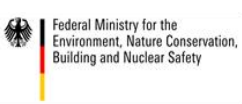
This project is co-funded by the European Union



Biodiversity Expenditure Review (BER) of Malaysia

Final Report

21 August 2018

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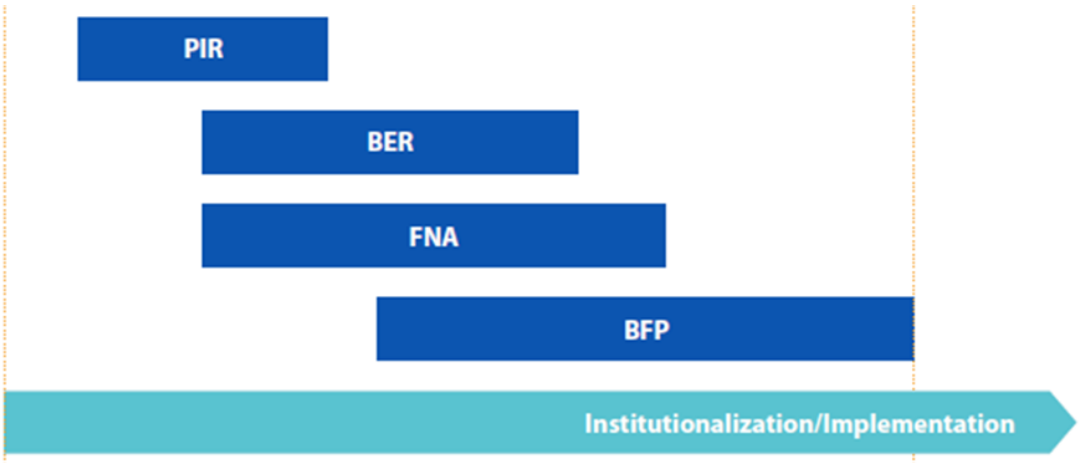
What is BIOFIN?

In 2014, the Biodiversity Finance Initiative (BIOFIN) was launched during the COP 11 by EU Commission and the United Nations Development Programme (UNDP) in recognition of the challenges faced in financing biodiversity. The initiative aimed to develop a common methodology and the capacity of nations to conduct financial planning for biodiversity. In effect, nations would be able to better identify their financing needs to achieve their respective National Biodiversity Strategic Action Plans (NBSAP) as well as understand their current sources of financing, the financing gap that remains and the opportunities available to close the gap through reducing needs and increasing resources.

The BIOFIN methodology

There are four main components to the BIOFIN methodology. First, the Policy and Institutional Review (PIR) is a review of all policy, legal and institutional frameworks and stakeholders that are relevant to biodiversity. This, together with the Biodiversity Expenditure Review (BER), an analysis of biodiversity expenditures through financial inputs such as budgets, allocations and expenditures related to biodiversity, will provide the basis for the Financial Needs Assessment (FNA). The difference between the BER and the FNA, an aspirational estimate of the resources needed to fund biodiversity-related activities, is the biodiversity finance gap. Finally, the Biodiversity Finance Plan (BFP) will lay out a mix of prioritised finance solutions that aims to address the biodiversity finance gap.



Source: UNDP (2016) The BIOFIN Workbook

BIOFIN Malaysia

Malaysia was one of the first 12 countries to participate in BIOFIN and to pilot the methodology from 2014-2018. The Economic Planning Unit (EPU) was the national focal point. A core team was formed to guide the study, and the key members were the EPU, Ministry of Finance, Ministry of Natural Resources and Environment, and UNDP Malaysia. In 2016, the National Policy on Biological Diversity (NPBD) 2016-2025 was launched and the BIOFIN methodology was applied with the purpose of developing a resource mobilisation plan for Policy.

The BIOFIN Malaysia exercise was conducted from March 2017 until August 2018. Three workshops were conducted in May and December 2017, and June 2018, where detailed information about the project and the methodology was shared and discussed. These workshops were supplemented by capacity building sessions with organisations to assist them with data compilation. The BER collected data from 32 samples comprising 18 government organisations, one (1) government trust fund, six (6) private sector firms, four (4) non-governmental organisations, and three (3) portfolio cases from a multilateral and bilateral organisation. The FNA collected data from 31 samples comprising 26 government organisations, one (1) private sector firm and four (4) non-governmental organisations or civil society organisations.

This Report

This report will describe the BER experience in Malaysia.

1 Introduction

Malaysia is among the top 12 countries with mega-biodiversity in the world. With global biodiversity on the decline, and a further 10% loss expected between 2010 and 2050, urgent action is needed more than over. As part of the global movement to conserve biodiversity, Malaysia signed the United Nations Convention on Biological Diversity (CBD).

Malaysia formulated and endorsed the National Policy on Biological Diversity (NPBD) 2016-2025 in February 2016, building on its predecessor policy of 1998 to protect this valuable asset and achieve the CBD goals. The Policy functions as Malaysia's National Biodiversity Strategies and Action Plan. The aspirations are also reflected in the 11th Malaysia Plan in consistency with other international commitments like the Aichi targets and Sustainable Development Goals (SDGs). The NPBD has 5 goals, 17 targets with 57 policy actions.

Within the NPBD 2016-2025, increased mobilisation of funds and resources has been explicitly mentioned set as a policy target to be achieved by 2025, among other targets. In fact, Malaysia had made early commitments on biodiversity conservation and protection via bilateral (e.g. DANIDA, JICA) and multilateral technical assistance (e.g. UNDP) to build capacity in the biodiversity sector. In moving forward, Malaysia realises that developing better financial plans, solutions and programmes is critical to achieve the targets set out in the Policy. BIOFIN presents an opportunity for building capacity in this aspect and for achieving its policy goals in this sector.

The BIOFIN Malaysia project is a four-year project that was conceived in 2013 with the national focal point being the Economic Planning Unit (EPU) at the Prime Minister's Department, while the national focal point for the implementation of the NPBD 2016-2025 is the Ministry of Natural Resources and Environment (NRE). The BIOFIN project is implemented by the UNDP Malaysia. Together with Ministry of Finance, EPU, NRE and UNDP-Malaysia constitutes the project core team to monitor the progress of the project.

This report presents the methodology and findings of the Biodiversity Expenditure Review (BER). The BER is one of four components in the BIOFIN process that provides a baseline estimate of biodiversity expenditures and spending patterns in Malaysia. Findings from this report will supplement discussions on biodiversity financing needs and possible financial solutions needed to achieve the NPBD 2016-2025.

1.1 BIOFIN and Malaysia

Biodiversity Finance Initiative (BIOFIN) is a global effort to address the biodiversity finance challenges commonly faced in implementing the national biodiversity plans. It is an innovative methodology developed by UNDP in 2012 in response to the need for a common 'language' in meeting the challenge of biodiversity financing. BIOFIN has received funding from the European Union and the Governments of Germany, Switzerland, Norway and Flanders. Presently, there are 31 participating countries worldwide.

In applying and adapting the BIOFIN methodology to their own national context, countries will be able to better understand their biodiversity financing landscape, assess biodiversity financing gaps, identify possible financial solutions and develop a biodiversity finance plan.

The BIOFIN process consists of four main components, namely:

- **Policy and Institutional Review (PIR)** - What are main policies & who are the stakeholders that are critical to biodiversity management and financing?
- **Biodiversity Expenditure Review (BER)** - How is biodiversity currently financed?
- **Financial Needs Assessment (FNA)** - What are financial gaps and possible solutions?
- **Biodiversity Financing Plan (BFP)** - How can the finance solutions be implemented?

Malaysia is one of the original 12 pilot countries that joined a global effort in 2013 with the BIOFIN Malaysia project commencing in 2014. Between 2014 and 2015, two workshops were organised to raise awareness on BIOFIN and its methodology among stakeholders. This was followed by a stock taking exercise using the 4th and 5th Malaysia Reports to CBD in place of the PIR as well as preliminary data collection for the BER in 2016; the latter involved collection of Development Expenditure data from the 9th and 10th Malaysia Plan through the EPU Environment and Natural Resource Economics Section. In 2017 and 2018, key activities of the BER and FNA components have been undertaken in addition to another round of introducing BIOFIN to a wider audience such as non-government organisations and private sector. Phase 1 of BIOFIN Malaysia will be completed in 2018 with the delivery of a Biodiversity Financing Plan (BFP).

1.2 What is Biodiversity Expenditure Review?

The BER is an analysis of the biodiversity expenditures of a country. It requires detailed data from all sectors, i.e. public, private and civil society – their financial inputs, such as budgets, allocations and expenditures to inform and promote improved biodiversity policies, financing, and outcomes. The key elements of BER are:

(a) **Spending basic**: Who spends money, how much do they spend, and what do they spend it on – establishing a "business as usual" situation.
(b) **Biodiversity category**: What are the spending patterns by biodiversity categories, by the NPBD's targets and by other key strategies?
(c) **Policy alignment:** Is the spending pattern aligned with stated government policies and priorities such as the NPBD targets?
(d) **Delivery pattern:** How is the budget being allocated? Has the allocation been disbursed and spent? Are there any barriers or opportunities for integrating biodiversity more effectively into the budgeting processes?
(e) **Future spending and finance solution:** What biodiversity expenditure trends and data can be used to predict future spending? Are there opportunities for improving biodiversity spending?
(f) **Business case:** How can we use the information in the BER to make a better business case for financing biodiversity?

Ideally, information from the Policy and Institutional Review[1] (PIR) and the BER would provide a basis for a Financial Needs Assessment (FNA) of biodiversity, especially in terms of informing the study team on which stakeholders to include in the FNA. The difference between the FNA and the BER will be the biodiversity financing gap and that gap shall then be addressed through the Biodiversity Financing Plan (BFP). The BER results will also inform the extent to which budgets and expenditures should be aligned to achieve national biodiversity priorities. The BFP will lay out the finance solutions to achieve national biodiversity targets and goals.

1.3 Structure of report

This report has six chapters. The first chapter serves as an introduction by discussing Malaysia's participation in BIOFIN, followed by a brief on the BER.

Chapter 2 provides background information on Malaysia's budgetary process. The background information serves a good scene setting before going into the review.

Chapter 3 discusses the BER methodology used in Malaysia. Under this section, the scope and framework of the BER is first established before applying the BIOFIN methodology. The section then provides information on data collection and data analysis. This includes information about the sources of data, the process of collecting data, the limitations of its use, the steps to prepare data for analysis, the analysis undertaken and the assumptions made.

Chapter 4 presents the results of the BER based on national level data and data from a total of 32 case study organisations examined. The chapter first explores trends of national budgets and accounts before presenting breakdown of biodiversity expenditures by national biodiversity targets or BIOFIN categories. A national estimate of biodiversity expenditures is also presented at the end of this chapter.

Chapter 5 is a discussion of the results and observations. The discussion will focus on the current level of biodiversity spending, the sectors where expenditures are made, and which targets are prioritised more than others. The discussion will also raise the limitations of the current review done and any areas for further improvement. Lastly, a conclusion is provided in Chapter 6.

[1] No specific PIR document was prepared for Malaysia. Instead Malaysia's 4th and 5th CBD country reports and past studies, e.g. DANIDA's component studies on biodiversity provided the necessary background information.

2 Background

2.1 Malaysia's budgetary process[2]

2.1.1 Overview

Over the years, Malaysia has undergone significant changes in the budgeting systems. Prior to 1969, the traditional budgeting system was used where the emphasis was on aspects of mobilization and allocation of resources. Performance of departments was based on how well they managed within their budgets, and shortfalls in expenditure. It was not unusual for departments to embark on "Christmas shopping", to avoid surrendering unused balances to the Treasury before the close of a financial year.

In 1969, the Programme and Performance Budgeting System (PPBS), which stressed output-oriented budgeting was introduced. Allocations were given on the basis of programmes and activities designed to meet the objectives of the agency. At the same time, performances of departments were tracked based on pre-determined performance indicators relating to the objectives of the agencies.

To further improve efficiency in operating agencies and to provide flexibility in the management of financial resources, the Treasury introduced modifications to the PPBS system in 1990. The Modified Budgeting System (MBS), which in effect is the final phase of PPBS, essentially advocates a decentralisation of authority giving controlling officers (agency heads) greater autonomy in financial management.

Budget Classification

The main sources of revenue for the federal budget come from the following:

(a) Direct taxes: Income taxes, customs, excise duties;
(b) All non-tax revenues: Motor vehicles and broadcasting licence fees, interest and returns from investments, service fees; and
(c) Non-revenue receipts: Receipts from other government agencies, refunds of expenditure.

The expenditure budget has two major components which is the Operating (Supply and Charged) Expenditure (OE) and Development Expenditure (DE). Supply expenditure, which is provided for under the Supply Act, includes all charges to the budgetary appropriations for goods and services, and for transfer payments to statutory funds, state governments and public enterprises. Charged expenditure are related to expenditure such as statutory grants to state governments, pensions and debt charges are obligatory payments under the law and do not require to be appropriated annually.

[2] ASOSAI organisation http://www.asosai.org/asosai/R_P_financial_accountability/chapter_8_malaysia.htm

On the other hand, Development Expenditure is met from the Development Fund. Sources of the Fund consist mainly of loans raised for development, contributions from the revenue account of the consolidated fund and from recoveries of loans from the development fund. Expenditure from the Fund is only for development purposes as specified in the Development Funds Act and includes grants, loans and investments for development purposes.

2.1.2 Budget Planning

To achieve the national development goals, the role of planning and budgeting are integrated. The successive Five-Year Malaysia Plans formulate operational goals and the strategic means for achieving them. The Malaysia Plans usually serve as the blueprints for development covering all aspects of the national economy.

The 5-Year Malaysia Plans set out the policy directions and development priorities within a 5-year cycle. The development budget, therefore, follows closely to the policies formulated in the Malaysia Plan documents. Progress and achievements done for each of the Plans are subject to detailed scrutiny during the Mid Term Review.

2.1.3 Role of the Budget Management Division

The primary role of the Budget Management Division is to analyse and examine all proposed financial plans and programmes of government agencies to ensure that they are in accordance with prescribed national objectives and that the resources are applied in an economical, efficient and effective manner to sustain stable economic growth.

The organisational structure of the Division follows the sectoral classification of the budget e.g. general administration sector, security sector, natural resources sector, etc. The Director of the Budget is supported by Senior Assistant Directors in charge of each sector with four or five Budget Review Officers (BRO's) assisting each of them. The number of departments governed under each BRO is dependent on the size of sector in-charge.

2.1.4 Budget steps

The budget year is from 1st January to 31st December. In January, the Ministry of Finance issues a circular prescribing the guidelines for the preparation of the budget estimates which includes the expenditure budget policy, the formats to be used and the timetable for submission of the budget proposals, amongst other things. After taking into account various factors such as the charged expenditure and personal emoluments, the treasurer calculates the total commitment for the budget year. Once the 'the locked-in' expenditure figure and the projected revenue for the year are known, the Treasury can decide on the ceilings for operating expenditures. Figure 1 shows the budget process in Malaysia.

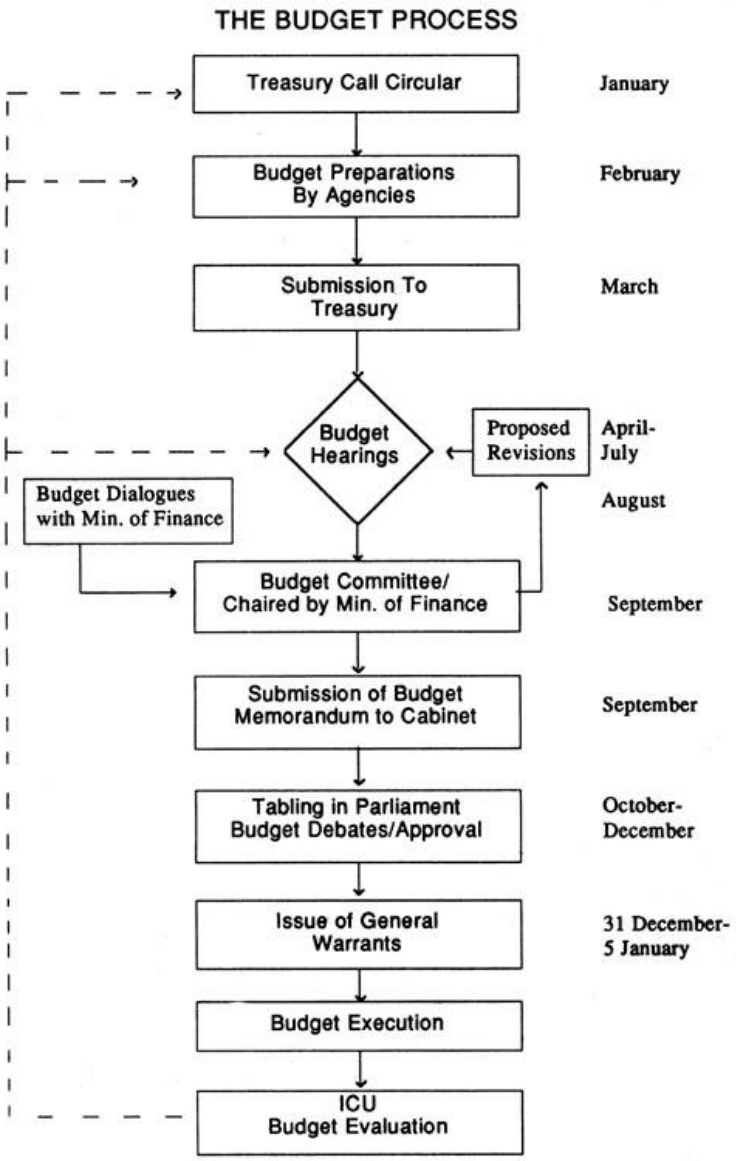


Figure 1: Summary of Malaysia's national budgetary process

By the end of March the budget estimates are submitted by the Agencies and the Budget Management Division then inspects the proposals. The budget review officers (BROs) will then conduct a hearing session with each of the agencies. A primary hearing is carried out first followed by a detailed hearing to examine the justifications given for the estimates proposals and the implications. The BROs are assisted by the representatives of two other central agencies; the Public Services Department (PSD) - a staff agency which controls the personnel system responsibilities for examining the manpower requirements of the agency, and the Economic Planning Unit (EPU) of the Prime Minister's Department who would advise on proposals made in the annual development estimates.

The planned ceilings by then will already be approved by the EPU and the Treasury. The only consideration is the cash flow position of government and the ability and capacity of agencies to implement the programmes. The BRO then, based on the arguments put up by the agency during the budget hearing and taking into account its past performance and ceiling imposed by the Ministry of Finance, recommends the amount of funds allocated to the Agency.

As for the revenue budget, each agency provides earnings forecast for the year. New sources of revenue, reviews of revenue areas to improve collections, reduce or even do away with existing taxes and duties are explored by the Treasury in conjunction with the revenue earning departments.

The Minister of Finance holds annual 'budget dialogues' which consist of a series of meetings with a wide range of organizations representing industry, agriculture, consumer groups, trade unions, etc., to listen to their views on government financial and fiscal policies and other specific measures. The dialogues allow the Minister to obtain valuable feedback and a sense of the taxpayers' sentiments to help the next budget. Budget hearings are completed by the end of July and the BROs then present their estimates to the Budget Director for his consideration and ultimately to the Minister of Finance. These are then submitted to Cabinet for its consideration before being tabled in parliament sometime in October.

The Minister of Finance highlights fiscal and financial strategies and policies for the ensuing year in his Budget Speech. The Finance bill will introduce new taxes and modifications to existing tax structures, alongside that new revenue measures are announced. After the estimates of each Ministry are debated, the estimates are then taken through various stages in the Parliament and Senate. The Minister then only passes the Supply Bill afterwards.

Only after the Supply Bill receives the royal assent, it then becomes the law and by the first week of the January of the budget year, the Accountant General receives a warrant issued by the Minister of Finance that authorizes the expenditure from the consolidated fund. This is the final act in the budget process.

3 Methodology

This chapter presents the methodology, processes and materials used in the Biodiversity Expenditure Review. It will first describe the scope of the review before moving on to describe the adapted BER methodology for Malaysia and finally the data collection and analysis processes. As the review started in 2017 and was largely completed by the first quarter of 2018, the names of the government ministries and institutions for that period will be retained. Since May 2018, a major restructuring of the government had taken place with reorganisation of ministries and agencies that are key institutions under this review.

3.1 Scope of review

The scope of the BER was defined by a number of factors. Firstly, the scope is circumscribed by the National Policy on Biological Diversity (NPBD) 2016-2025. This is in line with the objectives of the Core Team to use the BIOFIN methodology to understand the biodiversity financing landscape in Malaysia, identify financing needs and develop a finance plan to support the implementation of the NPBD. Secondly, the Core Team decided to contain the BER and FNA exercises to a selected sample of organisations, particularly the main biodiversity-related agencies in anticipation that a voluntary-based exercise would not be able to cover all agencies within the project's time. In particular, the Core Team insisted that NRE and their related line agencies would need to be sampled.

The first point of reference was the NPBD document where a list of the lead agencies and key partners are identified for each policy target (Table 3-1 of NPBD). Key points from the Policy are as follows:

- A total of 53 public sector agencies were identified including state-level agencies;
- There are seven (7) lead agencies, viz. the Ministry of Natural Resources and Environment (NRE), which has responsibility for most of the targets, the Ministry of Urban Well-being, Housing & Local Government (KPKT), the Ministry of Agriculture and Agro-based Industries (MOA), the Ministry of Plantation Industries & Commodities (MPIC), the Ministry of Tourism & Culture (MOTAC), the Ministry of Finance (MOF) and the EPU;
- Key partners included agencies such as the Ministry of Science Technology & Innovation (MOSTI), Ministry of Education (MOE), Attorney General Chambers of Malaysia (AG) and Public Services Department (PSD);
- The private sector was mentioned in 8 targets and 14 actions, but no specific organisation was identified.

Additionally, the study team also examined the 4th and 5th CBD National Report of Malaysia as well as the Eleventh Malaysia Plan (especially the Green Growth chapter). Desktop searches were made to identify potential stakeholders from the private sector, multilateral and bilateral organisations, as well as the NGO and CSO sectors. Based on these reviews, the study team proposed a list of stakeholders to the Core Team.

Upon advice from the Core Team, the study team initiated the BER with five pilot agencies within the NRE. They included the Forest Research Institute Malaysia (FRIM), the Forestry Department of Peninsular Malaysia (JPSM), the Department of Wildlife and National Parks

Peninsular Malaysia (PERHILITAN), the Department of Biosafety (JBK); and the Department of Marine Park Malaysia (JTLM). The study team developed and pre-tested the BER training guide, data collection template and training session before organising a briefing and training workshop with 32 other organisations in May 2017.

After the workshop, follow-ups were made with the participants. Some decided to participate in the BER. Other participants cited time constraints and existing commitments as main reasons for being unable to participate. The Core Team decided to include only federal level ministry and agencies and a few samples from the NGO, CSO and private sector, based on their willingness to participate. Importantly, the project needed to show results in order to demonstrate its value and build its case. As of August 2017, 21 participating organisations were enlisted, including NGO and the private sector (Table 1). Three more NRE divisions and 4 additional line agencies were pursued. (Note: The number of participating organisations fluctuated until February 2018 as some stakeholders dropped out, submitted late or joined later (e.g. after submitting the FNA, some filled in the BER). As of this report, data were collected for 32 organisations.

Due to different stages of participation in the BIOFIN project, the study team categorised the organisations into different tiers to optimise their progress in data collection. Those that completed the BER were transitioned to the FNA process. The BIOFIN project workflow is shown in Appendix I while the list of stakeholders approached are shown in Appendix II.

Table 1: List of Participants Engaged in the BER exercise

Organisation Type	Name
Government agencies	Department of Marine Parks (JTLM)
	Forest Research Institute Malaysia (FRIM)
	Department of Wildlife and National Parks Peninsular Malaysia (PERHILITAN)
	Ministry of Plantation Industries & Commodities (MPIC)
	Malaysian Palm Oil Board (MPOB)
	Ministry of Natural Resources & Environment (NRE)
	Ministry of Tourism and Culture Malaysia (MOTAC)
	Department of Fisheries (DoF)
	Ministry of Agriculture (MOA)
	Department of Agriculture (DOA)
	Department of Veterinary Services Malaysia (DVS)
	Malaysian Agricultural Research and Development Institute (MARDI)
	Economic Planning Unit (Budget section)
	Ministry of Finance (MOF)
	Ministry of Urban Wellbeing, Housing and Local Government (KPKT)
NGO	Management & Ecology of Malaysian Elephants (MEME)
	WWF-Malaysia
	Malaysian Nature Society (MNS)
	Global Environment Centre (GEC)
	Wetlands International
Private sector	Sime Darby Foundation

With regards to the source of funds for government participants, the review was focussed on government allocations and trust funds which proved to already be very taxing on the participants. This included development and operational expenditures. For non-governmental organisation (NGO) participants, the data included all biodiversity-related projects they carried out in Malaysia regardless of the origin of funds.

For the period for data collection, expenditure data from 2006 till 2016 were requested and provided where possible. Most participants were only able to provide about 5-7 years of data and not necessarily in the same years available for other participants. To compensate for this, secondary data sources were used as supplementary material. Secondary data sources included annual reports, financial statements, sustainability reports and other relevant sources.

3.2 Adapted BER methodology

The BER methodology was localised to Malaysia based on the 2016 Global BIOFIN workbook. The methodology was simplified into basic three steps although the approaches used were still the most recommended ones as listed in the Global BIOFIN workbook. Key decisions made during the simplification of the methodology included:

- Using the definition of 'biodiversity expenditure' as listed in the Global workbook
- Using the reference to the United Nations Convention of Biological Diversity (CBD) objectives in line with the OECD Rio Markers method of identifying biodiversity related expenditures
- Using only two tagging systems: the NPBD targets and the BIOFIN categories
- Attributing expenditures to biodiversity based on programme detail rather than based on the organisation making the expenditures
- Using only 5 categories of attribution percentages (0%, 20%, 50%, 80% and 100%)

Further development of the methodology was also made for attributing OE data based on the Philippines example of using Personnel Time Involvement Surveys and for handling non-project expenditure of NGO and private sector participants whose data were structured differently from the government data.

3.2.1 Simplified Methodology

The Malaysian BER methodology comprises three basic steps (Figure 2), each with guiding criteria. Participants first identified what would constitute biodiversity expenditures before assigning a category tag to these expenditure items and finally in estimating assigning an attribution percentage. Attribution percentages do not indicate the quality of the contribution of biodiversity but only the share of expenditures intended for biodiversity related objectives.

An 18-page BER training guidebook was developed and shared with participants (Appendix III). The guidebook contained examples, case studies, descriptions and guiding criteria of each step. To supplement this, the study team arranged for group meetings and check-in calls with participants to allow them to raise any queries and challenges faced in using the methodology. Common frequently asked questions by participants during this process are shown in Appendix IV.

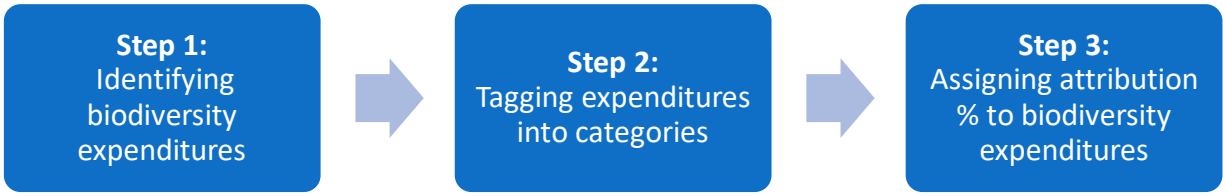


Figure 2: The adapted three steps of the BER process

As a rule of thumb, biodiversity expenditures were **intended to have positive impact on or to reduce or eliminate pressures on biodiversity**. It covers expenditures that aim to achieve one or more of the Convention on Biological Diversity's (CBD)'s three main objectives, namely:

- conservation of biological diversity;
- sustainable use of the components of biological diversity; and
- fair and equitable sharing of benefits arising out of the utilization of genetic resources.

For the tagging process, the study team used only two tagging categories namely the BIOFIN categories and the NPBD targets. The BIOFIN categories describe the function of the expenditure and while the NPBD targets match their activities with the national biodiversity targets. However, participants were free to do any additional tagging categories, e.g. based on their organisation's activities.

For the attribution process, the study team used the programme description as the basis. Compared to an agency approach, this approach recognises that different sections of an agency may have different levels of impact on biodiversity. Participants were provided with a guidance table (Table 2) for assigning attribution levels as shown in the BER guidebook and were encouraged to discuss their attribution tags with a colleague, similar to the process undertaken when assigning tags.

In general, 20% was assigned to expenditures for general infrastructure and maintenance, supporting administrative expenditures or activities where biodiversity is only one of several topics discussed (e.g. youth workshops). The attribution of 50% was assigned to expenditures where benefits to biodiversity were secondary to the main purpose such as to reduce erosion of coastal business areas by replanting coastal tree species. An attribution of 80% was given to expenditures where biodiversity outcomes were the main objective, but also had other objectives that also need to be achieved such as documenting the distribution of stingless bee populations in forests. In this case the secondary purpose is for potential food or income generation production (e.g. from honey). Participants usually did not have difficulty assigning 0% and 100%. When in doubt, participants were advised to put a lower percentage category for more conservative estimations.

Attribution is a subjective exercise and hence participants need to justify their choice of the percentage chosen. Apart from the guidance in Table 2, the appropriateness of the attribution percentage was checked by the study team during the QC process and participants were asked to justify their choice. During the group check-in sessions, participants were asked to give examples and to justify their tags and attribution percentages. This allowed participants from various agencies and divisions to gauge what

expenditures would qualify in the different categories. Based on the QC checks, these methods appeared to have a moderating effect on their choice of tag and attribution.

Table 2: Guiding criteria and examples for each level of % attribution

Levels of attribution %	Criteria	Examples
"Complete" 100%	Principal Intent of Organisation/ Activity is to accomplish one of three CBD objectives: Biodiversity Conservation, Sustainable Use, Access and Benefit Sharing	• Improving connectivity between two conservation areas • Programme "Rakan Alam Sekitar" (Friends of the Environment)
"Very High" (80%) *If within the range of 75-90%*	Main intent of Organisation/ Activity is at least one of the CBD objectives coupled to a lesser degree with other related / supportive intents (i.e. climate change, watershed maintenance, fisheries production sustainability)	• Purchase of equipment for the purpose of controlling the emission from vehicles • Setting up of database to collect DNA variations of main agricultural crops
"Medium" (50%) *If within the range of* 25-75%	Expenditures for activities where indirect biodiversity benefits may arise, but not as a direct or indirect objective of the expenditure or activity	• General water quality improvement efforts that lead to some form of water conservation actions
"Low but significant" (20%) *If within the range* 1-25%	Intent primarily for non-biodiversity related activities but have a stated intent for positive biodiversity impacts	• Human resource development for an environmental agency • Technical support to strengthen R&D in FRIM • Setting up of garden with various plant samples
"none or immeasurable" 0%	None or immeasurable intent or positive impact on biodiversity	• ICT improvement for better management • General enforcement activities unless related to conservation areas

3.2.2 Supplementary OE Methodology

Through discussions, a number of issues were raised about the difficulties in using the simple three step process (Figure 2). For instance, OE data structure differed significantly from the DE data. A supplementary OE methodology was developed to help participants prepare the data before applying the simple 3-step process.

Figure 3 shows a typical format of OE data used by the government. Due to the aggregated nature of the data, the simplified method is hard to use.

Expenditure Item	Budget code	Description	BIOFIN Categories	BIOFIN Subcategory	NPBD Targets	Attribution
Emoluments	OS 10000	11000 Salaries				
		12000 Allowances				
		13000 Statutory Contributions to Staff				
		14000 Overtime payments				
		15000 Other monetary benefits				

Hard to carry out process

Figure 3: Typical format of OE data extracted by participants and difficulties faced

Disaggregated data by division were not always available. There was also another variation of OE data in which the emoluments were divided into a number of functions.

To address this, the supplementary method required participants to first separate the data into emolument and non-emolument categories. For emoluments, one option was to arrange staff by their main functions and assign the tags and attribution percentage accordingly (Figure 4). However, such data were not always available. This method assumes that staff within each category performs only one function, when in reality staff, especially at ground level, perform multiple functions. It also assumes that staff of differing ranks within the same function performs the same tasks. For organisations where the main mandate is not directly biodiversity-related, these assumptions can cause difficulties.

Expenditure Item	Budget code	Description	BIOFIN Categories	NPBD Targets	Attribution
Emoluments	OS 10000				
	OS 11000	Salaries			
		GV - Veterinary	Targeted species conservation	Target 9	100
		G - Enforcement	Biodiversity Planning, Finance & Management	Target 10	100

Using staff functions to carry out BER process

Figure 4: Example of tagging specific staff functions to BIOFIN and NPBD categories

The second option was to use a supplementary Personnel Time Involvement Survey that would contain information needed to help participants estimate the biodiversity share and functions based on time spent in performing certain functions. The organisations were first required to list out all their divisions and functions and indicate their involvement with biodiversity. For the sections related to biodiversity, participants then estimated the percentage of time spent on various biodiversity functions based on a list of pre-set biodiversity-related activities that can then be tagged to the relevant BIOFIN category and NPBD target using an assisted guide as shown in Figure 5.

In the final part of the survey form, participants listed the number of staff and median pay by pay grade in each section of their organisation and then selected a pre-determined set of biodiversity involvement time for each staff grade (Figure 6). This information is needed to calculate a biodiversity coefficient for the organisation that will then be multiplied to the organisation's total emolument data and non-emolument data.

	BIOFIN categories												NPBD Targets															
Work functions	Bio-D knowledge	Resilient infra	Sustainable business	Climate change mitigation & adaptation	Biosafety	Pollution control	Sustainable use	Conservation areas	Targted species and genetic conservation	Ecosystem mgt and restoration	Access benefit sharing	Bio-D planning, finance and management	Target 1	Target 2	Target 3	Target 4	Target 5	Target 6	Target 7	Target 8	Target 9	Target 10	Target 11	Target 12	Target 13	Target 14	Target 15	Target 16	Target 17
Protected area management		x		x				x	x							x		x	x	x	x	x							
Enforcement activities			x		x	x	x	x	x	x		x		x		x		x	x	x	x	x	x						
Monitoring activities	x			x	x	x	x	x	x	x						x	x	x	x	x		x		x					
Utilisation of biodiversity resources	x		x								x			x		x	x								x				
Research activities	x			x	x			x	x	x								x					x	x	x		x		
Planning activities				x	x							x			x		x							x			x		x
Educating activities	x				x						x		x	x			x				x	x		x				x		
Maintenance activities	x	x																					x		x			x		
Management activities	x			x								x	Depending on function of division																
Support activities												x																		

Figure 5: (Non-exhaustive) Mapping of biodiversity-related activities from Q2 to BIOFIN categories and NPBD targets

Division	Total number of staff	Salary Grade (e.g. N29, M54, Jusa)	Median pay	Number of staff	% time spent on biodiversity-related activities (please tick 'x' one per row only)				
					90% to 100%	70% to 90%	30% to 70%	1% to 30%	0%
Enforcement and Monitoring	10	M48	4500	1	x				
		C44	3000	4	x				
		C44	3000	1			x		
		C42	2500	2		x			
		C32	2000	2		x			
Corporate and Management	5	M48	4500	1					x
		N22	1800	4					x
Planning	15	C44	3000	15			x		

Figure 6: Snapshot of "Q3_personnel time spent"

For non-emolument OE data, the participants would first check whether there are specific items that can be assigned to a specific purpose, objective or intention. For the items that can be assigned, they are tagged and attributed in the same way as per the simplified methodology.

For items that cannot be assigned to a specific purpose or intent, the participants will basically lump them into 'Non-specifics' and tagged as 'Miscellaneous supporting expenses'. Examples of such expenses include utility bills, general supplies, costs of hiring an office security guard, general meetings. Since the purpose is non-specific, a conservative attribution percentage of 20% is used to represent their contribution to delivering positive impact on biodiversity after applying the biodiversity coefficient.

Variations to the supplementary OE methodology

Based on feedback, the supplementary method was modified (several variations) to better match the situation and to reduce response burden. The variations used are described below.

(A) Availability of division-level OE data

A difference in reporting styles was discovered whereby each division in the agency had their respective OE data for emolument and non-emolument data. With such detail, the OE data for each division can be tagged and attributed based on the division's relationship to biodiversity. As such, participants only needed to fill in the first two sections of the Personnel Time Involvement Survey form.

(B) Difference in nature of participants

Non-governmental organisations used different methods of recording their expenditure data. Their data is broken down into project expenditure and non-project expenditure, e.g. rent, utilities, admin cost.

Even so, some of the non-governmental organisations' expenditure data is not properly segregated where the distinction between project and non-project expenditure is less clear. Following engagement sessions with the NGOs, three main forms of data were identified:

1) The organisation's non-project expenditure is charged based on a certain percentage of the project expenditure – *this makes the tagging and attribution process of the non-project expenditure being based of the project*;
2) The organisation's non-project expenditure data can be matched and included into the relevant projects' expenditure while the remainder unmatched expenditure is usually biodiversity related depending on the nature of the organisation – *analysis of the remainder unmatched expenditure was based on recognising non-emolument data and the biodiversity coefficient estimated based on the nature of the organisation*;
3) The organisation's non-project expenditure data is separated from their project expenditure data – *the OE methodology was used for data of such nature which is similar to the segregated data observed in government agencies*.

3.3 Data collection

In this section, the data collection process, sources of data collected and the data templates together with the materials produced are explained.

3.3.1 Data collection process

The data collection process involved a briefing meeting about the BIOFIN project in Malaysia and the methodology for estimating biodiversity expenditures (Figure 7). The participants are informed about the types of data, time commitments and training sessions. Training sessions were planned to run for approximately a week and participants were encouraged to bring their data to the session. During the training sessions, participants were briefed about the basic steps of the BER and introduced to the data collection template. Participants were requested to collect the needed data from their respective agencies. Case studies and examples were used to enrich the discussion before a hands-on practical training session using their own data.

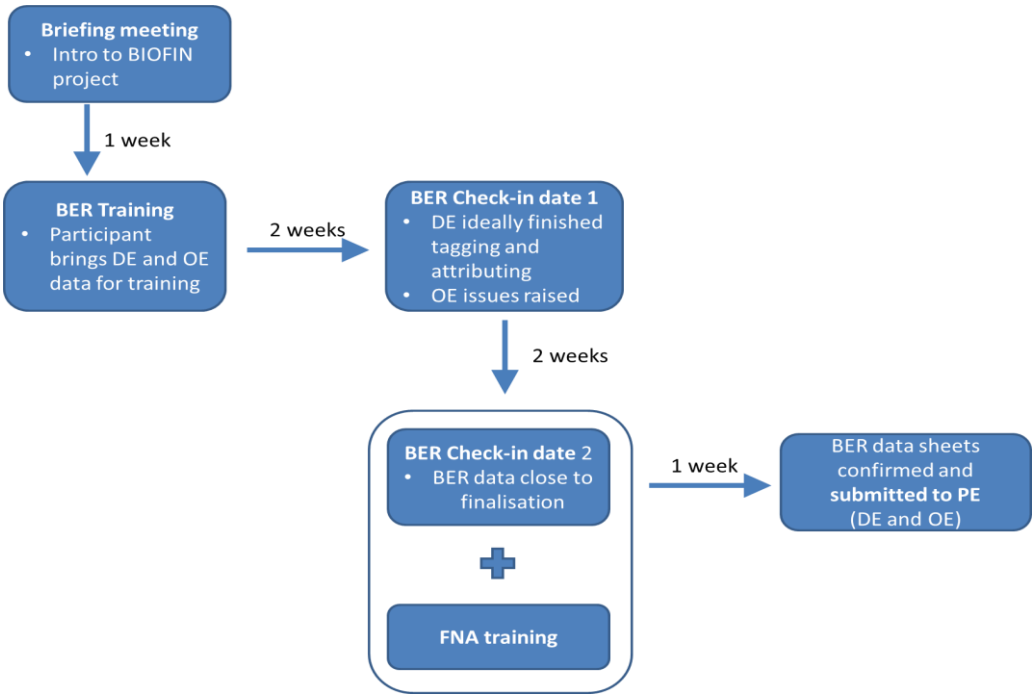


Figure 7: Steps of engagement with participants to carry out the BER process

Check-in sessions were scheduled ideally two weeks after the training session to monitor progress. Based on the experience with the first five pilot agencies, the study team anticipated that participants would have collected some data by then and be ready for further discussion, especially issues relating to the difficulties in collecting OE data. The sessions usually concluded with a recap of next steps and data cut-off dates.

A second check-in session was then called after two weeks to keep track of the BER data collection progress and to begin introducing the Financial Needs Assessment (FNA) which involved future planning and hence needed greater participation from their management. The early introduction was done to ensure participants had enough time to raise the matter to their management in time for the FNA exercise. Participants were then provided an additional week to finalise their BER data before submission.

According to this data collection plan, the engagement with participants for the BER process would be completed in 5 weeks. In reality, the engagement process was less straight forward and significant delays were experienced. Challenges faced included agreeing on a suitable time and location for briefing, training and check-in sessions, delays in identifying and extracting necessary data for tagging and attribution, lack of time that can be committed to undertake the exercise due to existing commitments. Consequently, the engagement and data collection process was modified (see Appendix IV).

3.3.2 Sources of data collected

Based on the scope of the review, three categories of participants were identified: the public sector participants, private sector participants and the NGOs. They have differing sources of data which were collected for the BER analysis.

Public sector

As public sector is the largest spender of biodiversity–related activities in Malaysia. The initial batch of data was the public sector expenditure. The 9th Malaysia Plan and 10th Malaysia Plan projects carried out by a few biodiversity-related agencies were first extracted from the EPU database and analysed using the BER methodology. At the same time, desktop research was carried undertaken to understand the nature of the federal expenditure in Malaysia. This includes information on government trust funds. The MOF statements were used to understand the expenditure codes and the JANM (Accountant General) Federal Expenditure Financial Statements. These two data sources make up the Tier 1 data source.

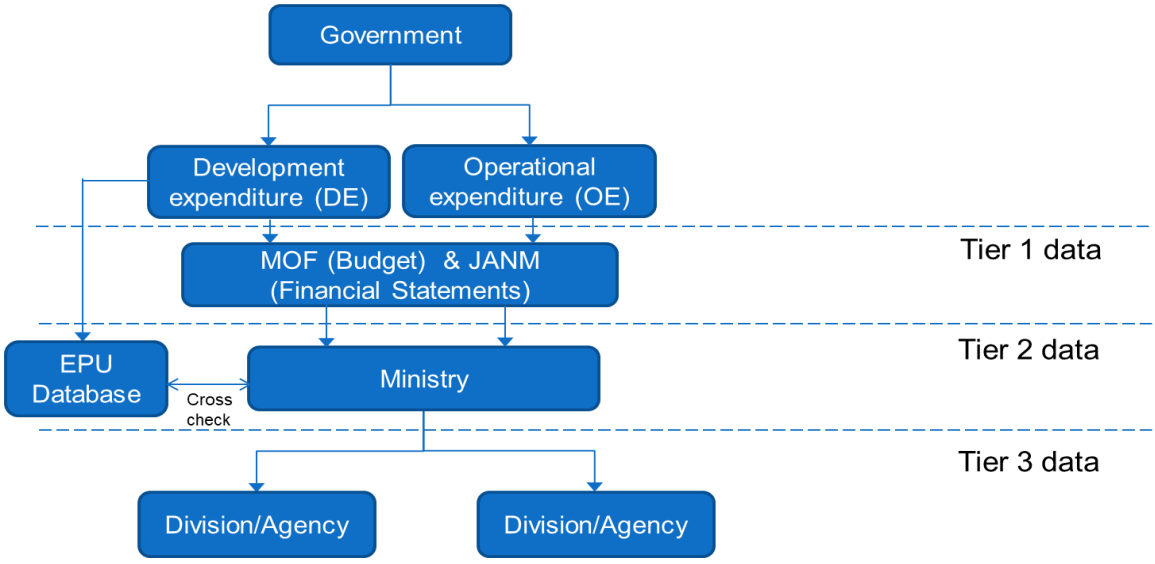


Figure 8: Different tiers of public sector data

Tier 2 then includes data extracted from the EPU and ministry databases. Ministry-level data can either be obtained from the JANM Federal Expenditure Financial Statements or by approaching the relevant ministries. On the other hand, Tier 3 data is the most detailed data where departmental data could also be analysed.

The EPU DE database and the JANM Financial statements have proven to be the most useful and consistently available sources even when compared to annual reports as the reporting can vary between organisations. The EPU DE data were useful when the agencies did not participate in the BER as there was basic information that could be used by the study team to tag and attribute the expenditure item. The study team was able to refine the tags and attributions later during the FNA exercise when participants were successfully engaged.

The JANM Financial statements were used to check the ceiling of reported biodiversity expenditures for the public sector samples and to obtain financial data to calculate growth rates for imputation purposes. The 2009 to 2011 statements were the most useful as they contained financial data at line agency levels. However, unlike the EPU data, the JANM Financial statements did not have enough details to allow for tagging or attribution. In that sense, this secondary source is only useful when the organisation has provided some form of data input, such as a few years' breakdown of OE data by NPBD targets, BIOFIN category and attribution. Secondary data can then be used to impute for the remaining years, subject to checks by the respective agency on the growth assumptions.

Private sector

Apart from collecting primary data from private sector participants, sustainability reports of the top 30 KLSE[3] companies and the Environmental Protection Expenditure Report by DOSM were used for the BER analysis. However, most sustainability reports did not have financial data. It would be ideal if all companies used a standard format to report their biodiversity projects and associated financial data. Attaching the BIOFIN and NPBD tags to the KLSE reporting system would be a simple and cost-effective way to collect information about biodiversity expenditures from the largest players in the private sector. In the DOSM survey, it is geared towards pollution control compliance costs although it also included some CSR costs. It provides a good estimate for such expenditures and possibly includes companies that are not in the KLSE list. However, the latest survey is for the year 2015.

Non-government organisations and civil society organisations

Primary data were mainly used for the analysis without imputations for missing data. The exception being a large environmental NGO whose annual reports provided sufficiently detailed financial data and was readily available online to allow for some growth projections and imputations to fill in some missing years.

Multilateral and bilateral organisations

For multilateral and bilateral organisations, data from the UNDP Malaysia office concerning their projects from the biodiversity portfolio was obtained. Data for climate change projects and the small grants programme were also requested.

[3] Bursa Malaysia or the Kuala Lumpur Stock Exchange (KLSE) has 909 companies that are among the largest in Malaysia (http://www.bursamalaysia.com/market/listed-companies/initial-public-offerings/listing-statistics/). Bursa Malaysia requires annual sustainability reporting by the top companies.

3.4 Data Checking and cleaning

Data cleaning is the quality control (QC) part of the data collection. Due to the small sample size, completeness and accuracy of the data is needed to ensure that the primary data is used in the most appropriate way.

The overall QC process is represented by the workflow shown in Appendix V. The average time taken to resolve QC matters and to finalise the data is about 4 weeks. Some cases take longer due to other commitments or changes of the participants involved in the BER process. As data from participants usually comes in batches due to different deadlines set for different tiers, the QC process happens simultaneously for various organisations. QC calls are usually done within an assigned week. When QC takes too long to resolve, other methods of resolving the issues were carried out, e.g. by referring to secondary sources and resorting to available data to make estimations.

The QC process differs for DE and OE. For DE, the following steps are carried out:

1) Organisation profile, e.g. its mission, vision and objectives can provide an impression of their biodiversity-related activities;
2) Their projects can also give additional information – inquiry is made if their activities did not match their profile especially exclusion cases (biodiversity related activities that was not included);
3) A check on the financial data – for some 11th Malaysia Plan projects there may be no corresponding expenditure data at the time of data collection, but they have been tagged as biodiversity-related projects;
4) A check on the tagging category and attribution percentages assigned to the projects – *the other inquiry matters will be any differences in the analysis done*;
5) All inquiry matters are sent to the participants and followed up accordingly.

For OE data, the steps differ depending on whether the participant uses the Personnel Time Involvement Survey data template. If used, the following are the steps carried out:

1) Ensure that past OE data has been provided with the relevant financial data in the "Template for key-in" or as additional information in the survey worksheet - If there is no relevant OE data or missing financial data, this is the first inquiry point;
2) The OE data is then assigned tagging categories and attribution value – the next few inquiry points will then be any differences in the analysis done;
3) Checks are made to ensure that the relevant divisions identified as having biodiversity-related functions have been assigned biodiversity functions. Also, that all biodiversity-related activities by each listed divisions adds up to 100%. For the last section, median pay or division-level data, the number of people in the division and their time spent on biodiversity is checked – *any missing or error in data in these three aspects will then be the additional inquiry points*;
4) All inquiry matters are sent to the participant via an email and followed up.

If no Personnel Time Involvement Survey is used by the participant, step 1 & 2 from above will be relevant before sending out any inquiry email if necessary. The items checked for incoming data submissions are listed in Table 3.

Table 3: List of items checked for QC process (DE & OE)

Type of expenditure	List of items checked
Development Expenditure (DE)	✓ Biodiversity-related projects listed against activities garnered from the agency profile ✓ Completeness of financial data ✓ Tagging done and attribution assigned
Operational Expenditure (OE)	✓ Existence of past financial data – applicable if Personnel Time Involvement Survey is used ✓ Completeness of financial data ✓ Tagging done and attribution assigned ✓ Data in the Personnel Time Involvement Survey

From this process, two recurring matters were often raised by participants:

(a) Incomplete data

- Participants were unable to extract past historical OE data, e.g. since 2006. With the Personnel Time Involvement Survey, participants proceeded to use that template to analyse their OE data with either most recent year's data or not providing any extra information regarding the OE data. The OE data is supposedly keyed in by years into the original data template ("Template for key-in") followed using the Personnel Time Involvement Survey as a supplementary method to carry out the tagging exercise and attribution exercise if needed.
- Other cases include missing data from a particular year e.g. data were given from the year 2010 to year 2015 but year 2014's data is missing. This was due to the lack of data in the organisation's record, such as OA 10000 Emolument. Due to the incomplete data received, external sources were relied upon for estimates. This approach will be discussed in greater detail in the next section.

(b) Inconsistent tagging and attribution value

As a result of the subjective nature of tagging and attribution, differences in opinions are bound to occur. To reduce the subjectivity of the process, any noted differences will be raised as an inquiry to the participant and an agreement will then be made unanimously on the treatment of the particular expenditure data.

Other actions carried out

Aside from the QC process, the Personnel Involvement Survey data were also re-checked. It included finding the attribution value from "Q3_personnel time spent" and the relevant tagging categories from analysing "Q2_bio-d work functions". The appropriate attribution percentages were estimated for each tagging category and applied to the original OE data in the template named "Template for key-in". Participants were asked to re-check the data as the second round of inquiry if the Personnel Time Involvement Survey is incomplete.

After the QC matters were resolved, the final step of that data cleaning included modification of the data templates and having unattributed biodiversity-related expenditure multiplied with the assigned attribution percentage and the biodiversity-related expenditure are calculated. This is to ensure conformity in the presentation of data for each organisation that will aid in the process of merging if needed during the final process.

3.5 Data Analysis

Data analysis consists of calculating the biodiversity expenditures of each organisation and cross tabulating the expenditures with the BIOFIN categories and NPBD targets. Sample biodiversity expenditures were then summed by the type of stakeholder and used to generate an estimate for national biodiversity expenditures. Detailed descriptions of the analysis done for each stakeholder type are presented in sub-sections below. In total, there were six types of stakeholders that finance biodiversity which could be included in this assessment, namely:

A. **Public sector –** estimates for federal government ministries, agencies based of the estimates from the primary data of 18 participating organisations, supplemented with the EPU database data and JANM financial statements (Jabatan Akauntan Negara Malaysia or Accountant General's Department);
B. **Government trust funds** – based on JANM financial statements for the National Natural Resources Conservation Trust Fund and Marine Reserve and Park Trust Fund as well as primary data from JTLM on the Marine Reserve and Park Trust Fund expenditures;
C. **State governments** – estimates based on secondary data for one case study with assumptions applied;
D. **Private sector** – estimates from the Environmental Protection Expenditure Study by Department of Statistics Malaysia, from the three case studies that reported biodiversity-related CSR activities in sustainability reports and primary data from three case studies;
E. **NGO and CSO sector** –estimates for small, medium and large sized organisations based on primary data from four case studies; and
F. **Multilateral and bilateral organisations** – estimates from one case study with three portfolios with assumptions applied.

3.5.1 Data analysis by stakeholder type

A. Public sector - Federal

Analysis for the Public Sector is based on primary data and some secondary data. Participants may have submitted the DE data but could have missed out most of the OE data. Preparing the data for analysis was therefore necessary. For participants who sent a few years of OE data, the Average Annual Return Rate (AARR) was calculated based on the emolument and non-emolument data in the JANM financial statements. Emolument and non-emolument growth rates were calculated separately as they were not always the same.

The secondary (JANM) data were assumed to be the ceiling of the biodiversity expenditures. The percentage shares of possible biodiversity expenditures from the agency's actual expenditures as well as the percentage shares of attributed biodiversity expenditures from the identified potential amount were calculated using the data provided by the participants. These percentage shares were then applied to the ceiling amount to impute the remaining years where data were not provided by the stakeholder.

Once the data gaps were filled, cross tabulations for the primary DE and OE data were done and the final expenditures (DE+OE) by BIOFIN category, BIOFIN subcategory and NPBD targets were calculated for each organisation. Adjustments to the breakdown figures then were made to account for the new OE total that now included the projected estimates. With that, the summary calculations sheet for that organisation would be completed.

The team took additional steps to prepare for data analysis for the organisations that did not submit their OE data or whose DE data came from the EPU database. Firstly, the team had to extract emolument and non-emolument data from the JANM statements or annual reports. As agency or departmental level data were only available for years 2009-2011 in the JANM statements, AAGR projections were made for the emolument and non-emolument components of OE. The sum of both components was then used for remaining years.

To assign the OE extracted data by BIOFIN categories or NPBD targets, cross tabulations of the DE data were made. As shown in Table 4, the cross tabulations show the BIOFIN categories in the DE data and its share in the total biodiversity expenditures (Column E); the most common attribution level for each BIOFIN category (Column F); and the targets associated with a specific BIOFIN category (Column I and J). Next, these were used to adjust the extracted emolument data to include a biodiversity involvement percentage based on the organisation's likely involvement with biodiversity. The assumptions are listed in Table 5.

Table 4: Example of additional cross tabulations to estimate BIOFIN categories, attribution percentages and NPBD targets

Biodiversity Knowledge	**3,689,777**	4.8%		**Biodiversity Knowledge**	**3,689,777**	
20%	3,569,795		97%	N/A	17,379	
50%	119,982			Target 1	-	
(blank)	-			Target 15	797,053	
Sustainable use	**43,528,314**	56.3%		**Target 16**	**2,875,345**	78%
20%	2,804,921			**Sustainable use**	**43,528,314**	
80%	9,752,446			**N/A**	**33,775,867**	78%
100%	30,970,946		71%	Target 4	9,752,446	
Pollution control	**12,694,694**	16.4%		**Pollution control**	**12,694,694**	
100%	12,694,694		100%	Target 4	12,694,694	
Sustainable business	**9,608,405**	1.9%		**Sustainable business**	**9,608,405**	
100%	9,608,405		100%	Target 7	9,608,405	
Ecosystem management	**1,502,563**	0.0%		**Ecosystem management**	**1,502,563**	
80%	1,502,563		100%	Target 7	1,502,563	
Biodiversity Planning, finance and Mgt	**10,000**	7.2%		**Biodiversity Planning, finance and Mgt**	**10,000**	
20%	10,000		100%	Target 17	10,000	
Sustainable use	**5,557,191**	1.0%		**Sustainable use**	**5,557,191**	
20%	5,557,191		100%	Target 16	5,557,191	
Climate change	**749,908**			**Climate change**	**749,908**	
50%	749,908			N/A	749,908	
Total	**77,340,853**					

Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Non-emolument data was assigned the tag 'Miscellaneous supporting expenses' and was attributed a conservative percentage of 20%, since there was no specific objective assignable to this figure. Similarly, a biodiversity involvement percentage (Table 5) was applied to obtain the final biodiversity non-emolument estimates. The total biodiversity expenditures and cross tabulations by BIOFIN category and NPBD targets were then conducted.

Table 5: Assumptions for assigning biodiversity involvement percentages to organisations

Organisation	Assumption	Action before adjusting for tags & attribution
JMG	20% of JMG is involved with biodiversity	Multiply extracted data by 0.2
JAS	50% of JAS is involved with biodiversity	Multiply extracted data by 0.5
NAHRIM	50% of NAHRIM is involved with biodiversity	Multiply extracted data by 0.5
JPS	50% of JPS is involved with biodiversity	Multiply extracted data by 0.5
JPSM	80% of JPSM is involved with biodiversity	Multiply extracted data by 0.8
FRIM	80% of FRIM is involved with biodiversity	Multiply extracted data by 0.8
KPKT	5% of KPKT involved in biodiversity	Multiply extracted data by 0.05
MOTAC	5% of MOTAC involved in biodiversity	Multiply extracted data by 0.05
MOA	50% of MOA involved in biodiversity	Multiply extracted data by 0.5
NRE HQ	20% of NRE at Ministry level would be involved with biodiversity	Multiply extracted data by 0.2
DOA	50% of DOA is involved with biodiversity	Multiply extracted data by 0.5
DOF	50% of DOF is involved with biodiversity	Multiply extracted data by 0.5

Consolidation of sample data

Once the steps above were completed for each agency, the total biodiversity expenditures across agencies were combined on the same sheet and then summed. This included the tabulations by year, by BIOFIN categories and by NPBD targets to generate results for the whole group of 15 organisations.

Generating national estimates of public expenditures from federal level

The sample estimates are based on 18 government organisations. They cannot be directly applied to national levels because they did not cover all stakeholders listed in the NPBD and participants may not have included all projects related to biodiversity.

In order to obtain a national estimate for the public sector, the team first grouped the 18 sample organisations into five involvement levels based on the understanding of their organisation size, mandate and likelihood to have biodiversity functions. The average biodiversity expenditure for the period of 2006-2016 and per year was then calculated for each group based on their BER data (Table 6).

Table 6: Average biodiversity expenditures for five categories of involvement levels

5% involvement level	50% involvement level	80% involvement level
MPIC	JAS	JPSM
KPKT	NAHRIM	FRIM
MOTAC	JPS	
MOF	MOA	
Average:		**Average:**
RM 243.4 million	MARDI	**RM 933.1 million**
	DOA	
20% involvement level	DOF	**100% involvement level**
JMG		JTLM
NRE HQ		PERHILITAN
MPOB		
Average:	**Average:**	**Average:**
RM 126.2 million	**RM 494.1 million**	**RM 428.2 million**

Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Next, the team listed out the stakeholders mentioned in the NPBD document and then removed state agencies, civil society, higher learning institutions and private sector from the list, before assigning the remainder to one of the five biodiversity involvement levels. In total there were 37 federal level government organisations that were tagged. The full list of stakeholders tagged is provided in Appendix VII. A simple cross tabulation then generated a count of organisations by involvement levels (Table 7).

Using this information, the number of organisations were then multiplied with the average biodiversity expenditure (per year) of their corresponding group to generate the per year national estimate for public sector (federal) biodiversity expenditures.

Table 7: Number of stakeholders tagged with biodiversity involvement levels and average biodiversity expenditures to estimate national public sector estimates

Biodiversity involvement level	No. of organisations	Average biodiversity expenditure for 2006-2016 (RM mil)	Average biodiversity expenditure per year (RM mil)	National estimate (RM mil)
5%	14	243.4	22.1	309.8
20%	8	126.2	11.5	91.8
50%	8	494.1	44.9	359.3
80%	3	933.1	84.8	254.5
100%	4	428.2	38.9	155.7
Grand Total	**37**			**1,171.1**
Note: Exchange rate is 1 USD = RM 4.10 (August 2018)				

B. Government trust funds

There are two government trust funds that were considered in the analysis namely the National Natural Resources Conservation Trust Fund and the Marine Reserve and Park Trust Fund. Information about the two trusts was extracted from the JANM financial statements. Additionally, JTLM provided expenditure information about the Marine Reserve and Park Trust Fund from 2007-2016.

For the National Conservation Trust Fund, the JANM statements only recorded the amount remaining in the trust each year from 2014-2016 (Table 8). The average amount in the trust was then calculated. As there was little information available about this trust fund, the project team assumed that 100% of its funds were used for biodiversity-related activities.

Table 8: Total amount of funds in two government trust funds related to biodiversity (2014-2016)

Government Trust Funds	Amount in the Trust Fund (RM)			Average RM (2014-2016)
	2014	2015	2016	
National Natural Resources Conservation Trust Fund	10,000,000	10,050,635	10,277,601	**10,109,412**
Source: JANM financial statements, 2014-2016 *Note: Exchange rate is 1 USD = RM 4.10 (August 2018)*				

For the Marine Reserve and Park Trust Fund, the JANM statements recorded the remaining balance in the trust each year while the JTLM data provided the expenditures made each year. To estimate the total amount that would hypothetically be in the trust in a given year, the JANM amounts are summed with the JTLM amounts (Table 9).

Table 9: Total amount of funds in the Marine Reserve and Park Trust Fund and estimated % usage per year (2008-2016)

Year	Total amount in trust fund (RM)	% usage per year
2008	6,783,195	19%
2009	7,149,783	49%
2010	5,653,078	51%
2011	5,798,212	43%
2012	6,461,264	36%
2013	8,461,741	44%
2014	9,204,332	44%
2015	9,857,820	46%
2016	9,989,035	51%
Average	**7,821,908**	**45%**
Source: JANM Financial Statements, 2009-2016 and JTLM, 2017 *Note: Exchange rate is 1 USD = RM 4.10 (August 2018)*		

From there, it can be seen that the trust fund is growing and that the share of the funds being used by JTLM is also growing. The average share of funds being spent each year is about 45%, excluding the first year (2008) when very little funds were taken out of the trust to be spent. Assessing the trust fund expenditures show that close to 100% is being spent on biodiversity-related activities. Based on these findings, the project team assumed that 100% of the trust's funds will be used for biodiversity-related activities and that each year 45% would be spent. The national estimate was hence calculated by multiplying the average amount in the trust fund by these assumptions.

C. State governments

As no primary data were collected from state governments[4], this is a major information gap in this BER study. However, secondary literature search yielded only one agency that reported state level expenditures on biodiversity.

Sabah Park's expenditure figures of 2007-2010 were taken from their 2010 annual report that is available online. Sabah Parks is an exceptional organisation that has managed to generate revenue from their world heritage assets. Unlike other state agencies, Sabah Parks keeps the revenue that they generate; revenue from all land-based activities by state agencies usually go into the state consolidated fund (similar to the federal consolidated fund[5]). In Sabah Park's case, there is thus greater accountability of their finances.

The AAGR on biodiversity expenditures was calculated (based on 2007-2010) and used to project the expenditure levels for the 2006-2016 time period. The average expenditure for that time period was then calculated and rounded down to the nearest million. This was then used as the 'per year per organisation' estimate. Given that Sabah Park generates and keeps its revenues in addition to government (both federal and state) grants, it is unlike other state agencies in the Peninsular that do not "keep" revenues and rely mainly on government allocations for their development and operating expenditures. In Sabah and Sarawak', there is greater financial accountability for biodiversity within state agencies.

The key agencies in Sabah on biodiversity are: Sabah Parks, Sabah Wildlife Department, Sabah Biodiversity Centre, Sabah Forestry Department, and Sabah Fisheries Department. There are similar organisations in Sarawak. Hence, we shall assume that there are five agencies in Sabah and Sarawak. As for Peninsular Malaysia, the key state agencies with relevance to biodiversity are: Forestry Department, Lands and Mines Department and Agriculture Department. Hence, the assumption was made that more agencies will need to be funded by Sabah and Sarawak compared to their Peninsular Malaysian counterparts.

[4] In so far as biodiversity is concerned, the Federal Constitution states that land assets, including forest, water, minerals (except oil and gas), land-based activities such as agriculture, fall under the jurisdiction of the states. As discussed earlier (Section 2.1), states are constitutionally recognised with their own finances. However, at the state level, both state and federal agencies can operate. In Peninsular Malaysia, the Forestry Department is a state department whereas the Department of Wildlife and National Parks (Perhilitan) is a federal agency. The state government operating budgets for state agencies while the federal government pays for federal agencies at the state level. See Section 2.1 for more details.

[5] For details of the operations of the federal budgeting system, see Section 2.1, specifically 2.1.1, above. The state consolidated fund operates in a similar way.

Two assumptions are made with regard to projecting the state's expenditures to the national level. First, financial support for biodiversity is lower for states in Peninsular Malaysia than in Sabah and Sarawak, mainly because of the size of the state. Second, at the agency level, the adjusted estimate will be applied to 5 state agencies for the two Bornean states and 3 state agencies for the 10 other states (note Perlis is excluded because of its size). For the latter, an additional 50% attribution was applied to account for the lesser need for state funded operations.

D. Private sector

Private sector estimates were made using the DOSM Report on Environmental Protection Expenditures in Malaysia 2015, sustainability reports of the top 30 companies listed on the Kuala Lumpur Stock Exchange (KLSE) that were downloadable online and primary data from three case studies. The latter two sources provided estimates for the Corporate Social Responsibility (CSR) aspect and operations that embedded biodiversity objectives as most of the DOSM figures were related to pollution control. There were four organisations that reported financial data of their biodiversity projects in the sustainability reports and three organisations submitted primary data. As one of the organisations providing primary data were also in the compiled data from sustainability reports, the primary data were used and hence there were only a total of six samples from the private sector.

For the DOSM report data, it was necessary to first tag the private sector expenditures to the BIOFIN categories to assess which figures are biodiversity related. Data were available for years 2011 to 2014. This was summed to provide the total spent across that period.

From the analysis, the bulk of expenditures were found to be related to pollution control and attribution of 20% was assigned to this figure to adjust it for its relevance to biodiversity. The other categories tagged were biodiversity knowledge, sustainable business and ecosystem management and restoration. These were given an attribution percentage of 100%. Post attribution, the expenditures related to biodiversity across 2011 to 2014 was about 24% of the total environmental protection expenditures. This amount was then divided by the number of years to obtain the average spent per year and was used directly for the national estimate.

From the case studies and sustainability reports, a 'per year per organisation' average was calculated by dividing this amount by the number of years and then by the number of organisations in the sample. The 'per year per organisation per project' estimate was then calculated by dividing the former amount with the number of projects per year per organisation. Investigating the patterns of these six samples, there was an average of 13 projects a year being conducted by these six companies. Based on the initial scanning of KLSE companies, several companies had listed biodiversity related projects but submitted no financial data. This led the team to assume that it is possible to identify up to 30 companies in Malaysia with five biodiversity-related projects each. This was multiplied to the 'per year per organisation per project' estimate to produce a national estimate.

E. NGO, CSO

Similar to the states, there is no comprehensive list or information about NGO-CSO work on biodiversity. The study is dependent on the organisations that regarded the BIOFIN project as useful for their own purposes. Only four organisations volunteered their participation.

Tagging and attribution were done for NGOs similar to the public sector data. However, for the NGO and CSO data, the organisations provided the data themselves which meant less processing. Once the cross tabulations were completed for each sample, the total biodiversity expenditures across samples were combined on the same sheet and then summed together. This included the tabulations by BIOFIN categories and sub-categories, and by NPBD targets to generate results for the four organisations sampled.

The team found it necessary to segregate the estimates into three categories. Small-sized organisations had less than 10 staff and an operating budget below RM1 million a year. Medium-sized firms had 10 to less than 50 staff with operating budget of RM5 million a year and large-sized firms had operating budgets of around RM 20 million a year with more than 100 employees. There were two small-sized, one medium-sized organisation and one large-sized organisation. Hence, caution is advised when interpreting data from such small samples.

Small organisations had 3 projects a year while the medium organisation had 30 projects a year and the large organisation had 130 projects a year.

To extrapolate to national estimates, a sample frame of NGOs would be necessary. Such a list unfortunately was not available. The next best was the membership list of environmental NGO networks. The Malaysian Network of Environmental NGOs (MENGO) website listed 30 NGOs. It would be safe to assume that there are more of them that are not members.

The number of projects was based on ad hoc discussions with NGO participants and the team's analysis of the case studies' project load per year. The assumptions are: 30 small NGOs, 10 medium and 10 large NGOs.

F. Multilateral and Bilateral Organisations (MLO)

For this BER exercise, the project team obtained information from the United Nations Development Programme (UNDP) Malaysia's Environment portfolio, Climate Change portfolio and the Small Grants Programme (SGP). Studying the projects, it was apparent that the former two focussed more on policy and management work, while the latter worked with communities on the ground. Due the difference in their nature, it was necessary to separate the estimation for UNDP type and SGP type of projects when it came to national estimates.

Prior to that, the processing of data for basic analysis was done as per the public sector and NGO, CSO sector. This produced the tabulations by BIOFIN categories and by NPBD targets to generate results for the whole group of three project portfolios. For projects under the Environment portfolio, further details were provided about the project components. Each

project has three project components that deliver specific outcomes. Financial data were available for each component and also for the overall project management expenditures.

Based on the outcomes, the project team was able to separately tag and attribute these components, even when they belonged to the same project. In some instances where the main outcomes of the same component were very distinct and needed to be tagged under different BIOFIN categories or NPBD targets. The indicative budget for each outcome (available in the project document) was used to estimate the percentage share of expenditures that each outcome had. This figure was multiplied back to the lumped sum figure at the component level to obtain estimations for each outcome. It was assumed the project spent funds on all outcomes in the component each year according to the percentage share in the indicative budget. These actions were not possible for the Climate Change portfolio and SGP projects. In these cases, tagging and attribution was done based on the project title.

Based on Malaysia's past experiences, multilateral or bilateral programmes or projects are likely to continue in the country albeit lesser than before as the nation moves towards developed nation status. To obtain a national estimate for multilateral and bilateral organisations, 'per year per organisation per project 'estimates were made for UNDP type of projects and SGP type of project.

For the UNDP types of projects, the average spend per organisation per year was estimated by taking the average of the biodiversity expenditures for two portfolios. This figure was divided by the number of years of which data were provided. This was further divided by the average number of projects run per year, which came to about three projects per year after comparing both portfolios, to produce the 'per year per organisation per project' estimate. This figure was multiplied by the assumption that Malaysia has and can conduct three UNDP type projects each with five multilateral or bilateral organisations in a year.

For the SGP type of projects, the average 'per organisation per year per project' estimate was calculated by first dividing the average expenditures by the number of years with data and then dividing this amount by the average number of projects conducted per year, which was 9 projects. This figure was multiplied by the assumptions that Malaysia has and can conduct 10 SGP type projects each with 3 multilateral or bilateral organisations in a year.

3.5.2 Generating national biodiversity estimates

Pulling together the various data and calculations made for each type of stakeholder, the final spread sheet of national biodiversity estimates was developed. The total estimate was compared against the 2016 national expenditure of Malaysia, extracted from the JANM financial statements.

The assumptions used to conduct the national estimate calculations for each stakeholder type are summarised in Table 10. The 'per year per organisation per project' and 'per year per organisation' averages used for these calculations are available in Appendix VIII.

Table 10: List of assumptions for each funder type to generate national level estimates of biodiversity expenditure per year

	Assumptions	
A. Public sector - Federal		
Stakeholders- 5% level bio-d involvement	Extrapolate to these number of organisations at the unit estimate	14
Stakeholders- 20% level bio-d involvement		8
Stakeholders- 50% level bio-d involvement		8
Stakeholders- 80% level bio-d involvement		3
Stakeholders- 100% level bio-d involvement		14
B. Government trust funds	For the National Natural Resources Conservation Trust Fund, 100% are used for biodiversity-related activities and allows a fund usage of 15% a year For the Marine Reserve and Park Trust Fund, 100% are used for biodiversity related activities and allows a fund usage of 45% a year	
C. State governments (12 states)	Extrapolate to 5 state agencies for Sabah & Sarawak, Extrapolate to 3 state agencies at 50% of this rate for 10 Peninsular Malaysian states, excluding Perlis because too small	
D. Private sector		
Environmental Protection Expenditure		
Sustainability reports	Extrapolate to 30 organisations with 5 projects each	
E. NGO, CSO		
Small sized	Extrapolate to 30 organisations with 3 projects each	
Medium sized	Extrapolate to 10 organisations with 10 projects each	
Large sized	Only 1 organisation with 130 projects	
F. Multilateral and bilateral organisations		
UNDP type of projects	Extrapolate of 5 organisations with 3 projects each	
SGP type of projects	Extrapolate of 3 organisations with 10 projects each	

4 Results

This chapter has been organised to present first the findings from the public sector, starting with trends and estimations of biodiversity share at national levels using secondary data sources. This is followed by findings based on ministry or agency level data collected from participants and supplemented with secondary sources where needed. At that level, a breakdown of biodiversity expenditures by source of funds, BIOFIN categories and NPBD targets are provided. The chapter then presents the findings for the private sector, NGO, CSO and multilateral agencies in a similar fashion based on selected case studies[6].

Findings from pooling together these various samples are presented next. Lastly, the chapter concludes with a national estimation of biodiversity expenditures using the sample findings presented in preceding sub-sections.

Take note that several organisations are still undertaking the BER process and hence their data have not been included in the findings presented in this report. The cut-off date used for this report's analysis was 17th November 2017.

4.1 Public sector – trends in national accounts and budgets

Malaysia's national budget has grown continuously over the years from RM 213.5 billion in 2009 to RM 260.8 billion in 2017. The largest budget was announced in 2015 at RM264.8 billion. In terms of actual expenditures, Malaysia spent RM 208.2 billion in 2009 and this grew to RM254.4 billion in 2016 (Table 11).

Table 11: Malaysia's total budget and actual expenditure, 2009 to 2016

Malaysia's total expenditures (DE + OE supply + OE charged)	2009	2010	2011	2012	2013	2014	2015	2016
Budgeted - Revised (RM billion)	213.5	205.1	229.4	249.8	263.1	264.2	264.8	257.3
Actual (RM billion)	208.2	212.4	231.8	254.8	255.6	260.1	259.9	254.4
% budget spent	97.5	103.6	101.1	102.0	97.1	98.4	98.2	98.9
Note: Exchange rate is 1 USD = RM 4.10 (August 2018)								

4.1.1 Efficiencies in spending and budgeting processes

When comparing the budgeted funds to actual expenditures, spending efficiencies have been consistently high (>97%). The lowest percentage spent between 2009 and 2016 was 97.1% in 2013. In 2016, the efficiency of spending budgeted resources was 98.9%. This suggests that there are no difficulties in allocating and spending budgeted resources at the national level.

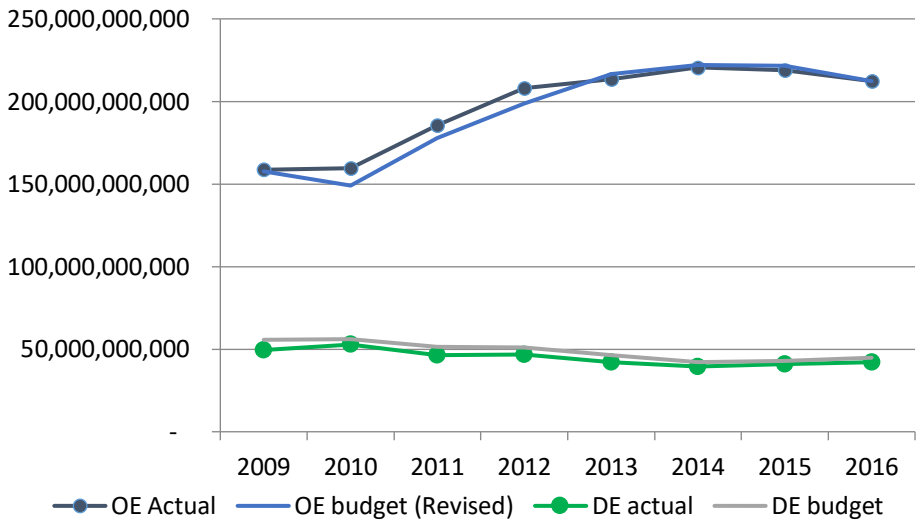
[6] At this stage of the study, the project team has not addressed the issue of double counting. For example, NGOs funded by UNDP's small grants programme may be counted twice. Further information will be needed to correct for this.

Based on the financial statements, Malaysia undertakes one budget revision per year. Between 2009 and 2012, the original budgets were increasingly adjusted upwards (Table 12). The largest increment was in 2012 when the revised budget was 7.4% higher than the original. The percentage increment slowed in 2013 and 2014 while in 2015 and 2016, the budgets were revised downwards.

Table 12: Differences in the original and revised national budgets from 2009 to 2016

	2009	2010	2011	2012	2013	2014	2015	2016
Budgeted - Original (RM billion)	210	194	214	233	248	260	266	260
Budgeted - Revised (RM billion)	214	205	229	250	263	264	265	257
% change in budget (between original and revised)	1.7	5.5	7.1	7.4	5.9	1.7	-0.6	-1.1
Note: Exchange rate is 1 USD = RM 4.10 (August 2018)								

As shown below (Figure 9), the difference between the budgeted and actual expenditures have been narrowing. This suggests that the budgeting mechanisms have been improved and are now more accurate with the expenditure needs for OE and DE at national levels.



Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Figure 9: Budgeted funds and actual expenditures for DE and OE from 2009 to 2016

4.1.2 OE versus DE

Operating expenditure (OE) takes up the bulk of the national budget. For years 2009-2012, OE constituted more than 70% of the national budget. This grew to be more than 80% between 2013 to 2016, implying that the Development Expenditure (DE) share is now less than a quarter of the national budget (Figure 10). Translating this back into monetary figures, OE had grown substantially between 2009 and 2014 (Table 13). Operational expenditures consist of supply expenditures and charges expenditures. Over the years, the percentage share of the supply OE expenditures has been declining albeit within a growing national budget. In monetary terms, the supply OE had initially increased to the range of RM 170 billion but has since declined slightly in 2015 and 2016.

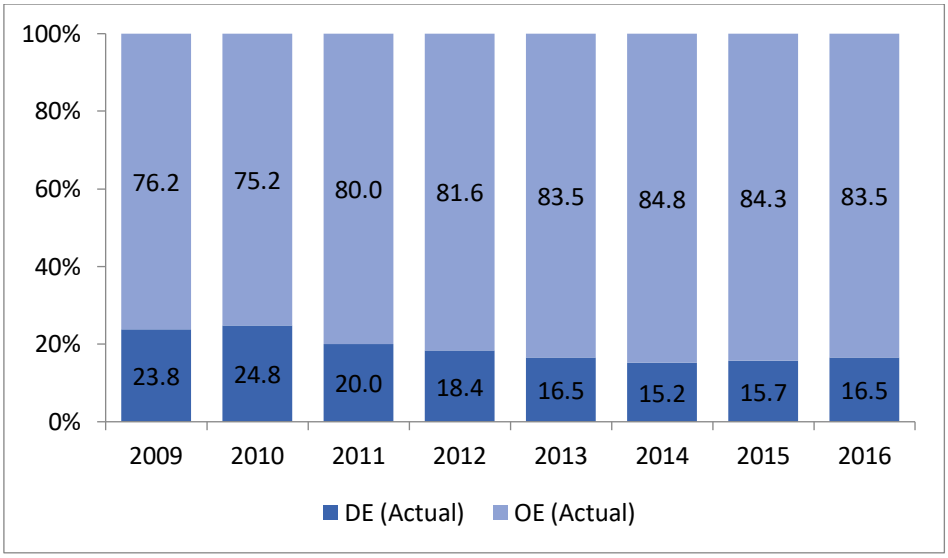


Figure 10: Share of development and operating expenditures from 2009 to 2016

Table 13: Share of supply operational expenditures from 2009 to 2016

	2009	2010	2011	2012	2013	2014	2015	2016
% of OE that is supply expenditures	83.2	81.7	82.2	82.6	81.7	79.9	78.2	75.3
Supply OE (RM billion)	132.0	130.4	152	171.65	174.3	176	171	160
Note: Exchange rate is 1 USD = RM 4.10 (August 2018)								

4.1.3 Estimating biodiversity expenditures with national level data

Assuming the whole of NRE (including agencies) is the only contributor to biodiversity, Malaysia would have spent **0.98% of national expenditures on biodiversity** (RM 2.5 billion) in 2016. The shares of NRE in national expenditures have been declining albeit within the context of a growing national budget. Looking at OE (supply expenditures), the share of NRE has largely stayed the same (~0.63%) while the share in DE has declined over time.

Table 14: NRE's share of national expenditures, DE and OE compared to other ministries

% Share of national expenditures	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
NRE	1.67	1.81	1.09	0.95	0.99	0.91	0.99	0.98
MOA	3.04	2.40	2.14	1.93	2.14	2.26	2.17	1.92
MINDEF	6.54	5.55	6.19	5.46	6.06	6.24	6.55	5.67
% Share in OE (supply expenditures)								
NRE	0.69	1.01	0.63	0.60	0.60	0.63	0.63	0.63
MOA	2.86	2.23	2.72	2.18	2.40	2.51	2.31	2.12
MINDEF	8.57	7.48	7.27	6.50	7.00	7.42	7.82	6.78
% Share in DE								
NRE	5.19	4.81	3.38	2.98	3.53	3.18	3.67	3.57
MOA	5.16	4.13	1.76	2.48	3.04	3.71	4.14	3.58
MINDEF	4.65	3.88	7.07	5.89	7.77	7.98	8.86	8.52

Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

4.2 Public sector

This subsection presents the results of the BER process conducted at an agency or ministry level. Data used for this analysis consisted of data from participating stakeholders, the EPU database and the Accountant General's (JANM) Financial Statements. Using this mix of primary and secondary data, information was compiled and estimated for **18 government organisations over the period of 2006-2016**. These samples cover six of the main lead agencies of the National Policy on Biological Diversity 2016-2025 as shown below.

NRE	**MOA**	**MPIC**	• **KPKT** • **MOTAC** • **MOF**
• JMG • JAS • NAHRIM • JPSM • JPS • FRIM • PERHILITAN • JTLM • NRE (Ministry level)	• DOA • DOF • MARDI • MOA (Ministry level)	• MPOB • MPIC (Ministry level) *Note: MPIC at Ministry level does not use DE funds but disburses it to its line agencies LGM, LKTN, LKM, MTIB and MPB.	

4.2.1 Overall findings

This review identified a total of 1,264 public sector projects and a total of RM 57.3 billion expenditures between years 2006-2016 that were possibly related to biodiversity. Upon completion of the tagging and attribution steps in the BER, only 13% or **RM 7.53 billion was confirmed to be biodiversity related** in the same time period. This estimate comprised government allocations disbursed through the five-year national development plans (DE) and annual operating budgets (OE). As expected, OE took up a larger share of the biodiversity expenditures with 58% attributable to OE and the remainder to DE.

The bulk of the biodiversity expenditures were spent via the Ministry of Natural Resources and Environment (NRE, 65%) followed by the Ministry of Agriculture and Agro-based Industry (MOA, 21%) as shown in Figure 11. This pattern resembles the share of NPBD actions that these Ministries are responsible for as Lead Implementing Agencies (Figure 12).

It is interesting to note that all KPKT's biodiversity expenditures submitted for this assessment were associated with the BIOFIN function of pollution control, mainly in terms of proper waste management. Yet when exploring the roles of KPKT listed in the NPBD 2016-2025, the ministry is a Lead Agency for the protection of environmentally sensitive areas in statutory land use plans (Action 3.3), urban biodiversity (Action 6.5) and is a supporting implementing agency for recognising, supporting and empowering indigenous people and local communities.

This example highlights that biodiversity can be associated with a variety of projects and hence there is a need to explore the expenditures using both the BIOFIN categories (biodiversity function) and NPBD targets (institutional commitments). In this case, waste management projects were given an attribution of 20% as an indication that it is related to biodiversity although the impact is less direct.

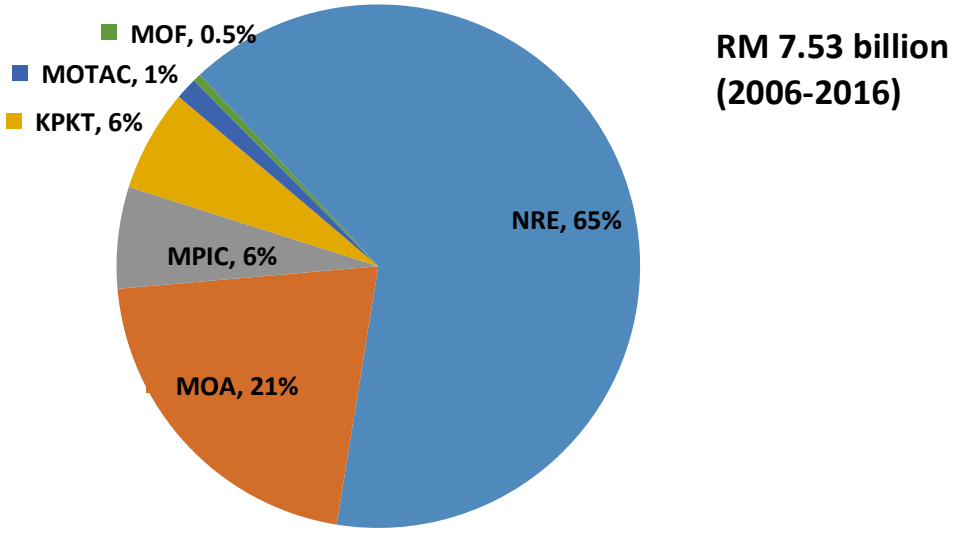
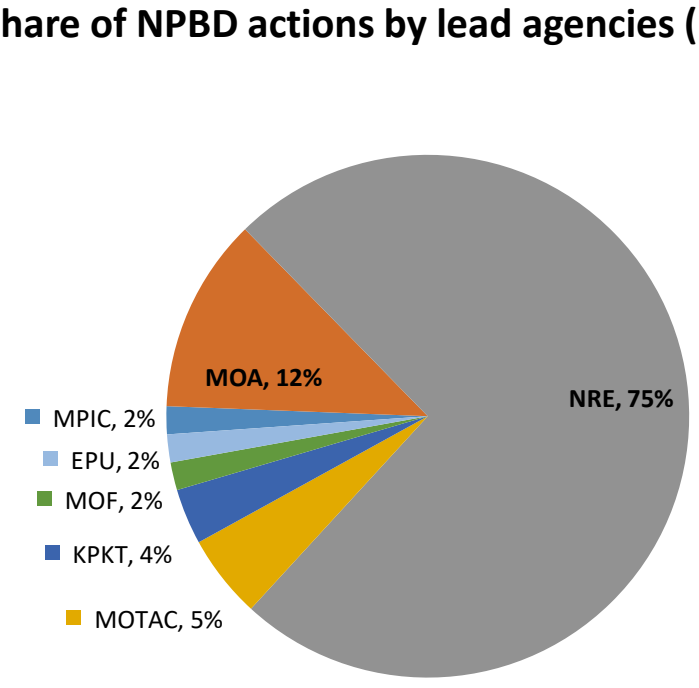


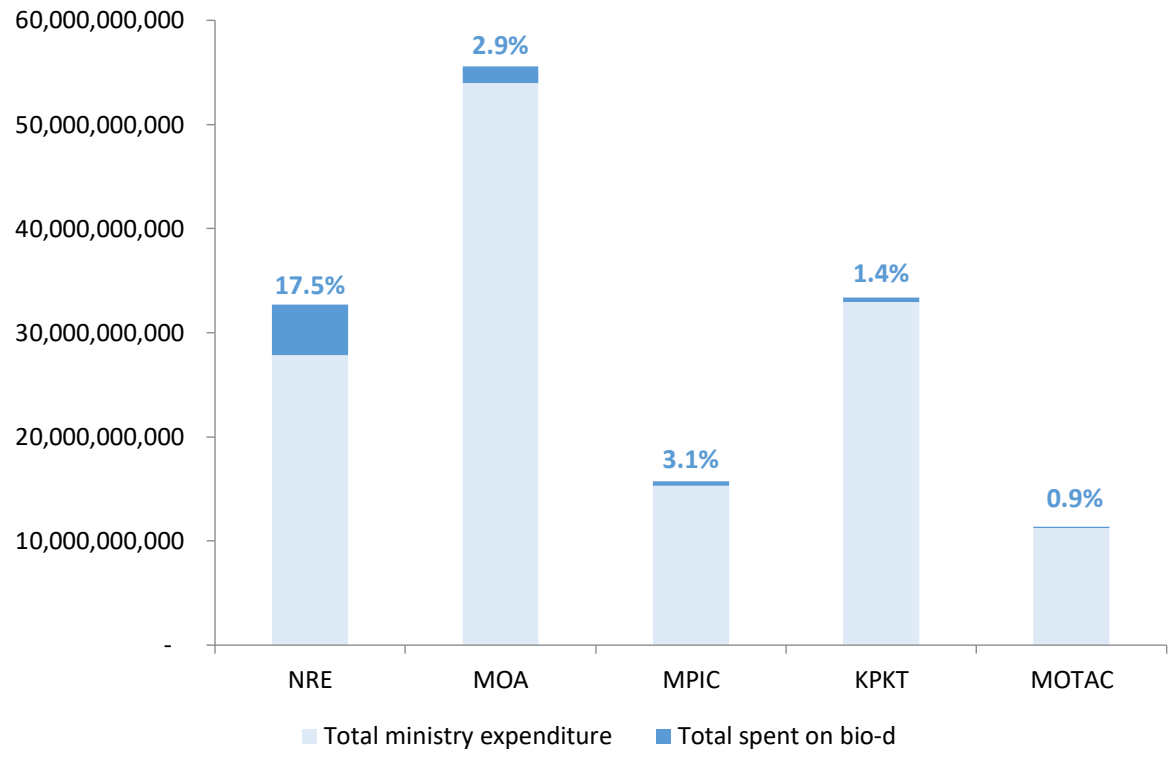
Figure 11: Share of biodiversity expenditures (2006-2016) identified by 15 government organisation samples arranged in their respective Ministries



Source: National Policy on Biological diversity 2016-2025, Table 3

Figure 12: Share of NPBD actions by lead agencies

The study team also compared the share of biodiversity expenditures to their respective ministries' total expenditures across years 2006-2009 (Figure 13). Caution should be exercised when interpreting these results as these are based on the 18 samples and not a total of all relevant agencies under the Ministries. Nonetheless, the analysis shows that about 17% of NRE's expenditures have been spent on biodiversity while the biodiversity expenditures of the other agencies were relatively small compared to their Ministry's total expenditures.



Note: Total spent on biodiversity and total ministry expenditures include both DE and OE.

Exchange rate of Malaysian Ringgit (RM) to US dollars (USD) is 1 USD = RM 4.10 (August 2018)

Source of ministry expenditures is JANM financial statements of various years

Figure 13: Total biodiversity expenditures of each Ministry based on the 15 government case studies versus the total ministries' expenditures from years 2006 to 2016

To further investigate the reasons for the smaller than expected share of biodiversity spent by NRE, the study team analysed NRE's expenditures in greater detail. On average, NRE receives about RM2.7 billion a year in DE and OE, with DE taking up about 60% of the expenditures. Comparing it with total DE for all ministries, NRE receives about 4% of the total DE nationally while if compared to the total expenditures, NRE's share is only at around 1% (Table 15).

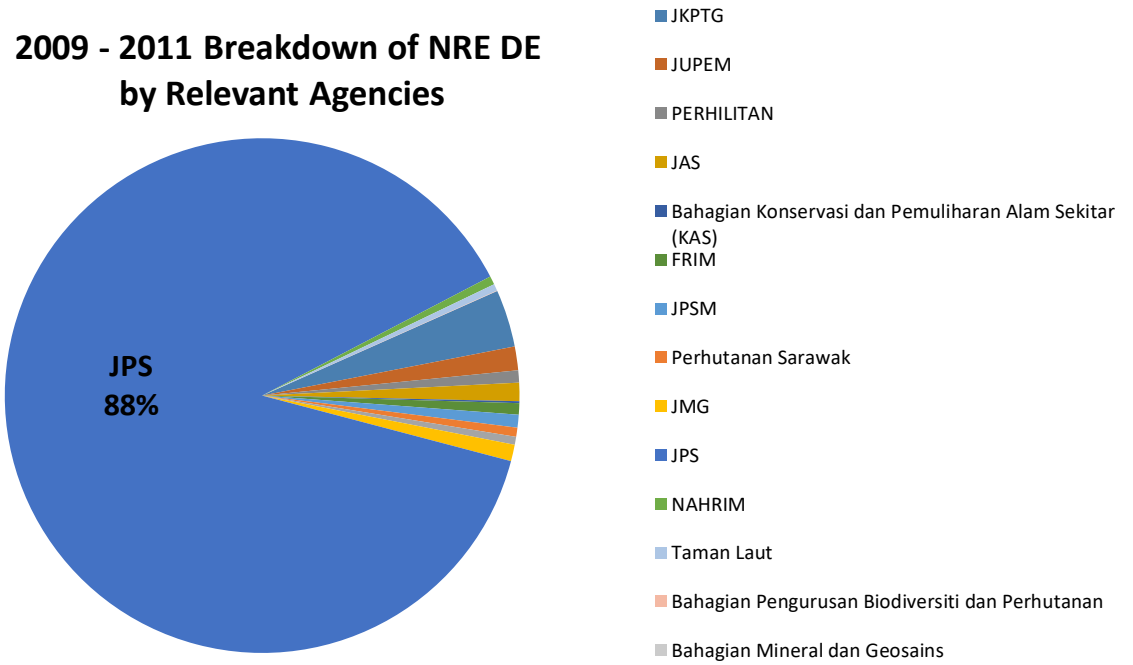
Table 15: Ministries' share of the national supply OE and DE between 2009 and 2016

Ministry	% share
Prime Minister's Department	7%
Ministry of Plantation Industries and Commodities	1%
Ministry of Agriculture and Agro-Based Industry	3%
Ministry of Natural Resources and Environment	1%
Ministry of Tourism and Culture	1%
Ministry of Urban Wellbeing, Housing and Local Government	2%
Ministry of Health	9%
Ministry of Defence	7%
Ministry of Home Affairs	6%
Ministry of Education	20%

Source: JANM financial statements, 2009-2016

Looking closely at NRE's expenditures, the majority of its DE goes to a single agency (Figure 14), to improve irrigation and flood mitigation and that require infrastructure projects to be developed and maintained. The concentration of funds in this agency presents an opportunity for better biodiversity financing. This is because this agency incorporates considerations of biodiversity into its projects that can have positive and negative impacts on biodiversity.

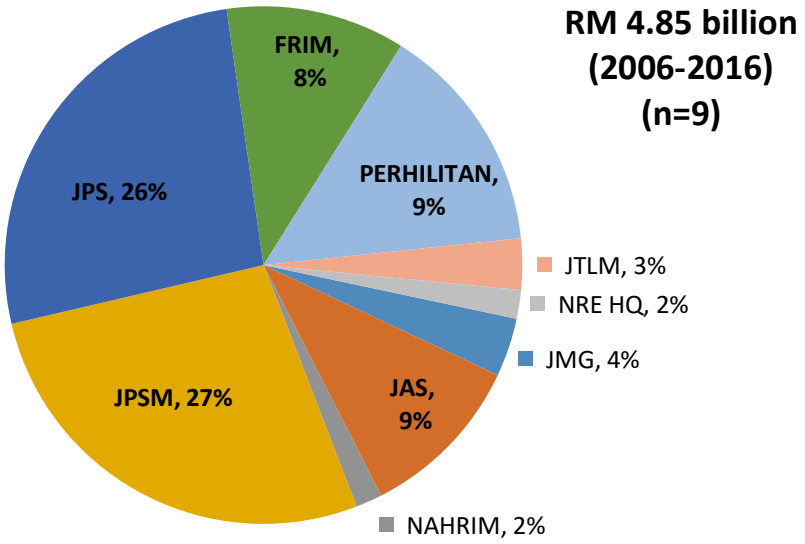
For example, by managing river basins in an integrated manner and using natural ecosystems as soft infrastructure to mitigate floods, then almost all such expenditures would be considered to have a positive impact on biodiversity. On the other hand, by straightening out and concreting rivers, the expenditures could be detrimental to biodiversity, although the flood mitigation protects certain vulnerable areas from flooding.



Source: JANM Financial Statements, 2009-2011

Figure 14: Breakdown of NRE DE by relevant agencies

Coming back to the study samples, the NRE share made up RM4.85 billion (65%) of the total biodiversity expenditures identified in this BER exercise. NRE's share comprised 8 sample agencies and NRE at ministry level (NRE HQ). Recognising that not all the expenditures made by JPS would result in biodiversity positive outcomes, attribution of 0% were assigned to dam related projects while flood mitigation projects were assigned 20%, river and coastal rehabilitation projects were assigned an attribution of 50% and water quality improvement projects attributed 100%. With these adjustments, the JPS share in the sample of biodiversity expenditures was only 26%, indicating that the attribution step helped ensure that more balanced data were used in the analysis (Figure 15).



Source: JANM Financial Statements, 2009-2011

Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Figure 15: Breakdown of biodiversity expenditures for NRE and 8 of its agencies

4.2.2 Breakdown by NPBD targets

Overall observations

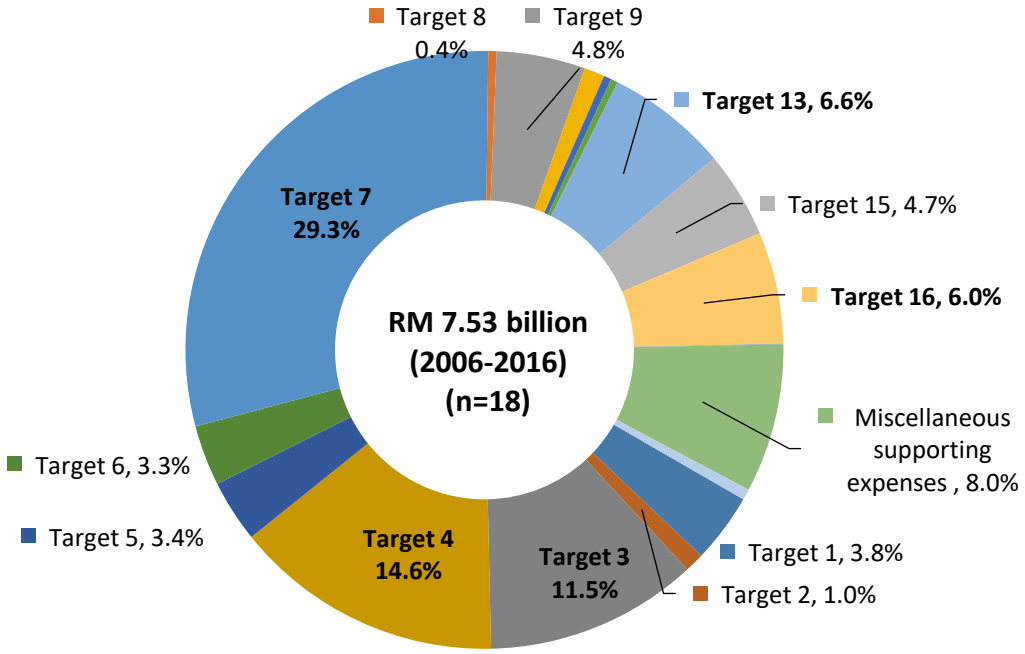
This subsection presents the spending by the NPBD targets for 18 agencies. Almost all NPBD targets had been covered by the samples, except for Target 14 on access and benefit sharing (ABS). Figure 16 illustrates the distribution of identified biodiversity expenditures. About 68% of biodiversity expenditures were spent on five targets, viz.:

- Target 7 on protecting and restoring vulnerable ecosystems:
- Target 4 on sustainable production forests, agriculture and fisheries;
- Target 3 on embedding biodiversity into national and sectoral policies and plans;
- Target 13 on conserving genetic diversity of cultivated plants, animals and wild relatives;
- Target 16 on improving and applying knowledge and science base relating to biodiversity.

Five targets had 1% or less of the total:

- Target 2 on civil society and private sector contributions to conserve and sustainably use biodiversity (1%);
- Target 8 on ecological corridors (0.4%);
- Target 10 on reducing poaching and illegal trade of biodiversity (1%),
- Target 11 on invasive alien species (0.4%); Target 12 on biosafety; and
- Target 17 on mobilisation of resources for biodiversity (0.03%).

Unexpectedly, there were biodiversity related expenditures that did not fit into any of the NPBD targets (N/A, 0.6%). There were also expenditures that could not be tagged to a specific target but were important for supporting the biodiversity-related operations in overall (Miscellaneous supporting expenses, 8.0%).



Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Figure 16: Biodiversity expenditures of 18 government samples from 2006 to 2016 by the National Policy on Biological Diversity 2016-2025 targets

Further observations

Upon further examination, Target 7 expenditures on protecting and restoring vulnerable ecosystems were mainly contributed by JPS (43% of Target 7 total) and JPSM (42%). Both JPS and JPSM spent close to RM 900 million each on this target across 11 years. Incidentally, Target 7 is the largest biodiversity expenditure category for both JPS and JPSM.

For JPS, Target 7 expenditures were largely DE in projects such as studies on river maintenance, integrated river basin management, integrated coastal zone management as well as river restoration programmes (1 state, 1 river), riverbank stabilisation and coastal erosion control operations, river and estuary restoration works and urban storm water management works. For JPSM, Target 7 expenditures were largely OE and covered mangrove replanting for coastal restoration and forest restoration for the Central Forest Spine. The remainder 15% of Target 7 expenditures were contributed by six other organisations, namely JMG, JAS, NAHRIM, PERHILITAN, JTLM and DOF (Table 16).

In second rank, Target 4's expenditure on sustainable forestry, agriculture and fisheries was contributed largely by FRIM (34%), MPIC (30%) and DOF (14%) that jointly account for 78% of the target's total. The remainder of the expenditures were spent by JPSM, PERHILITAN, MOA, MARDI, DOA, DOF and MPOB (Table 16)

For Target 3, KPKT's waste management projects account for 54.8% of expenditure[7]. This is likely due to the high cost of waste management projects, similar to the infra-based JPS projects to control river and coastal erosion and flooding in Target 7. If infra projects were removed, the top 5 targets of biodiversity spending would still be Targets 7, 4, 13 and 16 but Target 3 would have fallen to the fifth rank, together with Target 9 (threatened species conservation) and Target 15 (increasing implementation capacity).

At the lower end of the spending, Target 10 (reduce illegal harvesting and poaching of biodiversity) is noteworthy. The expenditure was contributed by PERHILITAN, JTLM and DOF. This is likely an underestimate because it did not include the expenditures of enforcement agencies such as the Malaysian Maritime Enforcement Agency, Royal Malaysian Customs, Malaysian Quarantine and Inspection Services, Royal Malaysian Police, Malaysian Armed Forces. JPSM's absence is likely due to its classification as OE. Given the assumptions on distribution of expenditures across the NPBD targets, the enforcement spending by JPSM is likely to be embedded in other targets.

In contrast, the low expenditures in Targets 11, 12 and 17 are likely because they are emerging topics in biodiversity. It is interesting to note that DOA and DOF were the only two agencies that spent on Target 11 (invasive alien species) while only DOA and JPSM had expenditures for Target 12 (biosafety) and only FRIM and MPOB invested in resource mobilisation (Target 17). For Target 2, it is not new for agencies to engage with communities and the private sector. Seven of 18 participants had invested in Target 12 (see Table 16). However, the expenditures are often embedded in other activities rather than dedicated, standalone ones.

[7] Note: Despite the lowest biodiversity attribution category of 20% was used to adjust the expenditures downward, this target still accounts for more than half of the expenditure for Target 3.

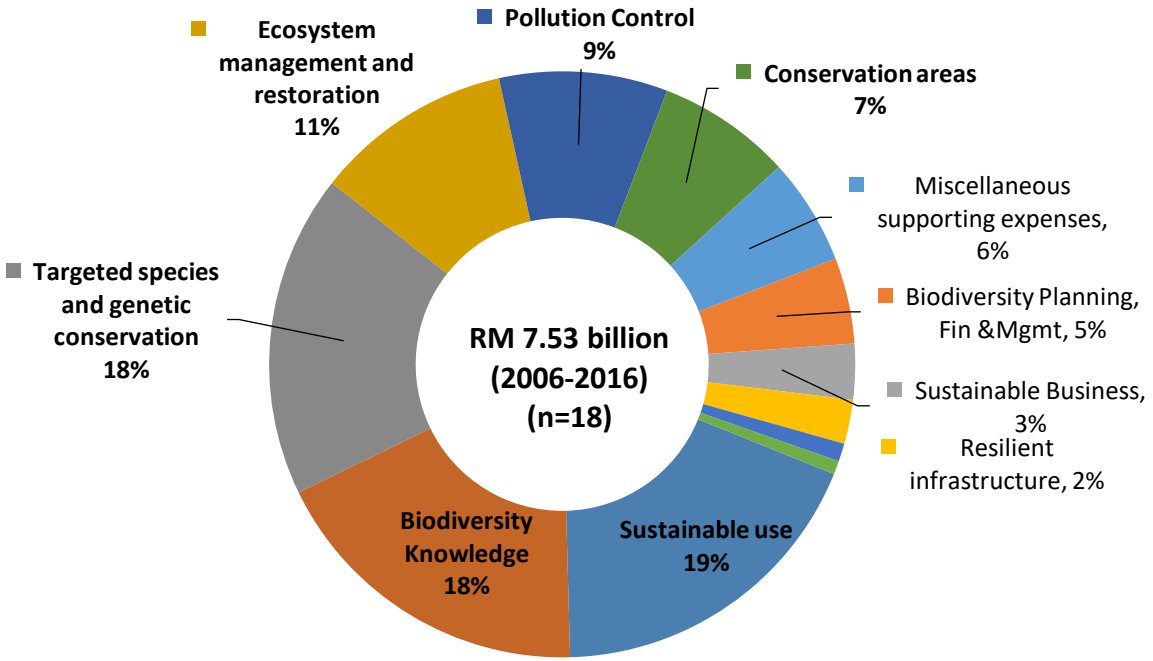
Table 16: Percentage share of total target expenditures (RM million) by agency (n=18)

	JMG	JAS	NAHRIM	JPSM	JPS	FRIM	PERHILITAN	JTLM	NRE HQ	MOA	MARDI	DOA	DOF	MPIC	MPOB	KPKT	MOTAC	MOF	Total (RM mil)
Target 1	0.6%	75.1%	0.04%	1.3%	5.3%	0.8%	9.4%	1.2%	0.2%						5.5%				**283.5**
Target 2		1.0%		1.3%		1.0%	65.9%	4.2%			1.8%				24.7%				**78.0**
Target 3	9.6%	1.7%	0.6%	0.1%	13.3%	1.0%	10.5%					0.4%	1.7%		2.6%	54.8%		4.3%	**867.8**
Target 4		0.1%		0.7%		34.3%	0.5%			7.2%	4.3%	6.0%	14.2%	29.9%	2.7%				**1,098.3**
Target 5				8.2%		2.4%	26.0%			23.1%		0.2%					40.1%		**253.3**
Target 6			0.1%	16.5%	12.9%		12.1%	58.4%											**247.5**
Target 7	2.5%	5.9%	0.5%	41.5%	42.7%		0.8%	0.02%					6.1%						**2,209.1**
Target 8				74.8%	24.3%		0.9%												**33.7**
Target 9				9.7%		0.2%	83.6%	0.1%	0.6%				5.8%						**361.5**
Target 10							91.1%	0.8%					8.1%						**83.0**
Target 11												62.1%	37.9%						**31.7**
Target 12				23.8%								76.2%							**28.1**
Target 13						3.5%	2.0%			87.9%	6.5%								**495.8**
Target 14																			**-**
Target 15	2.5%	27.3%	1.7%	5.1%	1.8%	5.2%		0.1%	5.4%		0.7%	3.4%	42.2%		4.7%				**354.2**
Target 16	5.0%		11.8%	13.5%	18.6%	1.5%	4.9%	0.6%	8.5%		5.0%		28.9%		1.8%				**455.4**
Target 17						64.0%									36.0%				**2.5**
Misc. supporting expenses	0.9%	8.7%	0.6%	30.3%	6.2%	17.7%			4.3%	26.0%				5.1%	0.1%				**606.0**
N/A					91.7%	3.9%	8.1%				0.2%								**43.7**
																		Grand Total (RM million)	**7,533.1**

4.2.3 Breakdown by BIOFIN categories

In terms of biodiversity functions, 12 BIOFIN categories were identified (Figure 17). The majority of the expenditures were spent on 'sustainable use' (19%) followed by 'biodiversity knowledge', 'targeted species conservation', 'ecosystem management and restoration', 'pollution control' and 'conservation areas.' These six functions make up 82% of the expenditures.

For expenditures that could not be assigned to any NPBD target, further examination revealed that they were 'sustainable business' beyond nature-based tourism[8], 'access and benefit sharing'[9], some aspects of 'sustainable use'[10] and 'biodiversity knowledge'[11] and 'Targeted species conservation' in relation to studies to explore other values of selected wildlife[12].



Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Figure 17: Total biodiversity expenditures of 18 government samples from years 2006 to 2016 broken down by the BIOFIN categories

Further breakdown by BIOFIN sub-categories were provided by 11 participants involving 47% of their expenditures (RM 3.53 billion). In particular, BIOFIN sub-categories could be assigned to OE items based on available primary data. A total of 39 BIOFIN sub-categories were reported (see Table 17) showing the diversity of functions in achieving biodiversity outcomes.

[8] e.g. development of forest products or local herbal products
[9] e.g. value added of marine products
[10] e.g. underground water resource management
[11] e.g. knowledge of geological risks of an area and awareness on controls for commercial swiftlet rearing
[12] e.g. game farming, alternative meat supply, bioprospecting, techniques to breed wildlife at commercial scales

From this sub-sample (n=11), 'Sustainable use' and 'Targeted species conservation' were the top areas of spending. Examining the sub-categories further, the following were observed:

- For **sustainable use,** the majority of funds were spent in sustainable agriculture albeit smaller shares from aquaculture and fisheries. As sustainable wildlife, expenditures were for activities to control the harvesting of wildlife, eliminate illegal poaching, monitor and manage human-wildlife conflicts and for the rescue of injured wildlife.

- For **targeted species conservation**, the majority of funds were being spent on maintaining agro-biodiversity compared to ex-situ conservation, species extinction threat reduction or in-situ conservation outside protected areas.

- **Pollution control** related projects leaned heavily on waste management (footnote 3). Note that pollution control by JAS and JPS were not included in this breakdown (EPU data did not have this). If protecting ambient air and climate as well as wastewater management were included, it would certainly be higher.

- **Biodiversity knowledge** spending was mainly found in improving, sharing and applying biodiversity knowledge as well as increasing managerial and technical capacities. Apart from biodiversity communication and education, spending was also made to improve evaluation, accounting and monitoring methods as well as to document and improve indigenous and local community knowledge on biodiversity.

- For **biodiversity planning, finance and management**, it was for biodiversity policy and management, followed by environmental law enforcement. In contrast, little was spent in environmental finance planning and environmental laws and regulations.

- The **sustainable business** option was reported by 11 participants in nature-based tourism. Other business options are: new uses for forest products, commercialisation of intellectual property relating to wood and forest research. The 'green supply chain' activities include certification, sustainability code of practice and reaching the market for such products.

- For **ecosystem management and restoration**, it is interesting to note that a larger amount was being spent on restoring ecosystems as compared to preventive actions such as conserving valuable ecosystem services or reducing the loss of valuable habitats. This seems to be in line with the observation that less spending is being made to the landscape conservation management under the **Conservation areas** category in comparison to spending made to improve protected areas management.

- For sustainable urban areas, one participant had suggested that urban farming should be placed under the category sustainable use rather than resilient infrastructure.

Table 17: Biodiversity expenditures by BIOFIN category and sub-categories (2006 to 2016)

BIOFIN Category and subcategory	Total (RM mil) (n=11)
Sustainable use	**884.3**
Sustainable agriculture	523.3
Sustainable wildlife	193.4
Sustainable aquaculture	62.7
Sustainable fisheries	93.9
Sustainable land management	11.1
Targeted species and genetic conservation	**677.9**
Agro-biodiversity maintained	468.3
Ex-situ conservation of endangered species	90.1
Species extinction threat reduction	73.8
In-situ conservation of endangered species outside PAs	45.7
Pollution Control	**480.9**
Waste management	475.3
Wastewater management	3.2
Protection of ambient air and climate	2.4
Biodiversity Knowledge	**423.9**
Biodiversity knowledge improved, shared and applied	172.3
Managerial and technical capacity increased	151.7
Biodiversity Communication	47.5
Biodiversity Education	26.7
Evaluation, accounting and monitoring methods	22.0
Indigenous and local community knowledge	3.7
Biodiversity Planning, Finance and Management	**286.7**
Biodiversity policy and management	123.6
Environmental law enforcement	80.5
Environmental finance policy and management	37.6
Strategic planning	36.8
International environmental agreements and conventions	7.9
Environmental finance planning	0.21
Environmental laws and regulations	0.16
Miscellaneous supporting expenses	**189.3**
Sustainable Business	**177.2**
Nature based tourism	175.8
Green supply chain	1.4
Conservation area	**176.4**
Improve PA management	175.9
Improve landscape conservation management	0.49
Ecosystem management and restoration	**157.5**
Restoration of ecosystems	126.8
Conservation of valuable ecosystem services	18.2
Reduce or stop loss of valuable habitats	12.5
Biosafety	**54.6**
Invasive Alien Species	53.1
LMO and GMO	1.4

BIOFIN Category and subcategory	Total (RM mil) (n=11)
Climate Change	**22.2**
GHG Mitigation	13.8
Ecosystem based adaptation	6.6
Sustainable energy	1.8
Access and Benefit Sharing (ABS)	**0.14**
Bioprospecting	0.14
Resilient infrastructure	0.17
Sustainable urban areas	0.17
Total (n=11)	**3,531.3**

Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

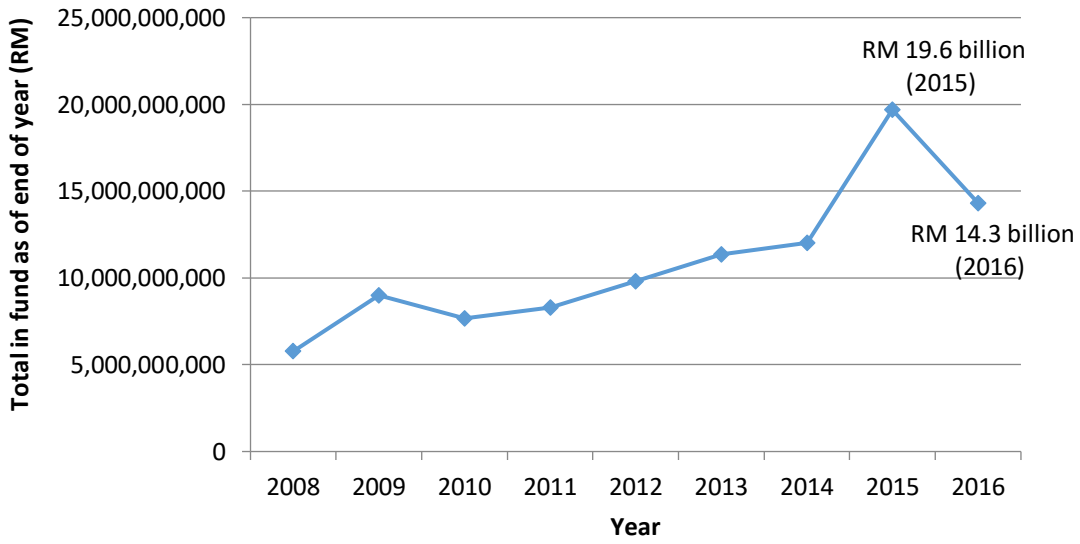
4.3 Government trust funds

In Malaysia, the Consolidated Trust Account consists of, inter alia the Government Trust Funds, the Public Trust Funds and Deposits. Upon further examination, biodiversity expenditures are most likely to come from two funds, namely the Marine Reserve and Park Trust Fund and the National Natural Resources Trust Fund.

Government Trust Funds get funds from Government allocations as well as public donations. They are established under Section 10 of the Financial Procedure Act 157. It is categorised into Development Fund and Miscellaneous Government Trust Funds; the former are funds meant for economic development, that is, where Development Expenditures (DE) are made, while the latter are funds meant for specific purposes. In relation to the two biodiversity related funds, the study team also examined the Miscellaneous Government Trust Funds, particularly the Other Funds account.

4.3.1 Overall findings

The Other Funds account comprises 22 accounts with RM 5.7 billion at the end of 2008. This has grown to 32 accounts with RM 14.3 billion funds as of the end of 2016 (Figure 18). Accounts included the National Trust, Poor Students Fund, the National Disaster Relief, the Artist Welfare and Cultural Trust Fund, the People Housing and Ownership Programme, and the Medical Aid Fund, among others, in addition to the two biodiversity-related funds mentioned above. The full list of funds and their amounts from 2008 to 2016 are available in Appendix IX.



Source: JANM Financial Statements, 2009-2016

Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Figure 18: Growth of Miscellaneous Government Trust Funds (2008-2016)

From the JANM Financial Statements, the National Natural Resources Trust Fund was only established in 2014 and its share of the total of Other Funds is 0.07% (RM 10 million) at the end of each year. The Marine Reserve and Park Trust Fund has been in existence longer but its share is slightly lower at about 0.04% (about RM 5 million a year). As of 2016, both funds jointly constitute **0.1% of the total Other Funds account**.

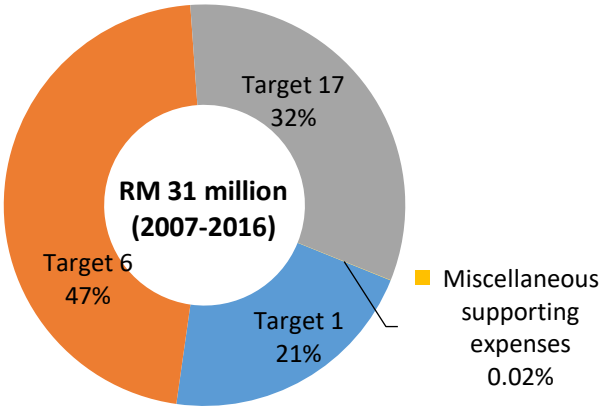
4.3.2 Analysis of the Marine Reserve and Park Trust Fund

The study team received additional information on the Marine Revenue and Park Trust Fund from the Marine Parks Department of Malaysia (JTLM) about the Fund's expenditures from 2007 to 2016. This allowed further analysis on the spending focus areas by NPBD targets and BIOFIN categories.

Over the period, this Trust Fund had a cumulative expenditure of RM 31 million. By NPBD targets (Figure 19), the bulk of the expenditures were spent on:

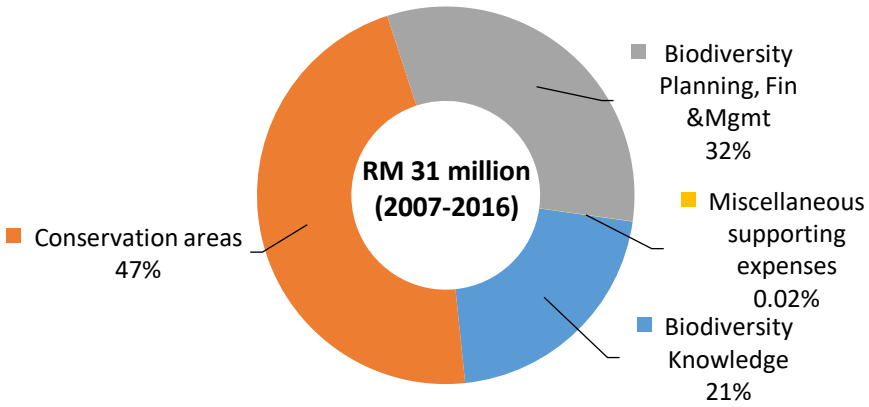
- Target 6 on ensuring conservation via protected areas
- Target 17 on increasing fund and resource mobilisation for biodiversity conservation from government and non-government sources
- Target 1 on increasing the awareness of Malaysians on values of biodiversity and steps to conserve and sustainably use it

Accordingly, the bulk of the expenditures were spent on 'Conservation Areas' followed by 'Biodiversity Planning, Finance and Management' and 'Biodiversity Knowledge. A very small amount of 0.02% was not assignable to any specific target or BIOFIN categories but generally supported biodiversity activities (Figure 20).



Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Figure 19: Marine Reserve and Park Trust Fund expenditures by NPBD targets (2007-2016)



Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Figure 20: Marine Reserve and Park Trust Fund expenditures by BIOFIN categories (2007-2016)

Additional information about the Trust Fund's expenditures showed the flux of funds and estimates were made on the actual available funds across each year. The JANM statements had annual revenue records while the JTLM data provided the annual expenditures. To estimate the total amount that would be hypothetically in the trust in a given year, the JANM amounts are summed with the JTLM amounts. As the JANM statements were only available from 2008 onwards, this part of the analysis only included the trust expenditure data from that year onwards.

From the analysis, the Marine Reserve and Park Trust Fund is growing over the years, although this is not obvious from the JANM statements. This is because the funds are used to supplement marine park activities. The fund has grown but stayed around 45% as very little funds were taken out.

Table 18: Total amount of funds in the Marine Reserve and Park Trust Fund and estimated % usage per year (2008-2016)

Year	Total amount in trust fund (RM)	% usage per year
2008	6,783,195	19%
2009	7,149,783	49%
2010	5,653,078	51%
2011	5,798,212	43%
2012	6,461,264	36%
2013	8,461,741	44%
2014	9,204,332	44%
2015	9,857,820	46%
2016	9,989,035	51%
Average	**7,821,908**	**45%**
Source: JANM Financial Statements, 2009-2016 and JTLM, 2017 *Note: Exchange rate is 1 USD = RM 4.10 (August 2018)*		

Overall, the average amount of funds available in this Trust Fund was RM 7.8 million a year with about 45% of the funds available for use each year for biodiversity-related activities and about RM 5 million being maintained by the end of the year.

4.4 Private sector

4.4.1 Findings from Environmental Protection Expenditure Survey Report

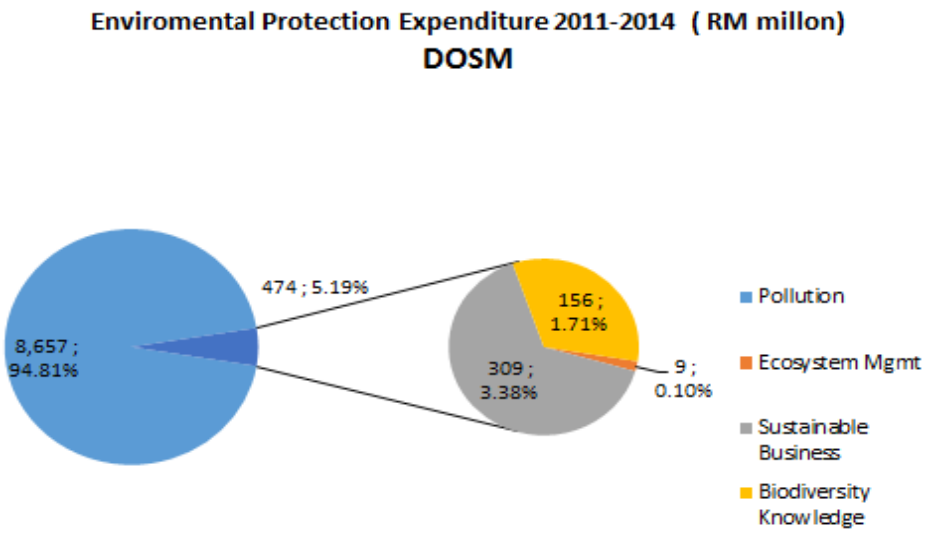
The Department of Statistics in Malaysia have conducted surveys since 2011 to estimate the private sector's environmental protection expenditures. The latest survey published in 2015 was for the reference period in 2014. The survey covers **capital expenses and operating & repair expenditures** incurred **by businesses** in order to comply with environmental regulations, conventions or voluntary agreements. The establishments were identified from the National Enterprise Statistical System; includes those in the 2010 survey and those that reported environmental expenditures in the 2011 Economic Census. The survey covers the agriculture, forestry & fishing; mining & quarrying; manufacturing; construction and services sectors.

From the descriptions of the types of expenditures, it was possible to tag the expenditures to BIOFIN categories and apply the national estimates from this study into the biodiversity expenditures. No finer tagging by BIOFIN sub-categories or NPBD targets was possible and the published report did not contain further details about the expenditures made. In total, the survey identified five main categories of expenditures, which were then tagged to four BIOFIN categories as shown in Table 19.

Table 19: Mapping of DOSM Environmental Expenditure types to BIOFIN categories

DOSM type of expenditures	BIOFIN categories
Expenditure for environmental media • *Environmental monitoring* • *Site reclamation and decommissioning* • *Pollution abatement and control* • *Pollution prevention*	Pollution control
Protection and conservation of wildlife and habitat *Expenditure made in compliance with environmental laws and regulations to protect wildlife and habitat from the outcome of establishment's operation*	Ecosystem management
Environmental assessment and audit and environmental charges *Expenditure to evaluate the environmental impact of proposed programme or projects. Legal, consulting fees and other cost incurred prior to environmental certification. Any penalty, fine or compensation incurred due to environmental degradation.*	Sustainable business
Waste management *Expenditures related to the collection, treatment, storage and disposal or recycling of hazardous and non-hazardous waste.*	Pollution control
Other environmental protection expenditure *Refers to contributions towards environmental protection for schools, universities etc., environmental awareness campaign (Earth Day, Green Day, recycle programme, mangrove planting etc.), courses, seminar and environmental workshop.*	Biodiversity knowledge

From the survey, Malaysia's private sector spends RM2.28 billion a year on environmental protection. Between 2011 and 2014, this amounted to RM 9.13 billion spent on environmental protection; the majority of which was spent on pollution control (Figure 21).



Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Figure 21: Share of environmental protection expenditures by BIOFIN category

However, as only 20% of pollution control expenditures are considered as biodiversity expenditures, the actual spending on biodiversity between years 2011 and 2014 is only **RM 2.2 billion**. This amounts to only **24%** of the total environmental protection expenditure being attributed to biodiversity. The calculations for this estimation are shown in Table 20.

Table 20: Estimated biodiversity expenditures from DOSM's national environmental protection expenditures across years 2011 to 2014 by BIOFIN category tags

BIOFIN categories (2011-2014)	National environmental protection expenditure (RM mil)	% Attribution	Estimated biodiversity expenditures (RM mil)
Pollution control	8,657	20%	1,731
Ecosystem management	9	100%	9
Sustainable business	309	100%	309
Biodiversity knowledge	156	100%	156
Total	**9,131**		**2,205**

Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

4.4.2 Results of case studies and sustainability reports

To supplement the analysis, the study team also explored sustainability reports for information on biodiversity related spending in the private sector. Using the top 30 companies listed in the KLSE as a starting base, the team was able to examine the sustainability reports of 28 companies and identified 125 biodiversity related projects. However, only four companies published some financial data on the projects.

The four case studies were: Maybank, Petronas, TNB and Sime Darby (mainly Sime Darby Foundation projects). In later stages of the BER, the study team received BER data from Sime Darby Foundation, Sime Darby Plantations and Sime Darby Properties. Primary data from the foundation replaced the compiled data from their sustainability report and expenditures from the latter companies were treated as separate from the foundation. Thus, a total of six case studies were explored in the analysis.

Overall findings

From the sustainability reports, RM 196.5 million had been spent in 26 projects by the four case studies between 2008 and 2016. Of these projects, some already had committed allocations for 2017 to 2020 which amounted to RM 29.7 million. This translated to a total of RM 226.2 million being spent by these four companies between 2008 and 2020 or about RM 4.3 million being spent each year per organisation.

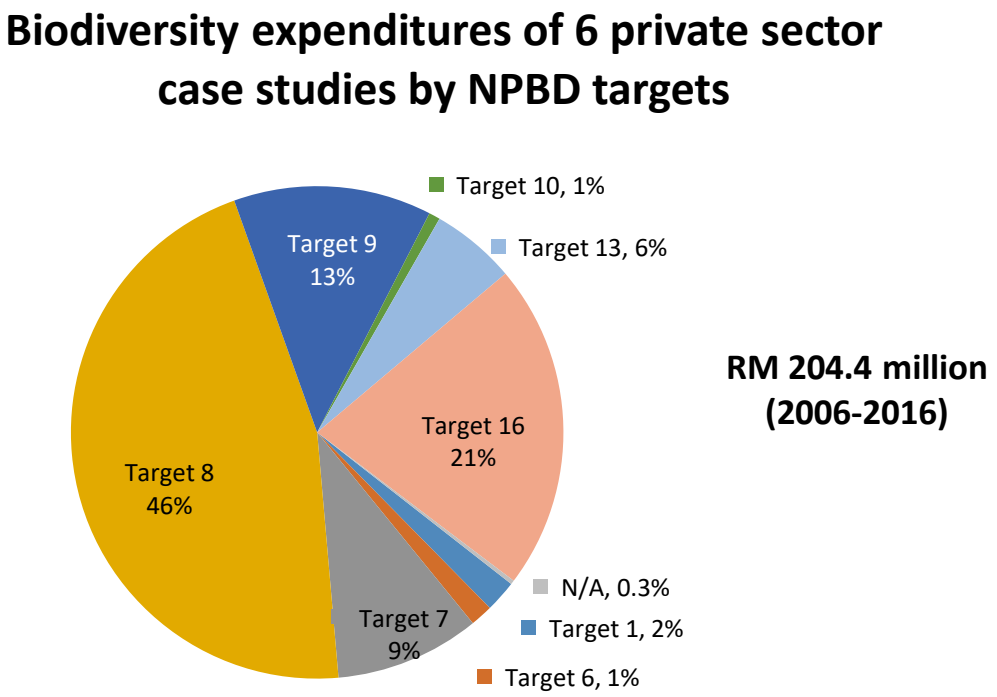
Seeing that there is still a much larger number of projects without financial data (99 projects), it implies that there is likely to be a much larger amount of resources being contributed by the private sector to biodiversity projects. The four case studies showed that on average 2.5 projects were run per organisation per year. This implied that the 'per year per organisation per project' expenditure amounted to about RM 1.7 million. Using this rough estimate, there would be another RM 172.2 million per year not being captured in this analysis, assuming all other 99 projects are undertaken in the same year.

After replacing Sime Darby Foundation's data and adding on Sime Darby Plantation and Sime Darby Properties' data, a total of **RM 204.4 million** had been spent by the six case studies between 2006 and 2016.

Breakdown by NPBD targets for four case studies

These six case studies collectively contributed to eight NPBD targets and there was a small amount (0.3%) that could not be allocated to any targets (Figure 22). The bulk of the expenditures was spent on:

- Target 8 on terrestrial and marine ecological corridors (46%);
- Target 16 on improving and applying biodiversity knowledge (21%);
- Target 9 on preventing the extinction of known threatened species and improving and sustaining their conservation status (13%);
- Target 7 on protecting and restoring vulnerable ecosystems (9%); and
- Target 13 on conserving genetic diversity (6%)



Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Figure 22: Biodiversity expenditures of 6 private sector case studies by NPBD targets, 2006-2016

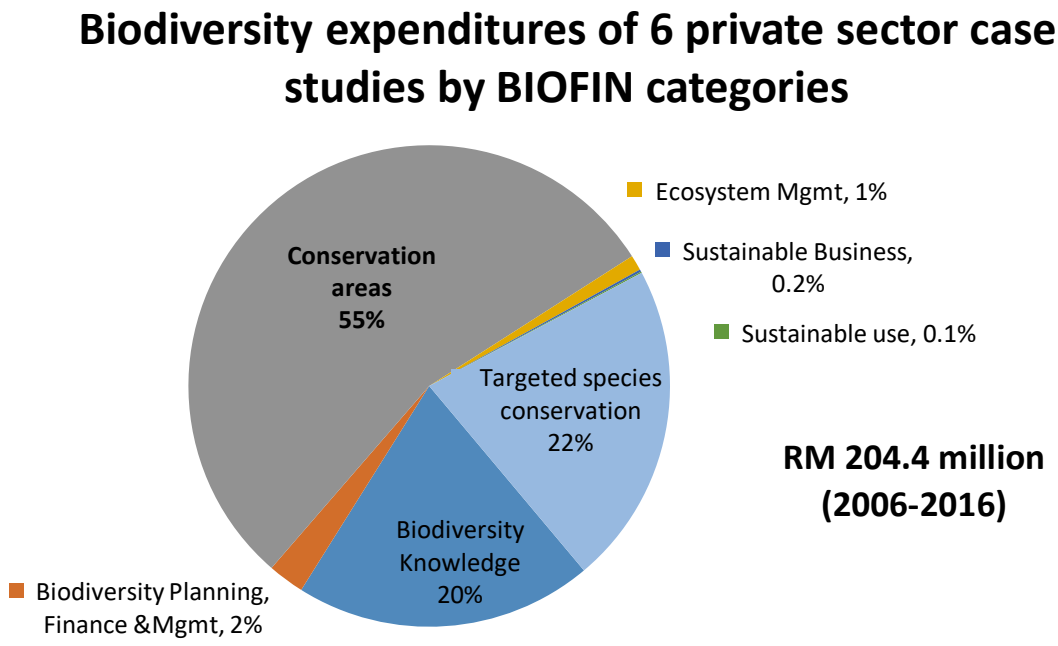
Breakdown by BIOFIN categories and sub-categories for four case studies

The six case studies covered seven BIOFIN categories and 15 sub-categories. The majority of funds was spent on conservation areas (55%) followed by targeted species and genetic conservation (22%) and biodiversity knowledge (20%) (Figure 23).

Examining the sub-categories (Table 21), 'conservation areas' tended to refer to 'improving landscape conservation management'. In particular, 90% of the funds for this sub-category had been spent by PETRONAS on Imbak Canyon Conservation Area (terrestrial) while 6% were spent on marine areas and the remainder on tree planting.

Funding for 'targeted species conservation' was focused on 'species extinction threat reduction' (49%) and 'ex-situ conservation of endangered species' (44%). The former sub-category was funded by Sime Darby Foundation and covered programmes to conserve rhinoceros, proboscis monkeys, elephants, Bornean Banteng, hornbills and Sunda Clouded Leopards. The latter had been contributed to by all three Sime Darby participants and targeted towards endangered tree species. 'In-situ conservation' (5%) was largely contributed to by Maybank towards tiger conservation and wildlife rescue and research.

More than 90% of the funding for 'biodiversity knowledge' was spent on improving, sharing and applying biodiversity knowledge. This included two projects funded by Sime Darby Foundation – one is research on forest fragmentation and best agricultural practices to protect rainforest ecosystems and biodiversity; another is research on sustainability for the palm oil industry.



Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Figure 23: Biodiversity expenditures of 6 private sector cases by BIOFIN categories

Table 21: Biodiversity related expenditures from 6 private sector cases 2006 to 2016 by BIOFIN category and sub-categories

BIOFIN category and sub-category	Total
Conservation areas	**111.6**
Improve landscape conservation management	90.0
Improve PA Management	21.1
(blank)	0.53
Targeted species conservation	**44.3**
Species extinction threat reduction	21.7
Ex-situ conservation of endangered species	19.5
In-situ conservation of endangered species	2.4
Agro-biodiversity maintained	0.66
Biodiversity Knowledge	**41.0**
Biodiversity knowledge improved, shared and applied	38.7
Biodiversity Education	1.1
Biodiversity Communication	1.0
Managerial and technical capacity increased	0.01
Biodiversity Planning, Finance and Management	**5.0**
Biodiversity Policy and Management	5.0
Ecosystem Management	**2.1**
Improve ecosystem connectivity	2.0
Restoration of ecosystem	0.09
Sustainable Business	**0.32**
CSR	0.18
Nature Based Tourism	0.14
Sustainable use	**0.18**
Sustainable Agriculture	0.18
Sustainable land management	0.002

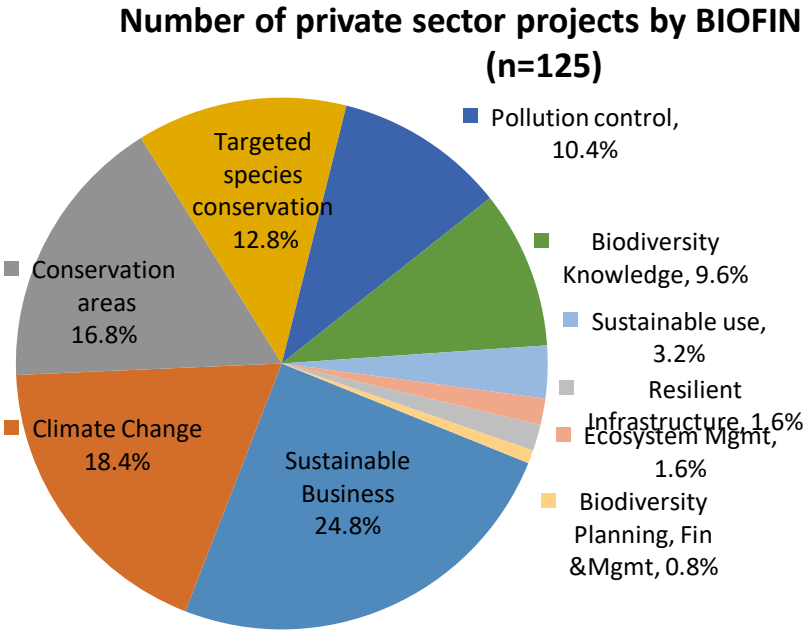
Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Possible spending concentrations based on project numbers

Although financial data were not available for the other projects identified in this exercise, a first estimate of spending could be done by assessing the number of projects by the BIOFIN and NPBD targets. A total of 10 BIOFIN categories and 26 sub-categories were covered by the 125 projects. Unlike the pattern observed in the six companies, major areas of spending were in (Figure 24):

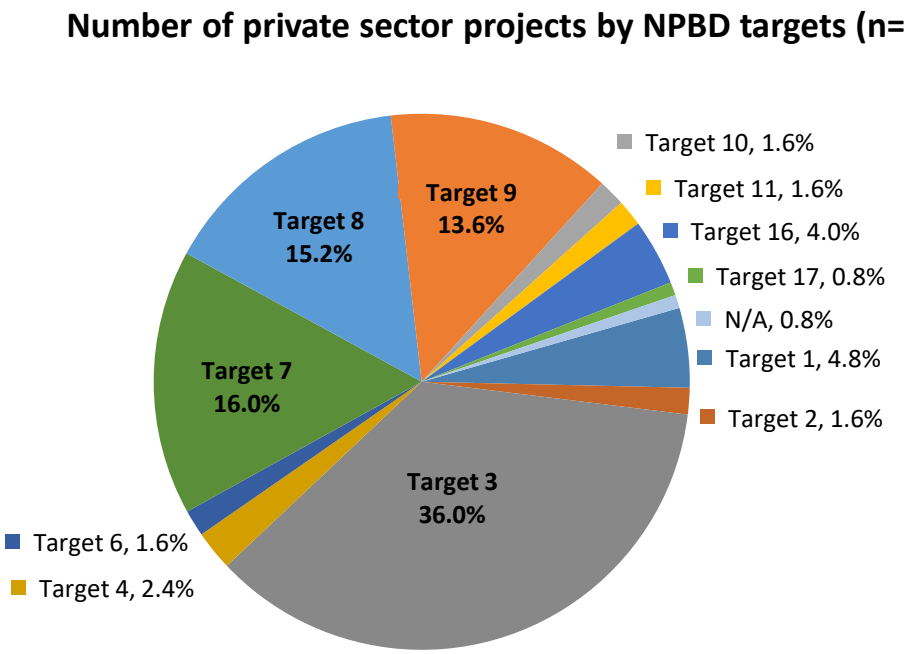
- 'Sustainable business,' which included Corporate Social Responsibility, Green Supply Chain and Sustainable Consumption
- 'Climate change,' which included Ecosystem based adaptation, sustainable energy and greenhouse gas mitigation
- 'Conservation areas,' which included improved landscape conservation management, improved protected areas management and expanding protected areas
- 'Targeted species conservation,' which included species extinction threat reduction and in-situ conservation
- 'Pollution control,' which included protection and remediation of soil, groundwater and surface water, protection of ambient air and climate, waste management and other pollution reduction; and
- 'Biodiversity knowledge,' which included biodiversity education, biodiversity knowledge improved, shared and applied and improvement to technical and managerial capacities.

A total of 12 NPBD targets were covered by the 125 projects, although the focus was still on Targets 3, 7, 8 and 9 (Figure 25).



Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Figure 24: Possible spending concentrations of the private sector based on the number of biodiversity related projects by BIOIFN category identified from 28 companies



Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Figure 25: Possible spending concentrations of the private sector based on the number of biodiversity related projects by NPBD targets identified from 28 companies

4.5 Non-government organisations (NGOs) and Civil Society Organisations (CSOs)

The results presented in this sub-section are based on the financial data and information from four NGO case studies that successfully completed the BER process.

Before moving on to the findings, it is important to recall that the case studies consist of:

- Two smaller-sized organisations with less than 10 core staff each, one medium-sized organisation with 40 core staff and one large-sized organisation with close to 200 employees dedicated to the day-to-day operations.
- The size of the organizations also reflected their yearly expenditures. The smaller organisations spend below RM 1 million, the medium sized ones above RM 5 million and the large organisation above RM 20 million.
- The missions of each organisation are different:
    - One is primarily a research project focussing on an iconic endangered species
    - One primarily does research and advocacy for a type of vulnerable ecosystem
    - One primarily does habitat conservation and environmental education to protect Malaysia's natural heritage and promote environmental stewardship
    - One conducts a wide range of conservation and environment work such as in the field of research, education, policy work, communication, marketing, programme management and information technology
- The organizations also have slight financial variations with one depending on research grants, another largely depending on sponsored projects and donors, one having a steady membership subscription base and one depending on trust and individual donors, grants from their international network and fundraising activities.

These case studies provide an interesting mix of organisational characteristics for the BER given their different characteristics. Note that the findings presented here are not meant to be representative of the entire NGO and CSO sectors involvement in biodiversity.

It is also necessary to note that each organisation also provided information based on its availability within the given timeline allocated for the BER. One case study was able to provide data from 2006 to 2016; another provided data from 2011 to 2017; the third case study that had more projects per year and a larger expenditure could only provide data from 2013 to 2017, while the fourth case study that was the largest had requested much more time to complete the data collection and submitted data from 2011 to 2016. Hence, the analysis provided is likely to be an underestimate and no time series analysis is presented.

4.5.1 Overall findings

From the four case studies, RM 268.6 million had been spent on biodiversity-related activities between 2006 and 2017. This translates to 99.2% of the total organisations' expenditures being spent on biodiversity related expenditures. The majority of which was spent on 'Development Expenditures (DE)' (98%) while 'Operating expenditures (OE)' constituted 2%.

Take note that for the NGO sector, expenditures are more commonly described as Programme or Project Expenditures. These expenditures include the development costs, capital investments as well as project staff emoluments, supplies, rental fees and other day-

to-day expenses incurred by the project. This therefore includes both DE and OE items based on the definition used by the public sector. In relation to this BER exercise, using Programme or Project expenditures made it easier for NGOs to identify financial data to specific outcomes that can be tagged and attributed to biodiversity functions and the NPBD targets.

In their context, pure or non-project related OE would instead constitute administrative costs of the headquarters, management of membership, donors and partners as well as use of general utilities and rent. These were difficult to tag and attribute to any NPBD targets or BIOFIN categories. In this exercise, only a small 0.03% of expenditures could not be directly linked to any specific objective or target but played a supporting role to the entire functions of the organisation. This was tagged as miscellaneous supporting expenses.

The distinction between DE and OE for the NGO sector has been done upon request by the consultants to ensure consistency of the analysis with the public sector.

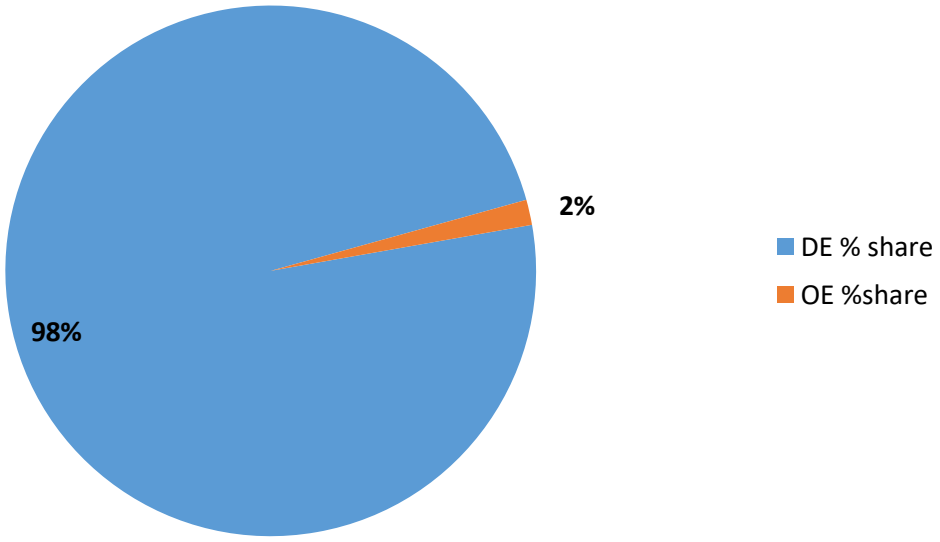
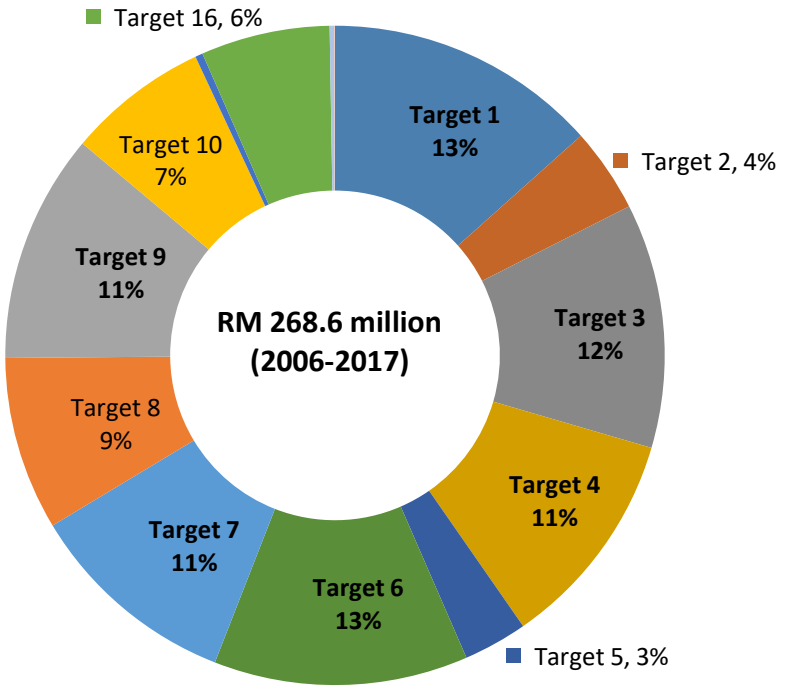


Figure 26: Share of development and operating expenditures in the total biodiversity related expenditures of four NGO case studies for years 2006 to 2017.

4.5.2 Breakdown by NPBD targets

Participants jointly identified their contributions to 13 NPBD targets. There was a very small percentage (0.03%) of the expenditures that could not be identified to any specific target but were still related to biodiversity. As illustrated in Figure 27, the spread of expenditures is balanced across nine targets while the remainder have smaller shares. These nine targets constituted 92% of the total expenditures and are as follows:

- Target 1 on increasing awareness of the values of biodiversity and the steps to conserve and use it sustainably (13%);
- Target 6 on protected areas and other area-based conservation measures (13%);
- Target 3 on mainstreaming biodiversity in national development planning and sectoral policies and plans (12%);
- Target 4 on sustainable forestry, agriculture and fisheries (11%)
- Target 7 on protecting and restoring vulnerable ecosystems and habitats (11%)
- Target 9 on preventing the extinction of known threatened species and improving and sustaining their conservation status (11%);
- Target 8 on terrestrial and marine ecological corridors (9%);
- Target 10 on reducing illegal poaching, harvest and trade of biodiversity (7%)
- Target 16 on improving and applying knowledge and the science base relating to biodiversity (6%)



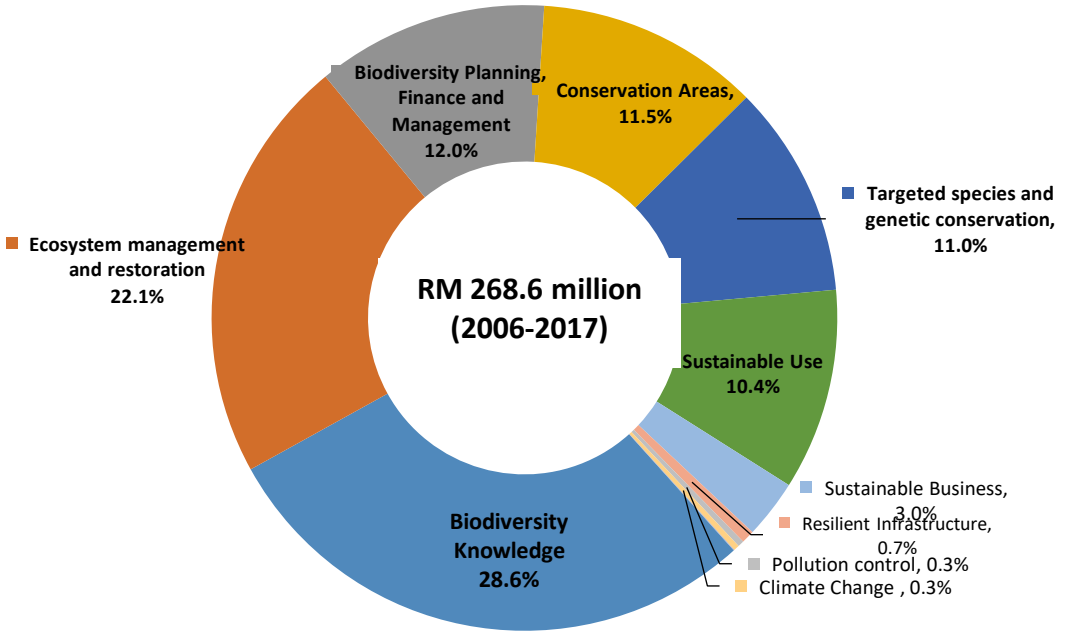
Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Note: One data point of less than 0.1% and that cannot be associated to any targets is not shown

Figure 27: Total biodiversity expenditures of three NGO case studies from years 2006 to 2017 broken down by the National Policy on Biological Diversity 2016-2025 targets

4.5.3 Breakdown by BIOFIN categories and sub-categories

In total, 10 BIOFIN categories and 42 BIOFIN sub-categories were identified by participants in this exercise. The top six BIOFIN categories constituted 96% of the total expenditures with 'Biodiversity knowledge' and 'Ecosystem management and restoration' accounting for half of the total expenditures. This was followed by 'Biodiversity planning, finance and management', 'Conservation areas', 'Targeted species and genetic conservation' and 'Sustainable use' that were relatively equally spread around 11% each.



Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Figure 28: Total biodiversity expenditures of four NGO case studies from years 2006 to 2017 by the BIOFIN categories (Note: The last data point of 0.03% is not shown)

From the four NGO case studies, the following points were observed:

- 'Biodiversity knowledge' is related to 'Biodiversity education' which constitute about half of the expenditures of this category. This included environmental education activities, camps, workshops, publications and public awareness campaigns. In comparison, about 29% of this category's expenditures had been used to improve, share and apply biodiversity knowledge. This included baseline studies or assessments for strategic planning, restoration efforts or management plans;
- 'Ecosystem management and restoration' expenditures were well balanced between curative and preventive measures with spending on restoration works and activities to reduce or stop the loss of valuable habitats receiving similar levels of financing;
- For 'Biodiversity planning, finance and management', it was interesting to note that about 60% of expenditures were spent on strategic planning and that there were expenditures for enforcement, finance planning and laws and regulations being identified by NGOs albeit at much smaller amounts;
- For 'Conservation Areas', more than 95% of the expenditures were for improving the management of protected areas and landscape conservation efforts while the remainder was aimed at expanding areas for conservation;

- 'Targeted species and genetic conservation' were largely contributed by expenditures for species threat reduction; and
- A larger share of 'Sustainable use' expenditures were made on terrestrial environments compared to marine and coastal environments.

Table 22: Tabulation of biodiversity related expenditures from four NGO case studies from years 2006 to 2017 by BIOFIN category and sub-categories

BIOFIN Category and sub-category	Total (RM million)
Grand Total	**268.6**
Biodiversity Knowledge	**76.9**
Biodiversity education	38.6
Biodiversity knowledge improved, shared and applied	22.1
Biodiversity communication	10.3
Managerial and technical capacity increased	4.6
Indigenous and local community knowledge	1.2
Evaluation, accounting and monitoring methods	0.12
Ecosystem management and restoration	**59.3**
Restoration of ecosystems	28.3
Reduce or stop loss of valuable habitats	23.5
Improve ecosystem connectivity	4.1
Conservation of valuable ecosystem services	3.4
Biodiversity Planning, Finance and Management	**32.2**
Strategic planning	19.1
Biodiversity policy and management	6.7
Environmental laws and regulations	3.0
Environmental law enforcement	2.8
Environmental finance planning	0.53
Environmental finance policy and management	0.06
Corporate sustainability	0.002
Conservation Areas	**31.0**
Improve PA management	12.1
Improve landscape conservation management	8.7
Expand PA systems	6.5
Expand landscape conservation	3.4
(blank)	0.36
Targeted species and genetic conservation	**29.6**
Species extinction threat reduction	25.6
Ex-situ conservation of endangered species	3.0
In-situ conservation of endangered species outside PAs	0.97
Sustainable Use	**28.0**
Sustainable Forestry	12.7
Sustainable Fisheries	7.2
Sustainable agriculture	4.6
Sustainable marine and coastal management	1.6
Sustainable Aquaculture	0.88
Watershed Management	0.55

BIOFIN Category and sub-category	Total (RM million)
Sustainable Land Management	0.42
Sustainable Business	**8.1**
Nature based tourism	6.4
Sustainable Consumption	1.0
Corporate Sustainability (CSR)	0.66
Resilient Infrastructure	**1.8**
Sustainable energy infrastructure	1.2
Sustainable urban areas	0.56
Sustainable water systems	0.08
Pollution control	**0.87**
Protection and remediation of soil, groundwater and surface water	0.45
Waste management	0.42
Wastewater management	0.004
Climate Change	**0.81**
GHG mitigation	0.60
Ecosystem based adaptation	0.20
Miscellaneous supporting expenses	**0.09**
Note: Exchange rate is 1 USD = RM 4.10 (August 2018)	

4.6 Multilateral and Bilateral Organisations

Multilateral organisations such as the United Nations Development Programme (UNDP), the Global Environment Facility (GEF), the European Union, as well as bilateral organisations like the Japan International Cooperation Agency (JiCA), and the Danish International Development Agency (DANIDA) constitute another group of funders that are known to have spent resources on biodiversity-related projects in Malaysia. Funds provided by these organisations often involve a matching or co-financed amount either in cash or in kind by the Malaysian government. Recognising the importance of such funding, this BER exercise has examined a case study of a multilateral organisation to better understand the accounting and budgeting scenarios, the spending patterns and its biodiversity priorities.

The case study chosen was the UNDP that have been supporting initiatives in Malaysia towards ensuring sustainability under the portfolio of Energy and Environment. The portfolio comprises three core strategies, which include: the enhancement of environmental management of biodiversity and natural resources; mitigating Green House Gas (GHG) emissions (including the implementation of renewable energy and energy efficiency projects) and reducing Ozone Depleting Substances (ODS) consumption; and the incorporation of environmental considerations into the planning and development of non-environmental agencies. UNDP also implements the Small Grants Programme (SGP) on behalf of the GEF partnership. SGP works with NGOs and CSOs to undertake small projects that cover focal areas such as biodiversity, climate change, international waters, chemical and waste, land degradation as well as capacity development.

In this BER process, project documents from the Environment portfolio (financial data for years 2012-2017), the Climate Change portfolio (years 2006-2016) and the Small Grants Programme (years 2006-2017) were shared with the project team. Of the data provided, more description was provided for the projects under the Environment portfolio. Hence, some further analysis for this portfolio is presented below but not for the other two portfolios. The results of extracting and analysing relevant information and data from these documents are presented in this sub-section.

4.6.1 Overall findings

From the case study, RM 99.8 million had been spent on biodiversity-related activities between 2006 and 2017. In line with the scope of this BER, the analysis presented here only represents expenditures that have already been claimed up to October 2017 and not the full project allocations. This amount was spent on 4 projects from the environment portfolio, 8 projects from the climate change portfolio and 108 projects from the SGP.

From the UNDP project documents, funding for these projects have been provided in US dollars and consist of funds coming from the following sources:

- GEF funds (UNDP managed resources)
- UNDP Funds (UNDP managed resources)
- Government of Malaysia (partner managed resources) via implementation agencies such as NRE, FRIM, SaBC, SBC, Sabah Forestry Department, Sabah Foundation
- Other partners e.g. WWF (partner managed resources)

For the purpose of this analysis, only the UNDP managed resources are being accounted for. Ideally, a follow up with the partners about the resources spent on these four projects would give a more accurate estimate and to prevent any double counting. Examining the UNDP's Environment portfolio in greater detail, we found that projects tended to last at least 4 years in duration with some projects due to be completed only in 2020. Of the amount spent by this portfolio between 2012 and 2017, about **11% had been used for project management** (this would be the project-related OE) while the remainder was spent on the project component activities.

Non-project OE such as the costs incurred by UNDP to bid, secure, monitor and manage these projects is not included in this analysis. Based on discussions, there are only two UNDP staff-related expenditures would need to be considered under such OE and require the participation from UNDP's finance department. This is because, UNDP tends to contract project staff dedicated to each project to run the overall administrative activities of the project. In that case, their salaries and claims would already be accounted under the project management expenditures. As per the NGO case studies previously described, this set up simplifies the tagging and attribution steps of the BER exercise for UNDP.

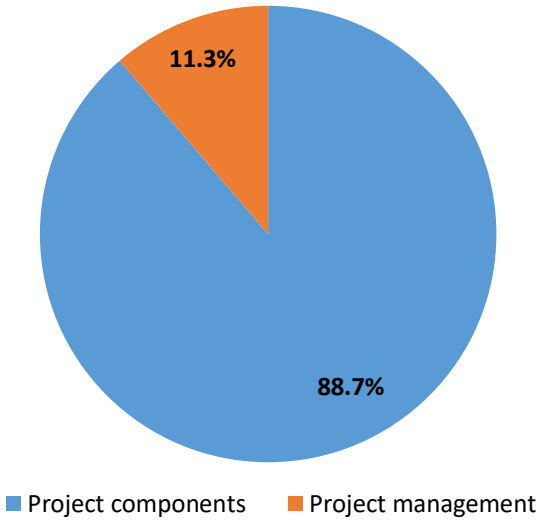
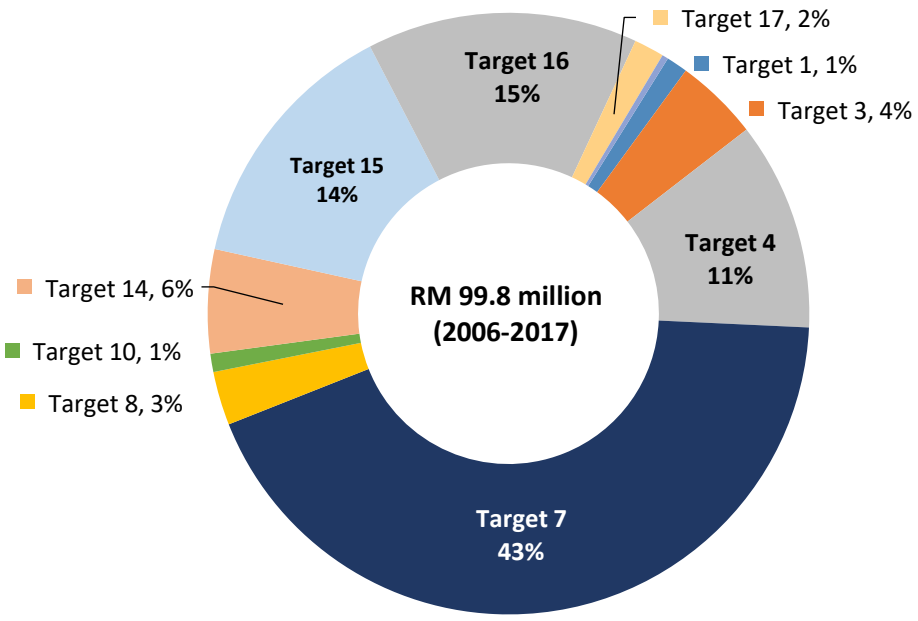


Figure 29: Share of project management and project component expenditures in the total biodiversity related expenditures of the multilateral case study for years 2012 to 2017.

4.6.2 Breakdown by NPBD targets

From the analysis, a total of 10 NPBD targets were being contributed to by the three portfolios. A very small percentage (0.33%) of the expenditures could not be tagged to any specific target but were important to support biodiversity-related activities. From the analysis, the top five targets that constituted 88.5% of the total expenditures. The top five targets are:

- Target 7 on vulnerable ecosystems and habitats protected and restored;
- Target 16 on knowledge and the science base relating to biodiversity improved and applied;
- Target 15 on the capacity for the implementation of the national and sub national-level biodiversity strategies, the CBD and other related MEAs significantly increased
- Target 4 on sustainable harvesting and management of production forests, agriculture, production and fisheries; and
- Target 14 on an operational ABS framework consistent with the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization.



Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Figure 30: Total biodiversity expenditures of the UNDP case study from years 2006 to 2017 broken down by the National Policy on Biological Diversity 2016-2025 targets

Examining the descriptions for UNDP's Environmental portfolio projects, it was found that most projects were associated with at least 3 NPBD targets through various components. Due to the multi-functionality of the projects, the project team had to rely on 'primary intent' to assign NPBD target tags. Consequently, the financial share of some NPBD targets may be underestimated.

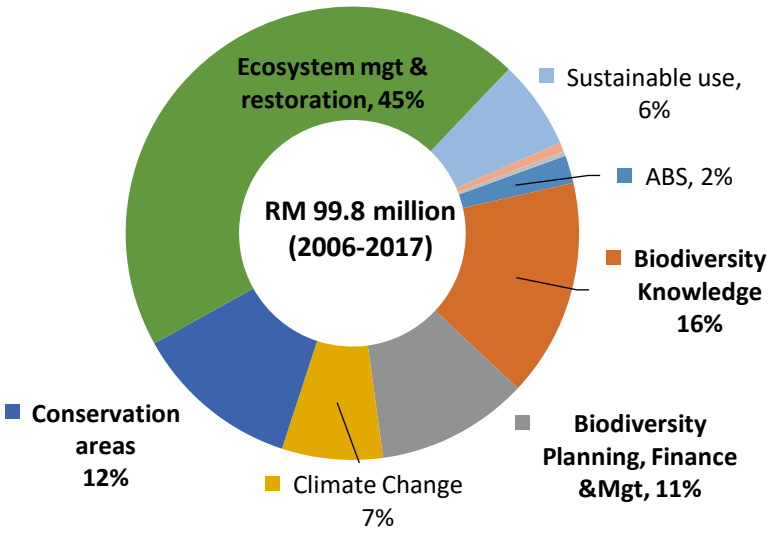
For example, the analysis showed that only 6% of total expenditures from Environment projects were spent on Target 17, which is to increase funds and resources mobilised for the conservation of biodiversity from both government and non-government sources. However, given that all four projects had incorporated finance related activities, Target 17's share is likely to increase when examining the activities of Target 4, 8 and 14 further. This is because the development of financing mechanisms and business plans has already been included under these primary tags.

The reason for not differentiating financing activities out from the primary tags is because the development of financing solutions was intended to help achieve for example, an operational ABS framework (Target 14) or sustainable management and harvesting of resources (Target 4) or the restoration and protection of corridors (Target 8). The primary intent of those actions was therefore not to mobilise resources for conservation; hence the tag was no assigned to Target 17.

4.6.3 Breakdown by BIOFIN categories

In terms of biodiversity functions, the case study's portfolios covered a total of 8 BIOFIN categories and 18 sub-categories. A small amount of expenditures (0.33%) could not be associated with any specific biodiversity function but were important for supporting biodiversity activities in general. The top area of spending was in 'Ecosystem management and restoration' (45%), followed by 'Biodiversity knowledge', 'Conservation areas', 'Biodiversity planning, finance and management' and 'Climate change'. Together these biodiversity functions accounted for 90.7% of expenditures made.

When the UNDP portfolios were analysed separately from the SGP portfolio, spending focus areas were largely concentrated on 'biodiversity knowledge', 'biodiversity planning, finance and management' as well as 'conservation areas', which jointly accounted for 78% of two portfolios' total expenditures. In other words, the SGP portfolio that works with communities focus their spending on different biodiversity functions compared to the UNDP portfolios who work with policy makers and government agencies.



Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Figure 31: Total biodiversity expenditures of the UNDP case study from years 2006 to 2017 broken down by the BIOFIN categories

Examining further to the sub-category level (Table 23), the following were observed:

- Ecosystem management and restoration largely refers to restoration activities (96%) although some expenditures are made to improve ecosystem connectivity
- Biodiversity knowledge largely referred to activities to improve, share and apply biodiversity knowledge (63%) such as conducting baseline studies and development of tools, management and business plans, financial models, enforcement frameworks that would enable authorities to deliver better biodiversity outcomes. About 20% under this category was spent on increasing managerial and technical capacities of those involved in biodiversity management which include training them to use tools and frameworks developed form the project.
- For conservation areas, much of the spending was to improve the management of protected areas (72%).
- Biodiversity planning, finance and management activities mainly focussed on policy and management (59%), which included business plan development among other management plans needed. There were also specific components aimed at improving environmental finance planning (15%) and meeting international environmental commitments (17%).
- For Climate change, the main focus was on ecosystem-based adaptation.

Table 23: Tabulation of biodiversity related expenditures from the UNDP case study from years 2006 to 2017 by BIOFIN category and sub-categories

BIOFIN Category and sub-category	Total (RM million)
Ecosystem Management & restoration	**45.1**
Restorations of ecosystems	43.1
Improve ecosystem connectivity	1.9
Biodiversity Knowledge	**15.5**
Biodiversity knowledge improved, shared and applied	9.7
Managerial and technical capacity increased	3.5
Biodiversity Education	1.1
Evaluation, accounting and monitoring methods	1.1
Conservation areas	**11.9**
Improve PA Management	8.5
Improve landscape conservation management	3.3
Biodiversity Planning, Finance & Management	**10.8**
Biodiversity policy and management	6.4
International environmental agreements and conventions	1.9
Environmental finance planning	1.6
Environmental law enforcement	1.0
Climate Change	**7.2**
Ecosystem Based Adaptation	6.3
GHG mitigation	0.9
Sustainable use	**6.3**
Sustainable Forestry	5.3
Sustainable Land Management	1.0
ABS	**2.0**
Nagoya protocol	2.0
Pollution	**0.7**
Waste management	0.7
Miscellaneous supporting expenses	**0.3**

Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

4.7 Pooled analysis of the various stakeholder samples

From this BER, the total sample collected was 32 samples consisting of:

- 18 samples of government organisations
- 1 government trust fund sample
- 6 private sector case studies
- 4 non-governmental organisations case studies
- 3 portfolio samples for multilateral and bilateral organisations

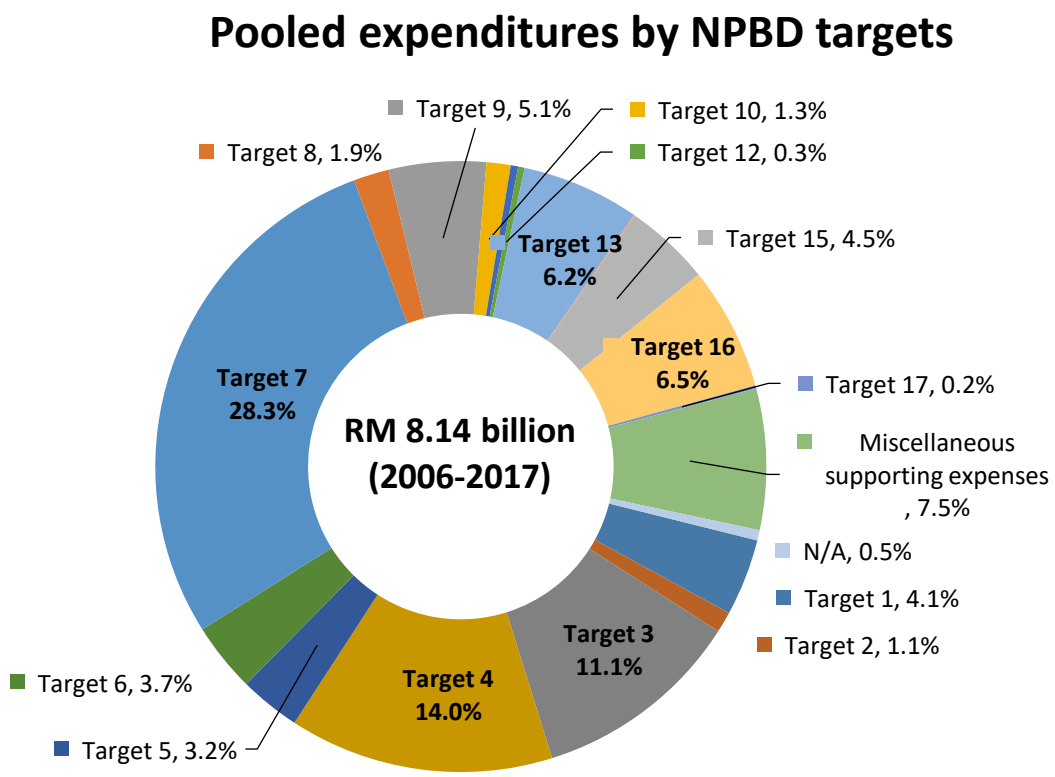
Pooling together all stakeholder samples, it is estimated that there was RM 8.14 billion spent on biodiversity related activities between 2006 and 2017.

4.7.1 Breakdown by NPBD targets

Breaking it down by NPBD targets, these samples covered all 17 targets in their biodiversity expenditures. Major areas of focus that constitutes 76% of biodiversity expenditures were:

- **Target 7** on vulnerable ecosystems and habitats restored and protected
- **Target 4** on sustainable management and harvesting of production forests, agriculture, production and fisheries
- **Target 3** on mainstreaming biodiversity conservation into national development planning and sectoral policies and plans
- **Target 16** on knowledge and the science base relating to biodiversity improved and applied
- **Target 13** on conserving genetic diversity of cultivated plants, domesticated animals and wild relatives
- **Target 9** on preventing the extinction of known threatened species and improving and sustaining their conservation status
- **Target 15** on the capacity for the implementation of the national and sub national-level biodiversity strategies, the CBD and other related MEAs significantly increased

Miscellaneous supporting expenses and expenditures that could not be assigned to any target amounted to 8% of the total expenditures.



Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

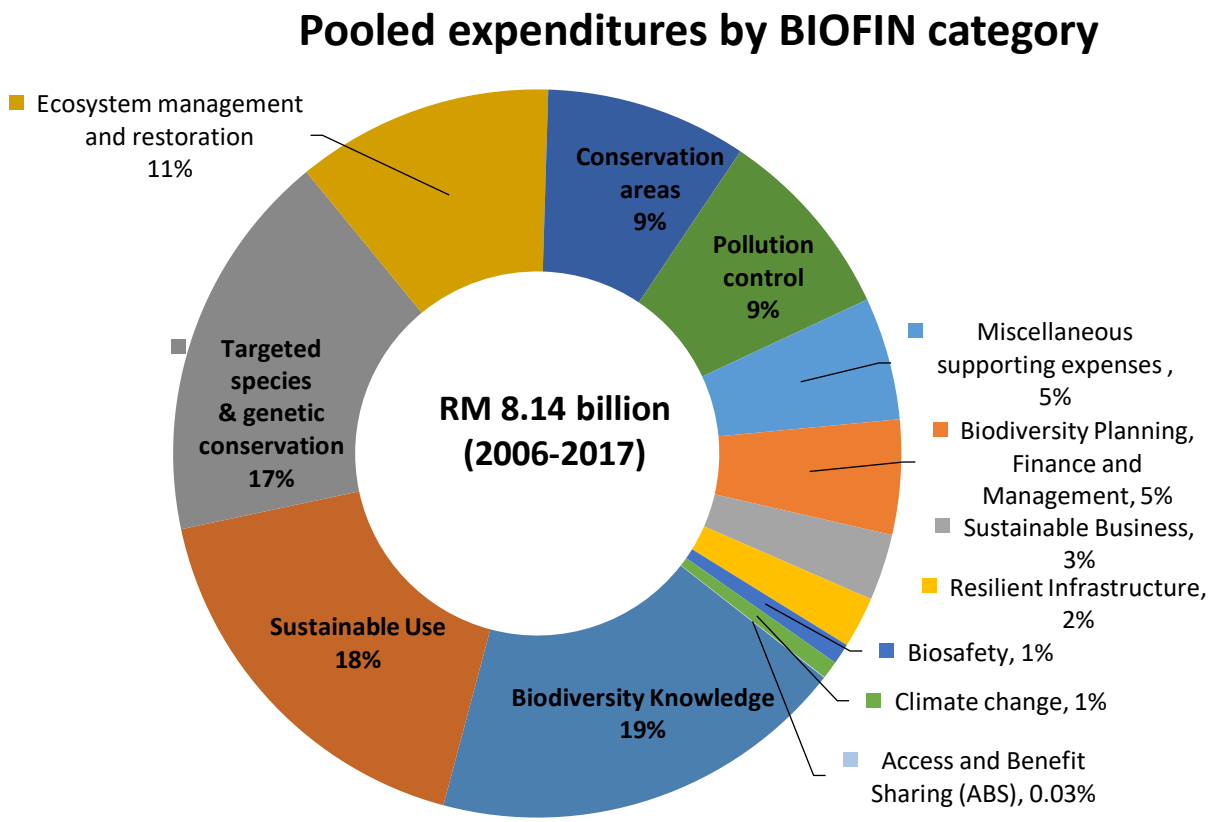
Figure 32: Pooled analysis of biodiversity expenditures from various stakeholder samples by NPBD targets (n=32), 2006-2017

The breakdown of biodiversity expenditures by NPBD target coverage by stakeholder group is available in Appendix X. Examining the breakdown, it is interesting to note that there are certain targets that are only covered by one type of stakeholder, namely:

- Targets 11 and 12 on invasive alien species and biosafety– by only the public sector
- Target 14 on operationalizing an ABS framework – by only the MLO sector

4.7.2 Breakdown by BIOFIN categories and sub-categories

In terms of BIFOIN categories, these samples covered all 12 BIOFIN categories and 52 sub-categories. Major areas where expenditures had been made were 'Biodiversity knowledge', 'Sustainable use', 'Targeted species and genetic conservation', 'Ecosystem management and restoration', 'Conservation areas', and 'Pollution control' as shown in Figure 33. The breakdown of biodiversity expenditures by NPBD target coverage by stakeholder group is available in Appendix XI.



Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Figure 33: Pooled analysis of biodiversity expenditures from various stakeholder samples by BIOFIN categories (n=32), 2006-2017

The breakdown by BIOFIN sub-category is available in Appendix XII. Take note that at the sub-category level, the public sector samples only cover 11 samples where participants provided the data directly. Nonetheless, it was interesting to note that there were different spending patterns between the stakeholder types, such as:

- ABS expenditures for the public sector samples were focussed on bio-prospecting while the MLO samples were looking into the Nagoya protocol.
- For Biodiversity knowledge, public sector, MLO and private sector samples tended to focus on improving, sharing and applying biodiversity knowledge while NGOs and private sector tended to focus expenditures more on biodiversity education.
- Environmental law enforcement was mostly reliant on public financing, as expected, but also received contributions from the NGO and MLO sectors
- For conservation areas, more finances were being contributed towards improving protected areas management except in the private sector samples where improved landscape management attracted more funds.

4.8 National estimates on biodiversity expenditure

A total of 32 organisations participated in this BER exercise. A baseline of biodiversity expenditures of various stakeholder types was developed (Appendix VIII). A national estimate of biodiversity expenditures was estimated by extrapolating the baseline estimates using a number of assumptions (See methodology Table Section 3.5.2, Table 10).

From the projected estimates, Malaysia is spending a total of **RM 2.45 billion a year** on biodiversity-related activities. Compared to the 2016 total national expenditures of RM 254 billion, which comprises of development expenditures, supply operational expenditures and charges operational expenditures, the biodiversity share is at only 0.96%.

Most spending was made by the federal government (47.9%) and the private sector (29.9%), although caution needs to be taken when viewing the private sector figures as pollution control is still the main component, even with a 20% attribution. This is likely to be a compliance response to environmental laws, regulations and policies. The share of multilateral agencies, government trust funds and NGOs are comparatively small (Table 24).

Table 24: Breakdown of national estimate for biodiversity expenditures

National estimate of bio-d expenditure	per year (RM million)	% share
A. Public sector - Federal	**1,171**	**47.9%**
Stakeholders- 5% level involvement with biodiversity	309.8	
Stakeholders- 20% level involvement with biodiversity	91.8	
Stakeholders- 50% level involvement with biodiversity	359.3	
Stakeholders- 80% level involvement with biodiversity	254.5	
Stakeholders- 100% level involvement with biodiversity	155.7	
B. Government trust funds	**5.0**	**0.2%**
National conservation trust fund	1.5	
Marine Reserve and Park Trust Fund	3.5	
C. State governments (12 states)	**454.5**	**18.6%**
D. Private sector	**732.8**	**29.9%**
Environmental Protection Expenditure	551.4	
Sustainability reports	181.5	
E. NGO, CSO	**58.1**	**2.4%**
Small sized	16.9	
Medium sized	20.4	
Large sized	20.8	
F. Multilateral and bilateral organisations	**25.4**	**1.0%**
UNDP type of projects	10.6	
SGP type of projects	14.8	
Grand total	**2,447**	**100%**

Total national expenditures – supply OE and DE (2016) (RM million)	202,015.1
% share of bio-d in national expenditures	**1.21%**
Total national expenditures – total OE and DE (2016) (RM million)	254,416.1
% share of bio-d in national expenditures	0.96%

Note: Source of national expenditure figures is JANM financial statements 2016
Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

5 Discussion

5.1 Coverage of NPBD targets and BIOFIN functions across stakeholder types

Comparing the 5 sectors - public, private, NGO, CSO, and the multilateral sectors, some interesting patterns have emerged:

- Of all the NPBD targets, Target 1 on biodiversity awareness was present across all five stakeholder types. Seven targets namely, Targets 4, 6, 7, 8, 10, 16, 17 were financed by four stakeholders. However, Targets 11, 12 and 14 were only funded by one stakeholder type – Targets 11 and 12 were funded by the public sector while Target 14 was funded by the MLO sector.
- ABS has been recently funded by the UNDP with collaboration from government agencies. With that, all NPBD targets had been accounted for. It is suggested that for Targets 11 and 14, further effort may be needed to engage with specific stakeholders in order to obtain more accurate estimates of the expenditures.
- On biodiversity knowledge, a lot of funds had gone into environmental education in the NGO sector while multilateral agencies are developing biodiversity knowledge for application in institutional, legal and operational frameworks. In the public sector, biodiversity communication is the main priority followed by developing the methods and knowledge for better application purposes.
- The multilateral agency case study has shown that project design is important and hence a smaller number of projects can have impacts on more NPBD targets and the biodiversity functions by structuring in various components holistically into the project. The project mix created a balance between national and site level work, between developing an enabling environment (macro level) and developing the local capacities and tools needed for successful engagement and implementation (micro level). Newer topics such as ABS were moved further into operationalization stage.

While these patterns are interesting, caution is advised as some targets may require less expenditure than others. At this stage of the BER, it is difficult to judge whether the targets with lower expenditures are a reflection of the sample or have lower financing needs. Currently no weights are assigned to adjust for this issue. However, the next step, the Financial Needs Assessment, may be able to shed insight on this matter. For that exercise, participants are asked to plan for what is needed to achieve the NPBD policy target, regardless of their ability to secure the expenditures or not.

5.2 Observations and learning from the BER process

5.2.1 Sample size and representativeness

The samples in this BER exercise covered a wide range of stakeholder types. The main lead agencies for the NPBD are in the sample, namely NRE, MOA, MPIC, MOTAC and KPKT including their line agencies. The sample also included non-government samples that were among the largest players in the environment sector in Malaysia such as WWF, MNS, UNDP and Sime Darby. Consequently, the study team is relatively confident that the findings of this BER exercise have covered a significant part of the biodiversity financing landscape in Malaysia.

Nonetheless, the national estimate of biodiversity expenditures can be more accurate if there were a larger sample size. For example, more NGO and CSO participation would lead to more accurate average estimates and consequently a better national estimate. Certain agencies such as Jabatan Lanskap Negara, Agensi Penguatkuasaan Maritim Malaysia, MOSTI, KeTTHA as well as the state governments should be included in the future. The study team has compiled a suggested list of stakeholders for future engagement in Appendix II.

The results of this BER exercise will require verification. Samples were used to understand patterns of various stakeholder groups and have been used to generate a national estimate in this BER. However, validation of this study should be undertaken in future studies. For now, it is vital to examine the assumptions used in the estimation process by various stakeholders; in a workshop held in December 2017. A guidebook for the BER exercise has been prepared. **It is recommended that the methodology and data collection procedures in the guidebook be applied and tested in a systematic order**. This is vital when more agencies, especially from the public and private sector are recruited for this process.

5.2.2 Tagging to NPBD targets and BIOFIN categories

Tagging was among the most difficult steps for the participants. Firstly, tagging is a subjective exercise, and secondly the categories were not intuitive. They did not fit in the way their projects are described or framed. The subjectivity of tagging required participants to justify their choices with details about the expenditures. The participants did not necessarily have the information and had to refer the query back to the person-in-charge, which took time and effort. Participants also found it difficult to pick only one tag per tagging category. The alternative of separating the expenditure by tags was made but it was not taken up as they were unsure of the percentage share of the expenditures across tags. A good example where finances of a project could be separated into various components and tagged differently was demonstrated by UNDP's data. **The first finding shows that the BIOFIN exercise must be an institution wide responsibility** as not all the knowledge is resident in one person assigned to this task.

Secondly, participants did not always agree with the tagging result. For example, expenditures related to improving knowledge on best practices for water basin management could be tagged as Target 16. However, upon further reflection of the policy actions under Target 16 as shown in Figure 34, seems not suitable. The alternative is Target 3, i.e. studies that help improve water basin management, especially under policy action 3.1

to embed biodiversity into sectoral planning and policies. Effort and time are needed to consult, choose and justify tags while ensuring that other individuals in their organisation are tagging in a similar manner was among the challenges raised by participants. Hence, **the second finding is that standard or common definitions are needed** to ensure consistency in getting to a consistent result. One might even say that training is a critical component because of the subjective nature of this exercise.

Another example relates to the BIOFIN categories and sub-categories. Some participants picked BIOFIN sub-category tags that differ from the parent category. For example, the sub-category of 'Corporate sustainability' under two parent categories, one of which is the original category 'Sustainable business' while the other was 'Biodiversity Planning, Finance and Management'. For this report, the study team realigned the expenditures to follow the sub-category's original parent category. However, this could be a matter to be raised with the Global BIOFIN technical teams in the future to better improve the methodology.

Similarly, there was some degree of confusion as to whether to pick the tags based on topics or based on the functions. This is because, some of the BIOFIN tags seem to be topical such as 'Climate change', 'Biosafety', 'Pollution control' and 'Conservation Areas', whereas some seem to be describing the function such as 'Biodiversity planning, finance and management', 'Environmental law enforcement'. For example, if the project was to improve knowledge on plant reactions to climate change in order to develop ecosystem-based adaptation measures, participants asked whether it should be tagged to 'Biodiversity knowledge > biodiversity knowledge improved shared and applied' or whether it would be tagged under 'Climate Change> Ecosystem based adaptation'.

The same applies in projects such as 'to control invasive alien species in order to rehabilitate an environment' where there is confusion about tagging it to 'Biosafety> invasive alien species' or 'Ecosystem management> Restoration of ecosystems'. If the former was chosen, then the whole data set may be tagged to only this tag and lose the detail about how the efforts on IAS are spread across ecosystem management or even in agriculture, aquaculture and forestry contexts. For this exercise, participants were advised to choose according to what is the main purpose of the expenditure. In these two examples, the choice would be 'Biodiversity knowledge' since the project has no details indicating that the research will be used in developing adaptation plans and 'Ecosystem management' since dealing with invasive species is only the means to the end of restoring the ecosystem. **The third finding is the need for good backstopping support** so that issues are given attention and resolved quickly.

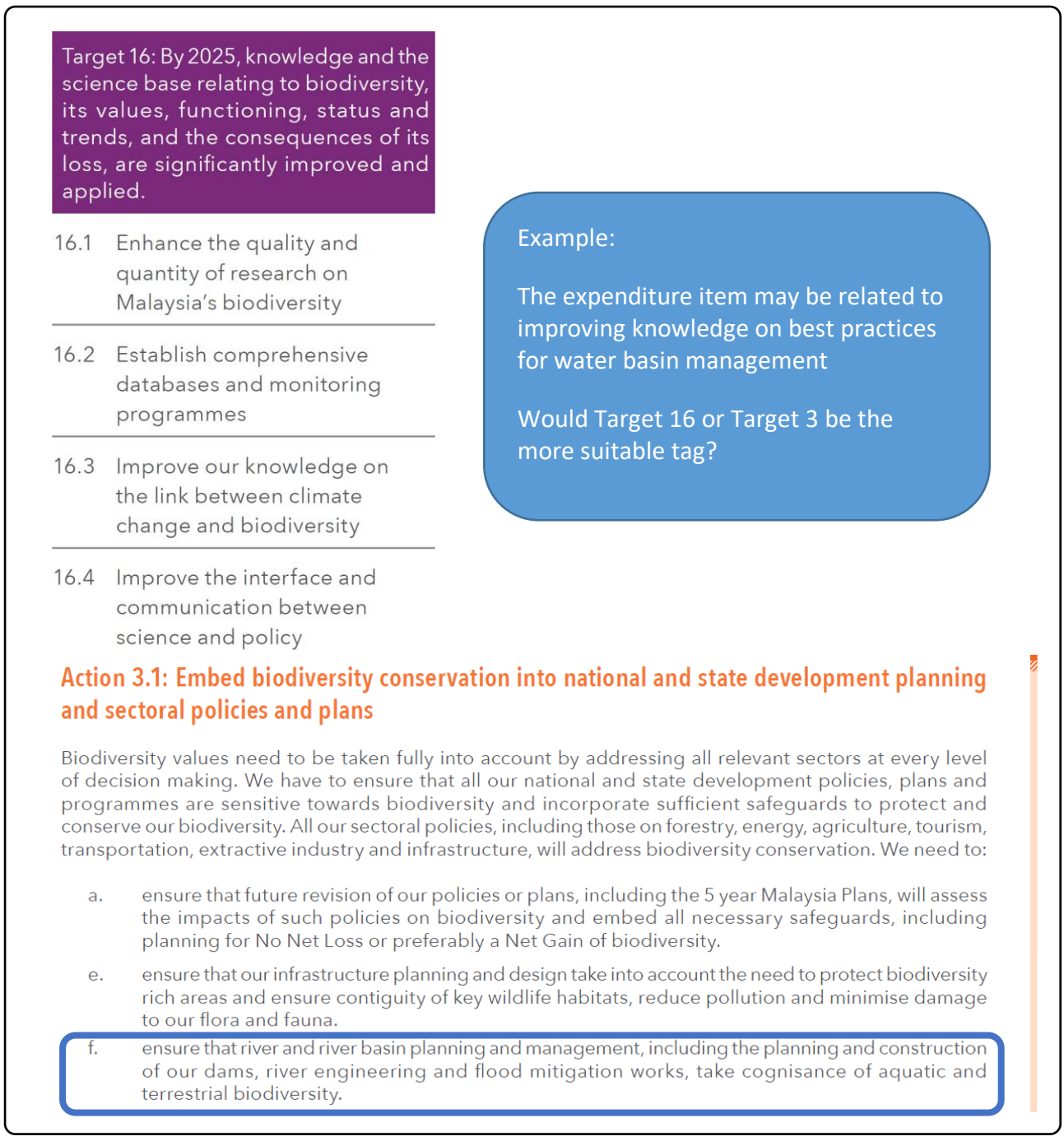


Figure 34: Screenshot of the NPBD policy illustrating Target 16 policy actions that may not be suitable for the project as compared to Target 3, action 3.1.

5.2.3 Dealing with large infrastructure projects

Another area of caution is in dealing with large infrastructural projects such as waste management, flood mitigation and pollution control measures. The study team found that even an attribution of 20% which is the lowest attribution scale to indicate some connection to biodiversity outcomes skewed the results when extrapolating the estimates to national levels. Although applying the attribution did help to balance out the expenditure analysis, infrastructure projects may lead to misrepresentation of the emphasis when compared to other biodiversity functions, e.g., improving biodiversity knowledge or communications.

Lower attribution percentages may need to be considered in future expenditure reviews for such projects to counter this inherent nature. At the same time, it raises the need to delve further into understanding these large infrastructure project expenditures where different management approaches either could lead to positive biodiversity outcomes or the contrary. As raised by some participants, there is concern that such large expenditures in an opposite effect will essentially negate their conservation efforts. **It is recommended that a review of the attribution percentages be undertaken.**

5.2.4 Double counting and underestimations

On another note, double counting is an issue that needs special attention as NGOs and CSOs tend to receive funding from international, multilateral and private sector organisations for their activities. For this BER exercise, there have been minimal data provided by such organisations and therefore the total amount from NGOs and CSOs has been used without removing any double counting. Also, our NGO participants brought up the issue that tagging and attribution of incoming funding by source of funds is difficult as their organisations pool their funds (unless specified by donor) before allocating to their projects. Participants' feedback was that tracing back historical data and estimating how much is spent from each funding source is time-consuming. It would be easier if a system were in place to track and tag funds.

Participants from the NGO sector also mentioned that financial expenditures alone may not fully reflect the cost of their operations because they receive a sizeable amount of in-kind contributions or discounted charges from members, donors and partners by virtue of their organisation type. For example, NGOs may use office space at no cost or heavily discounted compared to market rates. Volunteers' time is another area for further consideration. NGOs tend to operate with skeletal staff, supplemented by assistance from volunteers. These amounts have not been considered or estimated in this BER exercise.

Similarly, underestimations may occur because certain initiatives that benefit biodiversity are embedded in day-to-day operations and cannot be easily extracted or estimated. This was raised by Sime Darby Plantation and Sime Darby Properties during the BER. For example, Sime Darby Properties included environmental clauses into their service contracts, requested their landscape contractors to use Endangered, Rare and Threatened (ERT) local tree species for landscaping on their property developments and set aside plots of forested land in one of their townships as a park. These initiatives would benefit biodiversity and should be included in the BER.

However, the company could not estimate the biodiversity share in these expenditures as they were merely additional requirements that could be fulfilled by their staff or contractor's daily operations. Consequently, the submitted BER data were limited to obvious biodiversity-related initiatives with specific allocations such as the development of an ERT guide for landscaping (Sime Darby Properties), planting of fruit trees along buffer zones of their plantation estate, maintaining electric fencing and planting of mangroves (Sime Darby Plantations). This matter may need to be considered further in future applications of the BIOFIN methodology.

5.2.5 Level of participation and clarity of future plans for BIOFIN methodology

Private sector participants also mentioned that clarity is needed on how the findings would be used and the impact that it would make. It is important to specify the amount of time and effort to commit to the exercise, especially since they were profit-making entities. Common queries included whether this information would be used to improve policies relating to biodiversity and its financing, the government's future plans for using the methodology, whether such information will be requested for future reporting and who else in the private sector would be subject to reporting such information – in essence, participants wanted to know if this were a one-off exercise. These sentiments had also been raised by NGO, CSO and government participants. Hence, **it is recommended that EPU, MOF and NRE decide on the future plans for using BIOFIN methodology and make it part of their communication messages in order secure more participation.**

Additionally, participation was more easily secured with greater familiarity to the organisation's mandates, core activities, divisions, key policies and plans and their relations to biodiversity. This profile formed the basis for customised communication of BIOFIN and for justifying their participation in the exercise. As the PIR embedded in Malaysia's 4th and 5th CBD reports did not provide sufficient information, the study team also found that the BIOFIN process was a good platform to promote the NPBD and encourage participants to associate their plans and policies to it. In view of these observations, the BIOIFN process can be a good means to mainstream the NPBD. To facilitate better participation and monitoring, it would be useful to maintain a more detailed and periodically updated Policy and Institutional Review (PIR) that includes the profiles of agencies involved and to document the linkages between NPBD and other policies and plans. Based on the BER experience, the PIR needs to include sufficient information to support the communication and engagement processes required for BIOFIN.

Last but not least, all stakeholders raised that timing of the BIOFIN project would play a major role in determining future participation and commitment levels. The cut off for BER data had been extended multiple times to cater for the timing cycles faced by various participants. The entire BER process had taken almost 10 months with all the timeline extensions. Participants recommended that if BIOFIN were to be adopted, the training and data collection activities could be incorporated into the planning or reporting cycles and to include them into annual work plans. This would allow the officers in charge time to concentrate on completing the information and analysis needed to generate information needed by BIOFIN, bearing in mind that government, private sector, NGO, CSO and multilateral sectors may have different timelines. Hence, flexibility is needed.

6 Conclusions

This report is concerned mainly with the second step of the BIOFIN methodology, which is to estimate the Biodiversity Expenditure Review.

In applying the BIOFIN methodology, this study has made an estimate of RM 2.45 billion in annual spending on biodiversity. This estimate was derived from the financial case studies by participating institutions, and supplemented by secondary analysis of financial data from large companies, published environmental spending statistics, and applying those metrics to arrive at a national estimate. A large number of assumptions have been used to generate the BER estimate. This report has listed the assumptions used in the process. Future studies can revisit the explicit assumptions.

This project has a strong capacity building component. That has taken shape through the process where the participants have learned the attribution, the tagging, and the broad estimation procedures in deriving the biodiversity expenditure estimates. In the process, several workbooks and training manuals have been developed, and they have captured the essence of deriving the financial estimates of various institutions (public, private and NGO). These can be used if the project is extended to other organisations. Wider participation of the institutions will improve and increase the confidence of the BER data and estimates.

The other value of this project lies in the validation of the BIOFIN methodology in that it could be adapted to the Malaysian context. Without doubt, the formulation as stated in the BIOFIN workbook is quite complex, especially for those who are doing it for the first time. In that regard, several approaches had to be used in order to be able to attain the key objective of deriving a reasonably good estimate of the biodiversity expenditures.

As noted in the closing section of the previous chapter, there are many limitations to using the results. The reader is given caution to interpret the results with care. Nonetheless, it is the first time that an estimate of biodiversity expenditure has been developed.

With the BER part of BIOFIN project largely completed, the next stage is to develop the FNA, and then the BFP. The same organisations are currently engaged in this effort, and a few new organisations were approached to better reflect the biodiversity financing landscape in Malaysia.

The government is urged to consider some form of institutionalisation of the BIOFIN project. This can take the form of a directive when submitting a request for Malaysia Plan funding. At the present moment, more work needs to be done to develop a guideline for this exercise. However, a decision is needed first on its implementation as this is a key concern of all stakeholders.

Glossary

Term	Acronym	Definition	Source	Link
11th Malaysia Plan Green Growth Thrust		One of the main strategic thrusts in the 11th Malaysia Plan - Pursuing green growth for sustainability and resilience	EPU	http://www.epu.gov.my/en/rmk/eleventh-malaysia-plan-2016-2020
Aichi Targets		20 time-bound, measurable targets to be met by the year 2020 as part of the CBD's Conference of Parties Strategic Plan for Biodiversity (2011-2020)	CBD	https://www.cbd.int/sp/targets/
Attorney General Chambers Of Malaysia	AGC	The office of the Attorney General of Malaysia, who is the principal legal advisor to the Malaysian Government. The AGC is responsible for advising the Malaysian government on all legal matters.	AGC	http://www.agc.gov.my
Attribution		The percentage amount that a particular project is biodiversity related.		
Average Annual Growth Rate	AAGR	Also known as the compound annual growth rate, the AAGR shows an average value for the annual rate of change over a period of time (typically several years) allowing for the compound effect of growth.	Eurostat	http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Annual_average_growth_rate_%28AAGR%29
Average Annual Return Rate	AARR	A percentage used when reporting the historical return, such as the three-, five- and 10-year average returns of a fund.	Investopedia	https://www.investopedia.com/terms/a/aar.asp
Biodiversity Management and Forestry division	BBP	Also known as Bahagian Pengurusan Biodiversiti dan Perhutanan. The division within NRE (now KATS) that oversees planning, implementation and monitoring of policies and strategies relating to biodiversity and forestry	KATS	http://www.kats.gov.my
Biodiversity Expenditure Review	BER	An analysis of public and private expenditures in the country that benefit biodiversity. The assessment establishes past, present and projected expenditures on biodiversity.	BIOFIN	https://www.biodiversityfinance.net/
Biodiversity expenditures		Expenditures that are for biodiversity-related purposes		
Biodiversity Finance Initiative	BIOFIN	BIOFIN supports countries with a methodology that provides innovative steps to measure current biodiversity expenditures, assess financial needs, identify the most suitable finance solutions and provides guidance on how to implement these solutions to achieve their national biodiversity target.	BIOFIN	https://www.biodiversityfinance.net/
Biodiversity Finance Plan	BFP	Identifies and prioritises a mix of suitable biodiversity finance solutions to reduce the biodiversity finance gap.	BIOFIN	https://www.biodiversityfinance.net/
BIOFIN Categories and		These are internationally recognised categorisations according to	BIOFIN	https://www.biodiversityfinance.net/

Term	Acronym	Definition	Source	Link
Subcategories		BIOFIN, of the biodiversity functions that different costable actions can play		
BIOFIN Core team		Constitutes the Ministry of Finance, EPU, NRE and UNDP-Malaysia who monitor the progress of the project		
BIOFIN Study team		The team of research consultants for BIOFIN Malaysia Phase I.		
Budget Review Officers	BRO	Assists Senior Assistant Directors in the Budget Management Division to analyse and examine all proposed financial plans and programmes of government agencies		
Civil society organisation	CSO	A broader categorisation of NGOs and institutions that work towards the betterment of civil society	UNDP	www.undp.org
Consolidated Trust Account		Consists of the Government Trust Funds, the Public Trust Funds and Deposits		
Convention on Biological Diversity	CBD	Main objectives: The conservation of biological diversity; The sustainable use of the components of biological diversity; The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources	CBD	www.cbd.int
Corporate Social Responsibility	CSR	The responsibility of an organisation for the impacts of its decisions and activities on society and the environment	ISO 26000	www.iso.org
Danish International Development Agency	DANIDA	Denmark's official development cooperation agency, which is an area of activity under the Ministry of Foreign Affairs of Denmark	DANIDA	www.um.dk/en/danida-en/
Department of Agriculture	DOA	Also known as Jabatan Pertanian. A department under MOA, DOA is responsible for steering Malaysia's agricultural industry towards becoming a more competitive, high quality, safe and environmentally friendly industry.	DOA	www.doa.gov.my
Department of Biosafety	JBK	Also known as Jabatan Biokeselamatan. A department under KATS, JBK is responsible for biosafety related matters in Malaysia.	KATS	www.kats.gov.my
Department of Director General of Lands and Mines	JKPTG	Also known as Jabatan Ketua Pengarah Tanah dan Galian. A department under KATS, JKPTG is responsible matters regarding the management and governance of land.	JKPTG	www.jkptg.gov.my
Department of Environment	JAS	Also known as Jabatan Alam Sekitar or Department of Environment. Formerly a part of NRE, JAS is now an agency under the Ministry of Energy, Technology, Science and Climate Change. JAS functions to prevent, eliminate, control pollution and improve the environment, consistent with the purposes of the Environmental Quality Act 1974 and in line with international agreements and conventions.	JAS	www.doe.gov.my

Term	Acronym	Definition	Source	Link
Department of Fisheries	DOF	Also known as Jabatan Perikanan. An agency under MOA, DOF is responsible for transforming our national fisheries into a competitive and sustainable industry	DOF	www.dof.gov.my
Department of Irrigation and Drainage	JPS	Also known in Malay as Jabatan Pengairan dan Saliran. An agency under KATS, JPS strives to provide engineering expertise services and water resource management in a holistic way that balances water security, safety and environmental sustainability.	JPS	www.water.gov.my
Department of Marine Park Malaysia	JTLM	Also known as Jabatan Taman Laut Malaysia. An agency under KATS, JTLM is responsible for the management and conservation of marine protected areas in Peninsular Malaysia.	JTLM	www.jtlm.gov.my
Department of Minerals and Geoscience	JMG	Also known as Jabatan Mineral dan Geosains. This agency under KATS oversees the investigation, services and research in minerals and geoscience in Malaysia.	JMG	www.jmg.gov.my
Department of Statistics Malaysia	DOSM	DOSM is the premier agency in the field of statistics in the Malaysian government. They provide quality, user-oriented and timely information systems to support the formulation of national policies and plans	DOSM	www.dosm.gov.my
Department of Veterinary Services Malaysia	DVS	DVS, an agency under MOA that provides quality veterinary services to assure public health and a sustainable livestock industry	DVS	www.dvs.gov.my
Department of Wildlife and National Parks Peninsular Malaysia	PERHI-LITAN	Also known as Jabatan Perlindungan Hidupan Liar dan Taman Negara Semenanjung Malaysia. This agency under KATS is responsible for the protection and management of wildlife and national parks in Malaysia.	PERHILITAN	www.wildlife.gov.my
Development Expenditure	DE	Development Expenditure comes from the Development Fund which obtains its sources from loans raised for development, contributions from the revenue account of the consolidated fund and from recoveries of loans from the development fund. Expenditure from the Fund is only for development purposes and includes grants, loans and investments for development purposes.		
Economic Planning Unit	EPU	EPU, now under the Ministry of Economic Affairs, is responsible for economic planning for the nation	EPU	www.epu.gov.my
Environmental Protection Expenditure Survey Report		These surveys carried out by DOSM were to estimate the environmental protection expenditures of the private sector. The report covers capital expenses and operating & repair expenditures incurred by businesses in order to comply with environmental regulations, conventions or	DOSM	www.dosm.gov.my

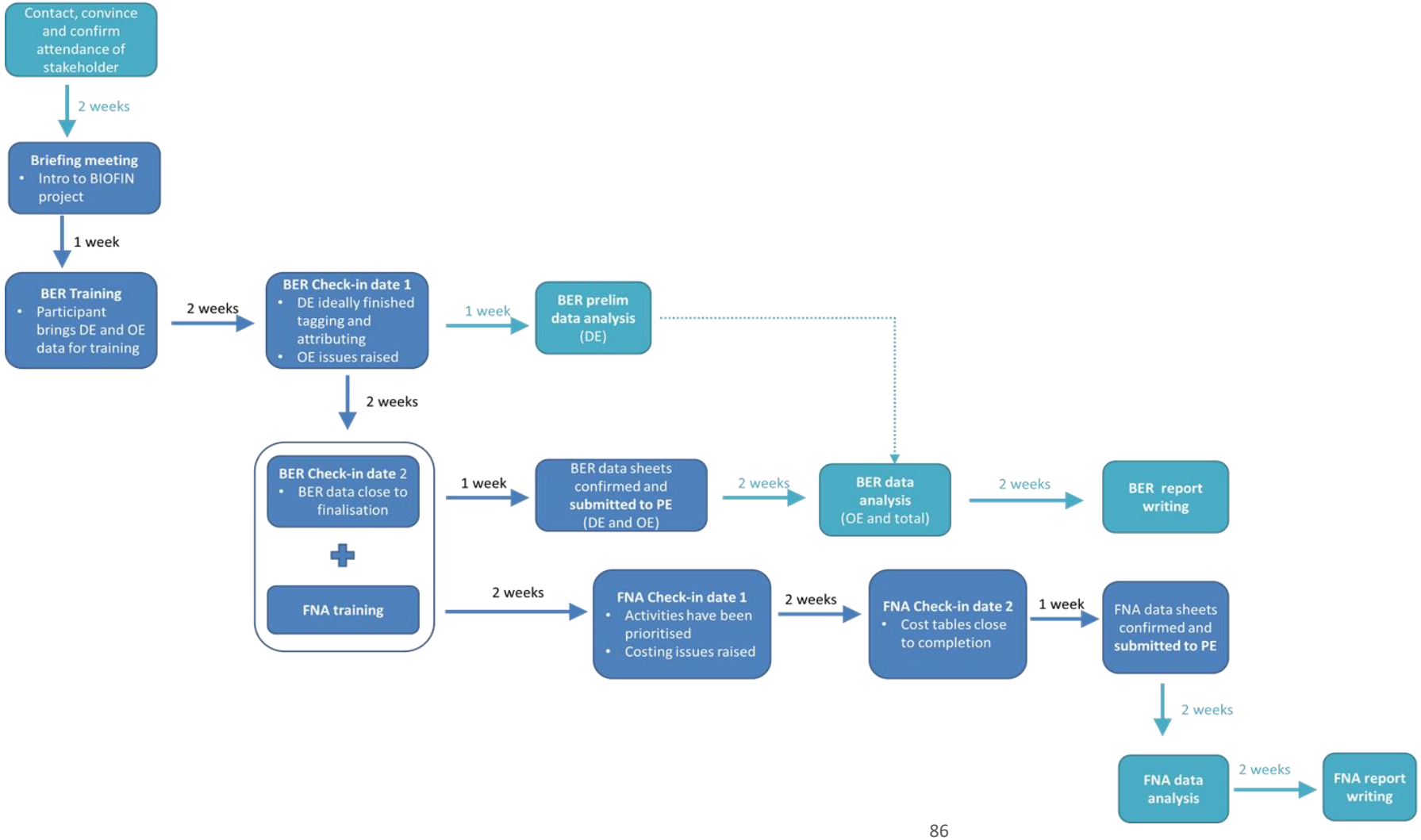
Term	Acronym	Definition	Source	Link
		voluntary agreements.		
Financial Needs Assessment	FNA	Estimates the finance required to deliver national biodiversity targets and plans, usually described in the NBSAPs.	BIOFIN	https://www.biodiversityfinance.net/
Five Year Malaysia Plans.	RMK	The Malaysian government plans its development based on 5-year economic development plans also known as Rancangan Malaysia.	EPU	www.epu.gov.my
Forest Research Institute Malaysia	FRIM	A statutory body under KATS, FRIM provides research and consultancy services with regards to forestry.	FRIM	www.frim.gov.my
Forestry Department of Peninsular Malaysia	JPSM	Also known as Jabatan Perhutanan Semenanjung Malaysia, all forest reserves in Malaysia fall under their jurisdiction.	JPSM	www.jpsm.gov.my
Global Environment Centre	GEC	A non-profit organisation established in 1998 to work on environmental issues.	GEC	www.gec.org.my
Accountant General's Department of Malaysia	JANM	Also known as Jabatan Akauntan Negara Malaysia, they are responsible for the accounting and financial management system of the government.	JANM	www.anm.gov.my
Japan International Cooperation Agency	JICA	The governmental agency that coordinates official development assistance (ODA) for the Japanese government.	JICA	www.jica.go.jp
Kuala Lumpur Stock Exchange	KLSE	Also known as Bursa Malaysia, KLSE is the Malaysian stock market.	KLSE	www.bursamalaysia.com
Malaysia Maritime Enforcement Agency	APMM	Also known as Agensi Penguatkuasaan Maritim Malaysia, APMM is the primary enforcer of Malaysia's marine borders.	APMM	www.mmea.gov.my
Malaysian Agricultural Research and Development Institute	MARDI	A government body under MOA that is responsible for research and development of Malaysia's agricultural industry.	MARDI	www.mardi.gov.my
Malaysian Nature Society	MNS	The oldest environmental NGO in Malaysia. It is membership based and works closely with grassroots communities and corporate and government agencies.	MNS	www.mns.my
Malaysian Palm Oil Board	MPOB	Government agency entrusted to promote and development national objectives, policies and priorities for the Malaysian oil palm industry.	MPOB	www.mpob.gov.my
Management of Ecology of Malaysian Elephants	MEME	A research project that aims to assess the effectiveness of on-going elephant conservation and management, develop a long-term strategy and build capacity with responsible parties	MEME	www.meme-elephant.org
Ministry of Agriculture and Agro-based Industries	MOA	Also known as Kementerian Pertanian dan Industri Asas Tani.	MOA	www.moa.gov.my
Ministry of Education	MOE	Also known as Kementerian Pendidikan.	MOE	www.moe.gov.my

Term	Acronym	Definition	Source	Link
Ministry of Energy, Green Technology & Water	KeTTHA	Also known as Kementerian Tenaga, Teknologi Hijau dan Air. As of July 2018, merged with other ministries to form Ministry of Energy, Science, Technology, Environment and Climate Change.	MESTECC	www.mestecc.gov.my
Ministry of Finance	MOF	Also known as Kementerian Kewangan.	MOF	www.treasury.gov.my
Ministry of Natural Resources and Environment	NRE	As of July 2018, known as the Ministry of Water, Land and Natural Resources, also known as Kementerian Air, Tanah dan Sumber Asli (KATS).	KATS	www.kats.gov.my
Ministry of Plantation Industries & Commodities	MPIC	Also known as Kementerian Perusahaan Perladangan dan Komoditi.	MPIC	www.mpic.gov.my
Ministry Of Science Technology & Innovation	MOSTI	As of July 2018, merged with other ministries to form Ministry of Energy, Science, Technology, Environment and Climate Change.	MESTECC	www.mestecc.gov.my
Ministry of Tourism & Culture	MOTAC	Also known as Kementerian Pelancongan, Seni dan Budaya Malaysia.	MOTAC	www.motac.gov.my
Ministry of Urban Well-being, Housing and Local Government	KPKT	Also known as Kementerian Perumahan dan Kerajaan Tempatan.	KPKT	www.kpkt.gov.my
National Hydraulic Research Institute of Malaysia	NAHRIM	Also known as Institut Penyelidikan Hidraulik Kebangsaan Malaysia. They are a statutory body under KATS responsible for research, consultancy, and advisory and as a referral centre pertaining to water and its environment.	NAHRIM	www.nahrim.gov.my
National Landscape Department	JLN	Also known as Jabatan Landskap Negara. Under their purview is the landscaping of cities and municipalities throughout Malaysia.	JLN	www.jln.gov.my
National Conservation Trust Fund	NCTF	Malaysia's National Natural Resources Trust Fund, established to implement activities related to conservation.	KATS	www.kats.gov.my
National Policy on Biological Diversity	NPBD	Malaysia formulated the National Policy on Biological Diversity (NPBD) 2016-2025, building on its predecessor policy of 1998 to protect this valuable asset and achieve the CBD goals. The Policy functions as Malaysia's National Biodiversity Strategies and Action Plan. The NPBD has 5 goals, 17 targets with 57 policy actions.	KATS	www.kats.gov.my
Operational Expenditure	OE	Operating (Supply and Charged) Expenditure (OE). Supply expenditure, includes all charges to the budgetary appropriations for goods and services, and for transfer payments to statutory funds, state governments and public enterprises. Charged expenditures are related		

Term	Acronym	Definition	Source	Link
		to expenditure such as statutory grants to state governments, pensions and debt charges.		
Personnel Time Involvement Surveys		Supplementary method for estimating the biodiversity share and functions in the organisation based on personnel time.		
Policy and Institutional Review	PIR	Looks into the policy and institutional context for biodiversity finance in the country and establishes who the key stakeholders to involve are.	BIOFIN	https://www.biodiversityfinance.net/
Programme or Project Expenditures		How expenditures are described in the NGO sector		
Public Services Department	PSD	A staff agency which controls the personnel system responsibilities for examining the manpower requirements of the agency		
Small Grant Programme Malaysia	SGP	An initiative established by GEC to support local community, SGP Malaysia provides financial and technical assistance to NGOs, CBOs, CSOs projects that implement the conservation and rehabilitation of the environment while improving livelihoods	SGP	www.sgpmalaysia.org
Sustainable Development Goals	SDGs	A universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. These 17 goals build on the successes of the MDGs, while including new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among others. They are interconnected.	UNDP	www.undp.org
The Department of Survey and Mapping Malaysia	JUPEM	Also known as Jabatan Ukur dan Pemetaan Malaysia, this agency under KATS provides survey, mapping and geospatial services and management.	JUPEM	www.jupem.gov.my
United Nations Development Program Malaysia Office	UNDP	Provides strategic policy-oriented advice and support for the national policy agenda as well as institutional capacity building in key areas, in line with the agreed country programme for Malaysia.	UNDP	www.undp.org
World Wild Fund for Conservation Malaysia	WWF-Malaysia	A national conservation trust affiliated to WWF global. It works to promote harmony between humans and nature.	WWF	www.wwf.org.my

Appendices

Appendix I: Overall BIOFIN project workflow



Appendix II: List of current and future participants for BER

List of stakeholders approached but did not participate in BER	
Type	Name
Government Agencies	JBK
	JPSM
	KeTTHA
	NRE -JMG
	Sarawak Forestry Corporation
	Kementerian Pembangunan Bandar dan Sumber Asli Sarawak
	Pusat Penyelidikan Sepilok
	Perancangan Sektor Hutan Sabah
NGOs	Belum Management and Conservation
	Pulau Banding Foundation
	Tropical Rainforest Conservation & Research Centre
	Wildlife Conservation Society (WCS)
	Treat Every Environment Special
Private sector	Hasanah Foundation
	HSBC
	PETRONAS

List of potential participants to approach in the future	
Type	Name
Government Agencies	Attorney's General Department
	NRE - BMG
	NRE - BSHA
	DID
	NAHRIM
	NRE - BSAPI
	DOE
	Sabah State - UPEN , Forestry, Wildlife
	Johor State -UPEN, state parks
	APMM
	JPBD
	JLN
	MOSTI
NGOs	Eco-knights
	Borneo research Institute
	EPA
	PACOS
	EU Switch Asia
	JICA

List of potential participants to approach in the future	
Type	Name
Private sector	Honda
	Digi
	Maybank
	CIMB
	RICOH
	Cargill
	Shell
Donors	Asian Development Bank (ADB)
	Global Environment Facility (GEF)
	Ramsar Convention Secretariat
	United Nations Environment Programme (UNEP)
	Danish International Development Agency (DANIDA)
	Japan Fund for Global Environment (JFGE)
	Japan Ministry of the Environment
	Kreditanstalt für Wiederaufbau (KfW)
	Norwegian Agency for Development Cooperation (Norad)
	Dutch Ministry of Foreign Affairs
	Kliene Natuur Initiatief Projecten, Royal Netherlands Embassy
	The Rufford Small Grants for Conservation
Trusts & Foundations	Ashden Trust
	Rufford Foundation

Appendix III: BER Guidebook

Please see attached BER guidebook.

Appendix IV : Common questions from participants

A1: Can the BIOFIN method also be used to tag our expenses and needs to other things such as the SDGs or our own policy or strategic plan targets?

Yes, the BIOFIN method is able to do so. Under the Biodiversity Expenditure Review (BER), the second step is the tagging process where your expenditure item can be tagged by its function, its relevant national biodiversity target or its theme. However, this is not an exhaustive list of ways that your expenditure data can be analysed. Some participants have also expressed interest in tagging their expenditure items to their own strategic plans and the SDGs targets as well.

However, for the current project, we are only requesting the participants to tag their expenditure items to the BIOFIN categories which illustrate the functions of the expenditure items and to the National Policy on Biological Diversity (NPBD).

A2: How far back of data should we collect?

We are looking for data from the year 2006 to 2016 as we are trying to standardise the data we are receiving from the government agencies which include RMK-9 and RMK-10. However, for OE (non-project expenditure), even government agencies are finding it hard to provide with the years we requested. The data found is mostly 1 to 2 years back. Therefore, we set a minimum of 3 years back for OE (non-project expenditure) and 5 years (RMK-10) for DE (project expenditure).

A3: Are programme staff the right people to be in this initiative since it seems like financial data is needed? Or should this initiative be actually for finance people only?

In the BIOFIN process, we need both people in finance and people from the project or programme team to work together. This is because the finance officers are needed to extract the financial data but they would not know the function or intended purpose of the projects or expenditures or the work done by various staff. Programme personnel also cannot do this alone since they would not know the structure of the accounts and the accounting system. Also, in the FNA exercise, we will need the knowledge of programme personnel to identify priority actions to achieve desired biodiversity outcomes. At the same time, the finance personnel are needed because we then need to cost each action by the various cost items and they could potentially retrieve historical costs for this purpose.

A4: How do you define biodiversity expenditures since everything can be biodiversity-related?

For the BER exercise, in order for an expenditure item to be biodiversity-related, we refer to the definition that was recommended in the BIOFIN workbook that has referenced the definition in the Convention on Biological Diversity (CBD). The definition states that:

> "Expenditure whose purpose is to have **positive impact or reduce/eliminate pressures on biodiversity** in terms of:
> **(a)** Conservation; or
> **(b)** Sustainable use; or
> **(c)** Fair & equitable sharing of benefits arising out of genetic resource"

The words in bold represent the important points needed to fulfil the definition of biodiversity expenditure and, importantly, it is about the intent or purpose of the action, not the effect. Even so, it does cover a broad range of expenditures that can be considered to be biodiversity-related. Hence, identifying whether the expenditure item is biodiversity expenditure is only the first step. The last step of the Biodiversity Expenditure Review (BER) looks at the attribution of the expenditure item. Even though the expenditure may be biodiversity-related, its contribution to biodiversity may be indirect resulting in the lesser attribution in terms of the financial data. For example, 20% of a RM100,000 biodiversity expenditure item may only be taken into consideration after the BER process as the intention of the biodiversity expenditure is not a direct contribution.

A5: What is the end point for this project? How will it look like?

The end point for this project will be the Biodiversity Financing Plan (BFP). The BFP will be looking at finding and prioritising financial solutions to close the gap identified by comparing what was spent in the past and what is needed for the future. At this stage, we hope to involve all the stakeholders of the NPBD to have this discussion as ultimately, this will act as a financing plan to achieve our national biodiversity targets.

A6: Can we get funds to finance our biodiversity from BIOFIN? Can it tell us if we can generate funds from other means?

In regards to the funds topic, this is dependent on a lot of other factors and there is no guarantee for that. However, the beauty of this methodology is that it helps to build a business case for your organisation to present to potential funders and also to be used for internal purpose in tracking your organisation's biodiversity expense.

The Biodiversity Expenditure Review (BER) step is aimed at understanding the past expenditure in your organisation. It looks at the nature of what was spent and from there a trend in expenditure can be established. In the next step known as the Financial Needs Assessment (FNA), organisations will carry out an exercise in establishing their future needs. By comparing the information that can be obtained by the past expenditure and what is needed from the future, a financial gap can then be established. From there, the BIOFIN

project brings us to the biodiversity financing plan step where different financial solutions are explored to discover the best way forward.

A7: Can there be more than one function to our expense – different tagging categories to one project?

This will be dependent on whether there is corresponding financial data. If the financial data can be separated by each action plan, then it is possible to be analysed at that level. If this is not possible, the project's main intention will be used for analysis in the BER process

A8: The method seems to be very subjective, how will we ensure accuracy?

The steps carried out under the BER exercise can be subjective. Hence, when carrying out the BER exercise we recommend you to do the exercise with a colleague where arguments and challenge of thoughts can be made to reduce the potential biasness of the results. Also, these training sessions and future discussions sessions are also a good platform to seek out other people's perspectives and to realign your interpretation. Therefore, it is important to jot down these discussions in the remarks column provided to ensure a consistency in interpretation when there is a change in hands.

A9: Have we taken into consideration the possibility of double counting? Are we looking at the organisation that is giving the funds or the implementing organisation?

Yes we are aware of the possibility of double counting, which will result in skewed results being produced. In such a case, we then request participants who have received funds externally to identify their source of funds. An ideal situation will be that each expenditure item can be matched with the relevant sources of funds. In cases where this is not possible, we request that that the participants provide the annual funds received by the corresponding parties.

A10: Do we account for negative biodiversity expenditure?

The BIOFIN methodology at a global level does discuss negative biodiversity expenditures. Drivers and stakeholders leading to biodiversity loss can be identified through the Policy and Institutional Review (PIR). The expenditures of such actions could then be collected and analysed during the BER as per how you would do for the positive biodiversity expenditures, just using opposite criteria. From there you could probably have a balance sheet where you have the total sum spent to deliver positive biodiversity impact and a total showing the total spend to deliver negative biodiversity impacts; whether the sums negate each other would then become clear.

For this project, we focus on only positive biodiversity spending. This is because our intention is to first familiarise our stakeholders to the BIOFIN methodology, rather than having them pull out of participating in defense. Also, in generating values for positive spend, we hope it will become apparent that positive spending is actually quite small in comparison to budgets. The size of negative biodiversity expenditures can then be the next stage of consideration if the project is deemed to be of value. As mentioned, this project aims to build the capacity for future use beyond this project

B1: How would median work as a good method in estimating the average salary of that particular staff grade if the staff grade has a wide range of salary?

While observing the various salaries under the particular staff grade, if you observe a few distinctive ranges, the salaries of the staff grade can be separated into those different ranges resulting in different median pays for one staff grade for the division. This information can then be keyed into the template separately.

B2: Why is the biodiversity coefficient used in multiplying the non-emolument data first before applying the conservative figure of 20%?

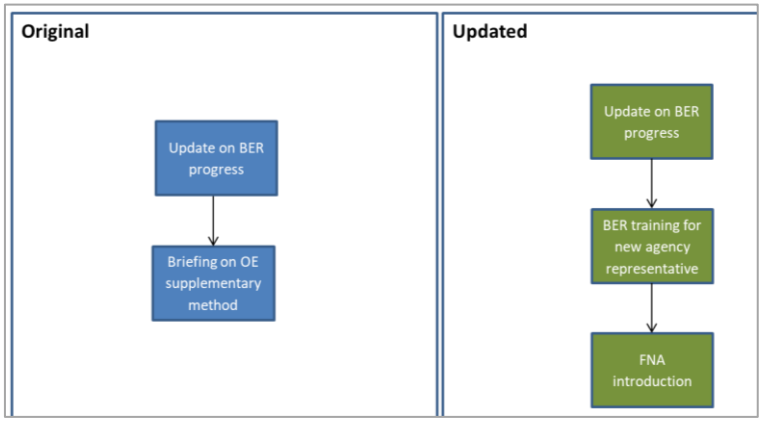
The use the biodiversity coefficient calculated from analysing the time spent from employees in biodiversity-related work is to first identify the biodiversity proportion of non-emolument and due to the nature of these expenses not contributing directly to biodiversity, we then apply a 20% attribution percentage.

There are two reasons why we are using the biodiversity coefficient as a method to establish the biodiversity proportion. The first reason is that we are taking the assumption that the biodiversity proportion of the expenses in your organisation is dependent on time spent by your employees in biodiversity-related work. For example, employee A spends 80% time of their time in monitoring activities in a national park which is biodiversity-relate. However, in order to carry out these activities, other expenses such as boat rental charges, fuel charges and many more will be needed.

Another reason is because emolument expense usually takes up a big part of the expenses in an organisation which makes it an appropriate basis of calculation for other expenditure items.

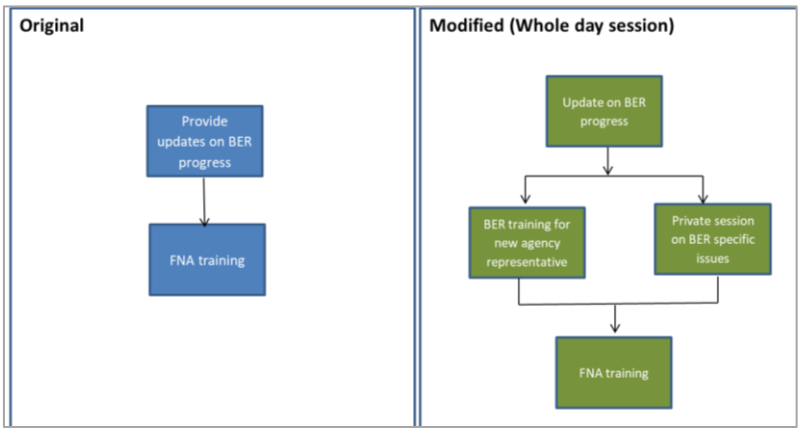
Appendix V: Changes in the check-in sessions operations

BER Check-in #1



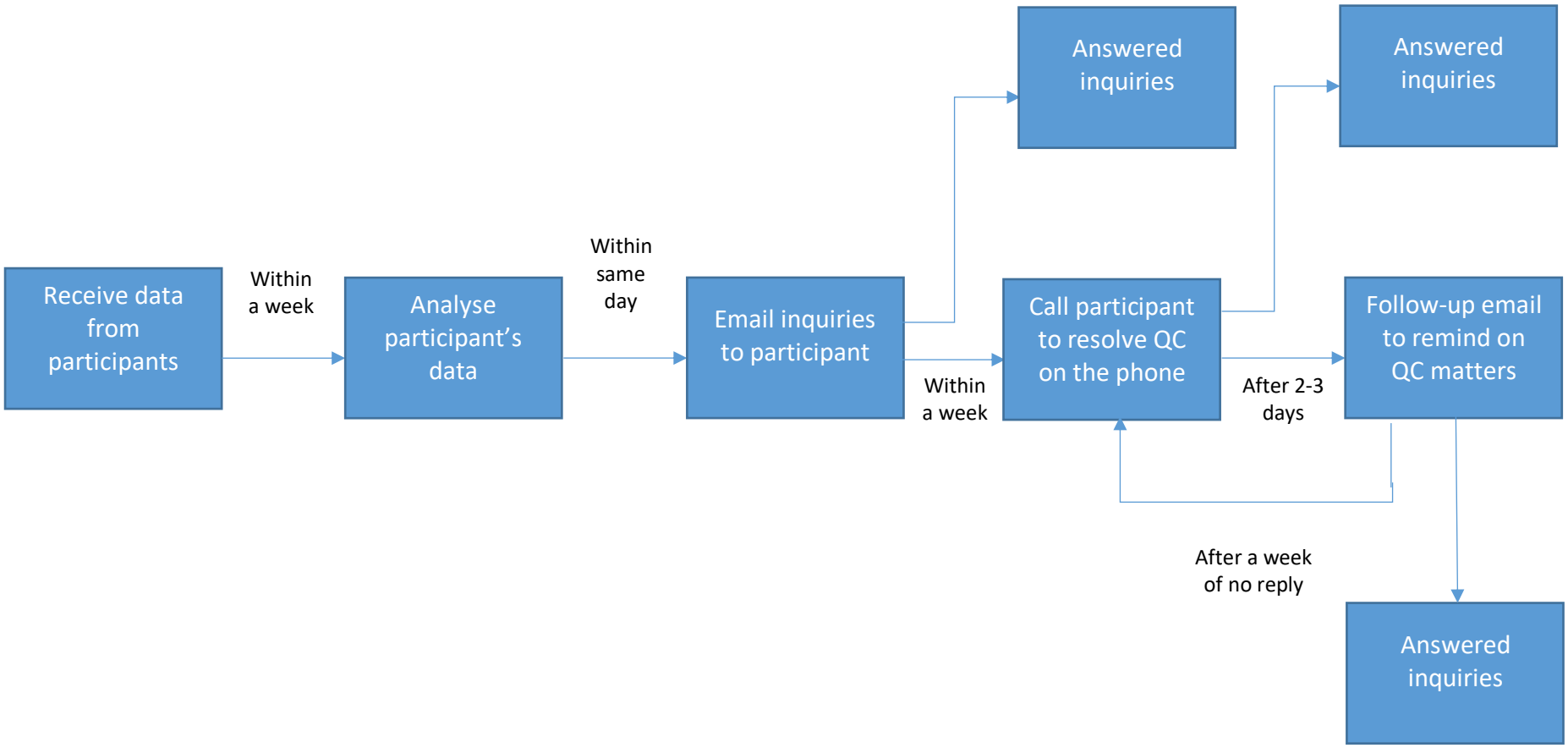
- **Original –** The session was to obtain updates on BER progress (mainly DE) and provide assistance on OE by briefing the OE supplementary method if needed
- **Updated –** As more experienced was gained on the next session – BER check-in session #2 and FNA training, the need for a FNA introduction session was apparent to get the participants ready with the relevant data and most importantly management's support

BER Check-in 2 and FNA training



- **Original –** BER check-in sessions #2 are run to obtain updates on the BER progress and to finalise the BER process; this was followed by a FNA training session.
- **Modified (Whole day session) –** This modified version was held for MOA and its agencies where a full day session was carried out. It started as a BER check-in session and noticed that there were still new representatives coming. After the BER progress update, participants were segregated into two groups. For those that have done the BER, private session held to review and resolve specific issues encountered. For the new representatives, BER training was conducted. After both groups have completed their respective BER review and training sessions, FNA training was given to all.

Appendix VI: Overall QC process



Appendix VII: Data sources

Organization	Sources of Data	
	Development Expenditure (DE)	Operating Expenditure (OE)
Department of Marine Park Malaysia	Data from Participant	Data from Participant
Ministry of Plantation Industries & Commodities	Data from Participant	Data from Participant + JANM Data
Department of Wildlife and National Parks Peninsular Malaysia	Data from Participant	Data from Participant
Ministry of Tourism and Culture	Data from Participant	JANM Data
Ministry of Urban Wellbeing, Housing and Local Government	Data from Participant	JANM Data
Forest Research Institute Malaysia	Data from Participant + EPU Database	Agency Annual Report
Forestry Department Peninsular Malaysia	EPU Database	Agency Annual Report
Department of Irrigation and Drainage	EPU Database	JANM Data
Minerals & Geoscience Department Malaysia	EPU Database	JANM Data
Department of Environment	EPU Database	JANM Data
National Hydraulic Research Institute of Malaysia	EPU Database	JANM Data
Sabah Forestry Department	EPU Database	Agency Annual Report (Not included in analysis a)

Organization	Sources of Data	
	Development Expenditure (DE)	Operating Expenditure (OE)
Sarawak Forestry Department	EPU Database	Agency Annual Report (Not included in analysis as is State funded)
Ministry of Natural Resources and Environment	EPU Database	JANM Data
Department of Biosafety	EPU Database	-
Ministry of Finance	Data from Participant	No relevant OE data

Appendix VIII: List of Federal NPBD stakeholders tagged with biodiversity involvement level for estimating national estimates of biodiversity expenditures by the public sector

NPBD list of stakeholders

Agency	Involvement level tag
Attorney General's Chambers	5%
Department of Agriculture	50%
Department of Biosafety	100%
Department of Environment	50%
Department of Fisheries	50%
Department of Irrigation & Drainage	50%
Department of Marine Park Malaysia	100%
Department of Minerals & Geoscience	20%
Department of National Heritage	20%
Department of Orang Asli Development	20%
PLAN Malaysia (former JPBD)	20%
Department of Wildlife and National Parks Peninsular Malaysia	100%
Economic Planning Unit	5%
Forest Research Institute Malaysia	80%
Forestry Department Peninsular Malaysia	80%
Malaysia Maritime Enforcement Agency (MMEA/ APMM)	70%
Malaysian Palm Oil Board (MPOB)	20%
Malaysian Palm Oil Certification Council (MPOCC)	80%
Malaysian Agricultural Research and Development Institute (MARDI)	50%
Marine Department	20%
Ministry of Agriculture and Agro-based Industries	50%
Ministry of Education	5%
Ministry of Energy, Green Technology & Water	5%
Ministry of Finance	5%
Ministry of Foreign Affairs	5%
Ministry of Plantation Industries & Commodities	5%
Ministry of Rural and Regional Development	5%
Ministry of Science Technology and Innovation	5%
Ministry of Tourism and Culture	5%
Ministry of Urban Well-being, Housing & Local Government	5%
Ministry of Works	5%
National Biodiversity Centre	100%
Port Authorities	5%
Public Services Department	5%
Royal Malaysia Customs Department	20%
Royal Malaysian Police	20%
National Landscape Department (not specified in NPBD but should be included)	50%

Appendix IX: Averages for national estimate calculations by stakeholder type

	Average per year per organisation per project (RM million)	Average per year per organisation (RM million)	Average per organisation (RM million)	Average per year (RM million)	Total (RM million)	Year	Notes
A. Public sector - Federal					7,533	2006-2016	18 samples
Stakeholders- 5% level involvement		*22.1*	**243.4**			2006-2016	
Stakeholders- 20% level involvement		*11.5*	**126.2**			2006-2016	
Stakeholders- 50% level involvement		*44.9*	**494.1**			2006-2016	
Stakeholders- 80% level involvement		*84.8*	**933.1**			2006-2016	
Stakeholders- 100% level involvement		*38.9*	**428.2**			2006-2016	
B. Government trust funds							
National conservation trust fund		***10.1***				2014-2016	
Marine Reserve and Park Trust Fund		***7.8***				2008-2016	
C. State governments		18.2	**200.0**			2006-2016	Half the total of a sample
D. Private sector							
Environmental Protection Expenditure				551.4	**2,205.4**	2011-2014	
Sustainability reports	*1.2*	2.6		15.7	**204.4**	2008-2020	Average projects at any one year is 13 for 6 samples
E. NGO, CSO					268.6	2006-2017	3 samples
Small sized	0.19	**0.56**				2011-2017	Average: 3 projects per organisation/ year
Medium sized	0.20	**6.1**				2013-2017	Average: 30 projects per organisation/ year
Large sized	0.16	**20.8**				2006-2016	Average: 130 projects/year
F. Multilateral and bilateral organisations					99.8	2006-2017	3 portfolios
UNDP type of projects	0.70	2.1	**23.2**			2006-2016	Average: 3 projects per

	Average per year per organisation per project (RM million)	Average per year per organisation (RM million)	Average per organisation (RM million)	Average per year (RM million)	Total (RM million)	Year	Notes
							organisation/ year
SGP type of projects	0.49	4.4	**53.4**			2006-2017	Average: 9 projects per organisation/ year

Note: The cells filled with pink and have bolded figures refer to the figures obtained from the sample data. Other averages have been calculated based on the number of years and number of projects written in the last two columns. Cells in light yellow are the estimates used with the assumptions to calculate the national estimates.

Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Appendix X: Other Fund accounts of the Miscellaneous Government Trust Funds

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
National Trust	3,804,565,288	4,076,555,913	4,362,655,239	4,804,902,567	5,653,917,035	7,040,478,437	9,523,070,010	12,293,693,028	11,868,887,171
Poverty Students Fund	68,361,161.81	120,254,402.99	443,757,048	471,582,212	478,656,172	428,734,551	229,607,833	215,185,676	40,150,122
National Sports Fund	2,643,892.86	13,592,174.85	11,766,764	10,435,878	577,000	25,329,695	16,938,063	12,056,833	36,317,283
National Disaster Relief	293,353,740.74	151,554,720.36	143,179,718	132,205,660	184,315,891	257,948,166	714,813,016	530,098,864	407,723,320
Victims of Wild Animal Attack Relief	795,800.00	716,200.00	587,800	335,800	281,000	251,500	2,753,500	1,898,300	1,184,100
State Reserve	78,723,114.58	239,158,460.58	226,624,324	230,391,662	349,618,591	248,606,008	99,731,424	294,052,875	442,802,385
Overseas Student Welfare and Amenity	3,732,976.09	3,730,976.09	3,781,106	3,286,540	2,776,212	3,875,655	3,070,152	2,517,356	2,233,300
Bumiputra Automotive Trust Fund					40,000,000	81,083,808	33,959,710	4,717,888	2,972,854
Arts, Cultural and Welfare Trust Fund				3,235,048	2,566,381	3,154,793	1,541,248	986,961	781,094
Examination Syndicate Trust Fund	69,493,440.49	13,749,475.51	56,359,475	65,498,209	125,064,112	84,660,107	76,837,530	114,872,765	88,808,498
Public Sector ICT Project Development Trust Fund					1,000,000	1,000,000	1,000,000	1,000,000	1,100,000
Education, Consultation and Research Trust Fund, National Institute of Valuation	983,099.55	557,712.83	414,329	1,075,797	1,520,646	1,689,081	2,517,487	2,294,020	1,551,432
Public Transportation Trust Fund	419,143,347.00	653,531,006.08	753,645,090	955,590,216	816,477,428	634,903,284	469,191,949	263,613,100	116,010,131
Tax Stamp (Banderol) Procurement Management for Cigarette and Liquor	21,074,914.68	6,051,091.60	43,876,236	46,056,666	43,075,662	46,029,888	50,951,084	52,403,532	50,973,417
Goods and Services Tax Refund Fund								2,261,802,724	323,436,815
Project and Boundaries Measurement between States in Peninsular of Malaysia		1,777,571.37	1,773,671	1,553,561	3,840,995	7,045,522	6,364,603	5,661,735	3,836,944
Guarantee Fees Trust Fund								42,035,274	125,235,274
Platform Continent Malaysia Project Trust Fund			1,398,810	1,317,538	1,016,170	835,748	779,768	637,328	1,903

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016
Support Syariah Judiciary Department of Malaysia Trust Fund			14,880,792	12,774,394	13,030,550	13,202,886	13,202,080	13,398,878	13,616,261
National Natural Resources Conservation Trust Fund							10,000,000	10,050,635	10,277,601
Marine Reserve and Park Trust Fund	5,503,443.15	3,651,065.12	2,741,782	3,301,274	4,130,965	4,777,584	5,142,408	5,359,113	4,925,044
Malay Studies Chair Leiden University, The Netherlands	1,206.00	1,206.00	794	794	794	794	794	794	794
National Council for Scientific Research and Development (MPKSN)	3,791,829.54	3,219,956.33	3,089,995	2,546,001	2,841,407	2,988,430	3,147,930	3,532,083	3,721,271
Industrial Adjustment	212,549,809.44	216,837,309.60							
Sinking Fund	200,000,000.00	200,000,000.00	200,000,000	206,715,154	213,528,635	219,449,874	225,450,294	234,893,705	3,381,166
Social and Welfare Services	84,567,288.18	80,338,118.82	75,395,808	69,204,562	64,092,032	57,561,454	49,188,440	41,690,711	37,981,539
National Library	1,331,296.93	1,374,559.19	1,306,444	1,343,327	1,102,027	653,949	1,096,915	1,265,762	1,287,115
Rakyat Home Ownership Programme	464,267,469.84	486,327,182.85	658,582,359	617,769,870	504,485,840	391,444,071	258,018,140	452,957,401	332,410,209
The Federal Sports Scholarship Scheme	209,887.22	121,624.72	1,265,001	918,618	923,996	2,028,245	911,590	853,694	406,999
Tax Refund Fund	0.00	2,699,447,356.98	595,253,542	610,975,797	1,274,862,121	1,777,285,515	179,136,825	45,201,263	52,299,176
Medical Aid Fund (TBP)	39,619,601.32	34,464,665.04	24,498,178	19,554,231	17,834,331	15,530,468	30,264,250	2,761,636,753	321,262,231
Innovation Fund			43,040,000	26,289,411	22,095,535	20,002,616	19,813,116	19,813,116	19,813,116
P. Ramlee Memorial Library	273,935.34	287,110.04	198,681	136,772	87,111	84,849	84,310	73,427	81,126
Total (RM)	**5,774,986,543**	**9,007,299,860**	**7,670,073,012**	**8,298,997,586**	**9,823,718,668**	**11,370,637,007**	**12,028,584,499**	**19,690,255,626**	**14,315,469,723**
Number of accounts	22	24	26	27	29	29	30	32	32
% share of Marine Trust Fund	0.10%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.03%	0.03%
% share of the National Conservation Trust Fund	-	-	-	-		-	0.08%	0.05%	0.07%

Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Appendix XI: Pooled analysis of biodiversity expenditures by for various stakeholders by NPBD targets

Stakeholder type Sample size Years	Public sector (n=18) 2006-2016	MRP Trust fund (n=1) 2007-2016	NGO (n=4) 2006-2016	MLO (n=3) 2006-2017	Private sector (n=6) 2006-2016	Grand total
Total	**7,533,353,230**	**31,033,594**	**268,630,735**	**99,820,535**	**204,441,999**	**8,137,280,093**
Target 1	283,420,906	6,558,698	35,990,632	1,140,238	4,234,457	**331,344,930**
Target 2	77,961,777		11,116,208		173,280	**89,251,266**
Target 3	867,817,851		32,207,650	4,485,942	-	**904,511,442**
Target 4	1,098,395,037		29,040,596	11,190,216	180,210	**1,138,806,059**
Target 5	253,369,382		8,425,958		141,644	**261,936,984**
Target 6	247,415,338	14,468,774	33,479,277		3,010,000	**298,373,390**
Target 7	2,209,131,335		28,033,318	43,186,011	19,395,150	**2,299,745,814**
Target 8	33,719,388		22,849,452	2,881,329	93,640,852	**153,091,022**
Target 9	361,615,976		30,181,870		26,525,276	**418,323,123**
Target 10	83,049,973		18,621,116	983,309	1,507,047	**104,161,444**
Target 11	31,713,552				-	**31,713,552**
Target 12	28,091,631				-	**28,091,631**
Target 13	495,819,861				11,364,799	**507,184,660**
Target 14	-			5,565,972	-	**5,565,972**
Target 15	354,198,411		984,938	13,917,959	-	**369,101,308**
Target 16	455,455,128		17,000,003	14,521,466	43,734,421	**530,711,019**
Target 17	2,442,427	10,000,000	611,079	1,619,145	-	**14,672,651**
Miscellaneous supporting expenses	606,033,301	6,122	85,008	328,947		**606,453,378**
N/A	43,701,955		3,630		534,863	**44,240,448**

Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Appendix XII: Pooled analysis of biodiversity expenditures for various stakeholders by BIOFIN category

Stakeholder type	Public sector	MRP Trust fund	NGO	MLO	Private sector	Grand total
Sample size	**(n=18)**	**(n=1)**	**(n=4)**	**(n=3)**	**(n=6)**	
Years	2006-2016	2007-2016	2006-2016	2006-2017	2006-2016	
Total	**7,533,353,230**	**31,033,594**	**268,630,735**	**99,820,535**	**204,441,999**	**8,137,280,093**
Access and Benefit Sharing (ABS)	136,781	-		1,982,509		**2,119,289**
Biodiversity Knowledge	1,373,199,660	6,558,698	76,899,374	15,523,733	40,951,415	**1,513,132,881**
Biodiversity Planning, Finance and Management	356,793,270	10,000,000	32,187,898	10,830,502	5,000,000	**414,811,670**
Biosafety	75,034,170	-		-		**75,034,170**
Climate change	56,065,356	-	805,883	7,184,425		**64,055,664**
Conservation areas	558,629,505	14,468,774	31,007,659	11,867,318	111,573,791	**727,547,048**
Ecosystem management and restoration	822,083,226	-	59,280,961	5,130,124	2,098,252	**928,592,562**
Pollution control	700,138,838	-	865,005	655,333		**701,659,176**
Resilient Infrastructure	182,909,319	-	1,816,031	-		**184,725,351**
Sustainable Business	231,837,160	-	8,139,853	-	321,644	**240,298,657**
Sustainable Use	1,390,544,080	-	27,972,703	6,317,645	180,210	**1,425,014,638**
Targeted species & genetic conservation	1,342,780,887	-	29,570,359	-	44,316,687	**1,416,667,933**
Miscellaneous supporting expenses	443,200,979	6,122	85,008	328,947		**443,621,055**

Note: Exchange rate is 1 USD = RM 4.10 (August 2018)

Appendix XIII: Pooled analysis of biodiversity expenditures by for various stakeholders by BIOFIN category and sub-category

Stakeholder type	Public sector	MRP Trust fund	NGO	MLO	Private sector	Grand total
Sample size	(n=11)	(n=1)	(n=4)	(n=3)	(n=6)	
Years	2006-2016	2007-2016	2006-2016	2006-2017	2008-2016	
Total	**3,531,268,229**	**31,033,594**	**268,630,735**	**99,820,535**	**204,441,999**	**4,135,195,091**
Access and Benefit Sharing (ABS)	**136,781**	**-**		**1,982,509**		**2,119,289**
Bioprospecting	136,781	-		-		**136,781**
Nagoya protocol		-		1,982,509		**1,982,509**
Biodiversity Knowledge	**423,924,281**	**6,558,698**	**76,899,374**	**15,523,733**	**40,951,415**	**563,857,501**
Biodiversity communication	47,519,182	1,407,882	10,317,467	-	1,049,796	**60,294,328**
Biodiversity education	26,732,390	5,150,816	38,597,007	1,140,238	1,143,918	**72,764,369**
Biodiversity knowledge improved, shared and applied	172,316,530	-	22,114,724	9,735,275	38,744,421	**242,910,950**
Evaluation, accounting and monitoring methods	21,984,467	-	116,294	1,119,125		**23,219,886**
Indigenous & local community knowledge	3,684,550	-	1,179,497	-		**4,864,047**
Managerial and technical capacity increased	151,687,161	-	4,574,386	3,529,096	13,280	**159,803,922**
Biodiversity Planning, Finance and Management	286,689,115	10,000,000	32,185,642	10,830,502	5,000,000	**344,705,258**
Biodiversity policy and management	123,621,581	-	6,651,858	6,360,916	5,000,000	**141,634,355**
Environmental finance planning	205,847	10,000,000	531,419	1,619,145		**12,356,412**
Environmental finance policy and management	37,600,000	-	63,043	-		**37,663,043**
Environmental law enforcement	80,452,706	-	2,849,043	983,309		**84,285,058**
Environmental laws and regulations	156,676	-	2,966,431	-		**3,123,108**
International environmental agreements and conventions	7,879,399	-		1,867,131		**9,746,531**

Stakeholder type	Public sector	MRP Trust fund	NGO	MLO	Private sector	Grand total
Sample size	(n=11)	(n=1)	(n=4)	(n=3)	(n=6)	
Years	2006-2016	2007-2016	2006-2016	2006-2017	2008-2016	
Strategic Planning	36,772,905	-	19,123,847	-		**55,896,752**
Biosafety	**54,558,370**	**-**		**-**		**54,558,370**
Invasive Alien Species	53,132,872					**53,132,872**
LMO and GMO	1,425,499	-		-		**1,425,499**
Climate Change	**22,200,174**	**-**	**805,883**	**7,184,425**		**30,190,481**
Ecosystem based adaptation	6,621,671	-	204,113	6,325,220		**13,151,004**
GHG Mitigation	13,771,743	-	601,770	859,205		**15,232,717**
Sustainable energy	1,806,760	-		-		**1,806,760**
Conservation areas	**176,387,190**	**14,468,774**	**31,007,659**	**11,867,318**	**111,573,791**	**345,304,733**
Expand PA systems			6,488,077			**6,488,077**
Expand landscape conservation		-	3,437,939	-		**3,437,939**
Improve landscape conservation management	494,946	-	8,669,696	3,345,586	89,985,800	**102,496,028**
Improve PA Management	175,892,244	14,468,774	12,055,024	8,521,732	21,053,128	**231,990,902**
(blank)		-	356,924	-	534,863	**891,787**
Ecosystem Management and restoration	**157,540,345**	**-**	**59,280,961**	**45,130,124**	**2,098,252**	**264,049,681**
Conservation of valuable ecosystem services	18,243,201	-	3,360,411	-		**21,603,612**
Reduce or stop loss of valuable habitats	12,515,558		23,493,501			**36,009,059**
Improve ecosystem connectivity		-	4,078,418	1,944,113	2,005,141	**8,027,672**
Restoration of ecosystems	126,781,585	-	28,348,630	43,186,011	93,111	**198,409,338**
Pollution Control	**480,905,545**	**-**	**865,005**	**655,333**		**482,425,883**
Protection of ambient air and climate	2,370,133	-		-		**2,370,133**
Waste management	475,303,412	-	415,618	655,333		**476,374,362**
Wastewater management	3,232,000	-	3,630	-		**3,235,630**
Protection and remediation of soil, groundwater and surface water			445,758			**445,758**
Resilient Infrastructure	**173,898**	**-**	**1,816,031**	**-**		**1,989,929**

Stakeholder type	Public sector	MRP Trust fund	NGO	MLO	Private sector	Grand total
Sample size	(n=11)	(n=1)	(n=4)	(n=3)	(n=6)	
Years	2006-2016	2007-2016	2006-2016	2006-2017	2008-2016	
Sustainable urban areas	173,898	-	560,491	-		**734,389**
Sustainable water systems		-	84,831	-		**84,831**
Sustainable energy infrastructure			1,170,709			**1,170,709**
Sustainable Business	**177,182,738**	**-**	**8,142,109**	**-**	**321,644**	**185,646,491**
Corporate Sustainability (CSR)		-	664,928	-	180,000	**844,928**
Green supply chain	1,397,839	-		-		**1,397,839**
Nature based tourism	175,784,899	-	6,431,894	-	141,644	**182,358,437**
Sustainable Consumption		-	1,045,287	-		**1,045,287**
Sustainable use	**884,339,541**	**-**	**27,972,703**	**6,317,645**	**180,210**	**918,810,099**
Sustainable agriculture	523,278,912	-	4,615,241	-	178,050	**528,072,203**
Sustainable forestry		-	12,736,618	5,325,464		**18,062,083**
Sustainable land management	11,115,194	-	422,429	992,180	2,160	**12,531,963**
Sustainable marine and coastal management		-	1,575,143	-		**1,575,143**
Sustainable wildlife	193,400,259	-		-		**193,400,259**
Sustainable aquaculture	62,684,582		877,239			**63,561,820**
Sustainable Fisheries	93,860,594		7,195,579			**101,056,173**
Watershed Management			550,455			**550,455**
Targeted species conservation	**677,906,408**	**-**	**29,570,359**	**-**	**44,316,687**	**751,793,455**
Agrobiodiversity maintained	468,275,810	-		-	658,100	**468,933,910**
Ex-situ conservation of endangered species	90,123,942	-	3,013,046	-	19,532,486	**112,669,475**
In-situ conservation of endangered species outside PAs	45,689,009	-	970,294	-	2,403,869	**49,063,172**
Species extinction threat reduction	73,817,648	-	25,587,019	-	21,722,232	**121,126,898**
Miscellaneous supporting expenses	**189,323,844**	**6,122**	**85,008**	**328,947**		**189,743,920**

Note: Exchange rate is 1 USD = RM 4.10 (August 2018)