project's financial sustainability is likely to be strong on two counts. First, the establishment of a financial plan to support implementation of the inter-sectoral strategy on riverine biodiversity conservation. And secondly, the project is well aligned with baseline government policy and planning initiatives that will allow continued government budget support to sustain the project outcomes in the demonstration areas.

164. By installing a national framework for riverine biodiversity conservation, including institutional mechanisms, information management and capacity building for the relevant

agencies and related stakeholders, the project will demonstrate institutional sustainability under the leadership of NRE. Institutional sustainability has also been supported by the consultations with stakeholders at all levels during project preparation, and the inclusive and consultative approach supported by the project at the demonstration sites including awareness raising measures. There is a proposed high engagement of local communities and the private sector (e.g. oil palm and tourism industries) at all three of the project demonstration sites. Institutional and financial sustainability will be achieved by integrating the project with national and state level initiatives and frameworks including the River of Life Initiative, Living River/One State, One River Programme, Sabah Strategy and Action Plan for enhancing water quality in selected rivers in Sabah, and the Master plan for the Lower Kinabatangan. Close involvement of a broad range of government, private sector and civil society stakeholders will also contribute to sustainability.

165. The outcomes of the project will be scaled up through the dissemination of project results, lessons learned and experiences including demonstration of best practices in riverine biodiversity management. This will be achieved through making project information available online in a timely manner through websites. The demonstrated participatory approaches towards river conservation at the demonstration sites are intended to enhance the uptake of community based conservation mechanisms for other river basins and sites across Malaysia. Overall, the project will have high potential for scaling up as it will focus on establishment of multi-stakeholder partnerships and practical demonstration of new approaches to riverine protection, management and rehabilitation.

3 PROJECT RESULTS FRAMEWORK

This project will contribute to achieving the following Country Programme Outcome as defined in CPAP: Priority 2b: Value natural capital, reduce environmental impacts and improve access to quality ecosystem services for low income households
Country Programme Outcome Indicators: 4. Natural resources management enhanced with institutional capacity strengthened and communities and low-income households benefitting
Primary applicable Key Environment and Sustainable Development Key Result Area: 1. Mainstreaming environment and energy OR 2. Catalysing environmental finance OR 3. Promote climate change adaptation OR 4. Expanding access to environmental and energy services for the poor.
Applicable GEF Strategic Objective and Program: BD4: Mainstream Biodiversity Conservation and Sustainable Use into Production Landscapes/ Seascapes and Sectors, Program 9: Managing the Human- Biodiversity Interface
Applicable GEF Expected Outcomes: Outcome 9.2 Sector policies and regulatory frameworks incorporate biodiversity considerations.
Applicable GEF Outcome Indicators: Indicator 9.2 The degree to which sector policies and regulatory frameworks incorporate biodiversity considerations and implement the regulations.

PART I: Strategic Results Framework, SRF (formerly GEF Logical Framework) Analysis

Strategy	Indicator	Baseline	Targets	Source of Verification	Critical assumptions
Objective: To mainstream biodiversity conservation into riverine landscapes through improved river planning and management practices in Malaysia	Riverine biodiversity conservation is mainstreamed into river management policies, regulations and plans involving related sectors, as indicated in the GEF Biodiversity 2 Tracking Tool	See the GEF BD Tracking Tool Existing national and state policies, regulations and plans do not adequately cover riverine biodiversity conservation, with responsibilities fragmented between agencies and low priority given to the subject.	See the GEF BD Tracking Tool Integrated approach to riverine biodiversity conservation reflected in inter-agency strategy and action plan, and related policies and plans for river management	GEF BD2 Tracking Tool completed at project preparation stage, midterm and project completion.	Risks: Sectoral conflicts due to lack of coordination and collaboration impact project progress Assumption: Malaysia's federal and state governments are committed to the conservation and sustainable use of the country's riverine biodiversity resources and the introduction of a national

Strategy	Indicator	Baseline	Targets	Source of Verification	Critical assumptions
					framework for inter-sectoral collaboration
Outcome 1: An operational institutional framework and capacity are established for strengthened management of riverine biodiversity in production landscapes	**Outputs:** 1.1 Inter-agency strategy, national action plan and financing plan to mainstream biodiversity into river management developed and adopted 1.2 Best Management Practice guidelines developed and adopted 1.3 Institutional capacity of NRE, DID and other related Federal and state agencies and key non-governmental stakeholders enhanced for riverine biodiversity management 1.4 Awareness programmes delivered targeting policy makers and practitioners				
	1.1 Development of a formalized mechanism for inter-agency collaboration to mainstream biodiversity into river management	No formalized mechanisms exist at national level for inter-agency collaboration on riverine biodiversity management	Inter-agency Strategy to mainstream biodiversity into river management developed and adopted including: (i) an interagency coordination mechanism with clear jurisdictions of concerned agencies; (ii) coordinated enforcement and compliance monitoring mechanisms; (iii) plans for mainstreaming riverine biodiversity management into operations of related sector agencies, private sector and communities; (iv) collaborative operational modality; (v) National Action Plan; and (vi) Financing Plan.	Inter-agency Strategy, Action Plan and Financing Plan endorsed by NRE	Risks: Sectoral conflicts due to lack of coordination and collaboration impact project progress Government staff turn-over, especially trained technical staff, may affect the project negatively Assumption: Federal and state government support exists for introduction of a national framework for mainstreaming biodiversity conservation into river management
	1.2 Availability of Best Management Practice (BMP) guidelines that	BMP guidelines available on some relevant topics but not	(i)Best Management Practice (BMP) guidelines for management of riverine biodiversity	BMP Guidelines for riverine biodiversity management	

Strategy	Indicator	Baseline	Targets	Source of Verification	Critical assumptions
	systematically address the management of riverine biodiversity in the Malaysian context	comprehensive or easily accessible; Lack of economic information on riverine ecosystem services including tourism to underpin policy and planning	developed, adopted and made widely available for application by NRE and DID; (ii)Riverine biodiversity valuation study report (iii)Riverine biodiversity-based tourism study report	endorsed by NRE; reports on economic valuation study and tourism study.	
	1.3 Federal government budget allocated for implementation of riverine biodiversity management strategy and action plan including establishment of a Biodiversity /ecosystem unit within DID	No specific allocation for riverine biodiversity management; no dedicated staff within DID for riverine biodiversity management	(i)At least USD 1 million per annum allocated for implementation of the riverine biodiversity management strategy and action plan; (ii)A Biodiversity /Ecosystem Unit is established within DID, complete with its roles and responsibilities, organization chart, 4 staff, and annual budget.	NRE and DID annual budget / financing reports; Civil Service Department approval for new Biodiversity / ecosystem unit within DID including staffing needs	
	1.4 Improved capacities of key national agencies responsible riverine biodiversity conservation as shown by an increase in the Riverine Biodiversity Capacity Development Scorecard (see **Annex 1: Additional Information on Project**)	Baseline score of 17% (Nov 2014)	Target score of 50% by end of project Biodiversity/ecosystem unit established within DID and riverine biodiversity valuation and other tools are in place.	Capacity development scorecard assessments at mid- term and project completion	

Strategy	Indicator	Baseline	Targets	Source of Verification	Critical assumptions
	1.5 Percentage of key agency staff and other national and state level stakeholders targeted by the campaign whose knowledge, attitudes and practices change in relation to riverine biodiversity and ecosystem services, the approach needed for a holistic and integrated approach for effective river management, and the responsibilities of different stakeholders. See **Annex 1: Additional Information on Project** for methodology.	Baseline to be determined at outset of specific awareness activities	60% of targeted stakeholders	-Results of structured interviews and /or questionnaires at start of awareness campaign (baseline) and repeated at project completion. -Documented expressions of support	
Outcome 2. Best management practices for critical riverine habitats are demonstrated, enhancing biodiversity conservation status and reducing threats	**Outputs:** 2.1 Biodiversity management strengthened and habitat enhanced through improved water reservoir catchment management in Upper Kinta River Basin (Perak) 2.2 Riverine biodiversity and habitat management integrated into planning and implementation of urban river management programmes in the Klang River Basin (Selangor and Federal Territory) 2.3 Riparian habitat protected and enhanced in partnership with the private sector and local communities in the Segama River Basin (Sabah)				
	2.1 Pilot demonstration 1 in upper Kinta Basin improves status of	(i)2013 Baseline – are of eroding/cleared slopes to be	(i)at least 75% of cleared/eroding slopes in the upper	(i)GIS mapping of area and status of cleared/eroding	Risks: Local communities

Strategy	Indicator	Baseline	Targets	Source of Verification	Critical assumptions
	riverine biodiversity through strengthened watershed management, indicated by: (i)percentage of cleared / eroding slopes in the upper catchment area that have been effectively treated. (ii)reduced rates and eventual phasing out of land clearing for orchards in traditional orang asli lands in the dam catchment (iii) mainstreamed approach applied in implementing catchment management plan (CMP), with inter-agency task forces tackling specific problems and all stakeholders engaged in CMP implementation. (iv)improved local status of selected globally significant species such as Copper Mahseer	established using GIS in Year 1 (ii)low level of forest clearance for orchards in traditional lands (<5ha/year) (iii)Lack of mainstreamed approach has resulted in major localised degradation of catchment with significant negative impacts on riverine biodiversity (iv)Copper Mahseer present in parts of the Kinta river system but impacted by high sediment loading from land clearance and slope erosion	catchment area effectively treated (ii) reduced level of forest clearance for orchards in traditional lands (<1ha / year) (iii) mainstreamed approach applied in implementing CMP, with inter-agency task forces tackling specific problems and all stakeholders engaged in catchment management plan implementation. (iv)Copper Mahseer present in all tributaries of the river system above the Sultan Azlan Shah dam	slopes in catchment (ii)GIS mapping of forest cover and land uses in the catchment; Perak Forestry Dept. (iii)Project reports, participating government agency reports	may be reluctant to engage in project activities and in riverine habitat management in general Government staff turn-over, especially trained technical staff, may affect the project negatively Climate change trends will increase water temperatures and the variability of rainfall, exacerbating floods and droughts and increasing pressures on riverine biodiversity Assumption: State government support exists for riverine biodiversity conservation and the engagement of other stakeholders

Strategy	Indicator	Baseline	Targets	Source of Verification	Critical assumptions
	Neolissochilus hexagonolepis				
	2.2 Riverine biodiversity management integrated into planning and implementation of the Klang River of Life Programme, indicated by: (i)adoption of river stretches by local stakeholders through partnership agreements with responsible authorities, (ii)physical enhancement of riverine and riparian habitats in the River of Life (ROL) are of the upper Klang River benefiting riverine biodiversity such as globally threatened Kelah *Tor tambroides* (iii)awareness levels concerning the risks posed by aquatic alien invasive species (AIS)	(i)Local stakeholders involved in GEC / DID River Care programme, but limited formal adoption of river stretches; (ii)Nearly all changes in riverine habitats involve habitat loss and degradation, declining populations of species such as *Tor tambroides*; (iii)Very low awareness of the risks posed by aquatic AIS among key stakeholder groups including aquarium and aquaculture industries (baseline to be conducted in Y1, See **Annex 5** for methods)	(i) Cover whole ROL area, influence engineering practices on 20km (c.100ha) of that area…Adoption of at least 4km (c.40 ha) of river stretches by local stakeholders through partnership agreements with responsible authorities; (ii) Engineering practices are influenced over at least 20km of river within ROL area and riverine and riparian habitats are rehabilitated to semi-natural condition in at least 4 locations (c.10 ha) in the upper Klang River system benefiting riverine biodiversity including sustained presence of *Tor tambroides* in specific locations; (iii)60% awareness of AIS risks among targeted aquarium and aquaculture industries within the target areas	(i)Stakeholder agreements for adoption of river stretches (DID / Project reports) (ii)Project reports (iii)Project reports-see methods in **Annex 1: Additional Information on Project**.	
	2.3: Riparian habitat protected and	(i)c.40km of riparian zone rehabilitated by	(i) At least an additional 50km (c.500 ha) of riparian habitat	(i)Private-public partnership	

Strategy	Indicator	Baseline	Targets	Source of Verification	Critical assumptions
	enhanced in partnership with the private sector and local communities in the Segama river basin, indicated by: (i) Length of biodiversity rich riparian zone protected through public-private-community partnerships along the Segama River in Sabah (ii) Engagement of local communities in river monitoring and protection (iii)Riverine biodiversity monitoring capacity developed and protocols established for implementation (iv)Increase in local extent of riparian distribution of key species such as *Pongo pygmaeus*, *Nasalis larvatus* and *Presbytis cristata*	SabahMas by Dec 2014. (ii)Local communities not currently engaged in river monitoring or protection (iii)No systematic riverine biodiversity monitoring in place (iv)Baseline information on riparian distribution of key species in Lower Segama is patchy. Some improvements in local status due to baseline conservation efforts against overall picture of decline.	protected and enhanced through partnership agreements in strategically important areas for biodiversity conservation; (ii)10 honorary river rangers and 10 honorary wildlife rangers recruited from local communities, trained and engaged, and evaluated for upscaling by DID; (iii)at least 20 DID, EPD, SWD and other relevant agency staff trained in riverine biodiversity monitoring methods and protocols agreed and monitoring activities initiated. (iv)Documented expansion of riparian distribution of key species where habitat restoration has been conducted.	agreements for protection and rehabilitation of riparian buffer zones (DID, project reports) (ii)DID, SWD and project reports (iii)DID and project reports (iv)DID, SWD and project reports	
	2.4 Community involvement at the demonstration sites provides socio-economic	No project supported activities underway.	Site 1: Orang Asli from at least 20 households trained and receive income from tourism and slope protection	Project reports	

Strategy	Indicator	Baseline	Targets	Source of Verification	Critical assumptions
	benefits to local communities and proactively engages women in the communities, indicated by: - number of households in target communities involved in implementing project activities (such as tree planting) on a paid basis; - proportion of women participating and benefiting from sustainable livelihood groups supported and facilitated by the project		and rehabilitation activities; Site 2: At least 20 households actively participate in community groups promoting river quality improvements Site 3: At least 20 households trained and receive income from tourism, handicraft and seafood processing activities At least gender equity achieved in all sustainable livelihood activities through engagement of female facilitators for community groups		

201. A detailed activity list and a chronogram of activities per output is under development and will be finalised upon project inception.

Part II: Incremental Cost Analysis

202. **Baseline Trends:** The government of Malaysia has clearly identified the critical nature of riverine biodiversity management in its efforts to conserve the outstanding array of biodiversity in the country. However, despite strong commitment from the government, concrete actions are seldom taken to remove the barriers to improvement of riverine area management for biodiversity conservation at federal or state levels. As the majority of river sections and associated biodiversity are found outside the protected area system, it is critical for the conservation of riverine biodiversity that clear strategies and plans are developed to conserve riverine biodiversity in productive landscapes. Such landscapes include areas being developed or managed for agriculture and plantations, urban and semi-urban development, production forests as well as for water resources management, which together cover more than 80% of Malaysia's land area. The government agencies and other stakeholders responsible for management of these areas do not normally have

biodiversity conservation as one of their main objectives. Despite substantial baseline investments, the Government's principal focus in river management remains flood control, water supply and pollution control with little direct consideration for riverine biodiversity and habitat management. Even the major River of Life programme focuses on urban redevelopment and beautification rather than restoring ecological conditions. Management of river systems remains sectorally based, with divided responsibilities, overlaps in jurisdiction, weak regulations, monitoring and enforcement, and an overall weak understanding of riverine ecosystem services and biodiversity values.

203. Overall, there is little information available on riverine biodiversity as a result of a lack of systematic survey, monitoring and evaluation schemes, and what data that does exist is often not easily accessible or presented in a manner that is useful for planning and decision-making purposes. Development of infrastructure such as highways and urban areas, as well as large plantations takes little or no account of their impacts on river systems despite environmental impact assessment requirements, with sediment control often being inadequate and poorly monitored, while such developments frequently encroach into riparian buffer zones with impunity. Smallholder agriculture and village development frequently takes place in riparian zones and is similarly poorly regulated, resulting in the loss and fragmentation of riparian habitats, and increased social and economic damage from flood events.

204. Without GEF investment in the proposed project, this fragmented sectoral approach to the governance and management of riverine and catchment areas is expected to continue. Uncoordinated management practices promoting sectoral interests at the expense of shared public benefits will continue to put pressure on riverine ecosystem services and biodiversity through habitat conversion, degradation and pollution. The lack of a holistic approach towards integrated river basin management that includes a science-based understanding of riverine resources, inter-agency coordination, strategy towards harmonized development and environmental goals, adequate technical capacity, and resources for implementation will mean that threats to riverine biodiversity will continue to grow and cause further habitat fragmentation and destruction. It is therefore imperative to mainstream biodiversity conservation principles into the mandate and practices of the relevant government agencies, as well as into the practices of other stakeholders.

205. **Global Environmental Objective:** The project intervention will achieve incremental global environmental benefits by directly addressing the GEF 5 BD2 Focal Area objective *To mainstream biodiversity conservation and sustainable use into production landscapes, seascapes and sectors*, by contributing through Outcome 2.1: *Increase in sustainably managed landscapes and seascapes that integrate biodiversity conservation*, and Outcome 2.2: *Measures to conserve and sustainably use biodiversity incorporated in policy and regulatory frameworks* through strengthening the institutional environment and capacity for riverine biodiversity management, catalysing improved management of riverine habitats in Malaysia, and through demonstrating integrated

riverine area planning and management in three riverine areas in different environmental and socio-economic settings. It will result in a national inter-agency strategy as a framework for riverine biodiversity conservation, and improved land use plans and management.

206. The project will achieve global environmental benefits through strengthened national contribution towards the achievement of the CBD's Aichi Targets, in particular under Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use, Target 5: the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced; Target 7: areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity; Target 8: reduction of pollution to levels that are not detrimental to ecosystem functions and biodiversity; and Target 12: preventing extinction of known threatened species.

207. Specifically, the project will contribute towards reduced rates of biodiversity loss in Malaysia through the following mechanisms:

- Integrating biodiversity conservation into the policies and practices of key sectoral agencies influencing the riverine environment;
- Promoting Best Management Practices for land uses impacting rivers, riparian zones and catchment areas in order to enhance biodiversity conservation and sustainable development;
- Increasing awareness of the social and economic values of riverine biodiversity and ecosystem services among key audiences;
- Developing public-private partnerships involving businesses, communities and CSOs for enhanced civil society engagement in sustainable river and riparian zone management, thereby reducing pressures for unsustainable use and conversion of ecosystems; and
- Contributing towards the maintenance of global ecosystem services, including avoided GHG emissions resulting from forest and wetland conversion.

208. **In the alternative scenario** enabled by the GEF, a set of institutional barriers to integrated and coordinated riverine landscape management will be removed at the national and state levels, backed by the development and adoption of an inter-agency strategy to mainstream biodiversity into river management, thus providing the foundation for coordinated planning and management including enforcement and compliance monitoring mechanisms. The project complements baseline programmes and projects by supporting the development of a national framework for the conservation of riverine biodiversity, addressing this at a national level and putting in place supporting capacity to enable its implementation. This will facilitate the transition towards a fully integrated approach towards river basin management in line with national policy including the Common Vision for Biodiversity and National Physical Plan 2.

209. At the national level, the institutional framework for riverine biodiversity management will be strengthened, catalysing improved management of riverine habitats in Malaysia with increased government investment and active uptake of best practices.

This will be accomplished through the development of an inter-agency strategy to mainstream biodiversity into river management, including an interagency coordination mechanism, coordinated enforcement and compliance monitoring mechanisms, mainstreaming of riverine biodiversity management into key sectors, a collaborative operational modality, and a financing plan for increased Federal and state budget allocations for riverine biodiversity management. Best Management Practice guidelines for management of riverine biodiversity will be developed with input from the pilot demonstration sites and their application promoted elsewhere. Capacity building actions will be undertaken for targeted stakeholders including government agencies, private sector and CSOs. The outcomes of the capacity building will include enhanced agency capacity for the conservation of riverine biodiversity in DID, strengthened biodiversity management capacity in other key national agencies, and the introduction of enhanced practices for biodiversity conservation in river management by key stakeholders in selected states.

210. The second project component will demonstrate best management practices for critical riverine habitats in three river basins, enhancing their biodiversity conservation status and reducing key threats. Each pilot addresses issues of national significance, with the aim that lessons learned from these approaches can subsequently be applied elsewhere. These interventions include the upper Kinta River Basin in Perak State, a forested catchment in the central forest spine which provides water via a key reservoir to Ipoh City, the upper Klang River Basin on the eastern edge of Kuala Lumpur city, and the Segama River in eastern Sabah, a rural area under mainly agricultural use by oil palm plantations and smallholders. In each case, the project aims to demonstrate integrated approaches that involve a range of stakeholders in order to improve the sustainability of river and catchment management, and to directly improve conditions for riverine biodiversity. It also seeks to tackle specific issues, such as sedimentation from road developments, and urban redevelopment planning, through a mainstreaming approach that combines specific stakeholders. Existing best practices for plantation and community-based protection and rehabilitation will be transferred and documented.

211. **System Boundary:** This project aims to strengthen the conservation and sustainable use of riverine biodiversity in Malaysia through developing a national inter-sectoral institutional framework and associated action and financing plans for the implementation of this aspect of the National Policy on Biological Diversity. It will build the capacity of key government agencies and other stakeholders for the implementation of BMPs for riverine biodiversity conservation and demonstrate partnership models. Geographically it covers the entire terrestrial territory of Malaysia, including Peninsular Malaysia and the East Malaysian states of Sabah and Sarawak on the island of Borneo. The demonstration pilot project activities in Component 2 focus on specific parts of the Kinta river basin in Perak, the Klang river basin in Selangor and Federal Territory, and the Segama river basin in Sabah. Baseline and incremental costs have been assessed over the four year life span of the project.

212. **Summary of Costs:** The Baseline associated with this project is estimated at US$270 million. The GEF Alternative has been costed at US$ 279.067 million. The total Incremental Cost to implement the full project is US$ 9.117 million. Of this amount, US$1.537 million is requested from GEF. GEF funds have leveraged US$ 7.580 million in co-financing for the Alternative strategy. Costs have been estimated for four years, the duration of the planned project Alternative. These costs are summarized below in the incremental costs matrix.

Table 10. Incremental Cost Matrix

Cost/Benefit	Baseline (B)	Alternative (A)	Increment (A-B)
BENEFITS			
Global benefits	Management of river systems is sectorally based, with divided responsibilities, overlaps in jurisdiction, weak regulations, monitoring and enforcement. There is overall weak understanding of riverine ecosystem services, biodiversity values and the know-how to undertake integrated management of riverine resources including biodiversity conservation concerns. Lack of value attached to biodiversity rich riverine and riparian ecosystems on state land inside and outside the PA system is leading to its rapid degradation and conversion for other land uses. This forgoes future use options for biodiversity conservation and non-consumptive land uses such as tourism	Development of an inter-agency strategy to mainstream biodiversity into river management, including institutional arrangements and an action plan and financing plan for increased Federal and state budget allocations for riverine biodiversity management. Best Management Practice guidelines for management of riverine biodiversity will be developed with input from the pilot demonstration sites and their application promoted elsewhere. Capacity building will be undertaken for targeted stakeholders including government agencies, private sector and CSOs. Strategic awareness raising will be conducted for key target audiences. Demonstrated application of best management practices for critical riverine habitats in three river basins, enhancing biodiversity conservation status and reducing threats. Enhanced collaboration of local communities, local and state authorities, oil palm plantation companies and other stakeholders, combined with capacity building and awareness raising to enhance understanding of the value of riverine biodiversity and sustainable land use practices.	The introduction of an effective national framework for inter-sectoral coordination and integrated management of riverine resources will contribute towards biodiversity conservation including globally significant species and ecosystems. Increased capacity of key stakeholders for riverine biodiversity conservation enables more effective and integrated management of riverine resources using Best Management Practices. Increased awareness of the values of riverine biodiversity among key audiences increases receptivity to conservation-friendly policies and management. Contributions towards the maintenance of globally significant biodiversity and ecosystem services, including avoided GHG emissions resulting from forest and wetland conversion.
National and local benefits	Sectoral approaches to development and land use take little account of riverine biodiversity and ecological integrity, resulting in the	The project will develop a national framework for an inter-sectoral approach towards riverine biodiversity conservation, including an interagency coordination mechanism, coordinated enforcement and compliance monitoring mechanisms,	Greater economic benefits to the government and other stakeholders from improved catchment and river management, including more secure water supply, improved water quality, reduced soil

Cost/Benefit	Baseline (B)	Alternative (A)	Increment (A-B)
	degradation of watersheds, catchment forests, riparian zones and riverine habitats and water quality and loss of ecosystem services impacting local and national benefits. Local land uses take little account of the value of biodiversity rich riverine and riparian ecosystems on state land leading to their degradation and conversion for other land uses. Environmental quality declines including impacts on soil erosion and siltation, water quality and loss of riparian habitats and species.	mainstreaming of riverine biodiversity management into key sectors, a collaborative operational modality, and a financing plan for increased Federal and state budget allocations for riverine biodiversity management. Demonstrated application of best management practices and involvement of local communities, local and state authorities, oil palm plantation companies and other stakeholders, combined with capacity building and awareness raising to enhance understanding of the value of riverine biodiversity and sustainable land use practices.	erosion and siltation impacts on agriculture, infrastructure and river uses, increased resilience to climate change impacts. Local communities experience improved water quality, more secure water supply, improved local fisheries, and increased opportunities for riverine tourism and recreation development. Oil palm companies have opportunity to demonstrate sustainable practices in line with RSPO guidelines enabling access to developed world markets.
COSTS			
Outcome 1: An operational institutional framework and capacity are established for strengthened management of riverine biodiversity in production landscapes	**Baseline:** **$10,000,000**	**Alternative:** **$10,850,000**	GEF: $462,000 COF: $400,000 **TOTAL** **$862,000**
Outcome 2: Best management practices for critical riverine habitats are demonstrated, enhancing	**Baseline:** **$260,000,000**	**Alternative:** **$267,295,000**	GEF $815,000 COF: $6,480,000 **TOTAL** **$7,295,000**

Cost/Benefit	Baseline (B)	Alternative (A)	Increment (A-B)
biodiversity conservation status and reducing threats.			
Project Management TOTAL COSTS	 **Baseline:** **$270,000,000**	 **Alternative:** **$279,117,380**	GEF $127,000 COF: $700,000 **TOTAL** **$827,000** Agency Fees $133,380 TOTAL **$9,117,380**

4 TOTAL BUDGET AND WORK PLAN

Short Title:	Mainstreaming of Biodiversity Conservation into River Management
Award ID:	00087899
Project ID:	00094781
Business Unit:	MYS10
Project Title:	Mainstreaming of Biodiversity Conservation into River Management
PIMS #:	5281
Implementing Partners:	Ministry of Natural Resources and Environment (NRE), and Department of Irrigation and Drainage Malaysia (DID)

GEF Outcome/ Atlas Activity	Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Acct Code	Atlas Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	Budget Note
COMPONENT 1: Institutional Framework and Capacity for Managing Riverine Biodiversity	DID	62000	GEF	71300	Local Consultants	12,000.00	-	-	-	**12,000.00**	1
				71600	Travel	10,000.00	25,000.00	17,000.00	-	**52,000.00**	2
				72100	Contractual Services - Company	94,000.00	90,000.00	78,000.00	50,000.00	**312,000.00**	3
				72200	Equipment and Furniture	-	5,000.00	-	-	**5,000.00**	4
				74200	Audio-visual and printing production costs	-	10,000.00	15,000.00	-	**25,000.00**	5
				75700	Training, conferences	23,000.00	23,000.00	10,000.00	-	**56,000.00**	6
				Total		**139,000.00**	**153,000.00**	**120,000.00**	**50,000.00**	**462,000.00**	

GEF Outcome/ Atlas Activity	Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Acct Code	Atlas Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Total (USD)	Budget Note
COMPONENT 2: Critical riverine habitat management demonstration	DID	62000	GEF	71600	Travel	3,000.00	8,000.00	3,000.00	3,000.00	**17,000.00**	7
				72100	Contractual Services - Company	190,000.00	330,000.00	138,000.00	105,000.00	**763,000.00**	8
				72200	Equipment and Furniture	10,000.00	-	-	-	**10,000.00**	9
				74200	Audio-visual and printing production costs	-	-	5,000.00	5,000.00	**10,000.00**	10
				75700	Training, conferences	5,000.00	5,000.00	5,000.00	-	**15,000.00**	11
				Total		**208,000.00**	**343,000.00**	**151,000.00**	**113,000.00**	**815,000.00**	
PROJECT MANAGEMENT	DID/UNDP	62000	GEF	71300	Local Consultants	28,600.00	29,900.00	31,200.00	32,500.00	**122,200.00**	12
				72200	Equipment and Furniture	1,800.00	-	-	-	**1,800.00**	13
				74500	UNDP Cost Recovery Charges	3,000.00	-	-	-	**3,000.00**	14
				Total		**33,400.00**	**29,900.00**	**31,200.00**	**32,500.00**	**127,000.00**	
TOTAL PROJECT						**380,400.00**	**525,900.00**	**302,200.00**	**195,500.00**	**1,404,000.00**	

Summary of Funds					
Source	Year 1	Year 2	Year 3	Year 4	**Total**
GEF	380,400.00	525,900.00	302,200.00	195,500.00	**1,404,000.00**
National Government - Cash	1,462,500.00	1,462,500.00	1,462,500.00	1,462,500.00	**5,850,000.00**
UNDP - Cash	65,000.00	65,000.00	65,000.00	65,000.00	**260,000.00**
Local Government - In kind	187,500.00	187,500.00	187,500.00	187,500.00	**750,000.00**
CSO - In kind	105,000.00	105,000.00	105,000.00	105,000.00	**420,000.00**
CSO - Cash	75,000.00	75,000.00	75,000.00	75,000.00	**300,000.00**
Total	2,275,400.00	2,420,900.00	2,197,200.00	2,090,500.00	**8,984,000.00**

Budget Notes	
Component 1	
1	Local Consultants: Institutional Capacity Assessment Expert (Output 1.3) – In Year 1 Conduct a capacity needs assessment of relevant divisions of DID and NRE regarding the implementation of riverine biodiversity conservation; provide specific recommendations for human resource management, training needs and procedural changes for these agency units; provide a technical report and present conclusions to project management. $12,000
2	Travel: Output 1.1: Travel for inter-agency task force consultations including travel to/from East Malaysia $20,000; Output 1.2: travel for project staff to participate in consultations, field visits and stakeholder workshops to develop BMP guidelines and other component 1 related travel, including travel to/from East Malaysia and for $32,000. Total: $52,000
3a	Contractual Services Company: Subcontract for development of inter-agency strategy (Output 1.1): (1) Review existing legal, policy and institutional set up for riverine biodiversity management, analyzing the current strengths and weaknesses of policies, agencies and practices in different sectors to conserve or address the threats to riverine biodiversity. Assess the effectiveness of existing mechanisms for inter-agency cooperation for environmental management, including river basins, catchment areas and estuaries. Y1 - $12,000 (2) Facilitate Task Force process and lead on drafting, review and finalization of the inter-agency strategy Y1,Y2 $24,000; (3) Facilitate Task Force process and lead on drafting, review and finalization of the national action plan and financing plan Y2,Y3 $16,000. (4) Biodiversity/Ecosystem Unit feasibility study to develop strategic mandate and roles and responsibilities, organizational chart and capacity need $20,000 Total: US$72,000.
3b	Contractual Services Company: Subcontract for development of BMP Case Studies and Guidelines (Output 1.2) – (1) Document best management practices on riverine biodiversity conservation in Malaysia and neighbouring countries through an initial literature review which will be written up as a series of draft case studies organized around relevant themes. (2) Facilitate the development of BMP guidelines, which elaborate on the draft case studies and the practical experiences of a wide range of stakeholders, through planning, coordinating and facilitating a series of workshops, dialogues and field visits in Peninsular Malaysia, Sabah and Sarawak. Minimum of four workshops – consultation / information gathering workshops in Peninsula, Sabah and Sarawak, and a national workshop later to review the final draft guidelines. Four field trips (2 Peninsula, 1 Sabah and 1 Sarawak) to visit case study sites and document them base on first-hand information, combined with dialogue sessions with relevant stakeholders. (3) Compilation of the draft guidelines for review at national workshop, and subsequent finalization, layout and publishing of the guidelines. (4) Finalization, layout and publication of the BMP case studies Total: $60,000

3c	Contractual Services Company: Subcontract for Training Programme Development (Output 1.3): the following training development activities will be conducted: establishment of the institutional basis and contractual arrangements for training provision by a government facility, including potential long term involvement; development of a detailed training programme and modules on riverine biodiversity conservation including technical content, pedagogical review and professional layout; training of at least 10 training facilitators at national and regional levels to conduct the training courses; and initial piloting and review of the training programme for at least 20 staff of key agencies (USD70,000).
3d	Contractual Services Company: Subcontract for a targeted research study (Output 1.4): Study on the economic values of riverine biodiversity and ecosystem services in Malaysia, covering the full range of ecosystem services provided by rivers and their catchment areas. This includes their role in the hydrological cycle (water supply, flood mitigation, water purification and more), carbon sequestration in forested catchments, ecosystem based adaptation to climate change, as well as more direct productive services such as fisheries, and cultural and social values including leisure and tourism. Where information is not available from Malaysia, the study should draw on similar situations in other countries. The study should highlight the economic values of river ecosystems to both the national economy and local communities. The study should result in a technical report and a PowerPoint presentation of the key findings. Riverine Biodiversity based tourism study to document existing demand and supply and estimate future potential, and develop Strategy for expanding the potential. Min 2 workshop and facilitate with Ministry of Tourism and private sector Y1. Total USD 50,000.
3e	Contractual Services Company: Awareness Programme Subcontract: Output 1.4: The following activities will be subcontracted in line with the project's communications and awareness raising strategy: (1) Development and production of relevant awareness materials to enhance understanding of riverine biodiversity conservation and the responsibilities of various stakeholders. These materials will be in Bahasa Malaysia and/or English, and if possible and relevant, other local languages (USD15,000); (2) Programme of awareness raising activities targeting national level policy-makers, relevant national agencies, other national stakeholders (CSOs, business sector), key state government agencies including socialization of the inter-agency strategy and action plan (USD20,000).Y1-4. Total USD 35,000.
3f	Contractual Services Company: Awareness Assessment Subcontract (Output 1.4): Knowledge, attitudes and practices (KAP) assessment surveys will be conducted targeting specific groups (including government agencies, local communities, oil palm plantation industry) that have a role to play in the conservation of riverine biodiversity, in order to determine the project's impact on awareness levels. These will include baseline surveys at the start-up of the awareness raising activities for specific target groups, and repeat surveys following the same methodologies at project completion. This work will be contracted to a service provider, with requirements to liaise closely with the project's implementing partners in the design and implementation of activities. The methodological approach is outlined in Annex 5. ($5,000 to develop the methodology (Y1); $10,000 for baseline assessments, analysis and reporting (Y1); $10,000 for final assessments, analysis and reporting (Y4). Total $25,000.
4	Equipment: Output 1.3: Equipment for training of key agency staff $5,000.

5	AV & Printing Production Costs: Output 1.1 - publication of inter-agency strategy, action plan and financing plan $10,000. Output 1.2: publication of BMP guidelines and case studies $10,000. Output 1.3: printing of training materials $5,000. Total $25,000
6	Training and Workshops: Output 1.1: Meeting costs for inter-agency strategy development task force $6,000 (Y1, Y2); stakeholder consultation meetings on inter-agency strategy - 2 at $10,000 = $20,000 (Y2, Y3); Project inception workshop $10,000 Y1; Output 1.2: Meeting costs for development of BMP guidelines - 4 consultation workshops at $5000 = $20,000 (Y1,Y2). Total $56,000.
Component 2	
7	Travel Costs: Output 2.1: travel costs for catchment strategy development process $5,000 (Y2); travel associated with M&E for Outcome 2 ($12000). Total 17,000
8a	Contractual Services Company (Output 2.1): Subcontract for assessment of the distribution and status of biodiversity in the Upper Kinta Catchment, covering aquatic biodiversity, globally significant vertebrates in catchment forests. The assessment will include development of a GIS map indicating the topography, hydrological network, condition of catchment forest cover and current land uses (including roads and settlements), and locations of key threats. It will document human settlements and livelihoods, as well as the distribution and status of threats (eg land clearing, soil erosion, pollution, etc). The outputs will be a GIS map and database, and a technical report detailing the findings. Total $87,000
8b	Contractual Services Company (Output 2.1): Subcontract to develop a multi-stakeholder management strategy and action plan for the catchment through a participatory process, facilitated by a technical expert in catchment management planning. The strategy and action plan will confirm the objectives of catchment management and identify the range of actions required to strengthen catchment management effectiveness, prioritized, with key result indicators and identified budget sources. It will also lay out the multi-stakeholder management arrangements for the catchment area, with provisions for review and revision. Total: $40,000
8c	Contractual Services Company (Output 2.1): Subcontract to support implementation of priority actions in catchment strategy and action plan - including 1) development of stakeholder dialogue mechanisms and sustainable livelihood options for Orang asli communities linked to sustainable forest management, including ecotourism and forest rehabilitation in the reservoir catchment (note - subcontract includes all payments for community costs and allowances). 2) Facilitation of slope erosion mitigation – establishment and facilitation of task forces on specific issues, support for technical evaluation, planning and design studies as needed, involvement of local communities in slope remediation works (note – government cofinancing will cover major costs). Development of awareness and education materials and actions targeted at local stakeholders. Total $85,000

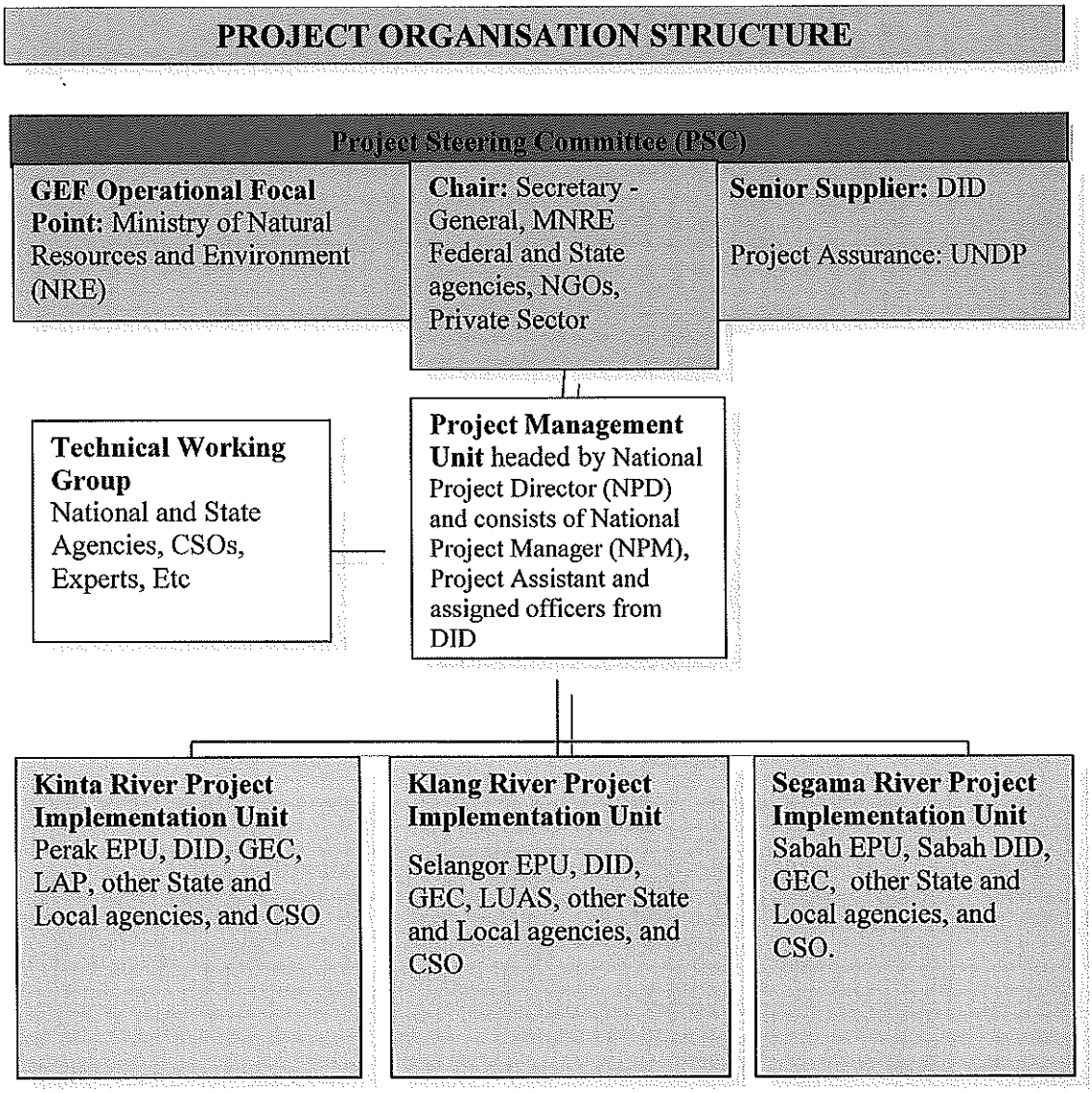
8d	Contractual Services Company (Output 2.2): Integration of community participation and biodiversity into the RoL programme in the upper Klang through empowerment, training and awareness programmes for key local government and community stakeholders on issues including: ecological enhancement of river corridors, habitat rehabilitation methods, waste management, re-introduction of native species, recreational fishery management, participatory monitoring of water quality and river corridor habitats. Develop training materials in Y1 and deliver 12 training courses in Y2-Y4. Develop and implement an awareness strategy on the identified issues, including a specific component on the impacts and management of IAS (especially Tilapia sp.) involving Fisheries Department ($100,000 (Y1-4) and other stakeholders.
8e	Contractual Services Company (Output 2.2): Support the adoption of key river stretches by local communities, and facilitate the physical enhancement of riverine habitats (physical measures to be supported mainly through government cofinancing) as follows: $90,000 (Y2-4) o Taman Warisan - strengthening the integrity of riparian habitats and securing their connection to the larger forest block of the Bukit Tabor Forest Reserve to enhance the river corridor. Small-scale wetland habitat creation and rehabilitation within the river corridor. o Selective interventions on the Kemensah River, engaging with the Hulu Kemansah orang asli village to ensure sustainable use of the forest in the upper catchment area, and with the committee for Kemensah Village as an entry point to demonstrate sustainable land uses in the river valley (e.g. improvements in ecotourism practices, development and socialization of ecotourism and riverine aquaculture guidelines). o Development of riverside parks and riparian habitat improvements (eg tree planting, improved waste management) for Taman Melawati, AU3 and AU2 housing areas. o Puah flood mitigation pond – provide technical advice on the inclusion of biodiversity-friendly design considerations in re-development of the flood mitigation pond and document lessons learned for DID. o Develop a network of community-based river protection groups and facilitate the exchange of experiences and approaches between groups to promote learning, sharing, advocacy and systematic action using low cost e-groups (Eg WhatsApp, Facebook, blogs) and a programme of exchange visits to other areas to review best practices, review and comment on rehabilitation plans, and provide mutual assistance.
8f	Contracted Services Company (Output 2.3): Identification and detailed planning of riparian buffer zone rehabilitation for target area based on BMPs: Establishment and moderation of Forum and e-group / knowledge hub on BMPs to access guidelines and best practices and to source expertise on specific subjects $8,000 (Y1-4); Travel $2,000 (Y1-4); Focus group meetings with DID, SWD, SFD, DO, Plantation Companies, RSPO, CSOs – 4 meetings at $3,000 = $12,000 (Y1-2); Analysis of remote sensing imagery and GIS mapping of restoration areas - $20,000 (Y1-2); Field visits – travel costs $5,000 (Y1-2); Development of detailed rehabilitation implementation plan – including preparatory facilitation work $12,000 (Y1-2); TA support for

	implementation $8,000 (Y3-4) [Note – the expectation is that the materials and labour for replanting would be cofinanced]. Total - $67,000
8g	Contractual Services Company (Output 2.3): Subcontract for development of a training programme for BMPs in Riparian Buffer Zone Management and Rehabilitation: Preparation of training materials based on BMPs; Training of Trainers to provide the programme; Pilot training delivery, review and finalize training materials; Delivery of the training course for plantation operators; Training visits to BMP sites. Total: $68,000
8h	Contracted Services Company (Output 2.3) for Capacity Building for Riverine Biodiversity Monitoring: A) Training on River Styles Framework: International Consultant to provide training 30 days at $600 = $18,000 Y2-Y3, Flights – 3 trips from Australia at $1000 = $3,000 Y2-Y3, DSA – 20 days in Sabah at $175 = $3500 Y2-Y3, Training course costs - $8,000 Y2, Subtotal = $32,500. B) Development, training and piloting of riparian biodiversity monitoring protocols: Local consultant – 30 days @ $400 = $12,000 Y2-Y3, Travel to Sabah / sites - $2000 Y2-Y3, DSA – 20 days in Sabah at $175 = $3500 Y2-Y3, Subtotal = $17,500. C) Pilot Monitoring costs: Local travel and DSAs $5,000 Y2-Y3, field monitoring equipment $4,000 (estimate)Y2, documentation of results and lessons learned $5,000Y4; Subtotal >> $14,000. Total $54,000.
8i	Contracted Services Company (Output 2.3) for Stakeholder Engagement and Awareness Raising in Riparian Communities: Training costs for 10 honorary River Rangers $5,000, initial allowances ($100/month x 10 pax x 12 months = $12,000 – (Note – to be cofinanced through DID budget subsequently); Training costs for 10 honorary Wildlife Rangers $5,000, initial allowances ($100/month x 10 pax x 12 months = $12,000 – (Note – to be cofinanced by SWD subsequently) Subtotal - $34,000; Awareness programme for riparian villages - Village meetings $20,000, Development of awareness materials $10,000, Allowances / incentives for sustainable livelihoods / riparian improvements $10,000, Subtotal - $40,000. Total $74,000
8j	Monitoring and evaluation costs (see **Table 10** for details), including: Contracted services for Mid term review (Y2) and Terminal Evaluation (Y4) including: International Project Evaluators, National Project Evaluators and associated travel for evaluators (total $80,000); specific studies and monitoring associated with MoV for project indicators ($8,000) (Y1-4); annual project audit ($10,000) (Y1-4). Total $98,000
9	Office equipment (computer, camera, printer/scanner/fax), accessories and software $10,000 Y1 (Output 2.2)
10	AV & Printing Production Costs: Output 2.1 - Printing of Kinta catchment strategy and action plan $5,000 (Y3); printing of catchment management lessons learned $5,000 (Y4).
11	Training and Workshops: Output 2.1 Stakeholder review workshops for catchment management SAP 2 x $5,000 (Y2, Y3) = $10,000; Output 2.3 Workshop to review BMPs on riparian buffer zone management for Lower Kinabatangan-Segama (linked to BMPs in Output 1.2) $5,000 (Y1); Total 15,000

Project Management	
12	Project Manager (US$550/w in Y1, $575/w in Y2, $600/w in Y3, $625 in Y4). Total $122,200. (Other PMU support staff cofinanced).
13	Office equipment for Project management unit.
14	Estimated UNDP Direct Project Service/Cost recovery charges for international and national consultant recruitment services requested by NRE to UNDP for executing services as indicated in the Agreement in **Annex 9** of the Project Document. In accordance with GEF Council requirements, the costs of these services will be part of the executing entity's Project Management Cost allocation identified in the project budget In accordance with GEF Council requirements, the costs of these services will be part of the executing entity's Project Management Cost allocation identified in the project budget. DPS costs would be charged at the end of each year based on the UNDP Universal Pricelist (UPL) or the actual corresponding service cost. The amounts here are estimations based on the services indicated, however as part of annual project operational planning the DPS to be requested during the calendar year would be defined and the amount included in the yearly project management budgets and would be charged based on actual services provided at the end of that year. Total: USD3,000

5 MANAGEMENT ARRANGEMENTS

213. The project's implementation and execution arrangements will focus on maintaining strong collaboration and cooperation, and avoid duplication of effort, among riverine biodiversity conservation related initiatives in Malaysia during the four year implementation period. The Ministry of Natural Resources and Environment (NRE) is the government institution responsible for the govenrment of Malaysia and will provide coordination for the project by Chairing the National Steering Committee and serving as the government Executing Agency (EA). The Drainage and Irrigation Department Malaysia (DID) will be the lead government implementing agency for the project.



Project Oversight

214. Oversight of project activities will be the responsibility of the National Steering Committee (NSC). Operational oversight will be ensured by UNDP, through the UNDP

Country Office in Kuala Lumpur, and strategic oversight by the UNDP/GEF Regional Technical Advisor (RTA) responsible for the project. This oversight will include ensuring that the project practices due diligence with regard to UNDP's Social and Environmental Screening Procedure (see **Annex 1: Additional Information on Project** for details). The structure of project management and oversight arrangements is shown in the organogram in **Section IV Part II** below.

215. DID will take overall responsibility for the project implementation, and the timely and verifiable attainment of project objectives and outcomes, but will report to the NSC. DID will provide support to, and inputs for, the implementation of all project activities, and recruitment of project staff and contracting of consultants and service providers with the advice from and involvement of the UNDP. International procurement will be mainly handled by the UNDP upon request of DID. DID will nominate a high level official, the Director of River Management who will serve as the National Project Director (NPD) for project implementation. The NPD will be responsible for providing government oversight and guidance for project implementation. The NPD will not be paid from the project funds, but will represent a Government in-kind contribution to the Project.

216. The UNDP Country Office (UNDP-CO) acting as the GEF Implementing Agency will be accountable to GEF for project delivery. UNDP thus has overall responsibility for supervision, project development, guiding project activities through technical backstopping and logistical and financial support. UNDP CO will be responsible for: (i) providing financial and audit services to the project; (ii) overseeing financial expenditures against project budgets approved by NSC; (iii) appointment of independent financial auditors and evaluators; and (iv) ensuring that all activities including procurement and financial services are carried out in strict compliance with UNDP/GEF procedures. A UNDP staff member will be assigned the responsibility for the day-to-day management and control over project finances.

217. *The National Steering Committee (NSC)* will be convened by NRE and will comprise of relevant national and state agencies, NGOs, and private sector. Membership by those agencies should remain consistent. The NSC will serve as the project's coordination and decision-making body. The NSC meetings will be chaired by the Secretary General of NRE. It will meet according to necessity, but not less than once in 6 months, to review project progress, approve project work plans and approve major project deliverables. The NSC is responsible for ensuring that the project remains on course to deliver products of the required quality to meet the outcomes defined in the project document. The NSC's role will include: (i) overseeing project implementation; (ii) approving annual project work plans and budgets, at the proposal of the Project Manager (PM) and working with UNDP, for submission to EPU; (iii) approving any major changes in project plans or programmes; (iv) providing technical input and advice; (v) approving major project deliverables; (vi) ensuring commitment of resources to support project implementation; (vii) arbitrating any conflicts within the project and/or negotiating solutions between the project and any parties beyond the scope of the project; (viii) overall project evaluation and (ix) ensuring that UNDP Social and Environmental Screening Procedure safeguards are applied to project implementation. The detailed TOR for the NSC is attached as **Annex 1: Additional Information on Project**.

218. The NSC will be chaired by the Secretary General of NRE and include the following stakeholders (membership to be confirmed during project inception): Drainage and Irrigation Department (DID) Malaysia, Federal Economic Planning Unit (EPU), Ministry of Finance (MoF), Ministry of Agriculture and Agro-Based Industry (MoA), Ministry of Plantation

Industries and Commodities (KPPK), Ministry of Rural and Regional Development (KKLW), Department of Fisheries Malaysia, Department of Forestry Peninsular Malaysia (JPSM), Department of Wildlife and National Parks (PERHILITAN); Department of Environment, and appropriate representation for the demonstration sites in Sabah, Perak and Selangor; UNDP, and the Global Environment Centre. Additional members may be added through the agreement of the NSC. Specific NSC membership and terms of reference will be finalized during the Project Inception Workshop.

219. *A Technical Working Group (TWG)* will be established to handle all technical matters relating to the project and will be chaired by the NPD. The members of the TWG will be confirmed during project inception, to consist of representatives from NRE, EPU, DID, Fisheries Dept, Wildlife Dept, Forestry Dept, Environment Dept, GEC, RSPO, other CSOs and technical experts engaged in riverine biodiversity conservation (eg university experts, SAFE project staff), and other relevant stakeholders to be determined by the NSC. Technical support will be provided by local and international consultants with extensive experience of the subject areas required by the project. The specific consultancy inputs required are detailed in **Section IV Part III**. The UNDP global knowledge network will also provide inputs through best practices and lessons learned from similar experiences in other countries.

Project Management

220. The day-to-day administration of the project will be carried out by a *Project Management Unit* (PMU) within the Department of Irrigation and Drainage comprised of a National Project Director, Project Manager (PM), a Project Assistant, and additional support staff of DID. The project staff will be recruited following UNDP and NRE recruitment procedures. The PM will, with the support of the Project Assistant, manage the implementation of all project activities, including: (i) preparation/updates of project work and budget plans, record keeping, accounting and quarterly and annual progress reporting; (ii) drafting of terms of reference, technical specifications and other documents as necessary; (iii) identification, proposal of project consultants to be approved by the NSC, coordination and supervision of consultants and suppliers; (iv) organization of duty travel, seminars, public outreach activities and other project events; and (v) maintaining working contacts with project partners at the central and local levels.

221. The National Project Director is accountable to the NRE and the NSC for the quality, timeliness and effectiveness of the activities carried out, as well as for the use of funds. The PM will produce Annual Work Plan and Budget Plans to be approved by the NSC. These plans will provide the basis for allocating resources to planned activities. The PM will further produce quarterly operational reports and Annual Progress Reports (APR) for submission to the NSC. These reports will summarize the progress made by the project versus the expected results, explain any significant variances, detail the necessary adjustments and be the main reporting mechanism for monitoring project activities. The PM will also be technically supported by contracted national and international service providers. Recruitment of specialist services for the project will be done by the PM in consultation with the UNDP and the DID/NRE. The PM will also liaise and work closely with all partner institutions to ensure good coordination with other complementary national programmes and initiatives. The organogram for project management (see **Section IV Part II**) illustrates the working relationship between all the main project implementing parties or bodies.

Project Management at the Site Level

222. Under the close supervision of the central Project Management Unit, project management for the implementation of demonstration activities in Component 2 will be coordinated by site level Project Implementation Units (PIUs). In each case, the site PIU will be hosted by DID and technical assistance will be provided by the Global Environment Centre (GEC), a local leading non-profit organisation working on water resource and river management in Malaysia. The activities of each site PIU will be overseen by a small technical committee at state level chaired by the State Executive Committee member responsible for environmental affairs / water resources, and with participation by key state agencies. The details of this oversight arrangement vary between states as described below. The management arrangements for the demonstration projects must be entirely consistent and integrated with those for the overall project, including the project M&E Plan, reporting requirements and budget disbursement.

223. The local management arrangements for each pilot project are expected to include representation of principal stakeholders such as relevant state and local authorities, ILCs and other partners in their implementation. There will be equitable participation of women and ethnic minorities on local level committees and groups related to community co-management, training and awareness activities. See the **Stakeholder Participation Plan in Section IV Part IV** for further details.

A) Output 2.1: Biodiversity management strengthened and habitat enhanced through improved water reservoir catchment management in Upper Kinta River Basin (Perak)

224. The Perak state government has agreed that the State River Management Committee will include this pilot project under its remit. It is proposed that this pilot intervention will be overseen by a smaller technical committee chaired by the State Executive Committee member responsible for environmental affairs/water resources and involving key government and local stakeholders – Perak Water Board (the dam operator), and state DID, Environment, Forestry, Fisheries, Wildlife, and Orang Asli Development Departments, and community representatives. Additional stakeholders will be co-opted as necessary (State Agriculture Dept, Highways Authority, Tourism Dept, Town and Country Planning Department, etc). This technical committee would report on progress to the State River Management Committee periodically. The newly formed State Water Resources Council (Majlis Sumber Air Negeri – MSAN) is also likely to be a significant stakeholder regarding its anticipated role in rolling out IRBM implementation. Stakeholder consultations during project preparation have suggested that an inter-state dialogue mechanism with Pahang (which covers much of the Cameron Highlands) should be established to discuss catchment management issues, which may require Federal Government facilitation, as well as links with existing committees for the Cameron Highlands and the One Stop Centre on highland development.

B) Output 2.2: Riverine biodiversity and habitat management integrated into planning and implementation of urban river management programmes in the Klang River Basin (Selangor/Federal Territory)

225. For the Klang River pilot demonstration activities, the project will work within the existing structures of the RoL programme, so that these can be effectively integrated into RoL, with the intention of replicating and upscaling these approaches towards the end of the project. Specifically, the PIU will report to meetings of the RoL Task Force. Outside the RoL context, LUAS (the Selangor Water Management Board) will be the lead partner for river conservation work in Selangor state.

C) Output 2.3: Riparian habitat protected and enhanced in partnership with the private sector and local communities in the Segama River Basin (Sabah)

226. The PIU will be overseen by a small technical committee chaired by the UPEN Sabah, and involving Sabah Drainage and Irrigation, Environmental Protection, Agriculture, Wildlife, Fisheries and Forestry Departments, local authorities and related research organizations (eg the SAFE project in Danum Valley). The project will work closely with riparian communities and oil palm plantations such as Hap Seng and SabahMas for the implementation of activities on the ground (see the **Stakeholder Involvement Plan and Table 14** for details). This pilot project will also collaborate with the Roundtable on Sustainable Palm Oil (RSPO) and NGO coalitions working to conserve the Kinabatangan River Corridor. As this demonstration project will pilot river monitoring approaches and development of best practices for riparian zone management by plantations in line with the State Government approved comprehensive Strategy and Action Plan to enhance Water Quality in Selected Rivers, DID and EPD will play significant roles in the demonstration project. The project will seek to build capacity and demonstrate best practices in riparian buffer zone management in line with the draft RSPO guidelines and work closely with Sabah Wildlife Department in linking protected areas in the lower reaches of the Segama floodplain.

6 MONITORING FRAMEWORK AND EVALUATION

227. Project monitoring and evaluation will be conducted in accordance with established UNDP and GEF procedures and will be provided by the project team and the UNDP Country Office (UNDP-CO) with support from the UNDP/GEF Regional Coordination Unit in Bangkok. The Strategic Results Framework in Section II Part I provides performance and impact indicators for project implementation along with their corresponding means of verification. The M&E plan includes: inception report, project implementation reviews, quarterly and annual review reports, and mid-term review and final evaluation. The following sections outline the principal components of the M&E Plan and indicative cost estimates related to M&E activities (see **Table 9** below). The project's M&E Plan will be presented and finalized in the Project's Inception Report following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities.

228. A Project Inception Workshop will be conducted with the full project team, relevant government counterparts, co-financing partners, the UNDP-CO and representation from the UNDP-GEF Regional Coordinating Unit, as well as UNDP-GEF (HQs) as appropriate. A fundamental objective of the Inception Workshop will be to assist the project team to understand and take ownership of the project's goal and objective, as well as finalize preparation of the project's first Annual Work Plan (AWP) and annual and quartely activity plans on the basis of the Strategic Results Framework (SRF). This will include reviewing the SRF (indicators, means of verification, assumptions), imparting additional detail as needed, and on the basis of this exercise, finalizing the Biennial Work Plan (BWP) with precise and measurable performance indicators, and in a manner consistent with the expected outcomes for the project.

229. Project Inception Workshop will be held within the first 2 months of project start with those with assigned roles in the project organization structure, UNDP country office 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.

230. The Inception Workshop should address a number of key issues including:

- Assist all partners to fully understand and take ownership of the project. Detail the roles; support services and complementary responsibilities of UNDP CO and RCU staff vis-à-vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff will be discussed again as needed.
- Based on the project results framework and the relevant GEF Tracking Tool if appropriate, finalize the first annual work plan. Review and agree on the indicators, targets and their means of verification, and recheck assumptions and risks.

- Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled.
- Discuss financial reporting procedures and obligations, and arrangements for annual audit.
- Plan and schedule Project Board meetings. Roles and responsibilities of all project organisation structures should be clarified and meetings planned. The first Project Board meeting should be held within the first 12 months following the inception workshop. 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.

231. A detailed schedule of project review meetings will be developed by the project management, in consultation with project implementation partners and stakeholder representatives and incorporated in the Project Inception Report. Day-to-day monitoring of implementation progress will be the responsibility of the Project Manager based on the project's BWP, activity plansand its indicators. Specific targets for the first year implementation progress indicators together with their means of verification will be developed at the Inception Workshop and included in the BWP. Targets and indicators for subsequent years would be defined annually as part of the internal evaluation and planning processes undertaken by the project team.

232. Measurement of impact indicators related to riverine biodiversity conservation targets will occur according to the schedules defined in the Inception Workshop. The measurement of these will be undertaken by the project partners, or through subcontracts or retainers with relevant institutions. Periodic monitoring of implementation progress will be undertaken by the UNDP-CO through quarterly meetings with the Implementing Partner, or more frequently as deemed necessary. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to ensure smooth implementation of project activities.

233. Annual Monitoring will occur through the NSC Meetings (NSCM). This is the highest policy-level meeting of the parties directly involved in the implementation of a project. The project will be subject to NSCMs at least two times a year. The first such meeting will be held within the first six months of the start of full implementation.

234. The Project Manager in consultations with NPD and UNDP-CO and UNDP-GEF RCU will prepare a UNDP/GEF PIR during the months of June-August. In addition, the Project Manager, in consultation with UNDP-CO will prepare an Annual Review Report (ARR) by the end of January and submit it to NSC members at least two weeks prior to the NSCM for review and comments. The ARR will be used as one of the basic documents for discussions in the NSCM. The Project Manager will present the ARR (and if needed the PIR) to the NSC, highlighting policy issues and recommendations for the decision of the NSCM participants. The Project Manager also informs the participants of any agreement reached by stakeholders during the PIR/ARR preparation on how to resolve operational issues. Separate reviews of each project component may also be conducted if necessary. The NSC has the authority to suspend disbursement if project performance benchmarks are not met. Benchmarks will be developed at the Inception Workshop, based on delivery rates, and qualitative assessments of achievements of outputs.

235. The terminal NSCM is held in the last month of project operations. The Project Manager is responsible for preparing the Terminal Report, in consultation with NPD and submitting it to UNDP-CO and UNDP-GEF RCU. It shall be prepared in draft at least two months in advance of the terminal NSCM in order to allow review, and will serve as the basis for discussions in the NSCM. The terminal meeting considers the implementation of the project as a whole, paying particular attention to whether the project has achieved its stated objectives and contributed to the broader environmental objective. It decides whether any actions are still necessary, particularly in relation to sustainability of project results, and acts as a vehicle through which lessons learnt can be captured to feed into other projects.

236. UNDP Country Office and UNDP-GEF RCU as appropriate, will conduct yearly visits to project sites based on an agreed upon schedule to be detailed in the project's Inception Report/Annual Work Plan to assess first hand project progress. Any other member of the National Steering Committee can also accompany.

Reporting

237. The Project Manager will be responsible for the preparation and submission of the following reports that form part of the monitoring process. A Project Inception Report will be prepared immediately following the Inception Workshop. It will include a detailed Annual Work Plan divided in quarterly time-frames detailing the activities and progress indicators that will guide implementation during the first year of the project. An Annual Review Report (ARR) shall be prepared by the Project Manager and shared with the National Steering Committee. As minimum requirement, the ARR shall consist of the Atlas standard format for the Project Progress Report (PPR) covering the whole year with updated information for each element of the PPR as well as a summary of results achieved against pre-defined annual targets at the project level. The ARR should consist of the following sections: (i) project risks and issues; (ii) project progress against pre-defined indicators and targets and (iii) outcome performance. The Project Implementation Review (PIR) is an annual monitoring process mandated by the GEF. Once the project has been under implementation for a year (from the CEO approval date), a Project Implementation Report must be completed by the CO together with the project team. Quarterly progress reports: Short reports outlining main updates in project progress will be provided quarterly to the local UNDP Country Office and the UNDP-GEF RCU by the project team. UNDP ATLAS Monitoring Reports: A Combined Delivery Report (CDR) summarizing all project expenditures, is mandatory and should be issued quarterly following the finalization of the quarterly progress reports. The following logs should be prepared: (i) The Issues Log is used to capture and track the status of all project issues throughout the implementation of the project. (ii) the Risk Log is maintained throughout the project to capture potential risks to the project and associated measures to manage risks; and (iii) the Lessons Learned Log is maintained throughout the project to capture insights and lessons based on good and bad experiences and behaviours. Project Terminal Report: During the last three months of the project the project team will prepare the Project Terminal Report. Periodic Thematic Reports: As and when called for by UNDP, UNDP-GEF or the Implementing Partner, the project team will prepare Specific Thematic Reports, focusing on specific issues or areas of activity. Technical Reports are detailed documents covering specific areas of analysis or scientific specializations within the overall project. As part of the Inception Report, the project team will prepare a draft Reports List, detailing the technical reports that are expected to be prepared on key areas of activity during the course of the Project, and

tentative due dates. Where necessary this Reports List will be revised and updated, and included in subsequent APRs.

External Evaluations

238. The project will be subjected to at least one independent external review and one evaluation: An independent Mid-Term Review will be undertaken at the mid-point of the project lifetime. The Mid-Term Review will determine progress being made towards 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. Furthermore, it will review and update the SESP report. 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 review will be decided after consultation between the parties to the project document. The ToR for this Mid-term review will be prepared by the UNDP CO based on guidance from the UNDP-GEF Regional Coordinating Unit.

239. 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 relevant GEF Focal Area Tracking Tools will also be completed during the mid-term evaluation cycle.

240. An independent Final Evaluation (Terminal 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.

241. The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response that should be uploaded to PIMS and to the UNDP Evaluation Office Evaluation Resource Centre (ERC). The relevant GEF Focal Area Tracking Tools will also be completed during the final evaluation.

242. 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 layout recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's results.

Learning and Knowledge Sharing

243. The project will develop a communications strategy in the first year, which will be updated annually and implementation supported by a communications, education and awareness specialist. This will include capturing and disseminating lessons learned, for review at NSC meetings in order to inform the direction and management of the project, and shared with project stakeholders as appropriate. A project completion report will document the project's achievements and lessons learned at the end of the project.

244. Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums. 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, analyse, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Finally, there will be a two-way flow of information between this project and other projects of a similar focus.

Branding and Visibility

245. Full compliance is required with UNDP's Branding Guidelines and guidance on the use of the UNDP logo. These can be accessed at http://web.undp.org/comtoolkit/reaching-the-outside-world/outside-world-core-concepts-visual.shtml. Full compliance is also required with the GEF Branding Guidelines and guidance on the use of the GEF logo. These can be accessed at http://www.thegef.org/gef/GEF_logo. The UNDP and GEF logos should be the same size. When both logs appear on a publication, the UNDP logo should be on the left top corner and the GEF logo on the right top corner. Further details are available from the UNDP-GEF team based in the region.

Audit Clause

246. 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 according to UNDP financial regulations, rules and audit policies by the legally recognized auditor of the Government, or by a commercial auditor engaged by the Government.

Other M&E Framework

247. In addition to the GEF M&E framework as mentioned above, the project activities will be closely monitored by UNDP country office according to the NIM where the following will be conducted:

- National Steering Committee Meetings - The National Steering Committee (NSC) will meet after the receipt of each project report or at least twice a year, whichever is greater and address project issues raised by the Project Manager, review project progress reports and provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to the project document. A final NSC meeting should also be held at the end of project completion to agree to and endorse the final findings and outcomes of the project and to make recommendations towards project closure.

- Technical Advisory Group (TAG) or Project Review Committee (PRC) Meetings - TAG will meet as regularly as required to assist the NSC in monitoring and advising the technical implementation of the project and its activities. The TAG acts as the technical advisors to the NSC, and regularly reviews the progress of all project components. TWG will recommend projects to be endorsed by NSC.
- Annual Project Review Meeting - This internal review meeting will be chaired by EPU as the co-signee of the project document during the fourth quarter of the year to assess the performance of the project based on the Annual Work Plan (AWP) submitted at the beginning of the calendar year as well as the Annual Progress Report submitted during the fourth quarter of each calendar year. The review will involve all key project stakeholders and the Implementing Partner, and will focus on the extent to which progress have been made towards achievement of the outputs and that they remain aligned to appropriate outcomes as outlined in the project document. This review should update output targets and results achieved. In the last year of the project, the review will be a final assessment.
- Final Project Review Meeting - A Final Project Review meeting will be conducted towards the end of the project completion. Its purpose is to assess the performance and success of the project. It should look at sustainability of the results, including the contribution to related outcomes (and the status of these outcomes) and capacity development. It will also review lessons learned and recommendations that might improve design and implementation of other UNDP-funded projects. The meeting will discuss the Final Project Review Report that should be submitted two weeks prior to the Final Project Review Meeting.

Progress Reporting Documents

- Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform, mainly from the Quarterly Reports
- 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.
- Mid-Year Progress Report (MYPR) - A Mid-Year Progress Report (1 Jan – 30 June) shall be prepared by the Project Manager, approved by NPD and shared with the NSC by 30 June of each project year. As a minimum requirement, the Mid-Year Progress Report shall utilize the standard template for the Annual Project Report (APR) covering a six month period.
- Annual Progress Report (APR) - An Annual Progress Report (1 Jan – 31 Dec) shall also be prepared by the Project Manager and shared with the NSC by the end of the last quarter of each year. The Annual Progress Report shall highlight risks and challenges, the summary of results achieved, and lessons learnt of the project for that reporting year
- Final Project Review Report - This document which is prepared by the implementing partner is a structured assessment of progress based on the chain of results initially defined in the Project Document and Annual Work plan (AWP) and will include information on financial allocations of expenditure. It may be supplemented by additional narrative to meet specific reporting needs of stakeholders, especially the donor(s). This report will be discussed at the Final Project Review meeting mentioned above.

The following should be submitted together with the report:

- Lessons learnt log - summarizing the information captured throughout the implementation of the project
- Minutes of NSC meetings
- Minutes of TWG meetings
- Annual signed CDRs
- Statements of cash position (if applicable)
- Statements of assets and equipment

Financial Monitoring and Quality Assurance

248. Combined Delivery Reports - The Combined Delivery Report (CDR) is the report that reflects the total expenditures and actual obligations (recorded in Atlas) of a Project during a period. This report is prepared by UNDP using Atlas and shared with the implementing partner on a quarterly basis and at the end of each year. The Implementing Partner is required to verify each transaction made and sign the quarterly issued CDR report. Statements of cash position as well as assets and equipment should also be submitted together with the CDR on a yearly basis.

249. Audit - The Government will provide the UNDP 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 project will be conducted according to UNDP financial regulations and rules and applicable audit policies. The audit will be conducted by the legally recognized auditor of the Government, or by a commercial auditor engaged by the Government.

250. Compliance with the Minimum Operating Security Standards - The project will comply with the UNDP MOSS.

Communications and visibility requirements:

251. Full compliance is required with GEF and 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 need 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.

252. 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.

253. 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.

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

Table 9. M&E Activities, Responsibilities, Budget and Time Frame

Type of M&E activity	Responsible Parties	Budget US$ *Excluding project team staff time*	Time frame
Inception Workshop	Project Manager UNDP CO UNDP GEF	10,000	Within first three months of project start up
Inception Report	Project Team UNDP CO	None	Submit draft two weeks before the IW, finalize it immediately following IW
Measurement of Means of Verification for Project Purpose Indicators	Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members	To be finalized in Inception Phase and Workshop. Indicative cost: 20,000.	Start, mid and end of project
Measurement of Means of Verification for Project Progress and Performance- measured annually	Oversight by Project Manager Project team	None	Annually prior to ARR/PIR and to the definition of annual work plans
ARR and PIR	Project Team UNDP-CO UNDP-GEF	None	Annually
Periodic status / progress reports	Project team	None	Periodic
CDRs	Project Manager	None	Quarterly
Issues Log	Project Manager UNDP CO Programme Staff	None	Quarterly
Risks Log	Project Manager UNDP CO Programme Staff	None	Quarterly
Lessons Learned Log	Project Manager UNDP CO Programme Staff	None	Quarterly
Mid-term Review, including SESP review	Project team UNDP- CO UNDP-GEF Regional Coordinating Unit External Consultants (i.e. review team)	40,000	At the mid-point of project implementation.

Type of M&E activity	Responsible Parties	Budget US$ *Excluding project team staff time*	Time frame
NSC Meetings	Ministry of Natural Resources and Environment and UNDP	0	Bi-annual
Visit to Field Sites	UNDP	0	Bi-annual
Final Evaluation	Project team, UNDP-CO UNDP-GEF Regional Coordinating Unit External Consultants (i.e. evaluation team)	40,000	At the end of project implementation
Terminal Report	Project team UNDP-CO local consultant	0	At least one month before the end of the project
Lessons learned	Project team UNDP-GEF Regional Coordinating Unit (suggested formats for documenting best practices, etc)	9,000	Compilation, publication and dissemination of lessons learned at end of project
Audit	UNDP-CO Project team	10,000	Yearly
TOTAL indicative COST *Excluding project team staff time and UNDP staff and travel expenses*		US$ 129,000	

7 LEGAL CONTEXT

This document together with the CPAP signed by the Government and UNDP which is incorporated herein by reference, constitute together a Project Document as referred to in the Standard Basic Assistance Agreement (SBAA); as such all provisions of the CPAP apply to this document. All references in the SBAA to "Executing Agency" shall be deemed to refer to "Implementing Partner", as such term is defined and used in the CPAP and this document.

Consistent with the Article III of the Standard Basic Assistance Agreement (SBAA), the responsibility for the safety and security of the Implementing Partner and its personnel and property, and of UNDP's property in the Implementing Partner's custody, rests with the Implementing Partner. To this end, the Implementing Partner shall:

a) 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;
b) assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.

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 the Implementing Partner's obligations under this Project Document. The Implementing Partner 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/sc/committees/1267/aq_sanctions_list.shtml. This provision must be included in all sub-contracts or sub-agreements entered into under/further to this Project Document".

8 ANNEX 1- RELEVANT INFORMATION

A. Annual Progress Report (APR) Template

COUNTRY PROGRAMME ACTION PLAN 2016-2020

ANNUAL PROGRESS REPORT 2016

Section 1: Overall Implementation of Project Outputs as Per Signed Annual Work Plan 2016

2016 AWP Budget:	**Total Project Budget:**
2016 AWP Budget (Revised):	**Total Project Expenditure:**
2016 Expenditure:	**Total Project Expenditure (%):**
2016 Expenditure (%):	**Total In-Kind Contribution:**
2016 In-Kind Contribution:	**Gender Marker Rating (ATLAS):**

OUTPUT 1:
Activity 1: **Target 2016:** **Achievement and Results 2016:** **Activity 2:** **Target 2016:** **Achievement and Results 2016:** **Remarks if any project activities and targets were not implemented or amended.**

OUTPUT 2:
Activity 1: **Target 2016:** **Achievement and Results 2016:** **Activity 2:** **Target 2016:** **Achievement and Results 2016:** **Remarks if any project activities and targets were not implemented or amended.**

OUTPUT 3:
Activity 1: Target 2016: Achievement and Results 2016: Activity 2: Target 2016: Achievement and Results 2016: Remarks if any project activities and targets were not implemented or amended.

Section 2: Project Contribution to National Development Agenda in 2016

2.1 Contribution to Analysis/ Development/ Refinement of National or Sectoral Policies, Strategies and Action Plans

(Note: Please indicate and elaborate on how the outputs have been utilized by the Implementing Partner to contribute to analysis/ development/ refinement of National or Sectoral Policies, Strategies and Action Plans. Please also indicate if the outputs have contributed to the implementation of the 10th Malaysia Plan or inputs into the 11th Malaysia Plan preparatory work.)

☐ Yes	
☐ No	

2.2 Contribution to awareness raising or convening on key thematic issues

(Note: Please indicate the thematic issues, objective of activities and the number of participants and affiliations.)

☐ Yes	Topic: Objective: Participants Pax: Affiliations (Name the Ministries involved and indicate the number of private sector, civil society organizations and academia who participated):
☐ No	

2.3 Contribution to capacity development and institutional arrangements (Mandatory response)

(Note: Please indicate if capacities are being built to implement or sustain systemic changes.)

☐ Yes	
☐ No	

2.4 Contribution to development of new datasets, statistics or models

(Note: Please indicate if datasets, statistics or models have been generated or improved/ updated. Please also indicate on how these have been utilized by the Implementing Partner to strengthen national evidence based policy making.)

☐ Yes	
☐ No	

2.5 Contribution to Gender Equality

(Note: Please specify aspects of project activities and outputs that have contributed to gender equality. E.g: gender disaggregated data have been produced; activities was gender inclusive; gender analysis of outputs have been generated; outputs have been utilized in state/national/agency policies in gender sensitive ways; and/or stakeholder capacity in collecting, retrieving, and analyzing data with a gender perspective have been supported.)

☐ Yes	
☐ No	

2.6 Demonstration or Pilot Initiative

(Note: Please indicate if demonstration or pilot initiatives were undertaken and how outputs have contributed to inform decision-making and/or national policy and also if it has led to actual/ planned upscaling or replication.)

☐ Yes	
☐ No	

2.7 Review of Risk Analysis and Action

(Note: Upon reviewing the Risk Analysis stated in the Project Document, please indicate if the risks status were monitored and updated regularly. Please also highlight mitigation steps undertaken, if applicable.)

☐ Yes	
☐ No	

2.8 Areas of Improvement for Project Management and Implementation

(Note: Please indicate any additional comments on areas of improvement that should be taken into consideration by EPU and UNDP Malaysia in the implementation of future projects.)

Section 3: Project Extension into 2017

(NOTE: APPLICABLE ONLY TO PROJECTS ORIGINALLY SCHEDULED FOR COMPLETION IN 2016)

Please indicate reasons for the project extension
Proposed duration of project extensions XX Months
Agreement by National Steering Committee: Date of Meeting: Minutes Attached: ☐ Yes ☐ No

Annual Progress Report 2016 approved by:

.....

Name

Designation

B. Mid-Year Progress Report (MYPR) Template

COUNTRY PROGRAMME ACTION PLAN 2016-2020

MID-YEAR PROGRESS REPORT 2016

SECTION A: *TO BE COMPLETED BY UNDP MALAYSIA*

1. PROJECT DETAILS	
Project Title: Implementing Partner:	Award ID: Project ID: Project Period (Project Document): Revised Project End Date (If Any):

2. FINANCIAL MANAGEMENT	
2016 AWP Budget: USD 2016 Expenditure - As of 30 June: USD 2016 Expenditure - As of 30 June (%):	Total Cumulative Expenditure: USD Total Cumulative Expenditure (%):

3. PROJECT MANAGEMENT				
NSC:	☐ Yes	☐ No	NSC Date (Actual/ Scheduled):	
Minutes (Attached):	☐ Yes	☐ No	NSC Chair & Designation:	

4. RISK LOG MANAGEMENT AND MONITORING				
Risk Log Reviewed:	☐ Yes	☐ No	Last Log Update:	
Risk Log Amended:	☐ Yes	☐ No	Last Log Amendment:	

5. AUDIT AND EVALUATION					
NIM Audit:	☐ Yes	☐ No	Project Evaluation:	☐ Yes	☐ No
Report (Attached):	☐ Yes	☐ No	Report (Attached):	☐ Yes	☐ No
Rating:			Rating:		

SECTION B: *TO BE COMPLETED BY IMPLEMENTING PARTNER*

1. 2016 OUTPUT TARGETS AND STATUS	
Output 1: Name	
Target:	Status: ☐ On Track ☐ Off Track Details:
Output 2: Name	
Target:	Status: ☐ On Track ☐ Off Track Details:
Output 3: Name	
Target:	Status: ☐ On Track ☐ Off Track Details:
Output 4: Name	
Target:	Status: ☐ On Track ☐ Off Track Details:

2. ISSUES AND CHALLENGES
Description:
Action Taken By implementing Partner:
Additional Support Requested from UNDP/ EPU:

Mid Year Progress Report 2016 approved by:

.....

Name:

Designation:

Date:

C. Funding Authorization and Certificate of Expenditures (FACE) Form Template

Funding Authorization and Certificate of Expenditures

UN Agency: XXXXXXXXXX

Date: DD/MM/YYYY

Country: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Programme Code & Title: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Project Code & Title: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Responsible Officer(s): XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Implementing Partner: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Type of Request:
- ☐ Direct Cash Transfer (DCT)
- ☐ Reimbursement
- ☐ Direct Payment

Currency: _____

Activity Description from AWP with Duration	Coding for UNDP, UNFPA and WFP	REPORTING				REQUESTS / AUTHORIZATIONS		
		Authorised Amount MM-MM YYYY A	Actual Project Expenditure B	Expenditures accepted by Agency C	Balance D = A - C	New Request Period & Amount MM-MM YYYY E	Authorised Amount F	Outstanding Authorised Amount G = D + F
XXXXXXXXXXXXXXXXXXXXXXXXX (MM/YYYY - MM/YYYY)								
XXXXXXXXXXXXXXXXXXXXXXXXX (MM/YYYY - MM/YYYY)								
XXXXXXXXXXXXXXXXXXXXXXXXX (MM/YYYY - MM/YYYY)								
Total		0	0	0	0	0	0	0

CERTIFICATION

The undersigned authorized officer of the above-mentioned implementing institution hereby certifies that:

- ☐ The funding request shown above represents estimated expenditures as per AWP and itemized cost estimates attached.
- ☐ The actual expenditures for the period stated herein has been disbursed in accordance with the AWP and request with itemized cost estimates. The detailed accounting documents for these expenditures can be made available for examination, when required, for the period of five years from the date of the provision of funds.

Date Submitted: _____ Name: _____ Title: _____

NOTES: * Shaded areas to be completed by the UN Agency and non-shaded areas to be completed by the counterpart.

FOR AGENCY USE ONLY:

FOR ALL AGENCIES
Approved by:
Name: _____
Title: _____
Date: _____

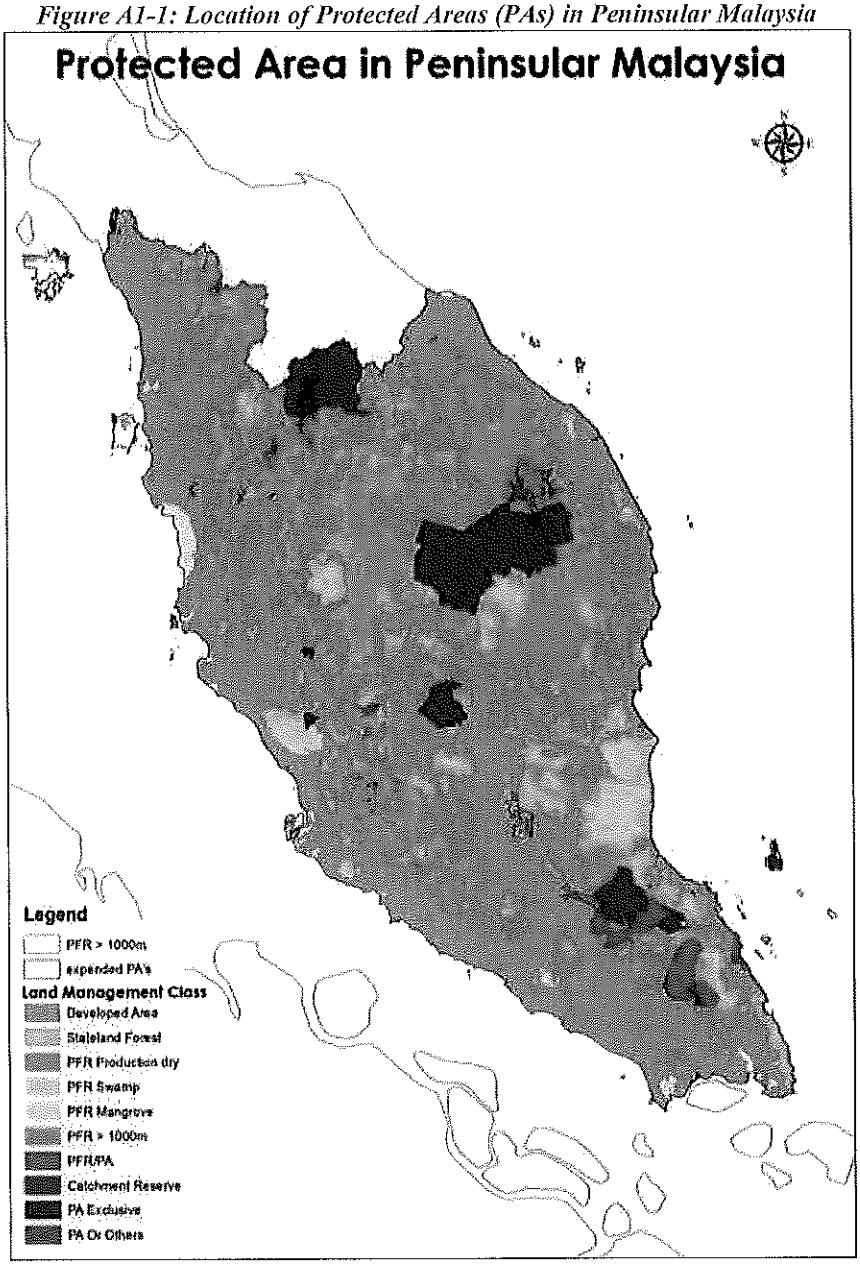
FOR UNICEF USE ONLY			
Account Charges		Liquidation Information	
Cash Transfer Reference: *CRQ ref. no., Voucher ref. no.*		DCT Reference: *CRQ ref. no., Liquidation ref. no.*	
GL codes:		DCT Amount	0
Training	0	Less:	
Travel	0	Liquidation	
Meetings & Conferences	0	Amount	0
Other Cash Transfers	0		
Total	0	Balance	0

FOR UNFPA USE ONLY	
New Funding Release	
Activity 1	0
Activity 2	0
Total	0

ADDITIONAL INFORMATION ON PROJECT

- Information on Malaysia's Protected Area System
- Preliminary proposals for a Strategy and Action Plan on Riverine Biodiversity
- Conservation
- Demonstration Site Profiles
- Capacity Development Scorecard See attached file
- Knowledge, Attitudes and Practices Assessment Methodology
- GEF Biodiversity Tracking Tool
- Social and Environmental Screening Procedure Summary
- Summary of SESP Stakeholder Consultations
- Preliminary list of related research by national universities

Figure A1-1: Location of Protected Areas (PAs) in Peninsular Malaysia



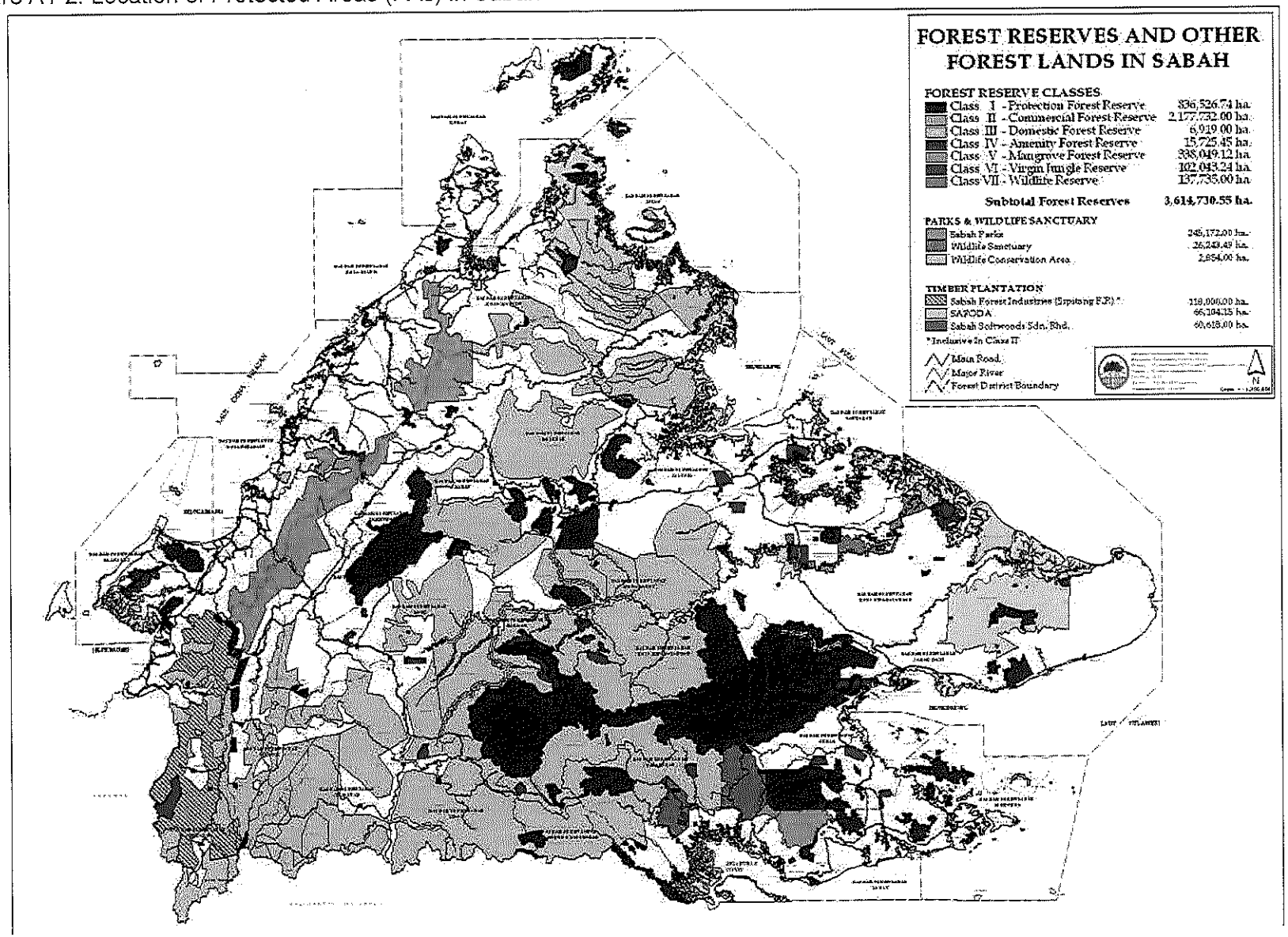
Source: NRE, 2014

Table A1-1: Protected Areas in Sabah

			Size (Ha.)
A Wildlife / Bird / Marine Sanctuary	Lower Kinabatangan		27,800
	Sipadan		12
	Kota Belud		12,200
	Mantanani Kecil		61
	Kota Kinabalu		24
	Lankayan Billean Tegapil Marine Conservation Area		30,000
	Sub-total		70,097
B Protected Forest Reserve	Class		Size (Ha.)
	I	Protection	342,216
	II	Commercial	2,685,119
	III	Domestic	7,350
	IV	Amenity	20,767
	V	Mangrove	316,024
	VI	Virgin Jungle	90,386
	VII	Wildlife Reserve	132,653
	Sub-total		909,401
C Parks (Including coral reef)	Kinabalu		75,370
	Tungku Abdul Rahman		4,020
	Turtle Islands		1,740
	Pulau Tiga		15,864
	Tawau Hills		27,927
	Crocker Range		139,919
	Sub-total		265,749

Source: http://www.wildlife.sabah.gov.my/

Figure A1-2: Location of Protected Areas (PAs) in Sabah



Source: Sabah Forestry Department, 2014

Figure A1- 3. The Lower Kinabatangan – Segama Wetlands Ramsar Site

Source: Ramsar Convention Secretariat – Ramsar Sites Database

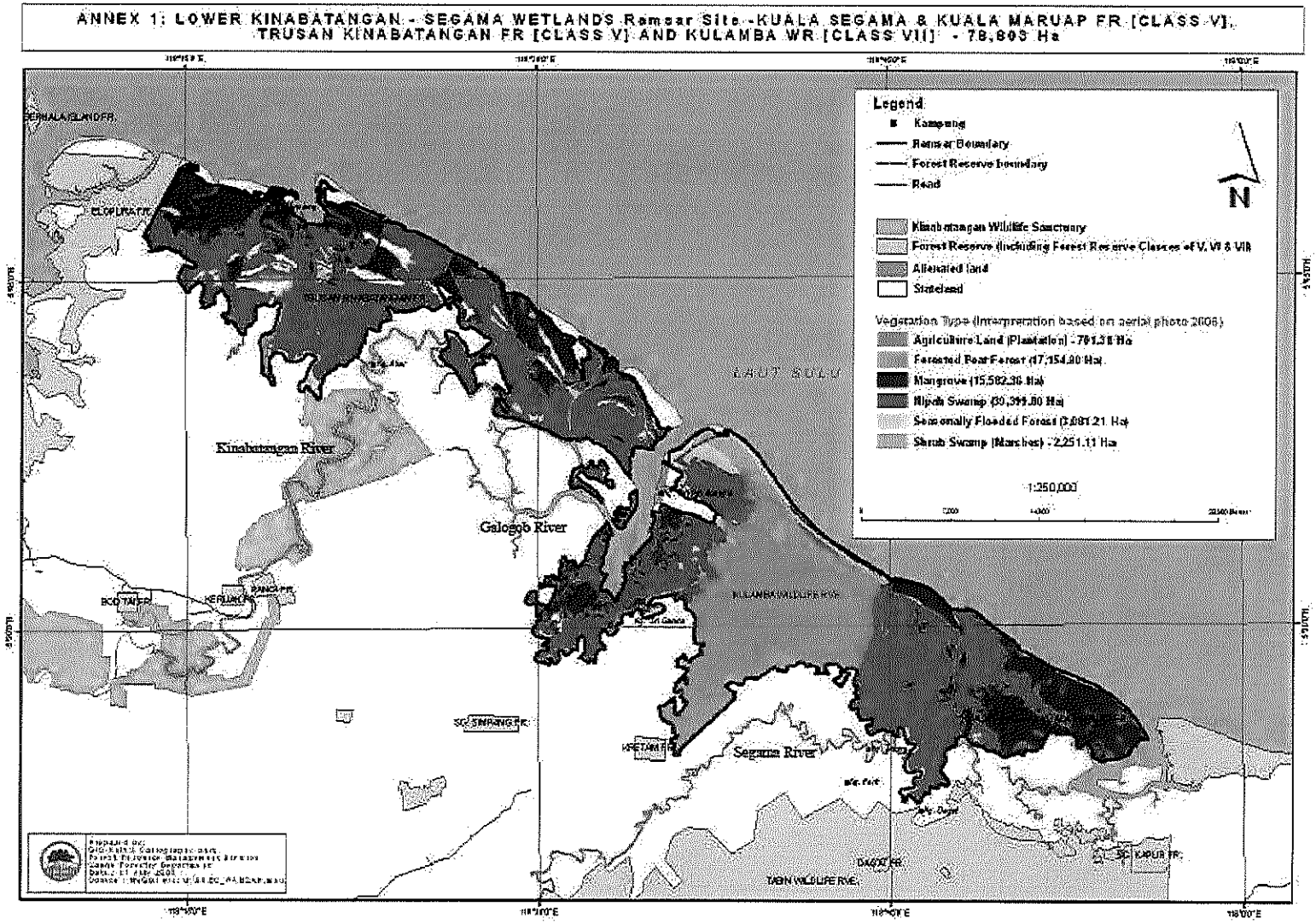
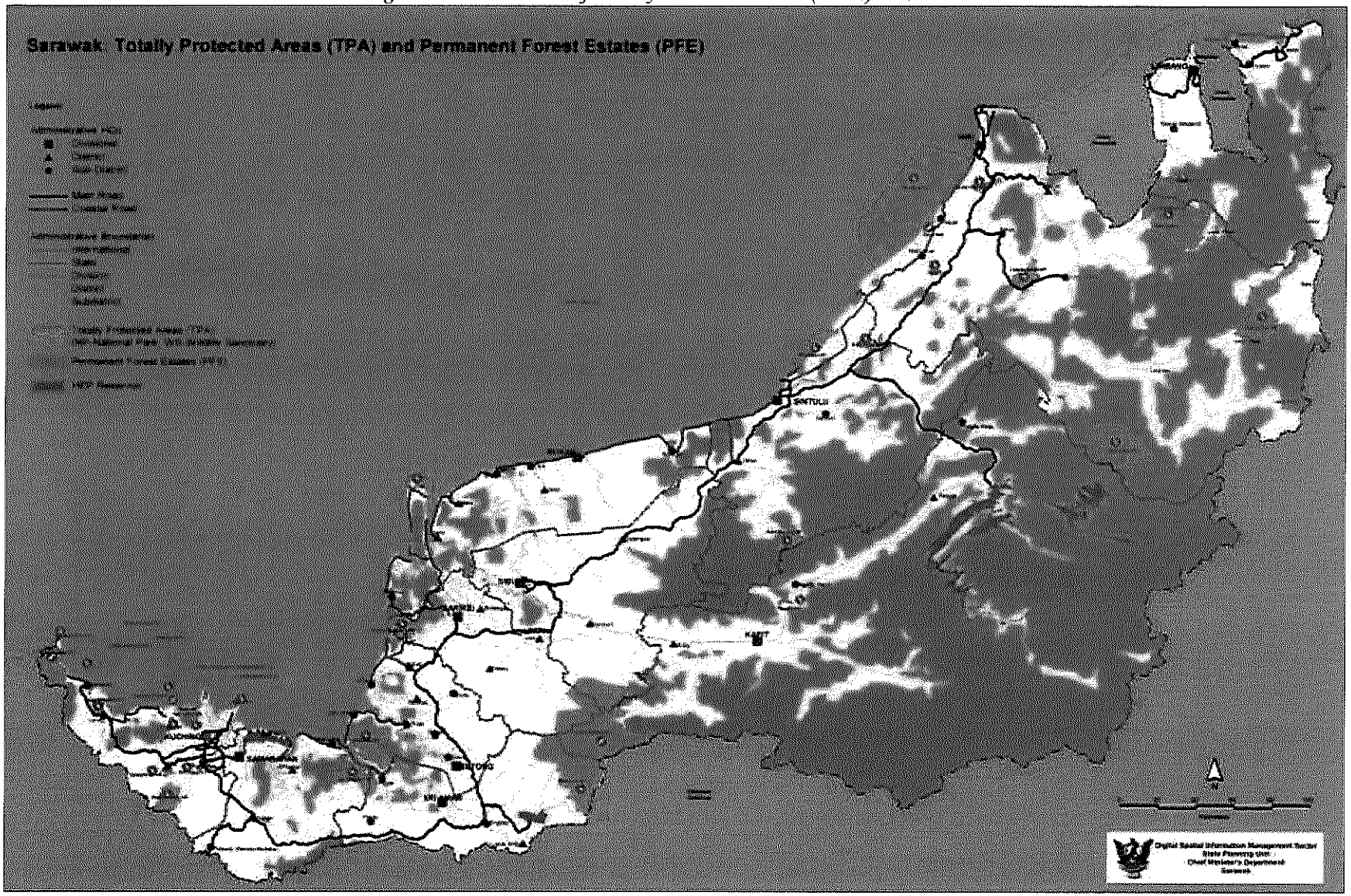


Table A1-2: Totally Protected Areas (TPAs) in Sarawak, 2012

TPAs	Land Area (ha)	Water Bodies (ha)	Total Area (ha)
National Parks	375,056.0	206,344.0	581,400.0
Nature Reserves	1,220.3	0.0	1,164.3
Wildlife Sanctuary	192,235.4	0.0	192,235.4
Total	**568,455.7**	**206,344.0**	774,799.7

Source: Forest Department Sarawak, 2014

Figure A1-4: Location of Totally Protected Areas (TPAs) in Sarawak



Source: Forest Department Sarawak

Annex 2. Preliminary proposals for a Strategy and Action Plan on Riverine Biodiversity Conservation

Strategy	Descri tion
Increase public awareness on the of importance oliversity conservation freshwater resources	A major issue in the conservation of any natural resource is public awareness, An informed and aware public that regards a natural resource rightly as heritage to be safeguarded for future generations is a critical asset in its sustainable management. The negligible level of public awareness on local freshwater fish resources stands in stark contrast against this backdrop. Though there is a vague recognition that freshwater biodiversity is seriously compromised by environmental degradation of aquatic habitats, there is little public awareness on the depth and wealth of living freshwater resources. Current Initiatives have been limited to the publication of posters and the occasional warning against using poisons for fishing, Beyond that, however, the public does not have ready access to information on local freshwater biodiversity resources. Current public perceptions are moulded largely by the aquarium trade. However, these perceptions are framed around aquarium fish, which may or may not be indigenous, and says nothing about conservation and management issues. Thc aquarium trade, however, still represents the most convenient access to the public and should be in the forefront of any awareness campaign Recreational fishermen, most of whom are educated and potentially capable of understanding resource conservation and management issues, should also be in the frontline of any awareness ro rammes.

Review existing legislation with respect to freshwater biodiversity conservation and management	Fish o Existing regulations enacted by the various State governments under the Fisheries Act 1985 (Amended 1993) are directed mainly at the management of inland capture fisheries. The standardised rules were first framed in the 1980s during very different economic and environmental conditions, when the major priority was managing fishing eff01t rather than sustaining biodiversity. Their continued relevance is thus eroded by changes in the nature of the fishing effort as well as the growing need to look at the resources from all perspectives. o In terms of fishing effort, regulations must be redrafted to reflect the growing presence of recreational fishing and the demands these fishers would have on the resource, Aspects relating to conservation and management of indigenous freshwater fish, even in areas where inland fishing is not undertaken, should also be expanded and strengthened. Provisions relating to the declaration and protection of spawning grounds should take priority in this exercise. o Other areas that such a legislative review would address include: Identification of centralised collection and distribution centres for inland fisheries catch. Pre-empting potential conflict between recreational and commercial fishermen, o Licensing of anglers. Regulations for licensing of marine anglers are in the pipeline. Regulations and enforcement (size limits, closed seasons, closed areas). Amphibians, reptiles, mammals and birds o The Department of Wildlife and National Parks has enforced Wildlife Conservation Act 2010 (Act 1976) since 27 th December 2010. This Act only applies in Peninsular Malaysia and Federal Territory of Labuan, which cover all wildlife species, wildlife derivatives, hybrid species and invasive alien species. The Act

	also has the jurisdiction to address issues on wild animal welfare and cruelty e.g. poaching, keeping and using protected species without permit. The new penalties include fines of up to RM500,000 with jai' term of not more than five years, while the minimum penalty imposed for several offences is not less than RM5,000. Moreover, this Act provides mandatory jail sentence for a term not exceeding five years and a fine not less than RMI 00,000 and not more than RM500,000 tor offences involving protected wildlife such as tigers, rhinoceros, leopard, clouded leopard and false gharial. Moreover, the General Director of Department of Wildlife and National Parks has the right to appoint any public officer to undertake the enforcement. In Sabah, the wildlife and its habitat are protected under Wildlife Conservation Enactment (No. 6 of 1997), which is gazette on 24 th December 1997, The authority that has been responsible on this enactment is Sabah Wildlife Department, The enactment provides declarations of three types of protected areas i.e. Wildlife Sanctuaries (section 9(6)), Conservation Areas (section 21) and Wildlife Hunting Areas (section 64(2)). Moreover, according to the enactment, every protected animal or plant or animal product shall be the property of the government, and if any person who hunts, or obtain possession of those animals without proper licensing are presumed to commit an offence and shall be liable on conviction to a fine of RM50,000 or five years imprisonment. or both. In Sarawak, the Wildlife Protection Ordinance 1998 has been implementing for the purpose to protect the wildlife and their habitat. The ordinance is fall under jurisdiction of Sarawak Forest Department and Sarawak Forestry Corporation. This ordinance is open only for purpose of conservation and research of wildlife. The wildlife (both flora and fauna) are categorized into two types i.e. 'Totally Protected' and 'Protected'. -However, only 'Protected' wildlife, licenses to hunt or ownership can be retrieved upon payment with respective amount of fees. Riparian vegetation a Study by Azliza et al. (2012) [1] stated that the riparian zone is legally protected in Malaysia, where the buffer zone should be built along the permanent watercourses, however, the size of buffer zones depends on individual states' laws and the width of the stream. Generally, the buffer zone is 10 m wide in Peninsular Malaysia (Chappell and T hang, 2002) [2] . Buffer zone regulations are rarely if ever enforced however. Thus, logging and land clcating activities tbr plantation development commonly deplete the riparian vegetation and contribute to high suspended sediments and nufricnts in water bodies, directly impacting aquatic flora and fauna. o Riparian vegetation is covered by the National Forestry Act 1984, which is applied throughout Peninsular Malaysia and managed by the Forestry Department Peninsular Malaysia. According to the Act, the State authority has the right to excise land from permanent reserved forest and need to replace land excised, where it should takes into account the need for water conservation, biodiversity and other environmental consideration. State Forestry acts in Sabah and Sarawak govern the use of vegetation resources in those states.

[1] Azliza, M, , M, Nazre, M.I<. Mohamad-Roslan alid K. Shamsul. 2012. Characterization of Riparian Plant Community in Lowland F0à•est of Peninsular Malaysia. International Journal of Botany, 8(4):

[2] Chappell, NIA. and H.C. T hang. 2007. Practical Hydrological Protection for Tropical Forests: 'Thc Malaysian Experience, (Jnasylva, 229: 17-21

Improve and strengthen existing resource management and administration mechanisms	There is a clear need tar the emergence of dedicated mechanisms to facilitate conservation and management [redacted] for inland fisheries resources. In this, current agencies are expected to continue their role as custodians of freshwater biodiversity resources. However, these agencies must develop the appropriate organisational resources to enable a comprehensive conservation regime to be put in place. Though a full scale mechanism can be engendered only in the medium to long term, measures such as identifying and training dedicated staff fbr management, conservation, education and public awareness programmes and others can be implemented in the near future,
Identificationof specific designation servation areas for shwater indigenous biodiversity	In the absence of knowledge on the reproductive biology of most species of freshwater fauna and flora, the only way to sustain recruitment to the standing stock would be to ensure that habitats are conserved in their natural state. The declaration of Endau Rompin as a State Park and that of Tasek Beca as a Ramsar Site, for example, has had a positive impact on freshwater biodiversity conservation. However, in most cases, the need for conservation of aquatic biodiversity has been incidentaf to the conservation of a habitat or other within it. Paft of the problem is the fact that there are insufficient data to indicate areas that are woffhy of protection. Investigations into Lake Temenggor indicated that the upstream stretches of the Perak River constitute a major spawning ground and recommendations were made to declare it a conservation area. However, na action was taken on the matter, though the area now falls under the Belum State Pat'k. Similarly, the upper reaches of the Bukit Merah reservoir are known to be a major spawning ground of the M ⊡ l a Boney-tongue (Scleropages.formosus) and are therefore a priority f03' conservation. The last systematic attempt to document Malaysia's wetland resources was the Malaysian Wetland Directory, published by the Dept of Wildlife and National Parks in 1987. This is now significantly out of date and should be ltpdated through a national wetland inventory programme, supported by field assessments of little known Fiver and wetland systems. The inventory should provide the basis for a conservation assessment prioritizing river and wetland systems tar protection, management, research and monitoring.
Protection of specific indigenous hwater captLkž•e fish from	Certain specific fish known to be of conservation value must be identified and their capture prohibited. These must include the eight Malaysian species listed by IUCN as Critically Endangered and Endangered. Othel rare species such as the Mahseet• (Kelah, Tor tambroides), Freshwater stingray (Pari, Dasyatis bleekeri) and Freshwater sale (Ikan Lidah, Achiroides leucorhynchos) should be included,
Habitat enhancement programmes for selected water bodies	Habitat enhancement is practiced to improve shelter, feeding and breeding grounds. Weed cutting is common in lakes where high levels of eutrophication encourage the growth of emergent vegetation. Spawning gravels and shelter devices may be installed. The manner in which habitat enrichment is carried out would be site,,specific, depending on the nature and requirements of the habitats in question. All initiative along these lines would necessarily have to be subject to detailed baseline studies to identify the kind of enrichment and improvements that are necessary and are practicable. Key elements of a restoration programme as described by Hobbs and

	Norton (1996)[79] are as folfows: o Identifying the processes leading to the decline of a system o Determine realistic goals
	Developing nnethods to reserve or mitigate the decline of a system Developing easily observable measures of SLICCeSS Developing practical techniques for the implementation of specific actions to achieve restoration goals Monitoring key system variables and practicing adaptive management, if necessary; and Documenting and communicating techniques fòr inclusion in other [and use planning. The [arge number of disparate and dispersed water bodies throughout the Peninsula pre-empts the possibility of a comprehensive fisheries management regime to be employed to cover all of thema at least in the near to medium term. A more rationai approach would bc to identify specific water bodies that have unique environmental characteristics or in which habitat degradation has not proceeded to a point where rehabilitation is untenabler
Institute planned seed stocking programmes	Though there is already a public stocking programllle. in place, its implementation leaves much to be desired. As pointed out earlier, the choice of species, stocking site and numbers released are decided capriciously, with little regard for the dynamics of the systems concerned. The lack of pre,, and post-stocking {nonitoring programme has also not enabled a concise appraisal of its costs and benefits. These shortcomings should be addressed in a planned seed stocking programme for public waters. As with habitat enhancement, it would be more practical to identify specific water bodies for stocking purposes, with a comprehensive baseline resource appraisal before stocking e g ı n s and a regular Inonitoring programme thereafter. In fact, where possible, the same water bodies should be involved in both programmes. This would prevent dilution of implementation resources as well as enable closer monitoring of the fish stocks in a given site.

[79] Hobbs, R.I. and D.A. Norton. 1996. Towards a Conceptual Framework for Restoration Ecology. Restoration Ecology, 4(2): 93-1 10

Institute guidelines for integrated approach to inland fisheries management	There is a need for guidelines on optimizing inland fisheries in multiple use contexts, particularly by State and Federal planners. During the planning and design process, negotiations between the flEture users should take place as this would assist both the fisheries and non-fisheries planners to better understand the specific requirements of fisheries in inland waters. These guidefines can be dealt in several issues such as: o The economic and social context of the fishery. o The factors controlling the size of the fishery, o The impacts of man's activities on the potential of fisheries including impacts of dams and barrages, land recovery, drainage, flood protection, aquaculture, industrial and urban use, recreational use, transport and the effect of fisheries exploitation. Adopting these guidelines would enable transcending of the administrative and legislative boundaries between State and Federal functions. However, the Drainage and Irrigation Department operates in a concurrent legal environment where fiver management is concerned and it Enay be appropriate to use their mechanisms to specify and implement these guidelines as well.

Proposed Elements of an Action Plan for Freshwater Fish Conservation

Action	Descri tion
To garner the support Of government institutions in enhancing the management and conservation of freshwater fisheries resources	State governments should be made aware of the importance of their respective freshwater fish resources and appropriate strategies should be embroidered into their overall resource management and conservation plans. This can be done by developing a state-specific conservation plan for each state, which would take into account their respective economic and political priorities regarding the prevailing freshwater fisheries resource base. As the lead management agency in the management and conservation of freshwater resources in the country, the collaboration and commitment of the DoFM is crucial to the success of any initiative in the field. Specifically, the initial efforts of the DoFM should focus on: o Improving and upgrading legislation on freshwater fish conservation and management. 0 Improving and upgrading management and organisatlonal machinery. Though the DoFM is a major player in the effort, another agency that plays a lead role is the Drainage and Irrigation Department and River Boards (Selangor). The DID is the primary instrument for drainage management in the country and its mandate also covers all freshwater aquatic resources that are also crucial freshwater fish habitats. The DID should be made aware of the habitat requirements of freshwater fish and the environmental impacts of drainage infrastructure on these requirements. The DID can also be the primary mechanism by which a more integrated approach on inland fisheries can be engendered. In this respect, the initial involvement of the DID can be to weave these proposed guidelines within the framework of the management regimes that are now pursued in their river management activities. Other agencies that can and should play a role include the Departments of Forestry, Environment and Wildlife Management and National Parks. The role of local district and municipal councils is also critical. Inputs for co-ordination of these agencies can come from the State Economic Planning Unit or an agency so designated by the State.
To develop an	At resent, information on indigenous freshwater fish

integrated database an indigenous freshwater fish	is scattered, with different authorities unde.ltaking research, without co-ordination Ol' complementation. Much of the present situation arises because of the lack of an integrated database on freshwater fish to which researchers can make reference. An integrated database on indigenous freshwater fish would thus be an important first step in channeling present research eflòrts into priority areas where it is most needed.
To undertake a public awareness programme on inland fisheries	A public education programme to instill public awareness of the value and extent of local freshwater fish should be undertaken. The campaign should ideally be interwoven together with the aquarium and recreational fisheries trade. Both have trade (Aquarium Fish Producers Association) and special interest groups (Persatuan Memancing Malaysia) who can help to mobilise public interest and opinion towards conservation and sustainable management. Aquarium shops would serve as yet another vehicle to expand knowledge and awareness of the conservation importance of local freshwater fish. The negative impacts of invasive alien species (AIS) on indigenous fish populations and the managelnent of AIS should be key subjects for awareness campaigns.
To identify suitable aquatic habitats for conservation and rehabilitation	The strategies to preserve, enrich and rehabilitate aquatic habitats should be predicated on adopting a focused approach, where specific water bodies that a have unique environmental characteristics or in which habitat degradation has not proceeded to a point where rehabilitation becomes untenable are identified and targeted. The first step, therefore, would be to undeffake a study to appraise the extent of various aquatic resources found throughout Malaysia and identify sites that would qualify for preservation and rehabilitation. Such a study would lead to a document that would provide a framework for the conservation of freshwater fish resources in Malaysia. It would identify various potential sites, indicate their conservation value and the manner in which rehabilitation should be pursued. When seed stocking programmes are involved, it would be able to identify suitable species and the approximate numbers that would be needed to be involved. It must be recognised that each site would then demand a separate site specific evaluation of its resources and recommendations on how these resources can be further enhanced or conserved. e

Strategy	Description
Increase public awareness on the of importance the of conservation biodiversity freshwater resources	▯ A major issue in the conservation of any natural resource is public awareness. An informed and aware public that regards a natural resource rightly as heritage to be safeguarded for future generations is a critical asset in its sustainable management. The negligible level of public awareness on local freshwater fish resources stands in stark contrast against this backdrop. Though there is a vague recognition that freshwater biodiversity is seriously compromised by environmental degradation of aquatic habitats, there is little public awareness on the depth and wealth of living freshwater resources. ▯ Current initiatives have been limited to the publication of posters and the occasional warning against using poisons for fishing. Beyond that, however, the public does not have ready access to information on local freshwater biodiversity resources. ▯ Current public perceptions are moulded largely by the aquarium trade. However, these perceptions are framed around aquarium fish, which may or may not be indigenous, and says nothing about conservation and management issues. The aquarium trade, however, still represents the most convenient access to the public and should be in the forefront of any awareness campaign. ▯ Recreational fishermen, most of whom are educated and potentially capable of understanding resource conservation and management issues, should also be in the frontline of any awareness programmes.
Review existing legislation with respect to freshwater biodiversity conservation and management	▯ Fish o Existing regulations enacted by the various State governments under the Fisheries Act 1985 (Amended 1993) are directed mainly at the management of inland capture fisheries. The standardised rules were first framed in the 1980s during very different economic and environmental conditions, when the major priority was managing fishing effort rather than sustaining biodiversity. Their continued relevance is thus eroded by changes in the nature of the fishing effort as well as the growing need to look at the resources from all perspectives. o In terms of fishing effort, regulations must be redrafted to reflect the growing presence of recreational fishing and the demands these fishers would have on the resource. Aspects relating to conservation and management of indigenous freshwater fish, even in areas where inland fishing is not undertaken, should also be expanded and strengthened. Provisions relating to the declaration and protection of spawning grounds should take priority in this exercise. o Other areas that such a legislative review would address include: ❖ Identification of centralised collection and distribution centres for inland fisheries catch. ❖ Pre-empting potential conflict between recreational and commercial fishermen. ❖ Licensing of anglers. Regulations for licensing of marine anglers are in the pipeline. ❖ Regulations and enforcement (size limits, closed seasons, closed areas). ▯ Amphibians, reptiles, mammals and birds o The Department of Wildlife and National Parks has enforced Wildlife Conservation Act 2010 (Act 1976) since 27th December 2010. This Act only applies in Peninsular Malaysia and Federal Territory of Labuan, which cover all wildlife species, wildlife derivatives, hybrid species and invasive alien species. The Act

	also has the jurisdiction to address issues on wild animal welfare and cruelty e.g. poaching, keeping and using protected species without permit. The new penalties include fines of up to RM500,000 with jail term of not more than five years, while the minimum penalty imposed for several offences is not less than RM5,000. Moreover, this Act provides mandatory jail sentence for a term not exceeding five years and a fine not less than RM100,000 and not more than RM500,000 for offences involving protected wildlife such as tigers, rhinoceros, leopard, clouded leopard and false gharial. Moreover, the General Director of Department of Wildlife and National Parks has the right to appoint any public officer to undertake the enforcement. o In Sabah, the wildlife and its habitat are protected under Wildlife Conservation Enactment (No. 6 of 1997), which is gazette on 24th December 1997. The authority that has been responsible on this enactment is Sabah Wildlife Department. The enactment provides declarations of three types of protected areas i.e. Wildlife Sanctuaries (section 9(6)), Conservation Areas (section 21) and Wildlife Hunting Areas (section 64(2)). Moreover, according to the enactment, every protected animal or plant or animal product shall be the property of the government, and if any person who hunts, or obtain possession of those animals without proper licensing are presumed to commit an offence and shall be liable on conviction to a fine of RM50,000 or five years imprisonment or both. o In Sarawak, the Wildlife Protection Ordinance 1998 has been implementing for the purpose to protect the wildlife and their habitat. The ordinance is fall under jurisdiction of Sarawak Forest Department and Sarawak Forestry Corporation. This ordinance is open only for purpose of conservation and research of wildlife. The wildlife (both flora and fauna) are categorized into two types i.e. 'Totally Protected' and 'Protected'. However, only for 'Protected' wildlife, licenses to hunt or ownership can be retrieved upon payment with respective amount of fees.
	□ Riparian vegetation

			o Study by Azliza *et al.* (2012)[80][81] stated that the riparian zone is legally protected in Malaysia, where the buffer zone should be built along the permanent watercourses, however, the size of buffer zones depends on individual states' laws and the width of the stream. Generally, the buffer zone is 10 m wide in Peninsular Malaysia (Chappell and Thang, 2002)[82]. Buffer zone regulations are rarely – if ever – enforced however. Thus, logging and land clearing activities for plantation development commonly deplete the riparian vegetation and contribute to high suspended sediments and nutrients in water bodies, directly impacting aquatic flora and fauna. o Riparian vegetation is covered by the National Forestry Act 1984, which is applied throughout Peninsular Malaysia and managed by the Forestry Department Peninsular Malaysia. According to the Act, the State authority has the right to excise land from permanent reserved forest and need to replace land excised, where it should takes into account the need for water conservation, biodiversity and other environmental consideration. State Forestry acts in Sabah and Sarawak govern the use of vegetation resources in those states.
Improve and strengthen existing resource management and administration mechanisms			There is a clear need for the emergence of dedicated mechanisms to facilitate conservation and management programmes for inland fisheries resources. In this, current agencies are expected to continue their role as custodians of freshwater biodiversity resources. However, these agencies must develop the appropriate organisational resources to enable a comprehensive conservation regime to be put in place. Though a full scale mechanism can be engendered only in the medium to long term, measures such as identifying and training dedicated staff for management, conservation, education and public awareness programmes and others can be implemented in the near future.
Identification and designation of specific areas for conservation of indigenous biodiversity	shwater		In the absence of knowledge on the reproductive biology of most species of freshwater fauna and flora, the only way to sustain recruitment to the standing stock would be to ensure that habitats are conserved in their natural state. The declaration of Endau Rompin as a State Park and that of Tasek Bera as a Ramsar Site, for example, has had a positive impact on freshwater biodiversity conservation. However, in most cases, the need for conservation of aquatic biodiversity has been incidental to the conservation of a habitat or other wildlife within it.

[80] Azliza. M., M. Nazre, M.K. Mohamad-Roslan and K. Shamsul. 2012. Characterization of Riparian Plant Community in Lowland Forest of Peninsular Malaysia. International Journal of Botany, 8(4):

[81] -191.

[82] Chappell, N.A. and H.C. Thang. 2007. Practical Hydrological Protection for Tropical Forests: The Malaysian Experience. Unasylva, 229: 17-21

		□ Part of the problem is the fact that there are insufficient data to indicate areas that are worthy of protection. Investigations into Lake Temenggor indicated that the upstream stretches of the Perak River constitute a major spawning ground and recommendations were made to declare it a conservation area. However, no action was taken on the matter, though the area now falls under the Belum State Park. Similarly, the upper reaches of the Bukit Merah reservoir are known to be a major spawning ground of the Malayan Boneytongue (*Scleropages formosus*) and are therefore a priority for conservation. □ The last systematic attempt to document Malaysia's wetland resources was the Malaysian Wetland Directory, published by the Dept of Wildlife and National Parks in 1987. This is now significantly out of date and should be updated through a national wetland inventory programme, supported by field assessments of little known river and wetland systems. The inventory should provide the basis for a conservation assessment prioritizing river and wetland systems for protection, management, research and monitoring.
Protection of specific indigenous freshwater fish from capture	□	Certain specific fish known to be of conservation value must be identified and their capture prohibited. These must include the eight Malaysian species listed by IUCN as Critically Endangered and Endangered. Other rare species such as the Mahseer (Kelah, *Tor tambroides*), Freshwater stingray (Pari, *Dasyatis bleekeri*) and Freshwater sole (Ikan Lidah, *Achiroides leucorhynchos*) should be included.
Habitat enhancement programmes for selected water bodies	□	Habitat enhancement is practiced to improve shelter, feeding and breeding grounds. Weed cutting is common in lakes where high levels of eutrophication encourage the growth of emergent vegetation. Spawning gravels and shelter devices may be installed. The manner in which habitat enrichment is carried out would be site-specific, depending on the nature and requirements of the habitats in question. All initiative along these lines would necessarily have to be subject to detailed baseline studies to identify the kind of enrichment and improvements that are necessary and are practicable.
	□	Key elements of a restoration programme as described by Hobbs and Norton (1996)[83] are as follows: o Identifying the processes leading to the decline of a system o Determine realistic goals

[83] Hobbs, R.J. and D.A. Norton. 1996. Towards a Conceptual Framework for Restoration Ecology. Restoration Ecology, 4(2): 93-110

		o Developing methods to reserve or mitigate the decline of a system o Developing easily observable measures of success o Developing practical techniques for the implementation of specific actions to achieve restoration goals o Monitoring key system variables and practicing adaptive management, if necessary; and o Documenting and communicating techniques for inclusion in other land use planning. The large number of disparate and dispersed water bodies throughout the Peninsula pre-empts the possibility of a comprehensive fisheries management regime to be employed to cover all of them, at least in the near to medium term. A more rational approach would be to identify specific water bodies that have unique environmental characteristics or in which habitat degradation has not proceeded to a point where rehabilitation is untenable.
Institute planned seed stocking programmes	Though there is already a public stocking programme in place, its implementation leaves much to be desired. As pointed out earlier, the choice of species, stocking site and numbers released are decided capriciously, with little regard for the dynamics of the systems concerned. The lack of a pre- and post-stocking monitoring programme has also not enabled a concise appraisal of its costs and benefits. These shortcomings should be addressed in a planned seed stocking programme for public waters. As with habitat enhancement, it would be more practical to identify specific water bodies for stocking purposes, with a comprehensive baseline resource appraisal before stocking begins and a regular monitoring programme thereafter. In fact, where possible, the same water bodies should be involved in both programmes. This would prevent dilution of implementation resources as well as enable closer monitoring of the fish stocks in a given site.
Institute guidelines for integrated approach to inland fisheries management	There is a need for guidelines on optimizing inland fisheries in multiple use contexts, particularly by State and Federal planners. During the planning and design process, negotiations between the future users should take place as this would assist both the fisheries and non-fisheries planners to better understand the specific requirements of fisheries in inland waters. These guidelines can be dealt in several issues such as: o The economic and social context of the fishery. o The factors controlling the size of the fishery. o The impacts of man's activities on the potential of fisheries including impacts of dams and barrages, land recovery, drainage, flood protection, aquaculture, industrial and urban use, recreational use, transport and the effect of fisheries exploitation.

	□	Adopting these guidelines would enable transcending of the administrative and legislative boundaries between State and Federal functions. However, the Drainage and Irrigation Department operates in a concurrent legal environment where river management is concerned and it may be appropriate to use their mechanisms to specify and implement these guidelines as well.

Proposed Elements of an Action Plan for Freshwater Fish Conservation

Action	Description
To garner the support of government institutions in enhancing the management and conservation of freshwater fisheries resources	• State governments should be made aware of the importance of their respective freshwater fish resources and appropriate strategies should be embroidered into their overall resource management and conservation plans. This can be done by developing a state-specific conservation plan for each state, which would take into account their respective economic and political priorities regarding the prevailing freshwater fisheries resource base. • As the lead management agency in the management and conservation of freshwater resources in the country, the collaboration and commitment of the DoFM is crucial to the success of any initiative in the field. Specifically, the initial efforts of the DoFM should focus on: o Improving and upgrading legislation on freshwater fish conservation and management. o Improving and upgrading management and organisational machinery. • Though the DoFM is a major player in the effort, another agency that plays a lead role is the Drainage and Irrigation Department and River Boards (Selangor). The DID is the primary instrument for drainage management in the country and its mandate also covers all freshwater aquatic resources that are also crucial freshwater fish habitats. • The DID should be made aware of the habitat requirements of freshwater fish and the environmental impacts of drainage infrastructure on these requirements. The DID can also be the primary mechanism by which a more integrated approach on inland fisheries can be engendered. In this respect, the initial involvement of the DID can be to weave these proposed guidelines within the framework of the

	management regimes that are now pursued in their river management activities. • Other agencies that can and should play a role include the Departments of Forestry, Environment and Wildlife Management and National Parks. The role of local district and municipal councils is also critical. Inputs for co-ordination of these agencies can come from the State Economic Planning Unit or an agency so designated by the State.
To develop an integrated database on indigenous freshwater fish	□ At present, information on indigenous freshwater fish is scattered, with different authorities undertaking research, without co-ordination or complementation. Much of the present situation arises because of the lack of an integrated database on freshwater fish to which researchers can make reference. An integrated database on indigenous freshwater fish would thus be an important first step in channeling present research efforts into priority areas where it is most needed.
To undertake a public awareness programme on inland fisheries	□ A public education programme to instill public awareness of the value and extent of local freshwater fish should be undertaken. The campaign should ideally be interwoven together with the aquarium and recreational fisheries trade. Both have trade (Aquarium Fish Producers Association) and special interest groups (*Persatuan Memancing Malaysia*) who can help to mobilise public interest and opinion towards conservation and sustainable management. □ Aquarium shops would serve as yet another vehicle to expand knowledge and awareness of the conservation importance of local freshwater fish. □ The negative impacts of invasive alien species (AIS) on indigenous fish populations and the management of AIS should be key subjects for awareness campaigns.
To identify suitable aquatic habitats for conservation and rehabilitation	□ The strategies to preserve, enrich and rehabilitate aquatic habitats should be predicated on adopting a focused approach, where specific water bodies that a have unique environmental characteristics or in which habitat degradation has not proceeded to a point where rehabilitation becomes untenable are identified and targeted.

	- The first step, therefore, would be to undertake a study to appraise the extent of various aquatic resources found throughout Malaysia and identify sites that would qualify for preservation and rehabilitation. Such a study would lead to a document that would provide a framework for the conservation of freshwater fish resources in Malaysia. - It would identify various potential sites, indicate their conservation value and the manner in which rehabilitation should be pursued. When seed stocking programmes are involved, it would be able to identify suitable species and the approximate numbers that would be needed to be involved. It must be recognised that each site would then demand a separate site specific evaluation of its resources and recommendations on how these resources can be further enhanced or conserved.

Demonstration Site Profiles

Profile for the Kinta River, Perak

Introduction

The Kinta River is situated in heart of Perak, and passes through several major towns i.e. Ipoh, Pasir Putih, Pengkalan Pegoh, Pusing, Batu Gajah, Tanjung Tualang and Kampung Gajah. The Kinta district, through which the river flows, has a population of approximately 800,100. The river originates from Gunung Korbu, which rises 2000 m amsl, in Ulu Kinta and then flows into the Perak River at an altitude of nearly 7 m amsl. The Kinta River is one of the main tributaries of the Perak River. The total length and catchment area is 100 km and 2,500 km^2, respectively. The Kinta River has seven main tributaries, namely Pari River, Buntong River, Kledang River, Raya River, Pinji River, Johan River, Kampar River and Chenderiang River.

Currently it is the most important source of water supply for the city of Ipoh and its adjacent town, in addition to being the second most important water resource in Perak. Ipoh, which is situated in the middle of Kinta Valley, on the bank of Kinta River, sees high precipitation throughout the year with more than 100 mm each month and averaging 2800 mm rainfall per year.

Land Use

The upper catchment of the Kinta River is naturally forested and is rich in biodiversity, while the middle and lower catchment is crowded with towns and settlements. Orang asli have traditional lands in the upper catchment, used for collecting forest produce and fruit tree orchards.

Human Modification / Regulation

At the moment there is only one dam on the river, which was constructed in 2000 with the intention of raising the water supply of Perak by 25%. The dam is able to provide 639,000 m^3 of water daily and is expected to meet the demand for water in Kinta Valley until the year 2020 (Ghani *et al.*, 2007)[84].

Water Quality

The Kinta River was once famous for tin mining, and due to the extensive mining undertaken in the past, the catchment is now facing flood problems. The main river is classified as 'Clean' under the River Water Quality Index (WQI values: 83) of National Water Quality Standard of Malaysia by Department of Environment, and falls within Class II (Department of Environment, 2014)[85]. In addition, two (2) of its tributaries i.e. Kampar and Chenderiang River also fall under Class II with WQI values of 90 and 86, respectively. This indicates both rivers as 'Clean'. On the other hand, there are also two (2) Kinta River tributaries recorded WQI values of 70 (Pari River) and 68 (Pinji River) and falls under Class III, indicating the river as 'Slightly Polluted'. The tributaries upstream of the dam flow through natural forest and are clean with the exception of Sungai Penoh which is heavily silted due to hillslope erosion associated with landslips from highway construction and agro-tourism project development in the upper catchment / top of the watershed. The sediments carried by Sg Penoh enter the reservoir, requiring continuous sediment removal by the Perak Water Board in order to provide potable water for Ipoh

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[84] Ghani, A., N.A. Zakaria, C.C. Kiat, J. Ariffin, Z. Abu Hasan and A.B. Abdul Gaffar. 2007. Revised Equations for Manning's Coefficient for Sand-bed Rivers. International Journal of River Basin Management, 5(4): 329–346.

[85] Department of Environment. 2014. Malaysia Environmental Quality Report 2013. Department of Environment, Ministry of Natural Resources and Environment, Malaysia. 156p.

City.

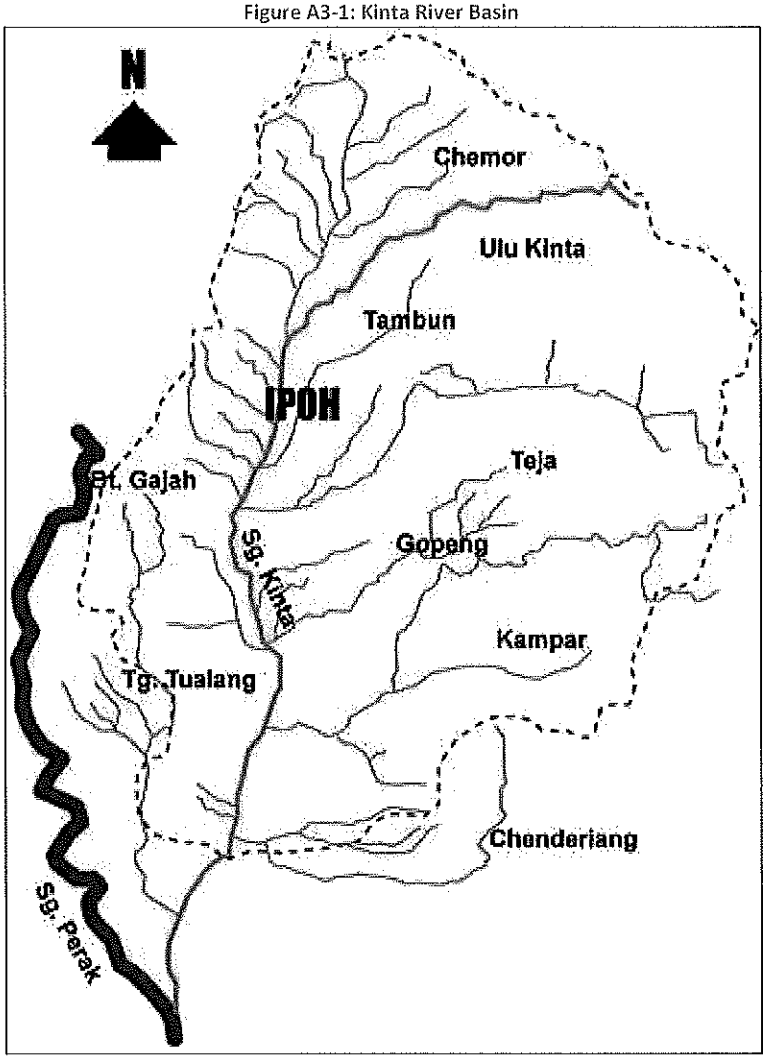
Biodiversity Values

In 2007, the Ulu Kinta catchment area was gazetted as a 'Water Catchment Area' by Perak Forestry Department and therefore, no logging activities are allowed within the area. The upper catchment forms an integral part of the Central Forest Spine, the largest forest block remaining in Peninsular Malaysia and subject of another UNDP/GEF project. The biodiversity of this catchment has not been systematically surveyed to date, and there is little information available in the literature.

One of the most abundant trees there is Meranti Tembaga (*Shorea leprosula*), which has been listed as 'endangered' under the IUCN Red List of Threatened Species. Other rare plant species include Bunga Pakma (*Rafflesia cantleyi*) and Bunga Rhizanthes (*Rhizanthes lowii*).

There are also many large mammals occurring within the area including rare and endangered species such as the Malayan Tiger (*Panthera tigris*), Asian Elephant (*Elephas maximus*), Tapir (*Tapirus indicus*) and Sun Bear (*Helarctos malayanus*). As for birds, about 150 species have been recorded by the Malaysian Nature Society (MNS) within the forest reserve and its surrounding area, including Great Argus Pheasant (*Argusianus argus*) which is a totally protected species under the Wildlife Conservation Act 2010. In terms of insects, the Rajah Brooke's butterfly (*Trogonoptera brookiana*) is a charismatic species present in the area. Endangered fish present in the river include the Copper Mahseer or Tengas *(Neolissochilus hexagonolepis)* (near threatened), and local orang asli reported False Gharial (*Tomistoma schlegelii*) in the river system before serious sediment pollution occurred in recent years.

Figure A3-1: Kinta River Basin



Threats to Riverine Biodiversity

The river is mainly affected by several anthropogenic sources of pollution i.e. industrial discharge, improper sewage treatment, residential discharge, wet markets, pig/chicken farms, sand-mining, land development and soil erosion. In the upper catchment, the most significant threat is severe sedimentation of the river system arising from forest clearance, agriculture / agro-tourism and infrastructure development projects such as roads.

Conservation Activities

The Kinta River has been identified for rehabilitation under Perak's Department of Irrigation and Drainage (DID) '1 State 1 River' programme, which aims to improve the overall water quality and restore the river resembling its original state. This is to be done with the participation of the communities, government and its agencies as well as other stakeholders. Another program that is currently being carried out is the 'Sungai Kinta River Education Program' by Global Environment Centre (GEC) and GAB Foundation. This is a three year program (April 2012 – March 2015) to encourage Malaysians, especially those who reside near to the river, to conserve the river as well as educate other local inhabitants.

Plans and Trends for the River Basin

The Kinta River near Ipoh City is currently undergoing a beautification process to attract more tourists, thus increasing its potential to generate incomes to those living nearby as well as towards the state. The Kinta River is also undergoing quality improvement as the main water source for several main towns situated alongside it. Both of these plans are being implemented by the Perak State's Department of Irrigation and Drainage (DID) as well as by Global Environment Centre (GEC).

Socio-economic Profile of Indigenous and Local Communities

Occupying an area of 1350 km^2, Kinta District encompasses Ipoh City and Batu Gajah town, among other settlements. According to government statistics based on 2012 data, the population of Kinta District was 672,300, with 333,700 men and 338,600 women. However, this population is resident outside the main Ulu Kinta catchment area – downstream of the Sultan Azlan Shah dam. 2010 population information indicated 4,986 non-Malay Bumiputra, presumably Orang Asli, in the district.

For the demonstration site in Perak, the project focuses on the Ulu Kinta area – the upper Kinta catchment above the Sultan Azlan Shah dam and including a group of orang asli villages in the vicinity of the dam, some of whom still make use of traditional lands in the upper catchment. In this area the residents are from RPS Ulu Kinta (a government Orang Asli resettlement). This is a relatively new resettlement organized around 2004. RPS Ulu Kinta is made up of four Orang Asli villages. These village are; Sungai Chadak village, Sungai Suloh village, Makmur village and Tonggang village. The people here are predominantly Temiar and the villages are located along two rivers; the Kinta river and Seng Oi river.

The RPS is a resettlement scheme and provides the community with access to basic amenities and includes access through tar roads. Children have access to schooling. The JAKOA or Department for Orang Asli Welfare (a government body in charge of the development of Orang Asli communities) office responsible for the community is based in Batu Gajah.

From a Global Environment Center (GEC) Rapid Assessment in 2014, they found that 53% earned RM700/- or less a month, with 16% earning less than RM400/- a month. 83% continue to rely on resources such as water, forest resources, fish and ecotourism.

Due to their association with ecotourism and other forest related work, understandably the community is keen on conservation of their river and biodiversity. They claim pollution upstream affected the river resources, thus due to heavy sediment loading the river at Kg Sungai Chadak can no longer be used for bathing, washing clothes or fishing, and fish populations have been impacted by the change in water quality.

According to the GEC survey, the majority of their respondents identified three main threats to biodiversity conservation. These threats are; water pollution, logging and land clearing for agriculture. The project plans to engage these Orang Asli communities in its demonstration activities, including:

i. Rehabilitation of degraded slopes (with due attention to safety at work risks).

ii. Participation in monitoring environmental concerns.

iii. Employment in ecotourism activities.

These communities will benefit from the project intervention through a formalized mechanism for participation in watershed management, improved employment opportunities and the restoration of water quality and fish populations in the river system.

Profile for the Klang River Basin, Selangor and Federal Territory

Introduction

The Klang River flows through Kuala Lumpur (Federal Territory) and Selangor, continuing to Port Klang where it discharges into the Straits of Malacca. There are eleven major tributaries, including the Gombak River, Batu River, Kerayong River, Damansara River, Keruh River, Kuyoh River, Penchala River and Ampang River. The Klang River originates in the Titiwangsa Range some 25 km northeast of Kuala Lumpur, where its headwater catchments are still pristine. These are located between Genting Highlands and the Ampang Hills of the Titiwangsa Range, forming part of the Selangor State Park. The length of the river is approximately 120 km, draining a basin of about 1,288 km^2. The river receives mean annual rainfall ranging from 2,400 – 2,600 mm, where, normally, the highest rainfall is recorded in March - April and November - December, while the lowest occurs in June – July. The Klang Valley is the most urbanized region in Malaysia, encompassing the Federal Territory of Kuala Lumpur and includes part of the state of Selangor. It has an estimated population of 4.4 million (16% of the national population), growing at a rate of 5% annually.

Land Use

The land use in the Klang River basin is diverse, ranging from tropical forests in the headwater region to urban areas in its middle and downstream parts. The land use in the middle and downstream sections largely consists of towns, housing and industrial estates and infrastructure (Balamurugan, 1991)[86]. The Klang Valley conurbation is considered the most developed and fastest growing region in the country with the highest rate of urban growth. Development trends in the Klang Valley Region assessed in term of land use changes have indicated an approximate 20% loss of green areas which have been converted to other uses including those allocated as green areas in the structure plan, mainly for housing to cater for the population increase and industrial development as well as other uses. The green areas being an important component of the urban systems as they act as buffers in stabilizing the ecosystem have been inevitably affected by the impacts of development.

Human Modification / Regulation

There are two major dams situated at the upstream part, namely Batu Dam and Klang Gates Dam. These dams provide water supply to the people of Klang Valley as well as playing an important role in mitigating floods. The Batu Dam is located adjacent to Batu Caves and has holding capacity of 30,199 million litres. The Klang Gates Dam is near Taman Melawati, Kuala Lumpur with a holding capacity of 25,104 million litres.

Water Quality

In 2013, Water Quality Index (WQI) values in Ampang River, Anak Air Batu River, Batu River, Damansara River, Gombak River, Jinjang River, Keroh River, Klang River and Rasau River ranged from 60 – 76, falling under Class III (Slightly Polluted) of the National Water Quality Standards of Malaysia. Other rivers such as Bunos River and Toba River had a WQI value of 59, falling under Class III (Polluted) of National Water Quality Standards of Malaysia. Untut River recorded a WQI value of 48, falling under Class IV (Polluted) of National Water Quality Standards of Malaysia (Department of Environment, 2014)[87].

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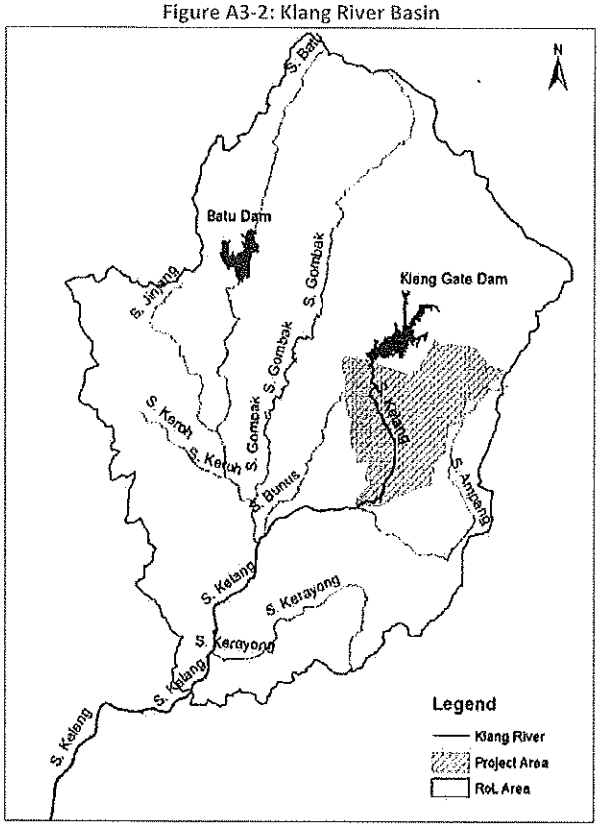
[86] Balamurugan, G. 1991. Sediment Balance and Delivery in A Humid Tropical Urban River Basin: The Klang River, Malaysia. Catena, 18: 271 - 287.

[87] Department of Environment. 2014. Malaysia Environmental Quality Report 2013. Department of Environment, Ministry of Natural Resources and Environment, Malaysia. 156p.

Figure A3-2: Klang River Basin



Biodiversity Values

The biodiversity of the upper reaches of the Klang river is also high with more than 95 mammal species including serow, tiger, leopard and three species of gibbon; 250 bird species, 63 reptiles, 20 amphibians, 363 butterflies. 20 new endemic species of aquatic insects described at one small site in the catchment. There are two major species of fish namely Suckermouth catfish (*Hypostomus plecostomus*) (from South America) or Tilapia (*Oreochromis* spp.).

The Klang river basin supports globally important forest and aquatic biodiversity, with more than 95 mammal species including Serow (*Capricornis sumatraensis*), Malayan Tiger (*Panthera tigris*) and Leopard (*Panthera pardus*); 250 bird species, 63 reptile species, 20 amphibian species and 363 butterfly species have been recorded. In addition, 20 new endemic species of aquatic insects have been described at one small site (University Malaya field station) in the catchment in recent years. Rare fish species recorded include the Malaysian Mahseer or Kelah (*Tor tambroides*). Most of the upper catchment has been designated as part of the Selangor State Park, also forming part of the Central Forest Spine.

Threats to Riverine Biodiversity

Various sources of pollution occur in the Klang river system, mainly from agriculture, sedimentation, livestock, urban and industrial areas. Most of the worst pollution comes from heavy solid and liquid waste disposal such as from squatter settlements, drainage effluents from commercial areas, food centres and wet markets, residual hydrocarbon from urban traffic and workshops, and excessive silt loads from land clearing (Keizrul, 2002)[88]. The introduction of alien invasive species (AIS) is a serious problem for riverine biodiversity in Malaysia,

[88] Keizrul, A. 2002. Integrated River Basin Management. Pp 3-14 *In:* Chan, N.W. (Ed). Rivers: Towards Sustainable Development. Universiti Sains Malaysia Press, Penang.

including the Klang River. This problem is compounded by the regular release of additional AIS, which are introduced to the country through the trade in ornamental fish. Such fish may be released to the wild for religious purposes or because aquarium owners no longer wish to continue maintaining them. The impacts of a range of threats on fish populations have been documented for the Gombak River basin, a tributary of the Klang, where studies have documented the extermination of 41 per cent of native fish species from 1969 to 1990. This is probably due to the construction of highways, logging, as well as land clearing for agriculture[89].

Conservation Activities

The public outreach component of the River of Life programme (RoL) is organised by the River Basin and Coastal Zone Management Division of the Drainage and Irrigation Department (DID), in collaboration with the Global Environment Centre (GEC) and ERE Consult Sdn Bhd, a Malaysia-based environmental consultancy. The RoL is an entry-point project under the Greater Kuala Lumpur/Klang Valley National Key Economic Area and the Economic Transformation Programme. See baseline analysis for further information.

Plans and Trends for the River Basin

The River Of Life (ROL) Initiative is a major 10 year programme from 2011-2020 to enhance the quality of the Upper River Klang as part of th Government's Economic transformation Programme. With a budget of RM4 billion it is expected to upgrade the sewage treatment system of Kuala Lumpur, enhance the ammenity value of the river corridor in the centre of the City as well as improve the water quality to Class IIb. The upper catchment is protected within the Selangor State Park, but faces challenges from urban encroachment and road development proposals.

Socio-economic Profile of Indigenous and Local Communities

The Klang River demonstration site straddles Selangor State (upper catchment) and the Federal Territory of Kuala Lumpur. In Selangor, Ampang / Ulu Klang District had a population of 83,040 in 2010, including 170 non-Malay Bumiputra, presumably Orang Asli.

The Klang river demonstration site addresses the upper Klang river as well as its tributary, the Kemensah river. The confluence of the two rivers is at the National Zoo where the Kemensah flows into the Klang river. Further down are urban landscapes where it flows through, designated as AU2 and AU3 respectively.

The earliest settlement in the Kemensah area is the Ulu Kemensah Orang Asli or indigenous settlement which was settled in the 1950's. The community were moved as a result of the construction of the Klang Gates Dam. There are approximately 90 people from the Temuan tribe in this village, occupying some 80 acres of land. The Kemensah Malay village was resettled in the 1960's. The squatter settlement was established in the 1980s.

On the Kemensah River, land uses in the upper reaches include traditional orang asli forest plots (*kebun*) used by Temuan from Hulu Kemensah village, significant small scale ecotourism development based on the river environment (chalets, day-shelters, bathing and fishing etc), as well as small-scale aquaculture ponds alongside much of the river channel. The project will undertake selective interventions in this area, engaging with the orang asli village to ensure sustainable use of the forest in the upper catchment area, and with the Village Development and Security Committee (Malay acronym JKKK) for Kemensah Village as an entry point to demonstrate sustainable land uses in the river valley.

Today the area covers a large and diverse urban landscape. The place typifies any urban space with its upper, middle and lower economic residential areas, and suburbs. It is unique however, in that the areas mentioned come under two local government jurisdictions; the MPAJ and DBKL. In the MPAJ, there are also additionally type settlements not common to

[89] Zakaria-Ismail M. 1992. Zoogeography and biodiversity of the freshwater fishes of Southeast Asia. Hydrobiologia. June 1994, Volume 285, Issue 1-3, pp 41-48.

urban settings, namely, rural settlements. There is also an indigenous settlement and also a squatter settlement set up along or near the river.

Apart from being a heavily populated residential area, the townships are also sites for commercial activities. There are active business hubs operating from restaurants to car repair shops, some of which deposit their untreated waste into drains which find its way into the river. The area is an active urban landscape that is less than 15 minutes away from the KL city centre.

Partners in the site includes; Village Committee (JKK) Kg. Warisan, JKK Kg Kemensah, Kg. Orang Asli Ulu Kemensah, AU3 JKK and Eco-Melawati.

The communities living in the greater Melawati which covers the demonstration generally have access to basic amenities and much more. However, it is worth noting the orang asli village in Ulu Kemensah remains without access to electricity and proper latrines. They have a gravitational system providing water directly into each house. Children have the right to schooling, however, lack of regular transportation has made access to schooling untenable. The squatter settlement has access to basic amenities but lack proper sewer disposal system. Current practice is to drain their waste water directly into the Kemensah river.

The socio-economic status of the communities is varied. Many who engage with Eco-Melawati are middle-class professional. Whereas the JKK Kg Kemensah are self employed. They work in eco-tourism related work such as, operating chalets, restaurants, forest guides, operate fish ponds and operate forest related tourism. Those living in AU3 live in medium to low cost flats and are either white collar or blue collar, or self-employed.

In Kg. Kemensah, women are active as traders supporting the chalet operations. These women often open restaurants or food kiosks next to the river. However, there appears to be a gap in their voice as men who operate the chalets represent the group as a whole. Working closely with both men and women in this sector, the project aims to address the challenge of unregulated eco-tourism development along the Kemensah river and to develop and socialize guidelines for more sustainable use of the river. Women participate in the Eco-Melawati CBO, playing an important role in the organization. The participants we spoke with from among our partners felt there is a need to protect the natural resources. For JKK Kg. Warisan, Eco-Melawati and JKK AU3 they are directly involved with the ROL program. Those in Kg Kemensah feel there is a need for clear guidelines to help chalet and tour operators work in a way that promotes and protects the environment.

The targeted communities will benefit from the project intervention through strengthened networking and sharing of experiences in river management, established mechanisms for dialogue and collaboration with DID and other government agencies, enhanced riverine environment that will sustain ecotourism development, as well as increased capacities through project-related training and educational programmes and demonstration of sustainable land uses.

Profile for the Segama River Basin, Sabah

Introduction

The Segama is the third largest river in Sabah, after the Kinabatangan and Padas Rivers. It flows through Kuala Segama and Kuala Maruap until discharging into the Sulu Sea. Among its main tributaries are the Bole and Tabin Rivers (Rajanathan, 1995[90]). Previous studies in the Upper Segama river catchment, particularly on the area close to Danum Valley Field have been undertaken by Walsh *et al.* (2011)[8]. Their study reported that the Upper Segama catchment has an area of 721 km^2. The mean annual temperature recorded is 26.98°C and mean annual rainfall is 2,849 mm (Walsh *et al.*, 2011). Altitude varies from approximately 100 – 1,200 meters above sea level (Walsh *et al.*, 2011). One station in the lower Segama records daily rainfall, which is located at Tomanggong Estate Oil Palm Mill, owned by Hap Seng Plantations (Rivers Estate) Sdn. Bhd.. Based on their Agronomic Advisory Report for Segama River, the rainfall from 2011 – 2013 was highest during January to April and lowest during July to August. Kg. Tidung and Kg. Parit are located adjacent to the lower Segama River, consisting of approximately 130 and 50 residents respectively. These communities are largely dependent on the Segama River and surrounding forests for their livelihoods. Normally, fish that has been caught will be sold to the workers in Tomanggong Estate Oil Palm or sent to Sandakan (Rajanathan, 1995). There are also other villages near the mid reaches of the Segama River such as Bukit Belacon, Kg. Lituk Pulau, Kg. Tawaiyari and Kg. Opak.

Land Use

Outside the Ulu Segama Forest Reserve, the upper reaches until the lower reaches of Segama River are largely occupied by private land subject to agricultural activities, such as oil palm plantations, which is normally owned by private companies. The local communities also undertake farming activities near to the Segama River involving smallholder oil palm plantations, fruit and vegetables.

Human Modification / Regulation

No human modification or river regulation has been recorded in the Segama River.

Water Quality

In 2013, the Water Quality Index (WQI) value in Segama River was 86, falling under Class II (Clean) of National Water Quality Standards of Malaysia (Department of Environment, 2014[91]). For a detailed assessment of pollution sources, impacts and proposed solutions, see Sabah EPD/Envsolve (2011)[92]. This report concludes that the four river basins studied (including the Segama) were significantly polluted – primarily by the oil palm sector with minor contributions from settlement and sand mining activities. Palm oil mills were responsible for large scale direct discharges of partly treated palm oil waste into the river systems. Oil palm plantations caused pollution through poor land management practices and lack of maintenance of riverine buffer strips, overuse of pesticides and fertilizers. Sand mining operations caused turbidity impacting aquatic life and local communities water supplies. Riparian settlements were minor sources of solid waste and sewage.

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[90] Rajanathan, R. 1995. A Mammal and Bird Survey in the Lower Segama Region, Sabah: With Emphasis on the Proboscis Monkey. Report Produced under Project Number MYS 290/94 for Sabah Wildlife Department and WWF Malaysia. 51p. [8] Walsh, R.P.D., K. Bidin, W.H. Blake, N.A. Chappell, M.A. Clarke, I. Douglas, R. Ghazali, A.M. Sayer, J. Suhaimi, W. Tych and K.V. Annammala. 2011. Long-Term Responses of Rainforest Erosional Systems at Different Spatial Scales to Selective Logging and Climatic Change. Philosophical Transactions of the Royal Society B., 366: 3340-3353.

[91] Department of Environment. 2014. Malaysia Environmental Quality Report 2013. Department of Environment, Ministry of Natural Resources and Environment, Malaysia. 156p.

[92] Sabah Environmental Protection Department / Envsolve Sdn Bhd. 2011. Impact of Palm oil mills, oil palm plantations and other pollutants on the quality of selected rivers in Sabah. Final Report. (3 Volumes).

Biodiversity Values

The Segama RIver basin includes a number of conservation areas. In the upper reaches, there are Danum Valley Conservation area and Ulu Segama-Malua, Kawang-Gibong, Merisuli and Sepagaya Forest Reserves. The lower reaches of the Segama River floodplain includes Tabin Wildlife Reserve, Sg. Simpang Forest Reserve, Kretam Forest Reserve, Kuala Segama and Kuala Meruap Forest Reserve and Kulamba Wildlife Reserve. Moreover, the combination of the wetlands of Kuala Segama and Kuala Meruap Forest Reserve, Kulamba Wildlife Reserve and Trusan Kinabatangan Forest Reserve make up the Lower Kinabatangan - Segama Ramsar site, designated as Sabah's first and Malaysia's largest Ramsar site in 2008.

The forests of the lower Segama (eg Tabin WS) and its catchment (Ulu Segama, including the Danum Valley Conservation Area) are known to be of exceptional value for biodiversity conservation, supporting high densities of endangered species such as Bornean orangutan (*Pongo pygmaeus morio*), Proboscis monkey (*Nasalis larvatus*), Silvered Langur (*Presbytis cristatus)*, Pig-tailed Macaque (*Macaca nemestrina)*, Bornean elephant (*Elephas maximus borneensis*), Bornean banteng (*Bos javanicus lowi*), Sumatran rhinoceros (*Dicerorhinos sumatrensis harrisoni*), Sunda clouded leopard (*Neofelis diardi*), Hairy-nosed Otter (*Lutra sumatrana),* Smooth Otter *(L. perspicillata)* and Malayan sun bear (*Helarctos malayanus*)[93]. Estuarine crocodiles *Crocodylus porosus* occur in the lower reaches of the river.

The Ramsar Information Sheet for the Lower Kinabatangan – Segama Ramsar Site describes the flora and fauna of this area[94] (see its annexes for species lists). The two large rivers, the Kinabatangan and Segama, flow through the Ramsar site and form important spawning and nursery grounds for fish and prawn species. The Marbled Sleeper Goby *Oxyeleotris marmorata* and the Giant Freshwater Prawn *Macrobrachium rosenbergii* are particularly important protein sources of the local inhabitants. *Macrobrachium rosenbergii* is a freshwater prawn species but requires brackish water for spawning, and the Ramsar site holds one of the largest spawning sites of the species in Sabah. Among other fish that spawn in the site, species with a high commercially valuable as food source include *Anguilla malgumora*, *Clarias teysmanni*, *Mystus nemurus*, *Mystus sabanus*, *Oxyeleotris marmorata*, *Pangasius macronema*, *Pangasius nieuwenhuisii*, *Pangasius tubbi*, *Puntius bramoides*, *Puntius bulu* and *Puntius sealei*. For ornamental fish, important species are *Nematabramis everetti*, *Osphronemus goramy*, *Rasbora hubbsi*, *Rasbora myersi*, *Rasbora sumatrana* and *Trichogaster trichopterus*.

In addition, a previous study by Martin-Smith and Tan (1998[95]) reported a total of 47 species of fish from 12 Families in the upper reaches and 13 species from 6 Families in the lower reaches of the Segama River, adjacent to the Danum Valley Field Centre, from May 1995 – May 1997. Among the species recorded are *Acrochordonichthys obscurus*, *Hemipimelodus borneesis*, *Batracocephalus mino* and *Hemibagrus sabanus*. *Hemibagrus furcatus*, a new species of bagrid catfish from the Segama was described in 2000[96]

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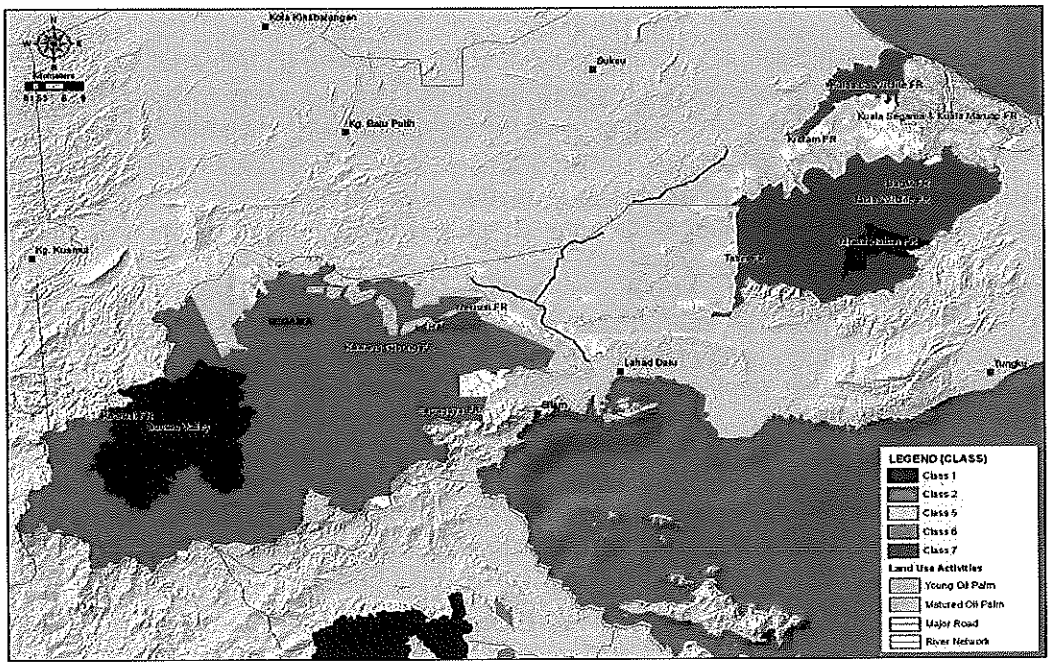
[93] For example, see Goossens B and Ambu LN 2012. Sabah Wildlife Dept and 10 years of research: towards a better conservation of Sabah's wildlife. J. Oil Palm and the Environment 3:28-51. DOI: 10.5366/jope.2012.05

[94] https://rsis.ramsar.org/RISapp/files/RISrep/MY1849RIS.pdf

[95] Martin-Smith, K. M. & H. H. Tan, 1998. Diversity of freshwater fishes from Eastern Sabah: annotated checklist for Danum Valley and a consideration of inter- and intracatchment variability. Raffles Bull. Zool., 46: 573-604.

[96] Martin-Smith, Keith M., and K. L. Peter. "Hemibagrus furcatus, a new species of bagrid catfish (Teleostei: Siluriformes) from Sabah, east Malaysia." *The Raffles Bulletin of Zoology* 48.1 (2000): 65-69.

Figure 1: Location of Segama River Basin



Threats to Riverine Biodiversity

The threats to Segama River and its biodiversity include forest conversion in the upstream area (e.g. conversion to oil palm plantations), forest fires, sand mining, climate change, invasive species and unsustainable fishing practices (e.g. use of poison or electricity to catch fish). In addition, this river is also impacted by the pollution from oil palm plantations and palm oil mills, marble factories and logging activities (Brito Alves *et al.*, 2009[97]). In recent years, the number of fish species including River Catfish or Patin (*Pangasius* spp.), Mysid catfish or Baung (*Mystus* spp.), Javanese carp or Lampam jawa (*Barbodes gonionotus*), Marble goby or Ketutu (*Oxyeleotris marmorata*) and Giant catfish or Tapah (*Wallago* spp.) have declined due to the high level of pollutants in the river, particularly from palm oil mill effluent, as well as logging and sand mining activities. Moreover, the uses of 'tuba' technique (temporarily poisoning the water, usually using the root of Derris sp.) to catch a fish in upstream areas have also affected the standing stock.

Conservation Activities

There is considerable conservation activity in the Segama River basin. In the upper catchment, the Danum Valley Conservation Area has hosted international research programmes over a period of decades, including the major SAFE project (see Baseline Analysis for further information). Also in the upper catchment area, the Ulu Segama Malua Sustainable Forest Management Project covers 12,000 ha of heavily degraded forest on the north side of the Segama River, focusing on restoring degraded forest of high wildlife value in the large forest reserve complex. In the lower floodplain, Tabin Wildlife Reserve represents one of the country's most important lowland forest protected areas, which this project will seek to connect with the Segama River and an adjacent conservation area.

Adjacent to Tabin WR, SabahMas Plantation, under PBB Oils, and part of Wilmar International Limited (oil palm company) is conducting ecological restoration of riparian zones along the

[97] Brito Alves, R.M., C.A. Oller Nascimento and E.C. Biscaia Jr.. 2009. 10th International Symposium on Process Systems Engineering (Part A). Elsevier Publications. Amsterdam, The Netherlands. 1172p.

Segama River, through a Memorandum of Understanding (MoU) signed with the Forestry Department. They also established a Game Warden programme to reduce an illegal poaching and trading of endangered animals in the Tabin Wildlife Reserve. The company spends around USD 60,000 per year for this programme, supporting a dedicated enforcement team of 16 rangers, two vehicles and a speed boat. The rangers conduct regular patrols in the conservation areas, complementing the current 8 rangers from the Sabah Wildlife Department.

At the river mouth, the Bornean Biodiversity and Ecosystems Conservation (BBEC) Programme[98] supported the designation of the Lower Kinabatangan – Segama Wetlands Ramsar Site in October 2008, and a subsequent management plan for the area.

Plans and Trends for the River Basin

The long term conservation and rehabilitation efforts in the upper catchment of the Segama will continue and are expected to improve the condition of watershed habitats, wildlife populations and river quality. Similarly, in the middle reaches of the Segama, examples established by certain oil palm companies with government and NGO support are likely to assist a trend of improved riparian habitat management. The lower reaches of the system are well protected through the Ramsar Site, although recent security issues may hinder conservation and sustainable use activities. Overall, Sabah's systematic approach towards improving river quality provides a strong framework for this aspect of river management, if it is adequately resourced and provided with political support.

Socio-economic Profile of Indigenous and Local Communities

For the demonstration site in Sabah, the project looks at the Segama river in the middle and lower reaches, in Lahad Datu District (population 206,000 in 2010, including Lahad Datu town). We visited several villages in these sites. The villages include; Kg. Tidong (population c.130), Kg. Parit (c.50) and Kg. Dagad (c.120) in the lower reaches of the Segama river. The villages here fall under the jurisdiction of the Kinabatangan district office. For the middle reaches, we visited Kg Belacon, Kg. Buang Sayang, and Kg. Sipadulang. These villages fall under the authority of the Lahad Datu district office. The area is sparsely populated, with few inhabitants other than this cluster of villages near the river.

For the lower reaches, the villagers are made up of Tidong people. The villages here are accessible from Lahad Datu by tar road, and laterite road with a ferry crossing. It takes about 3 hours to reach the villages. The villages have a school and access to basic amenities such as latrines, piped water and electricity. Their piped water comes from a clean river sourced from a small tributary to the Segama river.

Most of the residents here rely on small scale fisheries as their source of income. They fish local fishes in the estuary and sometimes go to the coastal areas. They also catch crabs and prawns. To support small scale fisheries, local villages also make the traps use for catching crabs and prawns. While fishing is a traditional livelihood, villagers in the Lower Segama also engage in small-scale agriculture for food and cash income (oil palm), which is seen to provide more secure income. Women in the community actively fish and catch prawns using a variety of methods including traps and fishing nets. There is a complimentary division of labor, but according to them it is not gendered. Women are keen on entrepreneur type training, particularly, in making shrimp based chili paste (belacan), prawn and fish crackers, fishballs, etc. as well as making and selling traditional handicrafts.

Kg. Dagad is proposed as a demonstration site. It has approximately 40 families, distributed in the new settlement as well along the lower Segama river. Like other Tidong settlements, the population here continue to rely heavily on aquatic resources for commercial and subsistence production.

Kg. Dagad has a longstanding homestay program developed in collaboration with JICA and the Wildlife Department, started in 2004. This program is seen positively and although the

[98] http://www.bbec.sabah.gov.my/index.php

capacity for ecotourism has not been fully capitalized, they seem satisfied with it. Mostly, they get tourists from Japan, with some making repeat trips back every year. However, they have had to freeze the program recently due to threats from suluk pirates and fishermen who encroached into the mangrove swamps. The area holds good potentias as an ecotourism site due to its proximity to the Ramsar site and the Tabin Wildlife Reserve. Villagers say that there is an abundance of wildlife on the riparian zone near the village. The villagers claim that pygmy elephants, Orangutans, proboscis monkeys, fireflies, etc. can be found there.

The second proposed demonstration site is in the middle reaches of the Segama river. Here we propose Kg. Belacon as the demonstration site. The indigenous inhabitants are the Dusun Segama. However, as reported, there are other ethnic groups, such as Iban, Bugis, Sungai, and others, who make up the local residents here. Traditionally a fishing village, today many of the residents work in Lahad Datu town. Only one family continues to rely on fishing as a commercial enterprise. Residents also have small holdings oil palm dotting the areas near the river. There are cultural significant sites in the area. According to the village committee there is a Dusun Segama cave burial in the upper Segama (near the Malua). Kg. Belacon is very close to Lahad Datu town, approximately 20 minutes by car.

The village is also a possible demonstration for best practices in promoting the growth of indigenous plant species along the riparian area. The headman of Belacon says he doesn't plant oil palm trees right down to the river bank but instead encourages indigenous trees to grow in these riparian areas. He maintains local plants, because he believes it helps to encourage the growth of local fish population by providing fruits and cover as well as helps prevent soil erosion.

Among the concerns raised include; illegal sand mining. It has affected a local lubok where the headman says there used to be an abundance of *kelah* fish and marble stone mining up stream of the river is close to a traditional cave burial site of the Dusun people.

There have been some government initiatives towards conservation. In 2006 the Sabah State government initiated the Ulu Segama-Malua Sustainable Forests Management Project which is being managed by Yayasan Sabah and Sabah Forestry Department. Other significant partners include the
Sabah Wildlife Department. Non-governmental partners include WWF (Malaysia), PACOS, Sabah
Society and ARCUS Foundation. Fund donors includes the US Government, HSBC, Sime Darby, 9th Malaysia Plan and the LEAP Foundation. The objectives are to rehabilitate biodiversity in Malua forest reserve and to rehabilitate Orangutan habitats in the Northern Ulu-Segama forest reserve. According to the Sabah Forestry Department Annual Report (2008), there are no communities living the area but the project engages with indigenous communities living nearby. These communities include, Kg. Sapagaya, Kg. Segama, Kg. Upak and Kg. Tawari. Mostly the villagers are engaged in tree planting and awareness raising programs.

The demonstration project will benefit the targeted communities by establishing a mechanism for dialogue and collaboration with DID, Sabah Wildlife Department and other government agencies, supporting the development of Auxiliary River and Wildlife Ranger schemes engaging villagers, demonstrating sustainable land uses, and improving the riverine environment through removal of conflicting land uses and strengthened monitoring. The participating oil palm estates will be enabled to meet RSPO guidelines for riparian zone management, enhancing the marketability of their products in international markets and boosting their competitiveness. This will also reflect well on Sabah as a state, in demonstrating how it is supporting the development of more sustainable palm oil production.

INTRODUCTION TO PROJECT SITE INTERVENTIONS

SOCIO-ECONOMIC INPUT BY SITE

Profile Indigenous and Local Communities in Selangor & WP

We look at two areas for the Klang river demonstration site, namely, the upper Klang river as well as the Kemensah river. The confluence of the two rivers is at the National Zoo where the Kemensah flows into the Klang river. Further down are urban landscapes where it flows through, designated as AU2 and AU3 respectively.

The earliest settlement in the Kemensah area is the Orang Asli or indigenous settlement which was settled in the 1950's. The community were moved as a result of the construction fo the Klang Gates Dam. The Kemensah Malay village was resettled in the 1960's. The squatter settlement was established in the 1980s.

Today the area covers a large and diverse urban landscape. The place typifies any urban space with its upper, middle and lower economic residential areas, and suburbs. It is unique however, in that the area mention comes under two local government jurisdictions; the MPAJ and DBKL. In the MPAJ, there are also additionally type settlements not common to urban settings, namely, rural settlements. There is also an indigenous settlement and also a squatter settlement set up along or near the river.

Apart from being a heavily populated residential area, the townships are also sites for commercial activities. There are active business hubs operating from restaurants to car repair shops, some of which deposit their untreated waste into drains which find its way into the river. The area is an active urban landscape that is less than 15 minutes away from the KL city centre.

Partners in the site includes; Village Committee (JKK) Kg. Warisan, JKK Kg Kemensah, Kg. Orang Asli Kemensah, AU3 JKK and Eco-Melawati.

The communities living in the greater Melawati which covers the demonstration generally have access to basic amenities and much more. However, it is worth noting the indigenous village in Kemensah remains without access to electricity and proper latrines. They have a gravitational system providing water directly into each house. Children have the right to schooling, however, lack of regular transportation has made access to schooling untenable. The squatter settlement has access to basic amenities but lack proper sewer disposal system. Current practice is to drain their waste water directly into the Kemensah river.

Socio-Economic of the communities are varied. Many who engage with EcoMelawati are middle-class professional. Whereas the JKK Kg Kemensah are self employed. They work in eco-tourism related work such as, operating chalets, restaurants, forest guides, operate fish ponds and operate forest related tourism. Those living in AU3 live in medium to low cost flats and are either white collar or blue collar, or self-employed.

The participants we spoke with from among our partners felt there is a need to protect the natural resources. For JKK Kg. Warisan, Eco-Melawati and JKK AU3 they are directly involve with the ROL program. Those in Kg Kemensah feel there is a need for clear guidelines to help chalet and tour operators work in a way that promotes and protects the environment.

Profile Indigenous and Local Communities Ulu Kinta, Perak

For the demonstration site in Perak, the project looks at Ulu Kinta area. In the area the residents are from RPS Ulu Kinta. The settlement is a relatively new resettlement organized around 2004. RPS Ulu Kinta is made up of four Orang Asli villages. These village are; Sungai Chadak village, Sungai Suloh village, Makmur village and Tonggang village. The people here are predominantly Temiar and the villages are located along two rivers; the Kinta river and Seng Oi river.

The RPS is a resettlement scheme and provides the community with access to basic amenities and includes access through tar roads. Children have access to schooling. The JAKOA or Department for Orang Asli Welfare (a government body in charge of the development of Orang Asli communities) office responsible for the community is based in Batu Gajah.

From a Global Environment Center (GEC) Rapid Assessment 2014, they found that 53% earned RM700/- or less a month, with 16% earning less than RM400/- a month. 83% continue to rely on resources such as water, forest resources, fish and ecotourism.

Due to their association with ecotourism and other forest related work, understandably the community is keen on conservation of their river and biodiversity. They claim pollution upstream affected the river resources. Today, there is hardly the variety of volume of indigenous fishes.

According to the GEC survey, the majority of their respondents identified three main threats to biodiversity conservation. These threats are; water pollution, logging and land clearing for agriculture. Their survey also identified possible roles for community participation. These includes;

i. Engaging in rehabilitation of degraded areas (although the potential ethics and safety concerns need to be address).
ii. Participate in monitoring environmental concerns. iii. Employment in ecotourism activities.

Profile Indigenous and Local Communities Sabah

For the demonstration site in Sabah, the project looks at the Segama river in the middle and lower areas. We visited several villages in these sites. The villages include; Kg. Tidong, Kg. Parit and Kg. Dagad in the lower reaches of the Segama river. The villages here fall under the jurisdiction of the Kinabatangan district office. For the middle reaches, we visited Kg Belacon, Kg. Buang Sayang, and Kg. Sipadulang. These villages fall under the authority of the Lahad Datu district office.

For the lower reaches, the villagers are made up of Tidong people. The villages here are accessible from Lahad Datu by tar road, and laterite road with a ferry crossing. It takes about 3 hours to reach the villages. The villages have a school and access to basic amenities such as latrines, piped water and electricity. Their piped water comes from a clean river sourced from a small tributary to the Segama river.

Most of the residents here rely on small scale fisheries as their source of income. They fish local fishes in the estuary and sometimes go to the coastal areas. They also catch crabs and prawns. To support small scale fisheries, local villages also make the traps use for catching crabs and prawns.

Kg. Dagad is a possible demonstration site. It has approximately 40 families living here. They are distributed in the new settlement as well along the lower Segama river. Like other Tidong settlements, the population here continue to rely heavily on aquatic resources for commercial and subsistence production.

Kg. Dagad has a homestay program developed in collaboration with JICA and the Wildlife Department. It was launched in 2012. However, they have had to freeze the program due to threats from suluk pirates and fishermen who encroached into the mangrove swamps. The area hold good potentials as an ecotourism site due to its proximity to the RAMSAR site and the Tabin Forest Reserve. Villagers say that there is an abundance of wildlife on the riparian zone near the village. The claim that pygmy elephants, Orangutans, proboscis monkeys, fireflies, etc. can be found there.

The other area that can be a possible demonstration site along the Segama river is in the middle reaches of the river. Here we proposed Kg. Belacon as the demonstration site. The indigenous inhabitants are the Dusun Segama. However, as reported, there are other ethnic groups, such as Iban, Bugis, Sungai, and others, who make up the local residents here. Traditionally a fishing village, today many of the residents work in Lahad Datu town. Only one family continues to rely on fishing as a commercial enterprise. Residents also have small holdings oil palm dotting the areas near the river.There are cultural significant sites in the area. According to the village committee there is a Dusun Segama cave burial in the upper Segama (near the Malua). Kg. Belacon is very close to Lahad Datu town, approximately 20mins by car.

The village is also a possible demonstration for best practices in promoting the growth of indigenous plant species along the riparian area. The headman of Belacon says he doesn't plant oil palm trees right down to the river bank but instead encourages indigenous trees to grow in these riparian areas. He maintains local plants, because he believes it helps to

encourage the growth of local fish population by providing fruits and cover as well as helps prevent soil erosion.

Among the concerns raised include; illegal sand mining. It has affected a local lubok where the headman says there use to be an abundance of *kelah* fish and marble stone mining up stream of the river is close to a traditional cave burial site of the Dusun people.

There have been some government initiatives towards conservation. In 2006 the Sabah State government initiated the Ulu Segama-Malua Sustainable Forests Management Project which is being managed by Yayasan Sabah and Sabah Forestry Department. Other significant partners include the Sabah Wildlife Department. Non-governmental partners include WWF (Malaysia), PACOS, Sabah Society and ARCUS Foundation. Fund donors includes the US Government, HSBC, Sime Darby, 9th Malaysia Plan and the LEAP Foundation. The objectives are to rehabilitate biodiversity in Malua forest reserve and to rehabilitate Orangutan habitats in the Northern Ulu-Segama forest reserve. According to the Sabah Forestry Department Annual Report (2008), there are no communities living the area but the project engages with indigenous communities living nearby. These communities include, Kg. Sapagaya, Kg. Segama, Kg. Upak and Kg. Tawari. Mostly the villagers are engaged in tree planting and awareness raising programs.

Capacity Development Scorecard

Date of Assessment: 17th November 2014

Location: Kuala Lumpur, during project stakeholder consultation meeting

The results of the assessment are given in the following table, with further comment below. The two values indicated in each cell represent first the estimated baseline score and secondly the estimated target score for end of project. The blank assessment form is also provided below for reference.

	Items		
1.	The riverine biodiversity conservation agenda is being effectively championed / driven forward	1/3	1/2
2.	There is a strong and clear legal mandate for riverine biodiversity conservation	1/2	2/3
3.	There are legally designated riverine biodiversity conservation institutions with the authority to carry out their mandate	0/2	1/2
4.	Riverine biodiversity conservation institutions are effectively led	0/2	1/2
5.	Riverine biodiversity conservation institutions are able to adequately mobilize sufficient quantity of funding, human and material resources to effectively implement their mandate	0/2	1/2
6.	Riverine biodiversity conservation institutions are effectively managed, efficiently deploying their human, financial and other resources to the best effect	0/2	2/2
7.	Riverine biodiversity conservation institutions are highly transparent, fully audited, and publicly accountable	0/2	2/2
8.	There is a fully transparent oversight authority (there are fully transparent oversight authorities) for riverine biodiversity conservation institutions	1/2	1/1
9.	There is systematic planning for river catchments and basins that incorporates riverine biodiversity conservation	1/2	1/2

10.	Catchment and river basins have regularly updated, participatory, comprehensive management plans incorporating riverine biodiversity conservation	0-1/2	1/1	1/2	-/-	1/3
11.	Management plans for catchments and river basins incorporating riverine biodiversity conservation are implemented in a timely manner effectively achieving their objectives	0/1	1/2	1/2	0/1	1/2
12.	Riverine biodiversity conservation is effectively implemented and enforced	0/1	1/1	1/2	0/0	0/2
13.	Individuals are appropriately skilled for their jobs	1/3	2/2	1/2	-/-	0/2
14.	Individuals are able to advance and develop professionally	0/2	0/1	1/2	-/-	1/3
15.	There are appropriate systems of training, mentoring, and learning in place to maintain a continuous flow of new staff	0/2	1/2	1/2	0/1	0/2
16.	Riverine biodiversity conservation implementation has the political commitment required	0-1/2	1/2	0/1	0/1	1/2
17.	Riverine biodiversity conservation has the public support required	1/3	0/1	0/1	0/2	0/2
18.	Riverine biodiversity conservation institutions are mission oriented	1/2	0/1	0/1	-/-	0/2
19.	Riverine biodiversity conservation institutions can establish the partnerships needed to achieve their objectives	1/3	1/2	0/1	-/1	1/2
20.	Civil society participation in riverine biodiversity conservation	1/3	1/2	1/2	0/1	1/2
21.	Riverine biodiversity conservation institutions have the information they need to develop and implement monitor strategies and action plans for the management of the river system	0/3	1/2	0/1	0/1	1/3
22.	Mechanisms to disseminate and access information involving civil society organizations (CSOs) for informed decision-making	1/3	0/2	0/1	0/1	1/2
23.	Riverine biodiversity conservation policy is continually reviewed and updated	0/2	0/1	0/1	0/1	0/3
24.	Society monitors the state of the riverine biodiversity	1/3	1/2	0/1	0/1	1/2

25.	Institutions are highly adaptive, responding effectively and immediately to change	1/2	1/2	0/1	-/-	1/2
26.	Institutions have effective internal mechanisms for monitoring, evaluation, reporting and learning	1/3	1/2	0/1	-/-	0/3
27.	Monitoring, evaluation and learning mechanisms incorporate inputs from civil society organizations (CSOs)	0/3	0/1	0/1	0/1	0/2
Baseline Score/Targeted Score		**14/62**	**25/47**	**11/38**	**0/16**	**17/63**
Overall comment					**Currently many items not relevant to DBKL**	
Average Score/Average Targeted Score		**Average Baseline Score (13.4/81) = 16.5%** **Average Estimated Target Score (40.4/81) = 50%**				

Individual Scores and Comments:

1. CSO Representative

Overall score (14); Estimated Targeted Score (62)

Issue 3 "Unclear lead-JPS has mandate for river but not biodiversity. Fisheries responsible for fish but not riverine biodiversity. PERHILITAN responsible for some biodiversity.

Issue 3 "Lack of a riverine biodiversity institution".

Issue 8 "Oversight by NRE".

Issue 9 "Some regulations eg. Fishery Enactment (states) -but not comprehensive. Riverine biodiversity is not incorporated into river basin plans".

Issue 10 "Limited conservation areas/rivers but rivers occur in all conservation area eg. Taman Negara/Tabin, etc. In general no specific management plans. None target main river basin plans...

Issue 11 "no management plan".

Issue 14 "since no clear section for riverine biodiversity hard for individual to advance".

Issue 18 "Fishery department has some vision but not other related agencies".

2. **NRE**
   Overall Score (25); Estimated Targeted Score (47)

   Issue 1 "A couple of national policies exists, but not for riverine biodiversity".

   Issue 2 "A number of legal framework have been in place i.e. DID, JPBD, Local Council, etc.".

   Issue 3 "Unclear institutional framework; who as the champion? Key stakeholders?"

3. **Department of Fisheries, Perak**
   Overall Score (11); Estimated Target Score Score (38)

   No feedback

4. **Kuala Lumpur City Hall (DBKL)**
   Overall Score (0); Estimated Target Score (16)

   Issue 4 "No biodiversity conservation institution within DBKL"

   Issue 10 "No conservation area for biodiversity within WPKL"

   Issue 12 "Enforcement by DBKL aims to remove aggressive wildlife such as snakes/monitor lizards".

   Issue 18 "No biodiversity conservation institution in /DBKL".

   Issue 25 "No biodiversity Conservation Institution".

5. **DID River Management Division**
   Overall Score (17); Estimated Target Score (63)

   No feedback

General Feedback from the Scorecard Discussion

Overall the Capacity Development scorecard results indicate low baseline scores with an average of 16.5% and a cautious estimated score of around 50%.

Among the main concerns raised were gaps in the legal and institutional frameworks. They proposed that in order to strengthen riverine biodiversity conservation, there is a need for a national action plan for river biodiversity. However, a question raise was who will lead it? A participant responded that traditionally, the enforcement authority for river resources came under the purview of the Fisheries Department. However, they acknowledged that there is a need for clear leadership. They commented that the demonstration project might be a good opportunity towards creating a mechanism to lead in riverine biodiversity conservation. Discussions also engaged on invasive species and the need to eradicate them and to repopulate rivers with indigenous species. One participant suggested zoning areas specifically for the release of breed fish species, for example for religious purposes, into designated

ponds. A clear gap that emerged from discussions was that there is no specific or clear role in the City Hall (Dewan Bandaraya (DBKL)) laws regarding river biodiversity. There appears to be no provision within the DBKL that acknowledges biodiversity conservation within the city area. For the local government, they see crows, snake, bees, monitor lizards, etc. as pests. A question asked by a respondent was whether biodiversity conservation and rehabilitation was even relevant in the city context? A response was that biodiversity in towns can be facilitated through protecting corridors of habitat (eg along rivers) and urban landscapes can be rehabilitated to reintroduce indigenous plant species.

The scorecard results indicate there is a lot more that needs to be done to ensure riverine biodiversity conservation. An important step towards streamlining biodiversity conservation into river management would be through the creation of clear lead agencies and to demonstrate institutional capacity towards ensuring sustainability.

National Capacity Development Scorecard for Riverine Biodiversity Conservation Institutions

Date of Assessment: Name of Assessor(s):

Strategic Area of Support	Issue	Outcome Indicators	Baseline Score:		Evaluative Comments	Estimated Target Score
1. Capacity to conceptualize and formulate policies, legislation, strategies and programmes	1. The riverine biodiversity conservation agenda is being effectively championed / driven forward	There is essentially no riverine biodiversity conservation agenda;	0			
		There are some persons or institutions actively pursuing an riverine biodiversity conservation agenda but they have little effect or influence;	1			
		There are a number of riverine biodiversity conservation champions that drive the riverine biodiversity conservation agenda, but more is needed;	2			
		There are an adequate number of able "champions" and "leaders" effectively driving forwards a riverine biodiversity conservation agenda	3			
	2. There is a strong and clear legal mandate for riverine biodiversity conservation	There is no legal framework for riverine biodiversity conservation;	0			
		There is a partial legal framework for riverine biodiversity conservation but it has many inadequacies;	1			
		There is a reasonable legal framework for riverine biodiversity conservation but it has a few weaknesses and gaps;	2			
		There is a strong and clear legal mandate for riverine biodiversity conservation	3			
	3. There are legally designated riverine biodiversity conservation	There is no lead institution or agency with a clear mandate or responsibility for riverine biodiversity conservation;	0			

	institutions with the authority to carry out their mandate	There are one or more institutions or agencies dealing with riverine biodiversity conservation but roles and responsibilities are unclear and there are gaps and overlaps in the arrangements;	1			
		There are one or more institutions or agencies dealing with riverine biodiversity conservation, the responsibilities of each are fairly clearly defined, but there are still some gaps and overlaps;	2			
		Riverine biodiversity conservation institutions have clear legal and institutional mandates and the necessary authority to carry this out	3			
2. Capacity to implement policies, legislation, strategies and programmes	4. Riverine biodiversity conservation institutions are effectively led	Riverine biodiversity conservation institutions have a total lack of leadership;	0			
		Riverine biodiversity conservation institutions exist but leadership is weak and provides little guidance;	1			
		Some riverine biodiversity conservation institutions have reasonably strong leadership but there is still need for improvement;	2			
		Riverine biodiversity conservation institutions are effectively led	3			
	5. Riverine biodiversity conservation institutions are able to adequately mobilize sufficient quantity of funding, human and material resources to effectively implement their mandate	Riverine biodiversity conservation institutions typically are severely underfunded and have no capacity to mobilize sufficient resources;	0			
		Riverine biodiversity conservation institutions have some funding and are able to mobilize some human and material resources but not enough to effectively implement their mandate;	1			
		Riverine biodiversity conservation institutions have reasonable capacity to mobilize funding or other resources but not always in sufficient quantities for fully effective implementation of their mandate;	2			
		Riverine biodiversity conservation institutions are able to	3			

		adequately mobilize sufficient quantity of funding, human and material resources to effectively implement their mandate				
	6. Riverine biodiversity conservation institutions are effectively managed, efficiently deploying their human, financial and other resources to the best effect	While the riverine biodiversity conservation institution exists it has no management;	0			
		Institutional management is largely ineffective and does not deploy efficiently the resources at its disposal;	1			
		The institution(s) is (are) reasonably managed, but not always in a fully effective manner and at times does not deploy its resources in the most efficient way;	2			
		The riverine biodiversity conservation institution is effectively managed, efficiently deploying its human, financial and other resources to the best effect	3			
	7. Riverine biodiversity conservation institutions are highly transparent, fully audited, and publicly accountable	Riverine biodiversity conservation institutions totally untransparent, not being held accountable and not audited;	0			
		Riverine biodiversity conservation institutions are not transparent but are occasionally audited without being held publicly accountable;	1			
		Riverine biodiversity conservation institutions are regularly audited and there is a fair degree of public accountability but the system is not fully transparent;	2			
		The riverine biodiversity conservation institutions are highly transparent, fully audited, and publicly accountable	3			
	8. There is a fully transparent oversight authority (there are fully transparent oversight authorities)	There is no oversight at all of riverine biodiversity conservation institutions;	0			
		There is some oversight, but only indirectly and in a nontransparent manner;	1			
	for riverine biodiversity conservation institutions	There is a reasonable oversight mechanism in place providing for regular review but lacks in transparency (e.g.	2			

is not independent, or is internalized) ;

		There is a fully transparent oversight authority for the riverine biodiversity conservation institutions	3			
	9. There is systematic planning for river catchments and basins that incorporates riverine biodiversity conservation	No or very few examples of plans incorporating riverine biodiversity conservation exist, and they cover only a small portion of the national river system;	0			
		Coverage of plans incorporating riverine biodiversity conservation is patchy both in number of rivers and geographical coverage;	1			
		Plans incorporating riverine biodiversity conservation have been applied to a reasonably representative sample of the national river system, but still present some gaps;	2			
		Plans incorporating riverine biodiversity conservation have been applied to all the major river systems in the country	3			
	10. Catchment and river basins have regularly updated, participatory, comprehensive management plans incorporating riverine biodiversity conservation	Conservation areas covering riverine biodiversity have no management plans;	0			
		Some conservation areas covering riverine biodiversity have up-to-date management plans but they are typically not comprehensive and are not participatory;	1			
		Most conservation areas covering riverine biodiversity have management plans though some are old, not participatory or are less than comprehensive;	2			

		Every conservation area covering riverine biodiversity has a regularly updated, participatory, comprehensive management plan	3			
	11. Management plans for catchments and river basins	There is very little implementation of management plans;	0			
incorporating riverine biodiversity		Management plans are poorly implemented and their	1			
achieving their objectives		Management plans are usually implemented in a timely manner, though delays typically occur and some objectives are not met;	2			
		Management plans are implemented in a timely manner effectively achieving their objectives	3			
12. Riverine biodiversity conservation is effectively implemented and enforced		No enforcement of riverine biodiversity conservation regulations is taking place;	0			
		Some enforcement of riverine biodiversity conservation regulations but largely ineffective and threats to ecosystem integrity remain active;	1			
		Riverine biodiversity conservation regulations are regularly enforced but are not fully effective and threats to ecosystem integrity are reduced but not eliminated;	2			
		Riverine biodiversity conservation regulations are highly effectively enforced and all threats to ecosystem integrity are negated	3			
13. Individuals are appropriately skilled for their jobs		Skills of individuals do not match job requirements;	0			
		Individuals have some or poor skills for their jobs;	1			
		Individuals are reasonably skilled but could further improve for optimum match with job requirement;	2			
		Individuals are appropriately skilled for their jobs	3			

14. Individuals are able to advance and develop professionally	No career tracks are developed and no training opportunities are provided;	0			
	Career tracks are weak and training possibilities are few and not managed transparently;	1			
	Clear career tracks developed and training available; HR management however has inadequate performance measurement system;	2			

conservation are implemented in a objectives are rarely met; timely manner effectively

		Individuals are able to advance and develop professionally	3			
	15. There are appropriate systems of training, mentoring, and learning in place to maintain a continuous flow of new staff	No mechanisms exist;	0			
		Some mechanisms exist but unable to develop enough and unable to provide the full range of skills needed;	1			
		Mechanisms generally exist to develop skilled professionals, but either not enough of them or unable to cover the full range of skills required;	2			
		There are mechanisms for developing adequate numbers of the full range of highly skilled protected area professionals	3			
3. Capacity to engage and build consensus among all stakeholders	16. Riverine biodiversity conservation implementation has the political commitment required	There is no political will at all, or worse, the prevailing political will runs counter to the interests of riverine biodiversity conservation;	0			
		Some political will exists, but is not strong enough to make a difference;	1			
		Reasonable political will exists, but is not always strong enough to fully support riverine biodiversity conservation;	2			
		There are very high levels of political will to support riverine biodiversity conservation;	3			
	17. Riverine biodiversity conservation has the public support required	The public has little interest in threats to ecosystem integrity and there is no significant lobby for riverine biodiversity conservation;	0			
		There is limited support for riverine biodiversity conservation;	1			
		There is general public support for riverine biodiversity conservation and there are various lobby groups such as environmental NGO's strongly pushing the approach;	2			
		There is tremendous public support in the country for riverine biodiversity conservation;	3			
		Institutional mission not defined;	0			

	18. Riverine biodiversity conservation institutions are mission oriented	Institutional mission poorly defined and generally not known and internalized at all levels;	1			
		Institutional mission well defined and internalized but not fully embraced;	2			
		Institutional missions are fully internalized and embraced	3			
	19. Riverine biodiversity conservation institutions can establish the partnerships needed to achieve their objectives	Riverine biodiversity conservation institutions operate in isolation;	0			
		Some partnerships in place but significant gaps and existing partnerships achieve little;	1			
		Many partnerships in place with a wide range of agencies, NGOs etc, but there are some gaps, partnerships are not always effective and do not always enable efficient achievement of objectives;	2			
		Riverine biodiversity conservation institutions establish effective partnerships with other agencies and institutions, including provincial and local governments, NGO's and the private sector to enable achievement of objectives in an efficient and effective manner	3			
	20. Civil society participation in riverine biodiversity conservation	There is no participation of Community-based Organizations (CBOs) and Non Governmental Organizations (NGOs) in riverine biodiversity conservation	0			
		There is limited participation of NGOs in existing riverine biodiversity conservation	1			
		Participation of both NGOS and CBOs in riverine biodiversity conservation exists but is limited and informal	2			
		Active participation by both NGOs and CBOs in riverine biodiversity conservation including formal mechanisms	3			

4. Capacity to mobilize information and knowledge	21. Riverine biodiversity conservation institutions have the information they need to develop and implement monitor strategies	Information is virtually lacking;	0			
		Some information exists, but is of poor quality, is of limited usefulness, or is very difficult to access;	1			
	and action plans for the management of the river system	Much information is easily available and mostly of good quality, but there remain some gaps in quality, coverage and availability;	2			
		Riverine biodiversity conservation institutions have the information they need to develop and implement strategies and action plans for the management of the river system	3			
	22. Mechanisms to disseminate and access information involving civil society organizations (CSOs) for informed decision-making	No official mechanisms exist to make information available to CSOs	0			
		Only unofficial information is accessible to CSOs	1			
		CSOs have limited access to official information	2			
		Mechanisms for information dissemination are formalized and accessible for CSOs	3			
5. Capacity to monitor, evaluate, report and learn	23. Riverine biodiversity conservation policy is continually reviewed and updated	There is no policy or it is old and not reviewed regularly;	0			
		Policy is only reviewed at irregular intervals;	1			
		Policy is reviewed regularly but not annually;	2			
		National riverine biodiversity conservation policy is reviewed annually	3			
	24. Society monitors the state of the riverine biodiversity	There is no dialogue at all;	0			
		There is some dialogue going on, but not in the wider public and restricted to specialized circles;	1			
		There is a reasonably open public dialogue going on but certain issues remain taboo;	2			
		There is an open and transparent public dialogue about the state of the protected areas	3			
		Institutions resist change;	0			

	25. Institutions are highly adaptive, responding effectively and immediately to change	Institutions do change but only very slowly;	1			
		Institutions tend to adapt in response to change but not always very effectively or with some delay;	2			
		Institutions are highly adaptive, responding effectively and immediately to change	3			
	26. Institutions have effective internal mechanisms for monitoring, evaluation, reporting and learning	There are no mechanisms for monitoring, evaluation, reporting or learning;	0			
		There are some mechanisms for monitoring, evaluation, reporting and learning but they are limited and weak;	1			
		Reasonable mechanisms for monitoring, evaluation, reporting and learning are in place but are not as strong or comprehensive as they could be;	2			
		Institutions have effective internal mechanisms for monitoring, evaluation, reporting and learning	3			
	27. Monitoring, evaluation and learning mechanisms incorporate inputs from civil society organizations (CSOs)	No mechanisms exist for feedback from CSOs	0			
		Mechanisms exist for feedback from CSOs, but these are informal and ad hoc	1			
		Formal mechanisms exist for scheduled feedback from CSOs into strategies, plans and operations	2			
		CSOs are represented on decision-making bodies for monitoring and evaluation and learning mechanisms	3			

TOTAL SCORE			Out of maximum possible total of 81 (less any N/A questions)	
			Percentage of total possible score	

Record of PPG Stakeholder Consultations
(need to verify dates and get attendances)

Selangor/WP

No.	Site visited	Evidence	Date	Comments
1	Meeting with DD, Federal	Minutes of meeting	20/5/2014	Brief DID on consultants hired and scope of work.
2.	Meeting with State committee			Consultants and UNDP brief committee on the proposed project.
3.	Meeting with LUAS	Meeting itinerary	29/9/2014	Consultant and GEC brief committee on the proposed project.
4.	Kg. Warisan	Photographs	20/7/2014	Introduction visit to Encik Sarip who operates ROL open learning centre. The consultant team and GEC (Dr. Khali) showed the Greater Melawati area.
5.	Kg. Warisan	Photographs	20/8/2014	Visited En. Sarip to understand more what the JKK Kg. Warisan had planned or were planning for Kg. Warisan and th Klang river in their area.
6.	Kg. Kemensah	Photographs	23/11/2014	Introduction visit to JKK and Tok Empat.

7.	Kg. Kemensah	Audio record/Photograph/notes	25/11/2014	Spoke to several JKK members and Tok Empat to understand issues faced by residence in Kg. Kemensah. Also visited the Orang Asli settlement here.
8.	Kg. Kemensah	Audio record	5/12/2014	Set a meeting with the JPS officer and
				JKK as well as with the Tok Empat.
9.	Eco-Melawati	Audio record/photographs	7/12/2014	Met up with several members of Eco-Melawati to learn issues facing conservation in the Melawati area and their vision of an environmental NGO for greater Melawati.
10.	JKK AU3	Audio record/photographs	7/12/2014	Spoke with the secretary of the JKK. He highlighted key issues faced by the community in trying to address ROL concerns.
11.	ESSP	Attendance lists/photographs, Audio record	12/12/2014	Attendance. Photographs, audio record

Segama Sabah

o.	Site visited	Evidence	Date	Comments
1.	RPS Ulu Kinta (Kg?)	Photographs	10/7/2014	Introduce to headman and JKK at Kg. Chadok by GEC.
2.	Meet the state exco on water management	None	10/7/2014	Consultant team and JPS presented project to committee.
3.	ESSP	Attendance list/photographs	9/12/2014	JPS and members of the consultant team attended and brief community on the broader project

No.	Site visited	Evidence	Date	Comments
1.	State UPEN	attendance	26/5/2014	GEC and Consultant team briefed UPEN Sabah on the proposed project.
2.	Lahad Datu District office, Kg. Belacon, Kg. Buang Sayang and Plantation (?)	Photographs	22/9/2014	Introduction visit to ADO, headman in Kg Buang Sayang, JKK in Kg. Belacon and plantation manager (?)
3.	Visited Kg. Belacon, Kg. Dagad and Kg. Tidong	Photographs/Audio record	9/10/2014 & 10/10/2014	Spoke to headman and JKK at Kg. Belacon about issues related to river conservation and possible roles for villagers. Visited Tidong and Dagad to discuss issues related to sustainability of river and how they can contribute.
4.	ESSP	Attendance list/photographs/audio record		

Tracking Tool for Biodiversity Projects in GEF-3, GEF-4, and GEF-5

Objective 2:
Mainstreaming Biodiversity Conservation in Production Landscapes/Seascapes and Sectors

Objective: To measure progress in achieving the impacts and outcomes established at the portfolio level under the biodiversity focal area.
Rationale: Project data from the GEF-3, GEF-4, and GEF-5 project cohort will be aggregated for analysis of directional trends and patterns at a portfoliowide level to inform the development of future GEF strategies and to report to GEF Council on portfolio-level performance in the biodiversity focal area. Structure of Tracking Tool: Each tracking tool requests background and coverage information on the project and specific information required to track portfolio level indicators in the GEF-3, GEF-4, and GEF-5 strategy.
Guidance in Applying GEF Tracking Tools: GEF tracking tools are applied three times: at CEO endorsement, at project mid-term, and at project completion.
Submission: The finalized tracking tool will be cleared by the GEF Agencies as being correctly completed.

Important: Please read the Guidelines posted on the GEF website before entering your data

I. General Data	Please indicate your answer here	Notes
Project Title	Mainstreaming of Biodiversity Conservation into River Management (Malaysia)	
GEF Project ID	5692	
Agency Project ID	5281	
Implementing Agency	UNDP	
Project Type	MSP	FSP or MSP
Country	Malaysia	
Region	EAP	
Date of submission of the tracking tool	April 20, 2015	Month DD, YYYY (e.g., May 12, 2010)
Name of reviewers completing tracking tool and completion date	March 20, 2015	Completion Date. Crawford Prentice
Planned project duration	4	years
Actual project duration	-	years
Lead Project Executing Agency (ies)	Ministry of Natural Resources and	

	Environment, Department of Irrigation and Drainage Malaysia, Global Environment Centre	
Date of Council/CEO Approval	May 20, 2014	Month DD, YYYY (e.g., May 12, 2010)
GEF Grant (US$)	1,404,000.00	
Cofinancing expected (US$)	7,530,000.00	
Please identify production sectors and/or ecosystem services directly targeted by project:		
Agriculture		1: Primarily and directly targeted by the project 2: Secondary or incidentally affected by the project 1: Primarily and directly targeted by the project
Fisheries	1	2: Secondary or incidentally affected by the project 1: Primarily and directly targeted by the project
Forestry	2	2: Secondary or incidentally affected by the project 1: Primarily and directly targeted by the project
Tourism		2: Secondary or incidentally affected by the project 1: Primarily and directly targeted by the project
Mining		2: Secondary or incidentally affected by the project 1: Primarily and directly targeted by the project
Oil		2: Secondary or incidentally affected by the project 1: Primarily and directly targeted by the project
Transportation		2: Secondary or incidentally affected by the project
Other: River and Water Resources Management	1	Please note: the issue here is that the policy, legal and regulatory framework for
Other: Wildlife Conservation	1	

		conservation of riverine biodiversity is inadequate and there are coordination issues between the different agencies involved. 1: Primarily and directly targeted by the project
Other: Oil Palm Plantations	1	2: Secondary or incidentally affected by the project

II. Project Landscape/Seascape Coverage		
1. What is the extent (in hectares) of the landscape or seascape where the project will directly or indirectly contribute to biodiversity conservation or sustainable use of its components? An example is provided in the table below.		
Foreseen at project start (to be completed at CEO approval or endorsement)		
Landscape/seascape[1] area directly[2] covered by the project (ha)	17,600 ha	Upper Kinta Catchment: - 17,000ha; Klang River Basin - focus on c.20 km of urban river corridor (100 ha); Mid-Lower Segama - c.50km riparian stretch (500 ha)
Landscape/seascape area indirectly[3] covered by the project (ha)	3.9 million ha	
Explanation for indirect coverage numbers:	This is the approximate area occupied by river and floodplain wetland systems in Malaysia. The project's national component will influence policy and management approaches towards this overall resource in the long term, beyond the demonstration sites.	Please indicate reasons
Actual at mid-term		
Landscape/seascape[1] area directly[2] covered by the project (ha)		
Landscape/seascape area indirectly[3] covered by the project (ha)		
Explanation for indirect coverage numbers:		Please indicate reasons
Actual at project closure		

Landscape/seascape[1] area directly[2] covered by the project (ha)		
Landscape/seascape area indirectly[3] covered by the project (ha)		
Explanation for indirect coverage numbers:		Please indicate reasons

[1] For projects working in seascapes (large marine ecosystems, fisheries etc.) please provide coverage figures and include explanatory text as necessary if r

[2] Direct coverage refers to the area that is targeted by the project's site intervention. For example, a project may be mainstreaming biodiversity into floodpla

[3] Using the example in footnote 2 above, the same project may, for example, "indirectly" cover or influence the remaining 9,000 hectares of the floodplain thr

2. Are there Protected Areas within the landscape/seascape covered by the project? If so, names these PAs, their IUCN or national PA category, and their extent in hectares

Name of Protected Areas	IUCN and/or national category of PA	Extent in hectares of PA
Selangor State Park	4	91,441
Tabin Wildlife Reserve	4	122,539
Danum Valley Conservation Area	4	43,800
Kuala Maruap and Kuala Segama Forest Reserve	4	17,650

3. Within the landscape/seascape covered by the project, is the project implementing payment for environmental service schemes? If so, please complete the table below. Example is provided.

Foreseen at project start (to be completed at CEO approval or endorsement)	N/A	Please Indicate Environmental Service
	N/A	Extent in hectares
	N/A	Payments generated (US$)/ha/yr
Actual at mid-term	N/A	Please Indicate Environmental Service
	N/A	Extent in hectares
	N/A	Payments generated (US$)/ha/yr
Actual at project closure	N/A	Please Indicate Environmental Service
	N/A	Extent in hectares
	N/A	Payments generated (US$)/ha/yr

Part III. Management Practices Applied

4. Within the scope and objectives of the project, please identify in the table below the management practices employed by project beneficiaries that integrate biodiversity considerations and the area of coverage of these management practices. Please also note if a certification system is being applied and identify the certification system being used. Note: this could range from farmers applying organic agricultural practices, forest management agencies managing forests per Forest Stewardship Council (FSC) guidelines or other forest certification schemes, artisanal fisherfolk practicing sustainable fisheries management, or industries satisfying other similar agreed international standards, etc.

Foreseen at project start (to be completed at CEO approval or endorsement)	A. Conservation and rehabilitation of riverine and riparian habitats, including demonstration of riparian buffer zones in oil palm estate management,	catchment forest protection, water quality improvement, community-based fisheries
	NA	Name of certification system being used (insert NA if no certification system is being applied)
	TOTAL: 600 ha: Klang River Basin - focus on c.20 km of urban river corridor (100ha); Mid-Lower Segama - c.50km riparian stretch (500 ha)	Area of coverage
Foreseen at project start (to be completed at CEO approval or endorsement)	B. Catchment forest protection, including water quality improvement through slope erosion control	Please indicate specific management practices that integrate BD
	NA	Name of certification system being used (insert NA if no certification system is being applied)
	Upper Kinta Catchment: - 17,000ha	Area of coverage
Foreseen at project start (to be completed at CEO approval or endorsement)	C. Community-based fishery management	Please indicate specific management practices that integrate BD

	NA	Name of certification system being used (insert NA if no certification system is being applied)
	TOTAL: 600 ha: Klang River Basin - focus on c.20 km of urban river corridor (100ha); Mid-Lower Segama - c.50km riparian stretch (500 ha)	Area of coverage
Actual at mid-term		Please indicate specific management practices that integrate BD
		Name of certification system being used (insert NA if no certification system is being applied)
		Area of coverage
Actual at project closure		Please indicate specific management practices that integrate BD
		Name of certification system being used (insert NA if no certification system is being applied)
		Area of coverage

Part IV. Market Transformation

5. For those projects that have identified market transformation as a project objective , please describe the project's ability to integrate biodiversity considerations into the mainstream economy by measuring the market changes to which the project contributed. The sectors and subsectors and measures of impact in the table below are illustrative examples, only. Please complete per the objectives and specifics of the project.

Foreseen at project start		
Name of the market that the project seeks to affect (sector and subsector)	n/a	Unit of measure of market impact
	n/a	
	n/a	
Actual at mid-term		

Name of the market that the project seeks to affect (sector and subsector)	n/a	Unit of measure of market impact
	n/a	
	n/a	
Actual at project closure		
Name of the market that the project seeks to affect (sector and subsector)	n/a	Unit of measure of market impact
	n/a	
	n/a	

Part V. Policy and Regulatory frameworks

6. For those projects that have identified addressing policy, legislation, regulations, and their implementation as project objectives, Please complete these tables for each sector that is a primary or a secondary focus of the project. Please answer (1 for YES or 0 for NO) to each statement under the sectors that are a focus of the project.

Biodiversity considerations are mentioned in sector policy		
Other: River and Water Resource Management	0	Yes = 1, No = 0
Other: Wildlife Conservation	1	However, policy governing management of riverine biodiversity provides inadequate protection, leading to resource depletion
Other: Oil Palm Plantations	0	Yes = 1, No = 0
Fisheries	1	Fisheries policy covers freshwater fish conservation, but this is very weak, despite the very high national fish biodiversity and severe threats facing this BD (eg from use of IAS in aquaculture).
Forestry	1	This mainly concerns protection of watershed forests.
Biodiversity considerations are mentioned in sector policy through specific legislation		
Other: River and Water Resource Management	0	Yes = 1, No = 0
Other: Wildlife Conservation	1	Aquatic fauna such as freshwater fishes, turtles, crocodiles and amphibians receive inadequate protection through existing legislation. State laws are not consistent.
Other: Oil Palm Plantations	0	Yes = 1, No = 0

Fisheries	1	There is national fisheries legislation, reflected in state laws. Community-based fishery management is poorly provided for.
Forestry	1	Ditto. The different categories of Forest Reserve provide scope for appropriate management of catchment and riparian forests. However community-based forest management is not provided for.
Regulations are in place to implement the legislation		
Other: River and Water Resource Management	0	Yes = 1, No = 0
Other: Wildlife Conservation	1	Same problems as for legislation
Other: Oil Palm Plantations	0	Yes = 1, No = 0
Fisheries	1	Regulations are in place at state level. However, the emphasis is on fisheries production rather than biodiversity conservation.
Forestry	1	Yes = 1, No = 0
The regulations are under implementation		
Other: River and Water Resource Management	0	Yes = 1, No = 0
Other: Wildlife Conservation	1	Yes, but they are inadequate, as is the financial and human resources allocated, and inter-agency coordination of implementation is often poor
Other: Oil Palm Plantations	0	Yes = 1, No = 0
Fisheries	1	Yes, but they are inadequate, as is the financial and human resources allocated, and inter-agency coordination of implementation is often poor
Forestry	1	Yes = 1, No = 0
The implementation of regulations is enforced		
Other: River and Water Resource Management	0	Yes = 1, No = 0
Other: Wildlife Conservation	0	Poor financial and human resource enforcement capacity and poor coordination between enforcement agencies are issues
Other: Oil Palm Plantations	0	Yes = 1, No = 0

Fisheries	0	Weak enforcement capacity due to inadequate financial and human resources
Forestry	0	Enforcement capacity could be improved
Enforcement of regulations is monitored		
Other: River and Water Resource Management	0	Yes = 1, No = 0
Other: Wildlife Conservation	0	Yes = 1, No = 0
Other: Oil Palm Plantations	0	Yes = 1, No = 0
Fisheries	0	Yes = 1, No = 0
Forestry	0	Yes = 1, No = 0

All projects please complete this question at the project mid-term evaluation and at the final evaluation, if relevant:

7. Within the scope and objectives of the project, has the private sector undertaken voluntary measures to incorporate biodiversity considerations in prod mention the sectors involved. Ar example of this could be a mining company minimizing the impacts on biodiversity by using low-impact exploration techniq exploration as part of the site management plan.

Part VI. Tracking Tool for Invasive Alien Species Projects in GEF 4 and GEF 5

Objective: The Invasive Alien Species Tracking Tool has been developed to help track and monito progress in the achievement of outcome 2.3 in the GEF-5 control, and manage invasive alier species" and for Strategic Program 7 in the GEF-4 strategy.

Structure of Tracking Tool: The Tracking Tool addresses four main issues in one assessment form:

1) National Coordination Mechanism;
2) IAS National Strategy Development and Implementation;
3) Policy Framework to Support IAS Management; and
4) IAS Strategy Implementation: Prevention, Early Detection, Assessment and Management.

Assessment Form: The assessment is structured around six questions presented in table forma which includes three columns for recording details of the ass Next Steps: For each questior respondents are also asked to identify any intended actions that will improve performance of the IAS management framework.

Prevention, control, and management of invasive alien species (IAS) Tracking Tool

Issue	Please select your score from drop down menu	Scoring Criteria
National Coordination Mechanism		
1) Is there a National Coordination Mechanism to assist with the design and implementation of a national IAS strategy? (This could be a single "biosecurity" agency or an interagency committee).		0: National Coordination Mechanism does not exist 1: A national coordination mechanism has been established 2: The national coordination mechanism has legal

		character and responsibility for development of a national strategy 3: The national coordination mechanism oversees implementation of IAS National Strategy
		Bonus point: Contingency plans for IAS emergencies exist and are well coordinated 0: NO 1: Yes
IAS National Strategy Development and Implementation		
2) Is there a National IAS strategy and is it being implemented?		0: IAS strategy has not been developed 1: IAS strategy is under preparation or has been prepared and is not being implemented 2: IAS strategy exists but is only partially implemented due to lack of funding or other problems 3: IAS strategy exists, and is being fully implemented
Policy Framework to Support IAS Management		
3) Has the national IAS strategy lead to the development and adoption of comprehensive framework of policies, legislation, and regulations across sectors.		0: IAS policy does not exist 1: Policy on invasive alien species exists (Specify sectors in comment box if applicable) 2: Principle IAS legislation is approved (Specify sectors in comment box if applicable. It may be that harmonization of relevant laws and regulations to ensure more uniform and consistent practice is most realistic result.) 3: Subsidiary regulations are in place to implement the legislation (Specify sectors in comment box if applicable) 4: The regulations are under implementation and enforced

		for some of the main priority pathways for IAS (Specify sectors in comment box if applicable) 5: The regulations are under implementation and enforced for all of the main priority pathways for IAS (Specify sectors in comment box if applicable) 6: Enforcement of regulations is monitored (Specify sectors in comment box if applicable)
Prevention		
4) Have priority pathways for invasions been identified and actively managed and monitored?		0: Priority pathways for invasions have not been identified. 1: Priority pathways for invasions have been identified using risk assessment procedures as appropriate 2: Priority pathways for invasions are being actively managed and monitored to prevent invasions (In comment section please specify methods for prevention of entry: quarantine laws and regulation, database establishment, public education, inspection, treatment technologies (fumigation, etc) in the comment box.) 3: System established to use monitoring results from the methods employed to manage priority pathways in the development of new and improved policies, regulations and management approaches for IAS
Early Detection		

5) Are detection, delimiting and monitoring surveys conducted on a regular basis?		0: Detection surveys[1] of aggressively invasive species (either species specific or sites) are not regularly conducted due to lack of capacity, resources, planning, etc 1: Detection surveys (observational) are conducted on a regular basis 2: Detection and delimiting surveys[2] (focusing on key sites: high risk entry points or high biodiversity value sites) are conducted on a regular basis 3: Detection, delimiting and monitoring surveys[3] focusing on specific aggressively invasive plants, insects, mammals, etc are conducted on a regular basis
		Bonus point: Data from surveys is collected in accordance with international standards and stored in a national database. 0: NO 1: Yes
		Bonus point: Detection surveys rank IAS in terms of their potential damage and detection systems target the IAS that are potentially the most damaging to globally significant biodiversity 0: NO 1: Yes
Assessment and Management: Best practice applied		

6) Are best management practices being applied in project target areas?		0: Management goal and target area undefined, no acceptable threshold of population level established 1: Management goal and target area has been defined and acceptable threshold of population level of the species established 2: Four criteria are applied to prioritize species and infestations for control in the target areas: a) current and potential extent of the species; b) current and potential impact of the species; c) global value of the habitat the species actually or potentially infests; and d) difficulty of control and establishing replacement strategies. 3: Eradication, containment, control and management strategies are considered, and the most appropriate management strategy is applied to achieve the management goal and the appropriate level of protection in the target areas (Please discuss briefly rationale for the management strategy employed.)
		Bonus point: Monitoring system (ongoing surveys) established to determine characteristics of the IAS population, and the condition of the target area. 0: NO 1: Yes
		Bonus points: Funding for sustained and ongoing management and monitoring of the target area is secured. 0: NO 3: Yes

		Bonus point: Objective measures indicate that the restoration of habitat is likely to occur in the target area. 0: NO 1: Yes
		TOTAL SCORE
	29	TOTAL POSSIBLE

[1] Detection survey: survey conducted in an attempt to determine if IAS are present.

[2] Delimiting survey: survey conducted to establish the boundaries of an area considered to be infested or free from a pest.[3] Monitoring survey: survey to verify the characteristics of a pest/IAS.

Social and Environmental Screening Template

The completed template, which constitutes the Social and Environmental Screening Report, must be included as an annex to the Project Document. Please refer to the Social and Environmental Screening Procedure for guidance on how to answer the 6 questions.]

Project Information

Project Information	
1. Project Title	Mainstreaming of Biodiversity Conservation into River Management
2. Project Number	00094789 (PIMS 5281)
3. Location (Global/Region/Country)	Malaysia, Asia-Pacific

Part A. Integrating Overarching Principles to Strengthen Social and Environmental Sustainability

QUESTION 1: How Does the Project Integrate the Overarching Principles in order to Strengthen Social and Environmental Sustainability?

Briefly describe in the space below how the Project mainstreams the human-rights based approach

This project aims to maintain the integrity of aquatic ecosystems through mainstreaming biodiversity considerations into river basin management in Malaysia. Accordingly, federal and state agencies concerned with river basin management will have effective collaborative arrangements in place, and riverine biodiversity will be managed according to an integrated river basin and ecosystem-based approach. The project alternative will mainstream biodiversity conservation into riverine landscapes through improved river planning and management practices. Component 1 addresses the need for an operational national institutional framework and capacity for a more integrated and holistic approach to river management that takes riverine biodiversity into account, while Component 2 will demonstrate best management practices for riverine habitats in three different situations (a forested water supply reservoir catchment area in Perak, an urban river in Selangor / Federal Territory, and a rural river impacted by plantation development and smallholder land uses) in Sabah. The project will achieve global environmental benefits through strengthened sustainable management of Malaysia's river systems and associated riverine buffer zones and catchment areas that specifically takes into account biodiversity conservation. The areas covered by major river basins include several Global 200 Ecoregions in East and West Malaysia, including tropical lowland, mangrove, peat and freshwater swamp-forests, sub-montane and montane forests. A wide range of globally threatened species occur in the project demonstration sites' riparian forests as well as rare and endemic riverine species.

Project oversight is provided by UNDP Malaysia, which is responsible to ensure that UNDP's global policies for the application of human rights based approaches are integrated into its projects and programmes, including considerations with regard to gender equality and the engagement and protection of the rights of indigenous and local peoples. UNDP Malaysia will therefore ensure that the procedures followed during project implementation adhere to these UNDP global policies, as well as Malaysian national government requirements. Specifically, during project preparation all key stakeholders at national, state and local levels were consulted and provided opportunity to comment on

project design, and the verbal agreement of indigenous and local communities (ILCs) was obtained. Specific concerns regarding gender equality and the access of ILCs to natural resources and appropriate land uses have been identified in the risk assessment and mitigation measures included to address any issues arising. The project M&E system, including demonstration project management committees and the project steering committee, will provide oversight for project implementation, including decisions required on any human rights issues arising from project implementation.

The PPG phase included extensive consultations with the project's key stakeholders at the national and local levels. Field trips were carried out between May 2014 and January 2015, during which all project sites were visited and local authorities and community organisations were presented with the project proposal for discussion (see **Annex 8** for SESP consultation reports). These specifically included consultations with indigenous communities at the demonstration sites. Two national level stakeholder workshops were convened in Kuala Lumpur by DID Malaysia, the first on 3 November 2014 (including both national and state level participants), and a second final project document review workshop in February 2015. State level meetings were held in Ipoh, Perak on 7 July 2014 (presentation to the State River Management Committee, chaired by the State Executive Councillor); in Shah Alam, Selangor in August 2014 (convened by the Selangor State Economic Planning Unit); and in Kota Kinabalu, Sabah on 22 July (convened by the Sabah State Economic Planning Unit). In addition, a number of bilateral meetings were held, including key stakeholders who could not attend the workshops. Generally, the project design was a highly participatory process, in line with UNDP's and GEF's requirements.

Local communities will be able to raise any human rights concerned related to project implementation through representations to the demonstration site management committees, or directly through related government departments, specifically DID (the National Implementing Partner) and JAKOA – the Orang Asli (Indigenous Peopole) Development Department. Such concerns would then be relayed immediately to the Project Steering Committee for urgent consideration. Trained project facilitators will be engaged with communities at each of the demonstration sites, and they would also have a responsibility to discuss and address any such concerns at the local level initially, and to inform project management in a timely manner so that any further action could be taken as necessary.

The project design includes the participation of ILCs at the demonstration sites to ensure that they receive benefit from the project. See the stakeholder involvement plan and demonstration site profiles in Annex 3 of the project document for details. At the Ulu Kinta (Perak) demonstration site, approximately 5,000 Orang Asli, mainly Temiar, are resident in four villages downstream of the dam, and use ancestral lands in the upper catchment area for orchards, fishing and collection of forest produce. In Ulu Klang (Selangor and Federal Territory), the project study area is predominantly urban and includes various urban and peri-urban communities, in particular Kampung (Kg) Warisan, Kg Kemensah, Kg Orang Asli Kemensah, the AU3 housing area and the Eco-Melawati community based organization. The earliest settlement in the Kemensah area is the small indigenous Orang

Asli village which was settled in the 1950's, when the Klang Gates Dam was constructed. The demonstration site in the middle-lower reaches of the Segama River in Sabah includes a cluster of villages in the middle reaches, and another cluster of villages in the Lower reaches. In the middle reaches, Kg. Belacon with a population of approximately 200 families has been proposed as the demonstration site. The indigenous inhabitants are the Dusun Segama. However, as reported, there are other ethnic groups, such as Iban, Bugis, Sungai, and others, who make up the local residents here. Traditionally a fishing village, today many of the residents work in Lahad Datu town. The villages in the lower reaches are predominantly Tidung people. Of these, Kg. Tidung and Kg. Parit are located adjacent to the lower Segama River, consisting of approximately 127 and 49 residents respectively. Kg. Dagad has approximately 40 families, representing the most likely target for demonstration activities.

Project monitoring and evaluation includes targets and indicators relating to the participation of ILCs and gender representation, and these will be applied with particular attention to activities at the demonstration sites.

Briefly describe in the space below how the Project is likely to improve gender equality and women's empowerment

The project design includes some analysis on the community involvement at the demonstration sites that provides socio-economic benefits to local communities and proactively engages women in the communities, indicated by:

number of households in target communities involved in implementing project activities (such as tree planting) on a paid basis;

proportion of women participating and benefiting from sustainable livelihood groups supported and facilitated by the project

In the developing world context, women have unique ways of producing and transmitting knowledge, but face barriers to participating in decision-making processes, both traditional and contemporary, that favour men in positions of power. For instance, the importance of gender and the essential role of women in developing and using community protocols (one of the demonstration project themes) have long been considered. Key lessons that will be integrated into this project include providing spaces for separate meetings and trainings with women to build their technical skills and capacities, supporting female champions and facilitators to complement (not threaten) traditional leadership, and using the strengths of customary laws (e.g. social norms of honor, pride, and reciprocity) as the basis for culturally appropriate and representative decisionmaking processes both within communities and in multi-stakeholder settings. For the rural communities in Sabah and Perak, special attention will be given to develop spaces for womens' participation. For the urban landscape of the Klang River basin, particularly in JKK AU3 and Eco-Melawati, women have started to play a role in educating children against littering in the river and on the organization as a whole. In Kg. Kemensah, women are active as traders supporting the chalet operations. These women often open restaurants or food kiosks next to the river. However, there appears to be a gap in their voice as men who operate the chalets represent the group as a whole. Working closely with both men and women in this sector, the project aims to address the challenge of unregulated eco-tourism development along the Kemensah river and to develop and socialize guidelines for more sustainable use of the river. Women participate in the Eco-Melawati CBO, playing an important role in the organization. The Project scores 2 as per the ATLAS Gender Marker

Briefly describe in the space below how the Project mainstreams environmental sustainability

This project aims to maintain the integrity of aquatic ecosystems through mainstreaming biodiversity considerations into river basin management in Malaysia. Accordingly, federal and state agencies concerned with river basin management will have effective collaborative arrangements in place, and riverine biodiversity will be managed according to an integrated river basin and ecosystem-based approach. In the project alternative, a set of institutional barriers to integrated and coordinated riverine landscape management will be removed at the national and state levels, backed by the development and adoption of an inter-agency strategy to mainstream biodiversity into river management, thus providing the foundation for coordinated planning and management including enforcement and compliance monitoring mechanisms. The capacity of key institutions responsible for different aspects of river management will be strengthened. Integrated riverine biodiversity management will be demonstrated in three different settings in Peninsular Malaysia and Sabah. The GEF financing will also help to catalyze support from both private and public sectors as well as local communities towards conservation objectives in the project demonstration areas, and provide a mechanism to use such support to generate sustained long-term improvements in riverine biodiversity.

The project will directly facilitate the mainstreaming of biodiversity into the management of river systems by the Malaysian government, in line with Malaysia's membership of CBD and the Ramsar Convention. In the riverine biodiversity conservation context, NRE has demonstrated a strong commitment to mainstreaming biodiversity into related sectors through a range of policies and strategies including the National Policy on Biological Diversity, the Common Vision on Biodiversity, National Wetland Policy, National Physical Plan 2, and the National Action Plan for Peatlands. The inter-sectoral strategy on riverine biodiversity conservation that is planned through this project will contribute directly towards the implementation of these policies and plans in line with national government priorities, and the demonstration projects in Component 2 will provide model examples of such practices on the ground.

Part B. Identifying and Managing Social and Environmental Risks

QUESTION 2: What are the Potential Social and Environmental Risks? *Note: Describe briefly potential social and environmental risks identified in Attachment 1 – Risk Screening Checklist (based on any "Yes" responses).*	**QUESTION 3: What is the level of significance of the potential social and environmental risks?** *Note: Respond to Questions 4 and 5 below before proceeding to Question 6*			**QUESTION 6: What social and environmental assessment and management measures have been conducted and/or are required to address potential risks (for Risks with Moderate and High Significance)?**
Risk Description	*Impact and Probability (1-5)*	*Significance (Low, Moderate, High)*	*Comments*	*Description of assessment and management measures as reflected in the Project design. If ESIA or SESA is required note that the assessment should consider all potential impacts and risks.*
Risk 1: Human rights concerns raised by stakeholders at project sites are not addressed	I = 2 P = 2	Low	The main concerns of relevance are continued access to natural resources and land uses in riparian zones.	At project demonstration sites, the project has conducted stakeholder analysis and consultations regarding project aims and activities with the concerned communities. The project design includes specific stakeholder involvement mechanisms to ensure that local communities both participate and benefit from project activities. Continued access to riverine resources depends on the legality of existing uses, where encroachment into legal riparian buffer zones may be an issue. A consultative approach towards resolving such issues would be taken, allowing informed decisions to be taken through government led processes. The same issues apply at a wider national level, in terms of the implications of the intersectoral strategy for riverine biodiversity management, which should undergo screening for social impact assessment during its development, and include provisions to address potential social impacts arising from its implementation.
Risk 2 Gender equality concerns raised by stakeholders at project sites are not addressed	I = 2 P = 2	Low	The most likely concerns are that the project maintains the status quo, without raising awareness of the significance of gender equality or empowering women through their engagement in the project activities	At the project demonstration sites, the project has conducted stakeholder analysis and consultations that specifically included assessment of the current roles and livelihoods activities undertaken by women in local communities. These have been taken into account in the design of the demonstration activities, in order to ensure the empowerment, engagement and delivery of benefits to women in the targeted communities. Project monitoring and evaluation specifically includes indicators and reporting on the engagement of women in project implementation.

Risk 3: The project negatively impacts environmental sustainability of critical habitats and protected areas	I = 1 P = 1	Low	The potential concern is that the project will have negative impacts on the protected areas and critical habitats within the project area. This is considered extremely unlikely as the project is intended to achieve overwhelmingly positive impacts for biodiversity conservation.	The project is designed to enhance biodiversity conservation into river management. At such, it will result in improvements in the environmental sustainability of river basin management, enhanced riparian zone protection, improved water quality, strengthened biodiversity conservation, climate change adaptation and sustained delivery of riverine ecosystem services. No negative impacts are foreseen at either the demonstration sites or through national implementation of the inter-sectoral strategy for riverine biodiversity conservation.
Risk 4: Indigenous peoples dependent on riparian resources at project sites and elsewhere in Malaysia are negatively impacted by project outcomes	I = 3 P = 2	Low	Indigenous communities are present at all three project demonstration sites, and in many other riverine settlements throughout the country. There is a risk that their land uses and access to riverine resources could be negatively impacted by stronger protection of riverine biodiversity.	This impact is essentially the same as Risk 1 above, only in this case considered specifically for indigenous peoples, whose communities are often associated with rivers, and who traditionally rely on riverine resources to a fair degree (together with adjacent forest resources and other sources of livelihood including agriculture and outside labour). The mitigation measures are essentially the same as for Risk 1 above, but including specific consideration of the needs of indigenous peoples in stakeholder assessments and the design of project activities at demonstration sites, and social impact assessments for national plans. During project design, specific attention has been given to involving indigenous communities in activities at the demonstration sites, including ensuring that they benefit directly from activities such as appointment of river rangers, ecotourism development, support for traditional fishery management, biodiversity monitoring, and habitat rehabilitation.
[add additional rows as needed]				

	QUESTION 4: What is the overall Project risk categorization?		
	Select one (see SESP for guidance)		**Comments**
	Low Risk	X	
	Moderate Risk	☐	
	High Risk	☐	

Signature	*Date*	*Description*
QA Assessor		UNDP staff member responsible for the Project, typically a UNDP Programme Officer. Final signature confirms they have "checked" to ensure that the SESP is adequately conducted.
QA Approver		UNDP senior manager, typically the UNDP Deputy Country Director (DCD), Country Director (CD), Deputy Resident Representative (DRR), or Resident Representative (RR). The QA Approver cannot also be the QA Assessor. Final signature confirms they have "cleared" the SESP prior to submittal to the PAC.
PAC Chair		UNDP chair of the PAC. In some cases PAC Chair may also be the QA Approver. Final signature confirms that the SESP was considered as part of the project appraisal and considered in recommendations of the PAC.

QUESTION 5: Based on the identified risks and risk categorization, what requirements of the SES are relevant?

Check all that apply		Comments
Principle 1: Human Rights	X	
Principle 2: Gender Equality and Women's Empowerment	X	
1. Biodiversity Conservation and Natural Resource Management	X	
2. Climate Change Mitigation and Adaptation	X	
3. Community Health, Safety and Working Conditions	☐	
4. Cultural Heritage	☐	
5. Displacement and Resettlement	☐	
6. Indigenous Peoples	X	
7. Pollution Prevention and Resource Efficiency	☐	

Final Sign Off

SESP Attachment 1. Social and Environmental Risk Screening Checklist

Checklist Potential Social and Environmental Risks		
Principles 1: Human Rights		**Answer (Yes/No)**
1.	Could the Project lead to adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of marginalized groups?	NO
2.	Is there a likelihood that the Project would have inequitable or discriminatory adverse impacts on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups?[99]	NO
3.	Could the Project potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups?	NO
4.	Is there a likelihood that the Project would exclude any potentially affected stakeholders, in particular marginalized groups, from fully participating in decisions that may affect them?	NO
5.	Are there measures or mechanisms in place to respond to local community grievances?	Yes
6.	Is there a risk that duty-bearers do not have the capacity to meet their obligations in the Project?	NO
7.	Is there a risk that rights-holders do not have the capacity to claim their rights?	NO
8.	Have local communities or individuals, given the opportunity, raised human rights concerns regarding the Project during the stakeholder engagement process?	YES
9.	Is there a risk that the Project would exacerbate conflicts among and/or the risk of violence to projectaffected communities and individuals?	NO
Principle 2: Gender Equality and Women's Empowerment		
1.	Is there a likelihood that the proposed Project would have adverse impacts on gender equality and/or the situation of women and girls?	NO
2.	Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	NO
3.	Have women's groups/leaders raised gender equality concerns regarding the Project during the stakeholder engagement process and has this been included in the overall Project proposal and in the risk assessment?	YES
3.	Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services? *For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well being*	NO
Principle 3: Environmental Sustainability: Screening questions regarding environmental risks are encompassed by the specific Standard-related questions below		
Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management		

[99] Prohibited grounds of discrimination include race, ethnicity, gender, age, language, disability, sexual orientation, religion, political or other opinion, national or social or geographical origin, property, birth or other status including as an indigenous person or as a member of a minority. References to "women and men" or similar is understood to include women and men, boys and girls, and other groups discriminated against based on their gender identities, such as transgender people and transsexuals.

1.1	Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services? *For example, through habitat loss, conversion or degradation, fragmentation, hydrological changes*	NO
1.2	Are any Project activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities?	YES
1.3	Does the Project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? (Note: if restrictions and/or limitations of access to lands would apply, refer to Standard 5)	NO
1.4	Would Project activities pose risks to endangered species?	NO
1.5	Would the Project pose a risk of introducing invasive alien species?	NO
1.6	Does the Project involve harvesting of natural forests, plantation development, or reforestation?	NO
1.7	Does the Project involve the production and/or harvesting of fish populations or other aquatic species?	NO
1.8	Does the Project involve significant extraction, diversion or containment of surface or ground water? *For example, construction of dams, reservoirs, river basin developments, groundwater extraction*	NO
1.9	Does the Project involve utilization of genetic resources? (e.g. collection and/or harvesting, commercial development)	NO
1.10	Would the Project generate potential adverse transboundary or global environmental concerns?	NO
1.11	Would the Project result in secondary or consequential development activities which could lead to adverse social and environmental effects, or would it generate cumulative impacts with other known existing or planned activities in the area? *For example, a new road through forested lands will generate direct environmental and social impacts (e.g. felling of trees, earthworks, potential relocation of inhabitants). The new road may also facilitate encroachment on lands by illegal settlers or generate unplanned commercial development along the route, potentially in sensitive areas. These are indirect, secondary, or induced impacts that need to be considered. Also, if similar developments in the same forested area are planned, then cumulative impacts of multiple activities (even if not part of the same Project) need to be considered.*	NO
Standard 2: Climate Change Mitigation and Adaptation		
2.1	Will the proposed Project result in significant[100] greenhouse gas emissions or may exacerbate climate change?	NO
2.2	Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change?	NO
2.3	Is the proposed Project likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future (also known as maladaptive practices)? *For example, changes to land use planning may encourage further development of floodplains, potentially increasing the population's vulnerability to climate change, specifically flooding*	NO
Standard 3: Community Health, Safety and Working Conditions		
3.1	Would elements of Project construction, operation, or decommissioning pose potential safety risks to local communities?	NO

[100] In regards to CO_2, 'significant emissions' corresponds generally to more than 25,000 tons per year (from both direct and indirect sources). [The Guidance Note on Climate Change Mitigation and Adaptation provides additional information on GHG emissions.]

3.2	Would the Project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)?	NO
3.3	Does the Project involve large-scale infrastructure development (e.g. dams, roads, buildings)?	NO
3.4	Would failure of structural elements of the Project pose risks to communities? (e.g. collapse of buildings or infrastructure)	NO
3.5	Would the proposed Project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions?	NO
3.6	Would the Project result in potential increased health risks (e.g. from water-borne or other vector-borne diseases or communicable infections such as HIV/AIDS)?	NO
3.7	Does the Project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during Project construction, operation, or decommissioning?	NO
3.8	Does the Project involve support for employment or livelihoods that may fail to comply with national and international labor standards (i.e. principles and standards of ILO fundamental conventions)?	NO
3.9	Does the Project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g. due to a lack of adequate training or accountability)?	NO
Standard 4: Cultural Heritage		
4.1	Will the proposed Project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g. knowledge, innovations, practices)? (Note: Projects intended to protect and conserve Cultural Heritage may also have inadvertent adverse impacts)	NO
4.2	Does the Project propose utilizing tangible and/or intangible forms of cultural heritage for commercial or other purposes?	NO
Standard 5: Displacement and Resettlement		
5.1	Would the Project potentially involve temporary or permanent and full or partial physical displacement?	NO
5.2	Would the Project possibly result in economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)?	NO
5.3	Is there a risk that the Project would lead to forced evictions?[101]	NO
5.4	Would the proposed Project possibly affect land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources?	NO
Standard 6: Indigenous Peoples		
6.1	Are indigenous peoples present in the Project area (including Project area of influence)?	YES
6.2	Is it likely that the Project or portions of the Project will be located on lands and territories claimed by indigenous peoples?	NO
6.3	Would the proposed Project potentially affect the rights, lands and territories of indigenous peoples (regardless of whether Indigenous Peoples possess the legal titles to such areas)?	NO

[101] Forced evictions include acts and/or omissions involving the coerced or involuntary displacement of individuals, groups, or communities from homes and/or lands and common property resources that were occupied or depended upon, thus eliminating the ability of an individual, group, or community to reside or work in a particular dwelling, residence, or location without the provision of, and access to, appropriate forms of legal or other protections.

6.4	Has there been an absence of culturally appropriate consultations carried out with the objective of achieving FPIC on matters that may affect the rights and interests, lands, resources, territories and traditional livelihoods of the indigenous peoples concerned?	NO
6.4	Does the proposed Project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples?	NO
6.5	Is there a potential for forced eviction or the whole or partial physical or economic displacement of indigenous peoples, including through access restrictions to lands, territories, and resources?	NO
6.6	Would the Project adversely affect the development priorities of indigenous peoples as defined by them?	NO
6.7	Would the Project potentially affect the traditional livelihoods, physical and cultural survival of indigenous peoples?	NO
6.8	Would the Project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	NO
Standard 7: Pollution Prevention and Resource Efficiency		
7.1	Would the Project potentially result in the release of pollutants to the environment due to routine or nonroutine circumstances with the potential for adverse local, regional, and/or transboundary impacts?	NO
7.2	Would the proposed Project potentially result in the generation of waste (both hazardous and nonhazardous)?	NO
7.3	Will the proposed Project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials? Does the Project propose use of chemicals or materials subject to international bans or phase-outs? *For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Conventions on Persistent Organic Pollutants or the Montreal Protocol*	NO
7.4	Will the proposed Project involve the application of pesticides that may have a negative effect on the environment or human health?	NO
7.5	Does the Project include activities that require significant consumption of raw materials, energy, and/or water?	NO

Summary of Environmental and Social Screening Procedure Stakeholder Consultations

Selangor/WP

The ESSP was held on the 12th December, 2014 and was attended by representatives from the Kemensah village, Chalet operator group in the
Kemensah river area, squatter residents, Eco-Melawati and the Deputy Director, JPS.

The meeting started at 9.00pm and ended at 11.00pm. En Khairul, JPS Deputy Director, presented the proposal at the meeting.

The discussion during the meeting covered several key issues. All who attended however agreed there was a need to arrest the degradation of the riverine environment within the Kemensah area.

Among the themes discussed were;

i. Whether the project would negatively affect local communities. Residents were concerned whether the proposed project would negatively affect squatter settlements as well as illegal chalet operators. The JPS responded by saying that the program aimed at educating and working together with local communities towards improving the cleanliness and improve/protect biodiversity of the river. When asked what benefits would the communities accrue, he responded, the benefits were not immediate but would take the form of eco-tourism and also, healthier river for the local people.
ii. The chalet operators also ask JPS to improve the infrastructure and put up signs to educate the public on river use and cleanliness. Also a resident ask for JPS to put a filtration system in the river. The JPS ask the community to work together with them to improve cleanliness through prevention rather than to spend money on possibly environmentally destructive methods. He mentioned that not only was it no green technology, but it was expensive. He asked would it be better if they could reduce the amount of garbage thrown in the river. This way they can work together to keep the river clean and reduce the costs of maintenance.
iii. One resident asked if JPS could gazette the area as a tourism designated area to prevent further degradation from commercial development. This was out of the purview of JPS.
iv. Also raised was about enforcement and to increase the penalty for developers if they pollute the river. Again, JPS mentioned that they do not have enforcement powers - authority falls under the local council and other government bodies.
v. The JPS officer mentioned that now local councils had a bigger budget, the village committee should put in proposals to access these funds for physical development programs.
vi. Finally, residents also asked what happened to the regular water quality reports collected and reported by them to JPS. The reply was JPS raises it

in their meetings at the state level but acknowledges the response may not flow back to the communities.

In general, the participants expressed frustration at the lack of communication between the communities and government agencies. However, they were happy with the presence of JPS at their meeting and welcomed the project as an opportunity to develop networking and cooperation.

The proposed project does not appear to have any negative livelihood implications. As mentioned by the communities, the river is mostly used for eco-tourism. Settlements in the area received piped water and do not rely on the river for daily needs. Squatter settlements however, do use the river as an open sewer. The proposed project does not appear to have potential to adversely affect use of the river by either men or women.

RPS Ulu Kinta, Perak

The ESSP was held on the 9th December, 2014 and was attended by representatives from the different village in RPS Ulu Kinta, JAKOA representatives and JPS.

The meeting started at 9.00am and ended at 11.00am. The deputy Director, JPS started with a welcoming speech and the proposal was presented by Mr. Gopi, a consultant for the UNDP/JPS.

The discussion during the meeting covered several key issues. All who attended however agreed there was a need to arrest the degradation of the riverine environment within the Ulu Kinta area.

Among the themes discussed were;

i. Logging taking place in the forest near their villages. These activities have caused deterioration in the water quality with high sedimentation. They say these has caused the fish stock to decline. Nowadays, they don't fish for their livelihood.
ii. Erosion after particularly heavy downpour. Erosion has caused problems in terms of access to the village and causing effect to the foundation of their houses. iii. The community raised the possibility of developing a fish sanctuary at the river.

From the meeting it appears that the communities no longer rely on the river for subsistence or as source for water for daily needs. Overall, there were no objections to the proposed project. The JAKOA officer was helpful in assisting with presenting the proposal to the community.

Segama, Sabah

An ESSP consultation meeting was held on the 22nd January, 2015, attended by village security committee representatives from kg. Belacon, Kg. Buang Sayang, and Kg. Lituk Pulau (Mid Segama).

The meeting started at approximately 2:30pm and ended at 4.00pm. En Rizal, Engineer, JPS (Sabah), presented the proposal at the meeting.

The discussion during the meeting covered several key issues. All who attended however agreed there was a need to arrest the degradation of the riverine environment within the Segama area.

Among the themes discussed were;

1. Continued use of river and aquatic resources by community
2. Fear of further erosion of banks as a result of planting oil palm trees right to the edge of the river,
3. Pollution of river due to estates releasing affluence directly into river,
4. Loss or greatly reduce in quantity of river aquatic life,
5. Illegal sand mining causing harmful impact to river, 6. Fear of encroachment into a traditional cave burial site.

From the discussion, the representatives agreed that it was important for the community to have access to clean rivers and to conserve the local riverine biodiversity. They agreed with the proposed project to develop capacity towards addressing multi-stakeholder in riverine biodiversity management and welcome the selection of their village as one of three possible pilot sites.

From the discussion they also suggested the team look into;

1. Reclaiming riparian zones planted with oil palm trees from estates. They suggest that the area be replanted with native trees. Although, they did not agree with taking such actions against smallholders arguing their land was already small as it is. Villagers could be employed to replant local tree species.
2. The representatives agreed to our suggestion of creating a environmental conservation unit within the village security committee. They recommend that such a unit should be at a multi-village level and should have as a start up some basic equipment to allow them to monitor river use. They asked for an authorization letter from the district office or government to empower the unit.
3. There was positive response to possible plans for developing ecotourism through capacity building programs.
4. There was no suggestion on how to make the projects specific for women, however, women could also be involved in eco-tourism.

A second ESSP consultation meeting (for Lower Segama) was held subsequently at the Dagad community hall on the 23nd January, 2015 and was attended by the village headman, members of the village security committee and villagers from kg. Dagad.

The meeting started at approximately 11:30am and ended at 1.00pm. En Rizal, Engineer, JPS (Sabah), presented the proposal at the meeting.

The discussion during the meeting covered several key issues dealing with how the community utilizes the Segama river, source of pollution and recommendations on how to protect their river. For the villagers of Kg. Dagad, the river is important because it is their main source for livelihood. Almost everyone here claimed to be a fisherman. It was expected therefore, that they enthusiastically agreed there was a need to arrest the degradation of the riverine environment within the Segama area.

Among the themes discussed were;

1. Pollution from upstream; possible logging activities.
2. Pollution from oil palm effluence flowing into the river unfiltered. They point out that the drains have their outlet directly into the river. During a heavy downpour, it was not uncommon to see fishes floating on the water surface.
3. Security threats from encroachment by illegal aliens possibly from neighboring Southern Philippines.
4. They have a working relationship with the Wildlife Department as Rangers. The position is voluntary and not paid. So far since it was formed over five years ago, they have not reported any encroachment or poaching to the authorities. The reason given was fear of reprisal as they are a small peripheral community. If anything were to happen in the village, the authorities would not be able to come to their aid.
5. They have a homestay program and at least twice a year, a group of foreign nationals will come to live for several days in the village. Regular tourists are from Japan.
6. Their main economic activity involves catching a variety of river and marine fishes that come up their river (as they live near the coast, the river sometimes carry salt water fish as well as fresh water fish), prawns and shrimps.
7. Their main concern however, is with regards to accessibility and security.
8. Women in the community also actively fish and catch prawns using a variety of methods including traps and fishing nets. There is a complimentary division of labor, but according to them it is not gendered.
9. Women are keen on entrepreneur type training, particularly, in making shrimp based chili paste (belacan), prawn and fish crackers, fishballs, etc.
10. Women were also keen on developing capacity for making and selling traditional handicrafts.

In our following discussion, whether they would like the following;

1. To create a river ranger unit under the village security committee.

2. To enhance homestay and ecotourism.
3. To develop cottage industry programs.

The response to creating a river ranger was not enthusiastic. If the government agency can initiate a scheme where participants are paid and given opportunities for a career, the response may very well be more encouraging. As it currently stands, their experience with being a volunteer ranger for the Wildlife Department has all the risked of field informants, but does not have any positive benefits.

The participants have a longstanding homestay program. The program was started in 2004 by the Wildlife Department with the assistance of JICA. This program is seen positively and although the capacity for ecotourism has not been fully capitalized, they seem very happy with it. Mostly, they get tourists from Japan, with some making repeat trips back every year. There is potential for developing capacity through hospitality training, green badge training as well as scientific research collaboration on the fauna and flora found in their area. The village has a healthy riparian area with sightings of Orangutans, pygmy elephant and other icon species as well as fireflies. The village is also near to the coastal mangrove swamps which is a RAMSAR designated site. The biggest threat to fully developing eco-tourism here is however, security. Thus, the villagers recommend that a police unit be station at the river mouth to ensure security of their area. As it is, whenever the village has homestay tourists, a police team will accompany them. However, the current arrangement is ad hoc.

On the third theme, women who participated in the meeting agreed that there should be a program to develop cottage industry. However, their only concern is that trainers should come to their village. If possible, they asked if the organization could link the participants to a market. However, they agreed that if there was capacity training, that by itself is welcomed. One possible partner would be Amanah Ikhtiar Malaysia, a women empowering organization through small loans and developing entrepreneurial skills among women. Another possible partner, for handicraft is Gerai OA, a loosely organized activity centered on developing women network among indigenous women through developing traditional handicrafts. Their main concern was that if the programs were held outside their village, access to regular training would be hampered by poor roads and access out of the village.

Preliminary list of related research by national universities and institutes

Note – this list is not comprehensive and would need to be elaborated significantly to cover all related research being conducted in the country

No.	Institution	Focal Person(s)	Area of interests
1.	Geography Department, University Malaya	1. Prof. Kharulmani B. Osman Salleh 2. Prof. Azizan Hj. Abu Samah	Selected research Focus: 1. Tropical Humid River Basin Studies 2. Climate Change and Vulnerability Study 3. Water resources studies
2.	Center of Excellence for Biodiversity Law, University Malaya	1. Prof. Gurdial Singh Nijar	Selected key objective: 1. To provide the necessary framework to develop expertise in biodiversity related laws; 2. To cooperate and develop Malaysia as a regional and international resource centre for biodiversity law; 3. To provide expertise to the Government in its national and international affairs relating to biodiversity related law and policy; and
3.	Faculty of Environmental Studies, UPM	1. Dr. Wan Nor Azmin Sulaiman	Research focus Environmental Hydrology and hydrogeology. Selected research Projects: 1. Determining impact of land use-land cover change on flood hydrology of the Pahang river basin; 2. Determination of shallow landslide potential in the Fraser Hill catchment area in Pahang; 3. Evaluation of slope stability from Pos Selim to Simpang Pulai Highway using remote sensing techniques.

No.	Institution	Focal Person(s)	Area of Interests
4.	LESTARI, UKM	Dr. Elfithri Rahmah	Selected research themes; 1. Sustainable development;
			2 Water resources; . 3 Environmental GIS; . 4 Integrate Water . Management; 5 Integrated River . Basin Management.
5.	Usains Holding Sdn. Bhd., Research wing of USM and PERHILITAN	None listed	Kelah Sanctuary, Taman Negara, Pahang. Allocated RM5 million under 8th Malaysia Plan.
6.	School of Biological Sciences, USM	1. Dr. Amir Shah Ruddin Md. Sah	Selected research focus: 1. Fish and Fisheries Management; 2. Aquaculture, Limnology; 3. Freshwater Ecology Current Research project: 1. Effects of Development Towards Sustainable Use of Bukit Merah Reservoir Catchment Area For Water Security - Model From Freshwater Fishes And Primary Productivity.
7.	School of Geography, University of Nottingham (Malaysia Campus)	1. Dr. Tuong-Thuy Vu 2. Dr. Lawal Billa	Selected Research focus: A. Water Resources 1. Hydrology and urban flashflood modeling; GIS and 2. remote sensing in water resource Management

No.	Institution	Focal Person(s)	Area of Interests
			B. Geospatial Science
			1. Distributed hydrological modeling: characterization of watershed precipitation, runoff processes and hydrography shape; 2. Forecasting river floods and predicting urban watershed, climate change and its
			impact of terrestrial ecosystems; 3. Urban green space and human life quality Possible Related Academic Program: 1. Environmental Monitoring and Management, MSc.
8	School of Science, Monash University (Malaysia campus)	1. Dr Catherine Yule	Research interests: Tropical ecosystems including streams and peat swamp forests, aquatic ecology, ecological monitoring, food webs, etc.
9	Forest Research Institute Malaysia (FRIM)	See: http://www.frim.gov.my/	Forestry & Environment Division research areas: - Natural Forest - Ecotourism & Urban Forestry - Geoinformation - Climate Change - Water Quality Forest Biodiversity Division research areas: Flora, Fauna, Forest Health and Conservation
10	National Hydraulic Research Institute Malaysia (NAHRIM)	See: http://www.nahrim.gov.my/en.html	Hydrogeology research centre; Water quality and environment research centre; river basin research centre; water resources and climate change research centre; coastal management and oceanography research centre

Overview of Inputs from Technical Assistance Consultants

Table 11. Overview of Inputs from Technical Assistance Consultants

Consultant		**Tasks and Inputs**
Local / National contracting		
Project Manager $550/week(Y1) ($575/week(Y2) $600/week(Y3)	Full time over 3 years	See above TOR for key management staff positions
Institutional Capacity Assessment Expert $2000/week	6 weeks $12,000	The Institutional Capacity Assessment Expert (Output 1.3) will in Year 1: – conduct a capacity needs assessment of relevant divisions of DID and NRE regarding the implementation of riverine biodiversity conservation; - provide specific recommendations for human resource management, training needs and procedural changes for these agency units; - deliver a technical report and present conclusions and recommendations to project management.

Stakeholder Involvement Plan

1. The PPG phase included extensive consultations with the project's key stakeholders at the national and local levels. Field trips were carried out between May 2014 and January 2015, during which all project sites were visited and local authorities and community organisations were presented with the project proposal for discussion (see **Annex 8** for SESP consultation reports). Two national level stakeholder workshops were convened in Kuala Lumpur by DID Malaysia, the first on 3 November 2014 (including both national and state level participants), and a second final project document review workshop in February 2015. State level meetings were held in Ipoh, Perak on 7 July 2014 (presentation to the State River Management Committee, chaired by the State Executive Councillor); in Shah Alam, Selangor in August 2014 (convened by the Selangor State Economic Planning Unit); and in Kota Kinabalu, Sabah on 22 July (convened by the Sabah State Economic Planning Unit). In addition, a number of bilateral meetings were held, including key stakeholders who could not attend the workshops. Generally, the project design was a highly participatory process, in line with UNDP's and GEF's requirements.

2. A plan for the engagement of stakeholders is presented in this section. However, this should be reviewed and a full Stakeholder Involvement Plan should be prepared at project inception stage and this is already an identified activity.

3. The key stakeholders at national level and for the demonstration sites in selected states of Malaysia, as well as those involved in relevant biodiversity conservation and river management programs were identified and their mandates and roles analyzed. **Table 12** below assesses stakeholders in terms of their influence (power over outcomes) and impact effects (how affected they will be by the project outcomes). For example, 'high influence, low impact' stakeholders will have a large degree of influence upon the project but will not be significantly impacted by its outcomes.

Table 12. Stakeholder Influence on the Project and Potential Project Impacts

	Low Influence	High Influence
High Impact	National Environmental NGOs (e.g. GEC, MNS, WWF-Malaysia, WildAsia, Wetlands International - Malaysia, etc) National Social NGOs (e.g. Eco-Melawati, COAC, JOAS, PACOS) Local Community Organisations (Village Development and Security Committees - JKKK)	Ministry of Natural Resources & Environment Ministry of Plantation Industries & Commodities Drainage & Irrigation Department Department of Wildlife and National Parks (State level) Department of Fisheries Department of Forestry Department of Environment State Government (Executive

		Council) Land Owners & Licence/Concession Holders Local Authorities (District Councils)
Low Impact	International NGOs Universities	Ministry of Housing & Local Government National Land Council National Physical Planning Council Media Donors

4. The PPG phase included consultations with the Project's key stakeholders at the national and local levels. Field trips were carried out to the three selected sites in Sabah, Perak and Selangor as well as the Federal Territory of Kuala Lumpur, where all project sites were visited. The project proposal was presented to local authorities and community organizations and discussed. One workshop was convened by DID Malaysia at the national level for both national and state level stakeholders, and feedback obtained on the key threats to riverine biodiversity and the proposed project intervention strategy. In addition, several bilateral meetings were held, mostly with donors and key stakeholders who could not attend the workshops. Several meetings were held with JPS, (WP) and at least two meetings were held with stakeholders at the state levels. The consultants made at least two visits to each of the communities in the demonstration sites. Generally, project design was a highly participatory process, in line with UNDP's and GEF's requirements.

5. The stakeholders to have primary involvement in the Project are the federal government's Ministry of Natural Resources and Environment, specifically the Drainage and Irrigation Department at both the Federal and State levels, and various state level agencies such as the Department of Wildlife and National Parks, Sabah, LUAS (Selangor), and the Perak Exco on Water Management. Steered by the NRE and DID at the Federal level government, state governments of Sabah, Perak, and Selangor will play an important role in the Project, being the primary institutions for the enabling and implementation of the Project, including the sustainable riverine biodiversity management plans, the financing mechanisms and riverine biodiversity conservation activities.

6. See **Table 13** below for a list of the Project's key stakeholders, and further information in **Table 5** in the Stakeholder Analysis section above. Details of the roles and responsibilities of local level stakeholders at the project demonstration sites is given in **Table 14**.

Table 13. Key Stakeholders of the Project

Stakeholders	Current Roles and	Interests in Project	Potential Conflict and

	Responsibilities		Mitigation
The Ministry of Natural Resources and Environment: the National Executing Agency	Ultimate responsibility for ensuring successful completion of the Project.	National executing agency Major beneficiary of capacity building Benefit to key line agencies: DID, DWNP, DoE, FDPM.	As the National Executing Agency, there should be no potential conflict
Department of Irrigation and Drainage	Key coordinating agency working with NRE. Main technical scope maintenance and monitoring of inland water bodies	Along with NRE, will act as the National executing agency Major beneficiary of capacity building Benefit to key line agencies: DID.	Seeks to maintain integrity of water courses; however, may disagree with certain activities planned as part of sustainable landscape management Mitigation: involve in project from an early stage
Department of Environment	Responsible for approving EIAs and monitoring implementation of mitigating measures; water pollution monitoring and control	Will need to adapt EIA completion procedure so that development projects are not approved before EIA review. Will provide advice for formulating guidelines for EIA and AMMO integration in landscape management planning. Review of water monitoring and control standards to include ecological requirements (eg to sustain fish populations)	Seeks to control of environmental impacts of development projects; however, may object to request to adapt EIA procedure; introducing ecological issues into water quality monitoring will require an increase in capacity and evolution of standards Mitigation: (1) involve in project from an early stage; (2) involve senior NRE officer as chair of PSC
Department of Wildlife and National Parks	Key implementing partner: will support DID in oversight and coordination of riverine management and project implementation, particularly concerned with river management, protected area gazetting, the implementation of wildlife crime law enforcement	Capacity building of enforcement	As the Principle Implementing Partner, there should be no potential conflict

	measures, human-wildlife conflict prevention, ecotourism and sustainable handicrafts activities.		
NRE Legal Division	Will continue to manage prosecutions under the NRE, in coordination with DID, Fisheries Department, FDPM and DWNP for improved prosecution procedures	Capacity building and enhanced coordination with the enforcement agencies	May not support being given training in wildlife crime prosecution / conviction procedures Mitigation: PSC to be chaired by senior NRE officer in a position of influence
Federal Economic Planning Unit	Responsible for decision-making regarding budgetary allocations for riverine management; will also be involved in formulation of sustainable financing plans	Enhanced capacity with regards to implementation of PES schemes in Malaysia	Seeks to encourage and plan for economic development of Malaysia; however, will need to adapt current budgetary plans in order to increase allocation of funds towards riverine biodiversity conservation
State Executive Councils	Ultimately responsible for decision- making in all land/ water matters in the focal landscapes	Preservation of biodiversity in the respective states Enhanced PES revenue capacity Ecotourism & handicraft schemes of benefit to the state.	May not support land-use decision-making informed by biodiversity, ecosystem and river management and valuation tools Mitigation: representatives of the offices of the key State Executive Council members will be briefed on the benefits of adopting the said approach
State Economic Planning Units	Will play a key part in formulating landscape/river management plans and sustainable financing plans	Capacity building related to implementation of river management strategy	May not support such a focus on conserving natural resources rather than economic development Mitigation: project will engage with State Executive Council

			members and highlight the benefits of conservation
State Wildlife Departments	Responsible for wildlife policy implementation in the focal landscapes; will be involved in wildlife crime monitoring and law enforcement, and biodiversity monitoring activities	Capacity building related to implementation of river management particularly on improved aquatic crime enforcement	May not support adaptations to current wildlife crime management methods Mitigation: project executants will include senior DWNP staff in each focal state

Department of Town and Country Planning	Responsible for supporting development of local landscape plans within each state through technical advice	Plan for river management	Some local plans are already in place as part of ROL or other river management plans
Department of Orang Asli Development (JAKOA)	Key role in coordinating development activities related to the Orang Asli	Providing guidance on socio-economic development considerations as well as traditional values	Seeks to further the socio-economic development of the Orang Asli; may object to advice given regarding the unsustainability of some current income-generating activities Mitigation: will be involved in the project from an early stage
Environmental CSOs	GEC have a long history of collaboration with DID and other partners on their RiverCare programme, and a presence at all three of the demonstration sites. WWF Malaysia have an active programme advocating the strengthening of the protected area network in Sabah. Have projects working with communities in Kinabatangan river. Involved in tree planting along riparian zone in the Segama area. MNS have active branches throughout the peninsula, including Perak, and have actively work with indigenous communities in Perak towards	A key implementing organization and champion of riverine biodiversity conservation. Local and national CSOs are important stakeholders / collaborators and possible co- implementers of river biodiversity management in Sabah (WWFM), Ulu Kinta (MNS), on working with oil palm plantations (WildAsia, WWFM, Hutan), and engaging with local and indigenous communities (PACOS, COAC, etc).	Government agencies may be unwilling to work with NGOs due to issues of confidentiality of information or differences in institutional culture. Mitigation: project will enhance avenues for cooperation between government and civil society to increase trust and develop public-private partnerships

	conservation (with SEMAI in Ulu Geroh, Perak)		
Academic Institutions	There are several local and international universities involved in research related to forest management, local communities and biodiversity conservation in the Peninsula and Sabah (See **Annex 1: Additional Information on Project**).	Conducting management oriented scientific research and surveys. Supporting science based management is a key part of CBNRM	Universities programmes may not be geared towards the needs of the relevant implementing agencies. Mitigation: agencies and universities will be brought together from the start of the project to allow greater communication of needs and programs for each counterpart

Table 14. Local level stakeholders at the project demonstration sites

Site	Stakeholder	Roles and Responsibilities
Selangor/WP	JKK Kg. Warisan (JKKK = Village Development and Security Committee)	i. Manage the ROL open classroom on river biodiversity. ii. Care takers of the Kelah fish breeding program in the Dam area. iii. Tour guides into the greater Tabur area.
	JKK Kg Kemensah	i. Based on pilot experience in the Segama (Sabah), DID should replicate the appointment of auxiliary river rangers within the JKK with the responsibility of ensuring the cleanliness of the river. They can report directly to the authorities on any dumping into the river. ii. A unit with the JKK can be set up to manage the forest in the upper reaches of Kemensah River as a community forests. iii. Strengthen the chalet operators' capacity to create and manage eco-friendly practices. iv. To create awareness and to find alternatives for sewer among squatter residents. v. As auxiliary river rangers, the community can continue to monitor river quality, to monitor garbage

			dumping as well as work towards reintroduce native fish species into river.
	Eco-Melawati	i. ii. iii. iv. v.	Currently their work involves raising awareness towards conservation and river protection. They work with three of the seven public schools in the Melawati area. Working with schools, the have demonstration sites for recycling, compost plots, and have school programs called Smart program and river ranger program. They have a program with restaurants called Dapur Hijau or Green Kitchen which aims at educating restaurant operators on how to properly dispose of waste. They hope to create enough public awareness as to be a pressure group to ensure compliance from restaurants. A possible role is they can be a hub connecting all the other NGOs and CBOs in the upper Klang area as part of a network working in the greater Melawati. They can play a role as consultants to other NGOs and CBOs in the area to access funding for biodiversity programs in the greater Melawati area.
	JKK AU 3	i. ii. iii. iv. v.	has the responsibility under ROL to manage a section of the river. They have the administrative structure but require capacity in terms of awareness towards biodiversity rehabilitation. Currently, the JKK works with children to create awareness as to not litter into drains or rivers. A possible partnership between the JKK AU3 and Forest Research Institute Malaysia (FRIM) to learn on best plant options to be replanted in the riparian areas. They can also partner with the Fisheries Department to learn on best indigenous fishes to repopulate the river. To create a Tagal system and community management of riverine resources.

	JPS	i.	To provide training, monitoring and coordination in riverine management.
	MPAJ	i.	To provide enforcement support to local JKK.
	DBKL	i.	To provide enforcement support to local JKK.
	FRIM	i.	To identify, train and monitor local capacity in replanting indigenous plant species.
	Fisheries Department	i.	Identify, train and monitor local capacity in reintroducing indigenous fish species.
	Environmental CSOs (GEC, etc)	i.	To provide technical assistance and advisory services, environmental education and capacity building
Ulu Kinta, Perak	JKK RPS Ulu Kinta	i. ii. iii.	Based on pilot experience in the Segama (Sabah), DID should replicate the appointment of auxiliary river rangers within the JKK with the responsibility of ensuring no illegal logging or pollution in the river area. They can report directly to the authorities on any illegal activities the river. A unit with the JKK can be set up to manage the forest in the upper reaches of Ulu Kinta river as a community forests. Create capacity for handicraft and homestay as part of eco-tourism package.
	JAKOA	i.	To provide assistances and support to local initiatives.
	DAM Manager	i.	To provide assistances, accessibility and partnership with the indigenous JKK at RPS Ulu Kinta in preventing illegal land encroachment and logging within the water catchment area.
	JPS	i.	As a coordinating agency.
	Fisheries Department	i.	To provide enforcement support and training on rehabilitation indigenous fish population.
	Forest Department	i.	To provide enforcement support on illegal logging.
	Environmental CSOs (GEC, MNS, etc)	i.	To provide technical assistance and advisory services, environmental education and capacity building
	JKK Kg. Belacon	i.	Create the auxiliary river rangers within the JKK with the responsibility

Segama, Sabah			of monitoring illegal activities along river. They can report directly to the authorities on any sand mining or marble mining along the river.
		ii.	A unit with the JKK can be set up to manage the riparian zone. Work closely with JPS to create awareness to the importance of maintaining a biodiversity rich riparian zone and document best practices which can be use for education among small holdings oil palm estates.
	JKK Kg. Dagad	i.	The JKK worked with the Wildlife Department to develop homestay programs. However, due to security risk, the program no longer is in operation.
		ii.	The JKK can work with the regional security body to ensure the lower Segama as a safe zone.
		iii.	Deputize JKK and provide support for carrying out monitoring and prevention of Southern Philippine terrorists and fishermen from encroaching into the area.
	Oil Palm Plantation Companies (SabahMas, Hap Seng)	i.	Participate in partnerships with government resource management agencies
		ii.	Participate in awareness raising and capacity building programmes
		iii.	Participate in programmes for rehabilitation of riparian forest and riverine habitats, and management of key areas for biodiversity conservation
	The East Malaysian Planters Association	i.	Facilitate networking with oil palm smallholders, with potential for upscaling the results of this demonstration to other smallholders.
	JPS	i.	To provide training, monitoring and coordination in riverine management.
	Wildlife Department	i.	To provide enforcement support and training.
	Fisheries Department	i.	To provide enforce authority on river biodiversity conservation.
	Eastern Sabah Security Command (ESSCOM)	i.	To provide security cover and training for community partnership in ensuring the border integrity along the lower Segama estuary.

	Environmental CSOs (GEC, WWF, Hutan, SEEN, WildAsia, etc)	i. To provide technical assistance and advisory services, environmental education and capacity building
	Research institutions - Stability of Altered Forest Ecosystems (SAFE) Project[102] at Danum Valley (researching the effects of different widths of riparian buffer strips of forest on waterways as part of its Watersheds component)	ii. To provide technical advice and potential collaboration on riparian buffer strip development in demonstration activities iii. Participate in pilot project committee

7. **Table 15** below outlines the coordination with other related GEF initiatives.

Table 15. Coordination and collaboration between the project and related GEF initiatives

INITIATIVES / INTERVENTIONS	HOW COLLABORATION WITH THE PROJECT WILL BE ENSURED
UNDP/GEF Improving Connectivity in the Central Forest Spine (IC-CFS)	Council Approved. The project aims to increase connectivity of the Central Forest Spine for biodiversity conservation and maintaining ecosystem services. The proposed project will complement the IC-CFS Project by strengthening biodiversity mainstreaming into the management of forested river catchment areas and river corridors within wider landscapes. The upper catchments of the Kinta and Klang Rivers are parts of the 5 million ha CFS, although not in the specific areas targeted for action through the CFS project. The overall elements of the CFS project which deal with sustainable forest area landscape management and development of PES schemes will be particularly complementary. This proposed project will generate the strategy, guidelines and best practices for conservation of riverine biodiversity which will be relevant to other portions of the CFS area. Close coordination will be achieved through regular contacts, updates and information exchanges between the two lead government agencies, namely the Forestry Department Peninsular Malaysia and DID that are both under the NRE, through the steering committees that will be chaired by the NRE.
UNDP/GEF National Biodiversity Planning to Support the Implementation of the CBD 2011-2020	CEO Approved. Under this project, revision of the National Biological Diversity Policy which deals with the conservation and sustainable use of biodiversity in a holistic manner will build in biodiversity mainstreaming to support conservation efforts, to be reflected in the

[102] http://www.safeproject.net/

INITIATIVES / INTERVENTIONS	HOW COLLABORATION WITH THE PROJECT WILL BE ENSURED
Strategic Plan in Malaysia	revised NBSAP. This project is also implemented by the same division in NRE and UNDP, thus the NSC will ensure coordination as well as direction and guidance from the top management of NRE.
UNDP/GEF Enhancing the effectiveness and financial sustainability of protected areas in Malaysia	CEO Approved and under implementation. This project aims at increasing financial resources for management of protected areas through conventional and non-conventional sources. This project is implemented by DWNP and NSC is chaired by NRE which will allow for coordination of these 2 projects.
UNDP/GEF Biodiversity Conservation in Multiple Use Forest Landscapes in Sabah, Malaysia	Under Implementation. The objective of the project is to bring the land uses 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, 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. The project will be executed by SFD as the representative of the Ministry of Natural Resources and Environment, Malaysia (NRE), which is acting as the Executing Entity (EE). The SFD will work in collaboration NRE and the State of Sabah Economic Planning Unit (SEPU). Coordination will therefore be achieved through NRE at national level, and SEPU at State level.

8. Major linkages identified with non-GEF initiatives are the links to the Living River/1S1R Programme of DID (Kinta River) and the River of Life Initiative (Klang River), both of which will contribute towards the cofinancing for this project and the project will be fully integrated in these on-going initiatives. In Sabah, the project will be linked to the implementation of the Sabah Strategy and Action Plan for Enhancing Water Quality in Selected rivers in Sabah as well as on-going work for the conservation of the lower Kinabatangan/ Segama Rivers coordinated by the Wildlife Department and Forestry Department. Links will be made with the relevant multilateral/bilateral funded projects such as European Union supported work to facilitate Community-based REDD+ activities in the Kinabatangan River Corridor and JICA supported activities at the Lower Kinabatangan-Segama Ramsar site. Links will also be made with the on-going work of GEC's River Care Programme. Also located in the upper catchment of the Segama River, the Stability of Altered Forest Ecosystems (SAFE) Project will research the effects of different widths of riparian buffer strips of forest on waterways as part of its Watersheds component. A representative of SAFE will be included in the project's technical advisory committee.

Stakeholder Engagement Process

9. The project will provide the following opportunities for long-term participation of all stakeholders, with a special emphasis on the active participation of local communities:

10. **Decision-making:** Through the landscape mechanisms and stakeholder groups. The establishment of these structures will follow a participatory and transparent process involving the confirmation of all stakeholders; conducting one-to-one consultations with all stakeholders; development of Terms of Reference (ToR) and ground-rules; inception meeting to agree on the constitution, ToR and ground-rules for the mechanism and its active land use planning, ecological monitoring and community development units.

238. **Capacity building**: At systemic, institutional and individual level – is one of the key strategic interventions of the project and will target all stakeholders that have the potential to be involved in brokering, implementing and/or monitoring management agreements related to activities in and around the reserves. The project will target especially organizations operating at the community level to enable them to actively participate in developing and implementing management agreements.

239. **Communication:** Will include the participatory development of an integrated communication strategy. The communication strategy will be based on the following key principles:

- providing information to all stakeholders;
- promoting dialogue between all stakeholders;
- promoting access to information.

240. The project will be launched by a well-publicized multi-stakeholder inception workshop. This workshop will provide an opportunity to provide all stakeholders with updated information on the project as well as a basis for further consultation during the project's implementation, and will refine and confirm the work plan. Based on the extensive list of stakeholders (mostly consulted) listed in the Stakeholder Analysis, a more specific stakeholder involvement strategy and plan can be developed at that inception stage.

Goal and Objectives for Stakeholder Involvement

241. The social sustainability of activities and outputs is addressed through the execution of a stakeholder capacity analysis and the elaboration of a detailed collaborative management involvement strategy and plan which identifies stakeholders' interests, desired levels of involvement, capacities for participation (at different levels) and potential conflicts and, responsive mitigation measures.

Principles for Stakeholder Participation

242. Based on the stakeholder analysis carried out during the PPG phase it is clear that different levels of capacity development activities will be required at the landscape

level on the level of the individual PAs. The two landscapes with which the project will work are quite different in nature, composition of members and technical needs on the ground. It is therefore recommended at the generic proposal for capacity development activities will be refined and regularly updated at the level of each landscape.

243. Capacity needs fall overall into four main categories:

- Awareness raising and knowledge development about the biodiversity and ecosystem services of river ecosystems, their economic values and management;
- Knowledge and skills for the rehabilitation of riverine and riparian habitats and catchment areas;
- Technical knowledge and skills
- Financial support and investments

Engagement Plan for Each Project Outcome

244. The project will aim to bring additional stakeholders on board for the implementation of riverine management demonstration projects. The existing national and state-level committees will be expanded to include representatives from NGOs and academic institutions at inception. The project will also look at setting up local-level committees, which can include local community reps as well as the other stakeholders. The engagement of NGOs, academic institutions and the private sector will be determined on a case-by case basis at inception and through the use of contractual services during project implementation. The final agreement of which stakeholders will be involved will come about at either inception, annual work planning or on a case by case basis in the case of procurement of contractual services for specific outputs and activities. However, the following stakeholders are indicated as likely to be involved in each component as follows:

Outcome 1: An operational institutional framework and capacity are established for strengthened management of riverine biodiversity in production landscapes

245. This outcome will involve the main federal agencies with legal responsibility for various aspects of river and catchment management – NRE, DID, DoFM, FDPM and DWNP, as well as key state level agencies – the State Economic Planning Units and DID, Water, Environment, Fisheries, Forestry and Wildlife Departments, as well as national environmental and social NGOs (e.g. WWF, MNS and Indigenous/Local Civil Society Groups). Academic institutions, specialists and international consultants will also be contracted by the project to assist in achieving this outcome.

Outcome 2. Best management practices for critical riverine habitats are demonstrated, enhancing biodiversity conservation status and reducing threats

246. This outcome will involve the key stakeholders at state and local levels related to the pilot demonstration sites and activities in Perak, Selangor/WP and Sabah. These will include the State Economic Planning Units and DID, Water, Environment, Fisheries, Forestry and Wildlife Departments, as well as national and local environmental and social NGOs. Representatives of local authorities such as the relevant District Offices, as well as rural communities (including JAKOA, CBOs and representatives of the communities themselves). International and local consultants and community liaison officers will also be involved as and when necessary.

Community Stakeholder Participation

247. Constraints to community participation includes lack of awareness, lack of capacity, lack of autonomy particularly on land matters and poor communication with authority agencies. It is recommended that any strategic involvement with indigenous and local communities should address community needs. Thus, we recommend a three part approach:

1. *Immediate action*

- Create employment funded by project activities (tree planting, fence building, women as community resource persons, etc.)
- Set-up CBOs and link to relevant national and regional NGOs
- Provide awareness and capacity building opportunities

2. *Mid-Term Program*

- Create sustainable income generating opportunities (eco-tourism, handicrafts, set up auxiliary rangers, etc. - note: sources of income should not be from the project budget)
- Develop integrated management plans for the demonstration areas

3. *Long Term Program*

- Community representatives on local committees for river management
- Community income sources diversified including environmentally sustainable practices

9 ANNEX 2 – ANNUAL TARGETS

Refer to Project Results Framework

10 ANNEX 3 – RISK ANALYSIS

OFFLINE RISK LOG

Table 7. Project Risks Assessment and Mitigation Measures

Project Title:							Project ID:		Date:
#	Description	Date Identified	Type	Impact / Probability	Countermeasures / Management Response	Owner	Submitted, updated by	Last Update	Status (Compared with previous evaluation)
1.	Sectoral conflicts due to lack of coordination and collaboration impact project progress Various government agencies responsible for the management of different aspects of river basins are unwilling to coordinate and collaborate, leading to inappropriate or conflicting development in the catchment, e.g. logging, road construction, land-clearing for agriculture, etc. and undermining project progress.		Political	Medium	The Government recognises the need for better coordination to improve riverine area management. The project will develop the inter-agency strategy to mainstream biodiversity into river management, which will be adopted by key agencies. The Strategy will include an inter-agency coordination mechanism with clear jurisdictions of concerned agencies as well as coordinated enforcement and compliance monitoring mechanisms. It will also include plans for mainstreaming riverine biodiversity management into operations of related sector agencies, private sector and communities, collaborative operational modality and a financing plan. The project will also invest in capacity development of NRE, DID and other relevant agencies at Federal and state levels to enable more effective collaboration between institutions. At the site level, collaboration will be established by: establishment of site level project coordination committees and/or riverine area management working committees that will be linked to existing state committees and mechanisms.				

#	Description	Date Identified	Type	Impact / Probability	Countermeasures / Management Response	Owner	Submitted, updated by	Last Update	Status (Compared with previous evaluation)
2.	Local communities may be reluctant to engage in project activities and in riverine habitat management in general There is a risk that local communities may not perceive any benefit from the project demonstration activities in their areas, and may be apprehensive of potential negative impacts on their livelihoods.		Operational	Low	Component 2 of the project builds on aforementioned extensive baseline activities, plus stakeholder analysis and consultations with local communities at the demonstration sites during the PPG phase. Through this process, the receptivity of local stakeholders to the project has been determined and key stakeholders have been identified to lead on implementation of the project activities. Other forms of engagement will include capacity building training, awareness raising and support for their participation in project activities. SESP consultations have taken specific account of potential negative impacts on local communities and vulnerable groups and safeguards included in the project design.				

#	Description	Date Identified	Type	Impact / Probability	Countermeasures / Management Response	Owner	Submitted, updated by	Last Update	Status (Compared with previous evaluation)
3.	Climate change trends will increase water temperatures and the variability of rainfall, exacerbating floods and droughts and increasing pressures on riverine biodiversity Climate change impacts, such as increasing temperatures and hydrological regime changes, could affect aquatic and riparian habitats as well as water resource availability. Such changes would especially affect aquatic biodiversity, particularly during prolonged drought periods.		Environmental	Low	The project will aim to address the anticipated negative impacts of climate change by increasing the ecological resilience of river basins through enhancing forest cover in catchment areas, rehabilitating riparian forest cover, and improving water quality through an integrated river basin management approach. This approach, coupled with improved availability of information from biophysical monitoring, will provide a strengthened basis for ecosystem-based adaptation to climate change impacts.				

#	Description	Date Identified	Type	Impact / Probability	Countermeasures / Management Response	Owner	Submitted, updated by	Last Update	Status (Compared with previous evaluation)
4.	Government staff turn-over, especially trained technical staff, may affect the project negatively. Government staff with strong knowledge of biodiversity related subjects may retire or move position during the project period, weakening institutional knowledge and capacity for project implementation.		Operational	Medium	The project will support strengthening of institutional capacity of DID as the principal government agency in charge of river management. Project intervention will include review of staffing structure of DID and its enhancement. This will reduce negative impacts from possible staff turnover. A series of training sessions will be conducted strengthening knowledge and skills necessary for integrated river management. The overall advancement of this subject area provides increased opportunity and incentives for staff to remain involved.				

5.	Human rights concerns raised by stakeholders at project sites are not addressed The main concerns of relevance (see SESP) are continued access to natural resources and land uses in riparian zones.		Operational	Low	At project demonstration sites, the project has conducted stakeholder analysis and consultations regarding project aims and activities with the concerned communities. The project design includes specific stakeholder involvement mechanisms to ensure that local communities both participate and benefit from project activities. Continued access to riverine resources depends on the legality of existing uses, where encroachment into legal riparian buffer zones may be an issue. A consultative approach towards resolving such issues would be taken, allowing informed decisions to be taken through government led processes. The same issues apply at a wider national level, in terms of the implications of the intersectoral strategy for riverine biodiversity management, which should undergo screening for social impact assessment during its development, and include provisions to address and compensate potential social impacts arising from its implementation.				
6.	Gender equality concerns raised by stakeholders at project sites are not addressed The most likely concerns (See SESP) are that the project maintains the status quo, without raising awareness of the significance of gender equality or empowering women through their engagement in the project activities		Operational	Low	At the project demonstration sites, the project has conducted stakeholder analysis and consultations that specifically included assessment of the current roles and livelihoods activities undertaken by women in local communities. These have been taken into account in the design of the demonstration activities, in order to ensure the empowerment, engagement and delivery of benefits to women in the targeted communities. Project monitoring and evaluation specifically includes indicators and reporting on the engagement of women in project implementation.				

#	Description	Date Identified	Type	Impact / Probability	Countermeasures / Management Response	Owner	Submitted, updated by	Last Update	Status (Compared with previous evaluation)
7.	The project negatively impacts environmental sustainability of critical habitats and protected areas The potential concern (see SESP) is that the project will have negative impacts on the protected areas and critical habitats within the project area. This is considered extremely unlikely as the project is intended to achieve overwhelmingly positive impacts for biodiversity conservation.		Operational	Low	The project is designed to enhance biodiversity conservation into river management. At such, it will result in improvements in the environmental sustainability of river basin management, enhanced riparian zone protection, improved water quality, strengthened biodiversity conservation, climate change adaptation and sustained delivery of riverine ecosystem services. No negative impacts are foreseen at either the demonstration sites or through national implementation of the inter-sectoral strategy for riverine biodiversity conservation.				

#	Description	Date Identified	Type	Impact / Probability	Countermeasures / Management Response	Owner	Submitted, updated by	Last Update	Status (Compared with previous evaluation)
8.	Indigenous peoples dependent on riparian resources at project sites and elsewhere in Malaysia are negatively impacted by project outcomes Indigenous communities are present at all three project demonstration sites, and in many other riverine settlements throughout the country. There is a risk (identified in the SESP) that their land uses and access to riverine resources could be negatively impacted by stronger protection of riverine biodiversity.		Operational	Low	This impact is essentially the same as the risk on human rights above, only in this case considered specifically for indigenous peoples, whose communities are often associated with rivers, and who traditionally rely on riverine resources to a fair degree (together with adjacent forest resources and other sources of livelihood including agriculture and outside labour). The mitigation measures are essentially the same as for Risk 1 above, but including specific consideration of the needs of indigenous peoples in stakeholder assessments and the design of project activities at demonstration sites, and social impact assessments for national plans. During project design, specific attention has been given to involving indigenous communities in activities at the demonstration sites, including ensuring that they benefit directly from activities such as appointment of river rangers, ecotourism development, support for traditional fishery management, biodiversity monitoring, and habitat rehabilitation.				

11 ANNEX 4 – CO-FINANCING LETTERS AND AGREEMENTS.

Letter of Agreement for UNDP Direct Project Services

STANDARD LETTER OF AGREEMENT BETWEEN UNDP AND THE GOVERNMENT FOR THE PROVISION OF SUPPORT SERVICES

Dear **Dato' Ir. HJ. Hanapi Bin Mohamad Noor,**

1. Reference is made to consultations between officials of the Government of Malaysia (hereinafter referred to as "the Government") and officials of UNDP with respect to the provision of support services by the UNDP country office for nationally managed programmes and projects. UNDP and the Government hereby agree that the UNDP country office may provide such support services at the request of the Government through its institution designated in the relevant programme support document or project document, as described below.

2. The UNDP country office may provide support services for assistance with reporting requirements and direct payment. In providing such support services, the UNDP country office shall ensure that the capacity of the Government-designated institution is strengthened to enable it to carry out such activities directly. The costs incurred by the UNDP country office in providing such support services shall be recovered from the administrative budget of the office.

3. The UNDP country office may provide, at the request of the designated institution, the following support services for the activities of the programme/project:
(a) Identification and/or recruitment of project and programme personnel;
(b) Identification and facilitation of training activities;
(c) Procurement of goods and services;

4. The procurement of goods and services and the recruitment of project and programme personnel by the UNDP country office shall be in accordance with the UNDP regulations, rules, policies and procedures. Support services described in paragraph 3 above shall be detailed in an annex to the programme support document or project document, in the form provided in the Attachment hereto. If the requirements for support services by the country office change during the life of a programme or project, the annex to the programme support document or project document is revised with the mutual agreement of the UNDP resident representative and the designated institution.

5. The relevant provisions of the **Standard Basic Assistance Agreement, 12 September 2013** (the "SBAA"), including the provisions on liability and privileges and immunities, shall apply to the provision of such support services. The Government shall retain overall responsibility for the nationally managed programme or project through its designated institution. The responsibility of the UNDP country office for the provision of the support services described herein shall be limited to the provision of such support services detailed in the annex to the programme support document or project document.

6. Any claim or dispute arising under or in connection with the provision of support services by the UNDP country office in accordance with this letter shall be handled pursuant to the relevant provisions of the SBAA.

7. The manner and method of cost-recovery by the UNDP country office in providing the support services described in paragraph 3 above shall be specified in the annex to the programme support document or project document.

8. The UNDP country office shall submit progress reports on the support services provided and shall report on the costs reimbursed in providing such services, as may be required.

9. Any modification of the present arrangements shall be effected by mutual written agreement of the parties hereto.

10. If you are in agreement with the provisions set forth above, please sign and return to this office two signed copies of this letter. Upon your signature, this letter shall constitute an agreement between your Government and UNDP on the terms and conditions for the provision of support services by the UNDP country office for nationally managed programmes and projects.

Yours sincerely,

Signed on behalf of UNDP

[Resident Representative]

For the Government
Dato' Ir. HJ. Hanapi Bin Mohamad Noor
Director, River Management Division, Department of Irrigation and Drainage, Malaysia

[*Date*] 30th April 2015

Attachment

DESCRIPTION OF UNDP COUNTRY OFFICE SUPPORT SERVICES

1. Reference is made to consultations between **Department of Irrigation and Drainage, Malaysia,** the institution designated by the **Government of Malaysia** and officials of UNDP with respect to the provision of support services by the UNDP country office for the nationally managed project **Mainstreaming of Biodiversity Conservation into River Management (PIMS 5281).**

2. In accordance with the provisions of the letter of agreement signed on **30 April 2015** and the project document, the UNDP country office shall provide support services for the Project as described below.

3. Support services to be provided:

Support services (insert description)	Schedule for the provision of the support services	Cost to UNDP of providing such support services (where appropriate)	Amount and method of reimbursement of UNDP (where appropriate)
1.Hiring of project management staff	Will be determined during the inception of the project	Using the latest Universal Price List	Will be deducted from the budget of the project
2. Purchase of goods like equipments and computers	Will be determined during the inception of the project	Using the latest Universal Price List	Will be deducted from the budget of the project
3. Hiring of consultants	Will be determined during the inception of the project	Using the latest Universal Price List	Will be deducted from the budget of the project

4. Assistance may consist of any other form which may be agreed by DID and UNDP .

5. Description of functions and responsibilities of the parties involved:

- DID to determine the type of services to be provided by UNDP, in line with AWPs.
- DID will be consulted by UNDP in the process of providing the support services.
- UNDP will update DID, quarterly, on the costs of the provision of these services.

6. All decisions related to support services provided by UNDP shall be made upon agreement/approval by DID.

Co-financing Letters

(Ministry of Natural Resources and Environment)
BAHAGIAN PENGURUSAN BIODIVERSITI DAN PERHUTANAN
ARAS 12, WISMA SUMBER ASLI
NO.25, PERSIARAN PERDANA, PRESINT 4
62574 PUTRAJAYA
URL : http://www.nre.gov.my
Telefon : 03-8886 1111 Faks : 03-8888 4504

Our Ref.: NRE (S) 600-2/19/14 (5)
Date : 18 May 2015

Ms Adriana Dinu
Executive Coordinator
UNDP - Global Environment Facility
United Nations Development Programme
304 East 45'h Street, FF914
New York, NY 10017

Dear Ms. Dinu,

CO-FINANCING FOR UNDP-GEF PROJECT "MAINSTREAMING OF BIODIVERSITY CONSERVATION INTO RIVER MANAGEMENT, (PIMS 5281)

We refer to the above and we would like to inform that Malaysia has developed a project document to secure funding under GEF5 for the above mentioned project.

2. In this regard, as part of our commitment, as the Executing Agency of this project, together with other agencies commitment, the government of Malaysia will provide a total of USD5,850,000 as co-financing to support the successful implementation of the project.

3. We believe that this project will contribute substantially to the implementation of the 10th Malaysia Plan, National Wetlands Policy 2004, National Integrated River Basin Management Plan and Malaysia's Common Vison on Biodiversity, 2008.

4. We sincerely thank UNDP and GEF for your kind support in complementing efforts by the government of Malaysia in mainstreaming biodiversity and ecosystems services in planning and development agenda of the country.

Thank you .

Yours sincerely,

(DR. MEGAT SANY BIN MEGAT AHMAD SUPIAN)
Under Secretary
Biodiversity and Forestry Division,
Ministry of Natural Resources and Environment, Malaysia

United Nations Development Programme

30 April 2015

Dear Adriana,

Subject: Co-financing for UNDP-GEF project "Mainstreaming of Biodiversity Conservation into River Management, (PIMS 5281).

UNDP is very pleased to an active partner in the development of this project on "Mainstreaming of Biodiversity Conservation into River Management, (PIMS 5281).

This letter is to confirm that UNDP will provide co-financing in the amount of USD260,000 through USD200,000 of UNDP-Government of Malaysia Cost-Sharing Fund and USD60,000 of UNDP TRAC Funds.

We look forward to continuing our support to Malaysia in the implementation of the conservation and sustainable use of biodiversity and ecosystems services in Malaysia. The project supports the objectives of 10th Malaysia Plan, National Wetlands Policy 2004, National Integrated River Basin Management Plan and Malaysia's Common Vison on Biodiversity, 2008.

Best Wishes,

Michelle Gyles-McDonnough
Resident Representative
UNDP Malaysia, Singapore and Brunei

Ms Adriana Dinu
Executive Coordinator
UNDP - Global Environment Facility
United Nations Development Programme
304 East 45'h Street, FF914
New York, NY 10017

Street Address: Wisma UN, Block C, Kompleks Pejabat Damansara, JalanDungun, Damansara Heights, 50490 Kuala Lumpur
Telephone: 2095 9122 / 33 Facsimile: 2095 2870 E-mail: registry.my@undp.org URL: http://www.undp.org.my
Mailing Address: P.O. Box 12544, 50782 Kuala Lumpur

SELANGOR STATE ECONOMIC PLANNING UNIT
13th FLOOR, SSAAS BUILDING,
BANGUNAN SULTAN SALAHUDDIN ABDUL AZIZ SHAH
40000 SHAH ALAM
SELANGOR DARUL EHSAN
Tel : 03-5544 7142 / 7274
Fax: 03-5510 1264

CERTIFIED TO ISO 9001:2008
CERT. NO. : AR1991

Ref No. : IPK.Sel. 60423/8 ( )

Date : // Jun 2015

Ms Adriana Dinu
Executive Coordinator
UNDP – Global Environment Facility
United Nation Development Programme
304 East 45'h Street, FF914
New York, NY 10017

Dear Ms. Dinu,

Co-financing for UNDP-GEF project "Mainstreaming of Biodiversity Conservation into River Management, (PIMS 5281)

We refer to the above and we are pleased to note that Selangor is one of the 3 States that has been chosen to demonstrate the implementation of the Best Practices in Riverine Biodiversity Conservation into River Management, (PIMS 5281).

2. In this regard, as part of our commitment, the State Government of Selangor will provide a total of USD250,000 (in-kind) as co-financing to support the successful implementation of the project.

3. The State Government of Selangor has already initiated many activities to ensure the riverine biodiversity are managed in a sustainable manner in the State of Selangor with the emphasis on eco-tourism and sustainable use of biodiversity.

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Co-financing for UNDP-GEF project "Mainstreaming of Biodiversity Conservation into River Management, (PIMS 5281)

4. We sincerely thank UNDP, GEF, and the Government of Malaysia, especially Ministry of Natural Resources and Environment for you kind support in complementing efforts by the Selangor State Government in mainstreaming biodiversity and ecosystems services in planning and development agenda of country.

Thank you.

Your sincerely,

DATO' HJ. MOHAMAD ROSLAN BIN SAKIMAN
DPMS.,AMS.,PJM
Director
Selangor State Economic Planning Unit

cc :

Datuk Dr. Abdul Rahim Nik
Deputy Secretary General (Environment)
Ministry of Natural Resources & Environment Malaysia
16th Floor, Wisma Sumber Asli,
No. 25, Persiaran Perdana, Presint 4,
62574 Putrajaya

PEJABAT SETIAUSAHA KERAJAAN NEGERI,
PERAK DARUL RIDZUAN,
UNIT PERANCANG EKONOMI NEGERI,
ARAS 1, BANGUNAN PERAK DARUL RIDZUAN,
JALAN PANGLIMA BUKIT GANTANG WAHAB,
30000 IPOH.

Ruj. Tuan :

Ruj. Kami : UPEN PK 45/19/16/2 ( )

Tarikh : 16 Syaaban 1436H
3 June 2015

Ms Adriana Dinu
Executive Coordinator, UNDP – Global Environment Facility
United Nations Development Programme
304 East 45th Street FF914,
New York, NY 10017

Dear Ms. Dinu,

CO-FINANCING FOR UNDP-GEF PROJECT - MAINSTREAMING OF BIODIVERSITY CONSERVATION INTO RIVER MANAGEMENT (PIMS 5281)

We refer to the above and we are pleased to note that Perak is one of the 3 States that has been chosen to demonstrate the implementation of the Best Practices in Riverine Biodiversity Management under the UNDP/GEF-GOM project Mainstreaming of Biodiversity Conservation into River Management (PIMS 5281).

2. In this regard, as part of our commitment, the State Government of Perak will provide a total of USD250,000 in the form of various projects, to support the successful implementation of the project.

3. The State Government of Perak has already initiated many activities to ensure the riverine biodiversity are managed in a sustainable manner in the States Of Perak with the emphasis on eco-tourism and sustainable use of biodiversity and maintaining sustainable water resources.

4. We sincerely thank UNDP, GEF and the Government of Malaysia, especially Ministry of Natural Resources and Environment for your kind support in complementing efforts by the State Government of Perak in mainstreaming biodiversity and ecosystems services in planning and development agenda of the country.

Thank you.

Yours sincerely

(ABU BAKAR BIN HAJI SAID)
Deputy State Secretary (Development)/
Director Of State Economic Planning Unit
For State Secretary
Perak State Government.

Tel : 05-2531957
Faks : Setiausaha Kerajaan Negeri - 05-254 5323

Telefon : 088-450800

Faks : 088-450998 (Aras 4)
088-450997 (Aras 3)
088-450801 (Aras 2)
088-450995 (Aras 1)

Laman Web : http://www.sabah.gov.my/upen

UNIT PERANCANG EKONOMI NEGERI
(STATE ECONOMIC PLANNING UNIT)
Lot 6-10, Wisma SEDIA
Off Jalan Pintas Penampang
88300 Kota Kinabalu

Beg Berkunci No. 2041
88999 Kota Kinabalu
Sabah, Malaysia

Ruj./*Ref.:* UPEN: 100-14/2/1/1 Vol.6 (42)

Tarikh/*Date:* 2 June 2015

Ms Adriana Dinu,
Executive Coordinator,
UNDP-Global Environment Facility,
United Nations Development Programme,
304 East 45'h Street, FF914
NEW YORK, NY 10017

Dear Ms. Dinu,

CO-FINANGING FOR UNDP-GEF PROJECT "MAINSTREAMING OF BIODIVERSITY CONSERVATION INTO RIVER MANAGEMENT, (PIMS 5281)

We refer the above and we are pleased to note that Sabah is one of the 3 States that has been chosen to demonstrate the implementation of the Best Practices in Riverine Biodiversity Management under the UNDP/GEF-GOM project Mainstreaming of Biodiversity Conservation into River Management, (PIMS 5281).

2. In this regard, as part of our commitment, the State Government of Sabah will provide a total of USD250,000 [USD: Two Hundred and Fifty Thousands (in kind)] as co-financing to support the successful implementation of the project.

3. The State Government of Sabah has already initiated many activities to ensure the riverine biodiversity are managed in a sustainable manner in the State of Sabah with the emphasis on eco-tourism and sustainable use of biodiversity.

4. We sincerely thank UNDP, GEF, and the Government of Malaysia, ESPECIALLY Ministry of Natural Resources and Environment for you kind support in complementing efforts by the Perak State government in mainstreaming biodiversity and ecosystems services in planning and development agenda of the country..

Thank you.

Yours sincerely,

(DATUK HAJI OSMAN BIN HAJI JAMAL)
Director
Sabah State Economic Planning Unit

2/.....

c.c: Datuk Dr. Abdul Rahim Nik,
Timbalan Ketua Setiausaha (Alam Sekitar),
Kementerian Sumber Asli dan Alam Sekitar,
Aras 16, Wisma Sumber Asli,
No.25, Persiaran Perdana, Presint 4,
62574 PUTRAJAYA *[Merujuk surat Ruj: NRE(S) 600-2/19/14 (7) bertarikh 21 Mei 2015]*

Global Environment Centre

2nd Floor, Wisma Hing, No.78, Jalan SS2/72, 47300 Petaling Jaya, Selangor
D.E., MALAYSIA
Phone: +60 3 7957 2007 Fax: +60 3 7957 7003; www.gec.org.my

Ms Adriana Dinu
Executive Coordinator
UNDP - Global Environment Facility
United Nations Development Programme
304 East 45th Street, FF914
New York, NY 10017

24 June 2015

Dear Adriana,

Co-financing for UNDP-GEF project "Mainstreaming of Biodiversity Conservation into River Management, (PIMS 5281)

We refer to the above and we would like to inform you that the Global Environment Centre fully supports the project "Mainstreaming of Biodiversity Conservation into River Management.

2. In this regard, as part of our commitment as an implementing partner of this project - as specified in Project Document, GEC will provide a total of USD 720,000 in co-financing to support the successful implementation of the project as follows:

a) USD300,000 as co-financing in cash through our ongoing projects including River of Life Public Outreach Programme; W.A.T.E.R. Project in the Sg Klang Basin; Sg Kinta Education Programme in Sg Kinta Basin and activities of our River Care Fund at national level

b) Co-financing in kind of USD220,000 from GEC and our various CSOs partners including the Angling Association of Malaysia, Society for Greater EcoMelawati and the Round table on Sustainable Palm Oil)

c) Co-financing in kind of USD 200,000 through our private sector partners (including IJM Plantations, Sime Darby Plantations/Foundation; and PBB Oils)

3. We believe that this project will contribute substantially to the enhancement of the conservation of riverine biodiversity in Malaysia

Yours sincerely,

Faizal Parish
Director

12 ANNEX 5 – TERMS OF REFERENCE

National Project Director (NPD)

National Project Manager

Project Assistant

NATIONAL PROJECT DIRECTOR

Background

The National Project Director will be a staff member of the Government of Malaysia's national implementing agency of this UNDP/GEF-supported project and in this case will be the Director, River Management Division, DID. The NPD will be responsible for providing government oversight and guidance for project implementation, including the coordination of project activities among the main parties to the project: the Government NEA and executing partners, the Project Manager, consultants, and UNDP, including oversight of the Project Management Unit. This position will be co-financed by DID. From the strategic point of view of the project, the PM will report on a periodic basis to the National Steering Committee (NSC). Generally, the PM will be responsible for meeting government obligations under the project, under the national implementation modality (NIM)

Duties and Responsibilities

Specifically, the NPD works in close collaboration with the Project Manager, as well as UNDP and responsibilities include:

- Ensure that the project document and project revisions requiring Government's approval are processed smoothly through the Government NEA in accordance with established procedures;
- Prepare work plans in discussion with the Project Manager, UNDP and consultants;
- Mobilise national institutional mechanisms for the smooth progress of the project;
- Ensure the smooth and effective functioning of the NSC and TWG including NEA representation on these bodies;
- Review project progress and financial reports and other project outputs;
- Provide direction and guidance on project-related issues;
- Provide advice and guidance to the project team;
- Approve financial transactions.

PROJECT MANAGER

Background

The Project Manager (PM), will be a locally recruited national selected based on an open competitive process. He/She will be responsible for the overall management of the project, including the mobilization of all project inputs, supervision over project staff, consultants and sub-contractors.

The PM is accountable to the DID and the NSC for the quality, timeliness and effectiveness of the activities carried out, as well as for the use of funds. The PM will report to the NDP in close consultation with the UNDP CO for all of the project's substantive and administrative issues.. He/She will perform a liaison role with the Government, UNDP and other UN Agencies, NGOs and project partners, and maintain close collaboration with other donor agencies providing co-financing.

Duration 4 years, based at the Project Management Unit.

Duties and Responsibilities

- The PM will, with the support of the Project Assistant, manage the implementation of all project activities, including:
- Supervise and coordinate the production of project outputs, as per the project document;
- Mobilize all project inputs in accordance with UNDP procedures for nationally executed projects;
- Prepare technical specifications and TORs for contractors or subcontractors and ensure contractors' deliverables;
- Coordinate the recruitment and selection of project personnel including consultants and subcontractors for NSC approval;
- Supervise and coordinate the work of all project staff, consultants and sub-contractors;
- Prepare and revise project work and financial plans for NSC approval and allocate resources according to these documents;
- Coordinate and oversee implementation of the project's monitoring and evaluation plan;
- Liaise with UNDP, NRE, relevant government agencies, and all project partners, including donor organizations and NGOs for effective coordination of all project activities;
- Facilitate administrative backstopping to subcontractors and training activities supported by the Project;
- Oversee and ensure timely submission of the Inception Report, Combined Project Implementation Review/Annual Project Report (PIR/APR), Technical reports, quarterly financial reports, and other reports as may be required by UNDP, GEF, NRE and other oversight agencies;
- Disseminate project reports and respond to queries from concerned stakeholders;
- Coordinate secretarial services for the smooth operation of the NSC and TWG in close consultation with DID and UNDP CO, including logistical arrangements for meetings, preparation of meeting agendas and recording and dissemination of meeting reports in a timely manner;
- Report on project implementation progress to the National Steering Committee and Technical Working Group, and ensure the fulfilment of NSC directives;
- Oversee the exchange and sharing of experiences and lessons learned with relevant integrated conservation and development projects nationally and internationally;
- Ensure the timely and effective implementation of all components of the project;

- Oversee implementation of the stakeholder participation plan and assist community groups, municipalities, NGOs, staff, students and others with development of essential skills through training workshops and on the job training thereby upgrading their institutional capabilities;
- Oversee an up-to-date accounting system to ensure accuracy and reliability of financial reporting, and monitor project funds and resources;
- Oversee an effective record-keeping system for all project-related documents and information;
- Coordinate duty travel, seminars, public outreach activities and other project events;
- Coordinate, assist and monitor partner scientific institutions with the initiation and implementation of all pilot projects and monitoring components of the project;
- Ensure that UNDP SESP safeguards are applied to project implementation.

Qualifications, Skills and Experience

- Bachelor's degree or equivalent in Biodiversity/Environmental Science/Natural Resources Management or a related discipline. Work experience in lieu of formal qualifications will also be considered;
- At least 10 years of relevant working experience and a solid understanding of biodiversity conservation, ideally including wetland ecology, watershed management and integrated river basin management issues;
- Knowledgeable in CBD subject matters, ideally relating to biodiversity mainstreaming and integrated river basin management;
- Understanding of political, institutional and environmental governance issues associated with biodiversity in Malaysia;
- At least 5 years of project/programme management experience and demonstrated ability to effectively coordinate a large, multi-stakeholder project; experience of managing international projects and familiarity with UNDP/GEF projects an advantage;
- Working experience with ministries, national or state institutions concerned with natural resource management and environmental protection is an advantage;
- Demonstrated ability to administer budgets, train and work effectively with counterpart staff at all levels and with all groups involved in the project;
- Strong drafting, presentation and reporting skills;
- Strong computer skills, in particular mastery of all applications of the MS Office package and internet search;
- Excellent oral and written communication skills in Bahasa Malaysia and English are a requirement.

PROJECT ASSISTANT

Background

He/she will be responsible for the overall administration of the project. The Project Assistant will report to the Project Manager. Generally, the Project Assistant will be responsible for supporting the Project Manager in meeting government obligations under the project, under the national execution modality (NEX).

Duration 4 years based at the Project Management Unit.

Duties and Responsibilities

- Collect, register and maintain all information on project activities;
- Contribute to the preparation and implementation of progress reports;
- Monitor project activities, budgets and financial expenditures;
- Advise all project counterparts on applicable administrative procedures and ensure their proper implementation;
- Maintain project correspondence and communication;
- Support the preparations of project work-plans and operational and financial planning processes;
- Assist in procurement and recruitment processes;
- Assist in the preparation of payments requests for operational expenses, salaries, insurance, etc. against project budgets and work plans;
- Follow-up on timely disbursements by UNDP CO;
- Receive, screen and distribute correspondence and attach necessary background information;
- Prepare routine correspondence and memoranda for Project Manager's signature;
- Assist in logistical organization of meetings, training and workshops;
- Prepare agendas and arrange field visits, appointments and meetings both internal and external related to the project activities and write minutes from the meetings;
- Maintain project filing system;
- Maintain records over project equipment inventory; and
- Perform other duties as required.

Qualifications

- A post-school qualification (college diploma, or equivalent);
- At least 5 years of administrative and/or financial management experience;
- Demonstrated ability to administer project budgets, and track financial expenditure;
- Demonstrated ability to maintain effective communications with different stakeholders, and arrange stakeholder meetings and/or workshops;
- Excellent computer skills, in particular mastery of all MS Office programmes;
- Excellent written communication skills; and
- A good working knowledge of English and Bahasa Malaysia.