The policy was prepared by
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NATIONAL POLICY ON BIOLOGICAL DIVERSITY 2016 - 2025

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FOREWORD BY THE PRIME MINISTER

Malaysia's biological diversity is among the richest in the world. Our rainforests harbour an enormous range of plants and animals including iconic species such as tigers, elephants and orang-utans and massive trees towering more than 80 metres above the forest floor. Our seas are blessed an extraordinary array of marine life. Our coastlines are fringed with productive mangroves and amazing coral reefs. All these help maintain our natural environment and give us food, water and numerous economic benefits.

As we march forward to becoming a developed high-income nation, we continue to face numerous challenges including threats to our biodiversity. Our economic growth, that is so crucial for the well-being of our people, places pressures on our flora and fauna. Many of our wild animals and plants and ecosystems are at risk. If we do not manage these challenges carefully, our natural environment, life support systems and economic well-being would be affected.

Recognising these challenges, the government, through the Ministry of Natural Resources and Environment has formulated the National Policy on Biological Diversity 2016 – 2025 with inputs from various stakeholders. This new Policy will serve as our guide for biodiversity management over the next 10 years. It emphasizes the need for continued conservation, sustainable utilisation and the sharing of benefits from biodiversity in a fair and equitable manner. It has clear targets and actions and timelines for implementation and calls for active participation by all stakeholders. This new policy will also complement Malaysia's obligation under the United Nations Convention on Biological Diversity and the Sustainable Development Goals.

It is my fervent hope that with the support from all stakeholders, this Policy will be effectively implemented to ensure that our biodiversity is managed and used wisely for the well-being of our present and future generations.

I call upon all the people of Malaysia to join hands to safeguard our biodiversity. Our biodiversity is our shared heritage. It is also our shared responsibility.

DATO' SRI MOHD. NAJIB BIN TUN HAJI ABDUL RAZAK

February 2016

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LIST OF ABBREVIATIONS

1MBEON	1Malaysia Biodiversity Enforcement Operation Network
ABS	Access and Benefit Sharing
AGC	Attorney General's Chambers
ASEAN	Association of Southeast Asian Nations
ASEAN-WEN	ASEAN Wildlife Enforcement Network
BIMP-EAGA	Brunei-Indonesia-Malaysia-Philippines East ASEAN Growth Area
CBD	Convention on Biological Diversity
CBNRM	Community Based Natural Resources Management
CCA	Community Conserved Area
CEPA	Communications, Education and Public Awareness
CFS	Central Forest Spine
CHM	Clearing House Mechanism
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CPB	Cartagena Protocol on Biosafety
CTI	Coral Triangle Initiative
DOE	Department of Environment
DTCP	Department of Town and Country Planning (Peninsular Malaysia)
DTRP	Department of Town and Regional Planning (Sabah)
DWNP	Department of Wildlife and National Parks
EAFM	Ecosystems Approach to Fisheries Management
EEZ	Economic Exclusive Zone
EPU	Economic Planning Unit
ESA	Environmentally Sensitive Area
FAO	Food and Agricultural Organisation
FMU	Forest Management Unit
FPA	Fisheries Prohibited Area
FRIM	Forest Research Institute Malaysia
GAP	Good Agricultural Practice
GMO	Genetically Modified Organism
GSTC	Global Sustainable Tourism Criteria
HCV	High Conservation Value
HoB	Heart of Borneo
IAS	Invasive Alien Species
IPLC	Indigenous People and Local Communities
IMO	International Maritime Organisation
IUCN	International Union for Conservation of Nature and Natural Resources
IUU	Illegal, Unreported and Unregulated
LMO	Living Modified Organism

MAB	Man and Biosphere (UNESCO)
MMEA	Malaysia Maritime Enforcement Agency
MOA	Ministry of Agriculture and Agro-Based Industry
MOE	Ministry of Education
MOF	Ministry of Finance
MOTAC	Ministry of Tourism and Culture
MUWHLG	Ministry of Urban Wellbeing, Housing and Local Government
MPA	Marine Protected Area
MPIC	Ministry of Plantation Industries and Commodities
MPOB	Malaysian Palm Oil Board
MPOC	Malaysian Palm Oil Council
MPOCC	Malaysian Palm Oil Certification Council
MSC	Marine Stewardship Council
MSPO	Malaysian Sustainable Palm Oil
NAPP	National Action Plan on Peatlands
NBC	National Biodiversity Centre
NBR	National Biodiversity Roundtable
NCTF	National Conservation Trust Fund
NPBD	National Policy on Biological Diversity
NRE	Ministry of Natural Resources and Environment
NSC-NPBD	National Steering Committee for National Policy on Biological Diversity
PA	Protected Area
PES	Payment for Ecosystem Services
PFE	Permanent Forest Estate
PPP	Policy, Programme and Plan
PSD	Public Service Department
R&D	Research and Development
RSPO	Roundtable on Sustainable Palm Oil
SaBC	Sabah Biodiversity Centre
SBC	Sarawak Biodiversity Centre
SCP	Sustainable Consumption and Production
SEPU	State Economic Planning Unit
SFM	Sustainable Forest Management
SWD	Sabah Wildlife Department
TED	Turtle Exclusion Device
TEK	Traditional Ecological Knowledge
TK	Traditional Knowledge

EXECUTIVE SUMMARY

THE CHALLENGE BEFORE US

Malaysia is a megadiverse country. On land, our natural ecosystems consist of an immense variety of wild plants and animals including the famous dipterocarp forests and montane forests, while our coastal and marine areas house important ecosystems such as mangrove forests and diverse coral reefs. These natural ecosystems contain a diverse array of floral and faunal communities. There are an estimated 15,000 species of vascular plants in Malaysia, with about 8,300 species in Peninsular Malaysia and about 12,000 in Sabah and Sarawak. Fauna diversity includes 307 known species of mammals, 30 of which are endemic to Malaysia, 785 species of birds, 242 species of amphibians and 567 species of reptiles, as well as 1951 species of freshwater and marine fishes. Our rich biodiversity constitutes an extraordinary natural capital that maintains our natural environment and the life-support systems that give us food, water and numerous economic benefits. We depend on it for our very existence.

The first National Policy on Biological Diversity was formulated in 1998. Since then, the nation has undergone significant population increase and socio-economic changes; the population has increased from 23 million in 1998 to about 30 million in 2015, the per capita GDP has almost tripled and the country's exports have grown seven folds. Numerous housing and industrial areas, townships and infrastructure have been built. The country's transition to become a developed, high-income nation has exerted various pressures on our biodiversity, leaving many species vulnerable with some even facing threats of extinction. Nearly half of the nation's plant diversity is facing various levels of threat. Iconic wildlife like the Sumatran rhinoceros and leatherback turtle have also become locally extinct, while others like the Malayan tiger are threatened with extinction.

Other pressures that currently threaten Malaysia's biodiversity include extensive habitat fragmentation, invasive alien species, pollution, poaching, increasing competition for land as well as climate change. Furthermore, there is a general lack of awareness on the importance of biodiversity throughout the country as well as significant knowledge gaps. There are also weaknesses in management capacities and shortage of funding – both which are crucial to ensure that Malaysia's biodiversity is effectively conserved. While the 1998 Policy provided direction in the past, the present and future challenges call for a Policy that will enable the nation to protect its biodiversity in the coming years.

The National Policy on Biological Diversity 2016-2025 provides the direction and framework for us to conserve our biodiversity and use it sustainably in the face of the increasingly complex challenges. It also forms part of Malaysia's response to the Convention on Biological Diversity's Strategic Plan for Biodiversity 2011-2020.

POLICY STATEMENT

"Malaysia is committed to conserve its biological diversity, promote its sustainable use and ensure fair and equitable sharing of the benefits arising out of the utilisation of biological resources."

PRINCIPLES

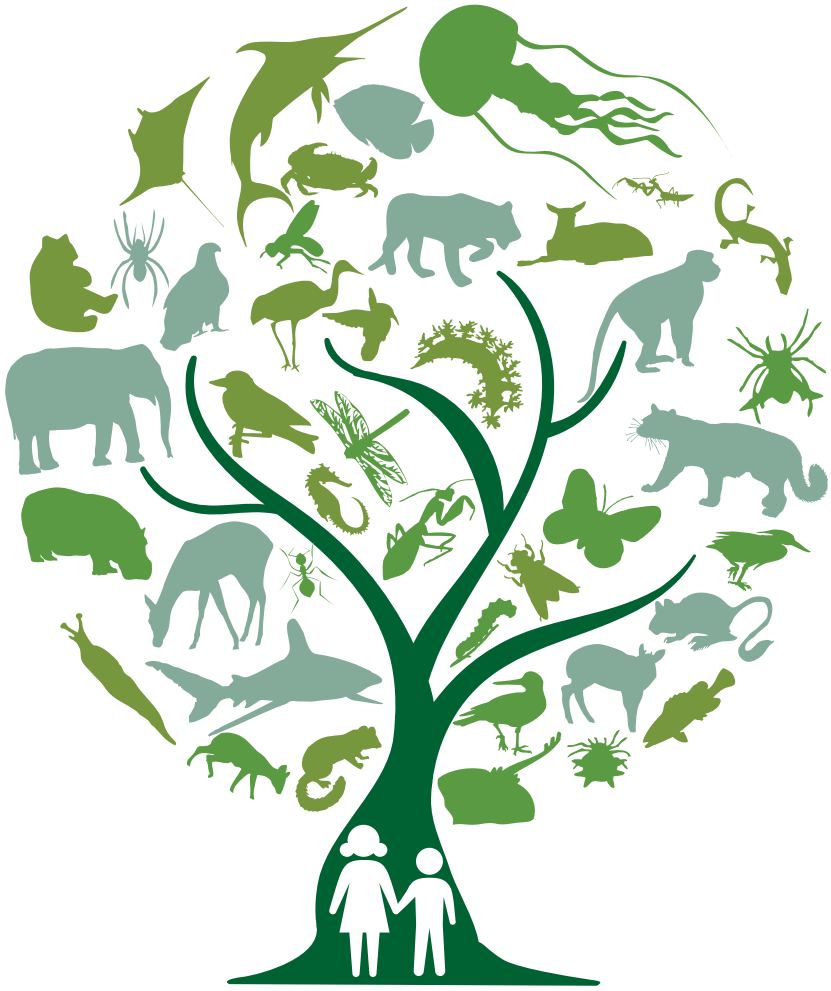
PRINCIPLE 1: Heritage. Biological diversity is a national heritage. It must be sustainably managed, wisely utilised and conserved for future generations.

PRINCIPLE 2: Precautionary. The lack of full scientific certainty should not be used as a reason to postpone measures to minimise threats of significant loss of biodiversity.

PRINCIPLE 3: Shared responsibility. The conservation and sustainable utilisation of biodiversity are the shared responsibility of all sectors of society.

PRINCIPLE 4: Participatory. Planning and management of biodiversity must be carried out in a participatory manner.

PRINCIPLE 5: Good governance. Good governance, including accountability and transparency, is crucial to biodiversity conservation.

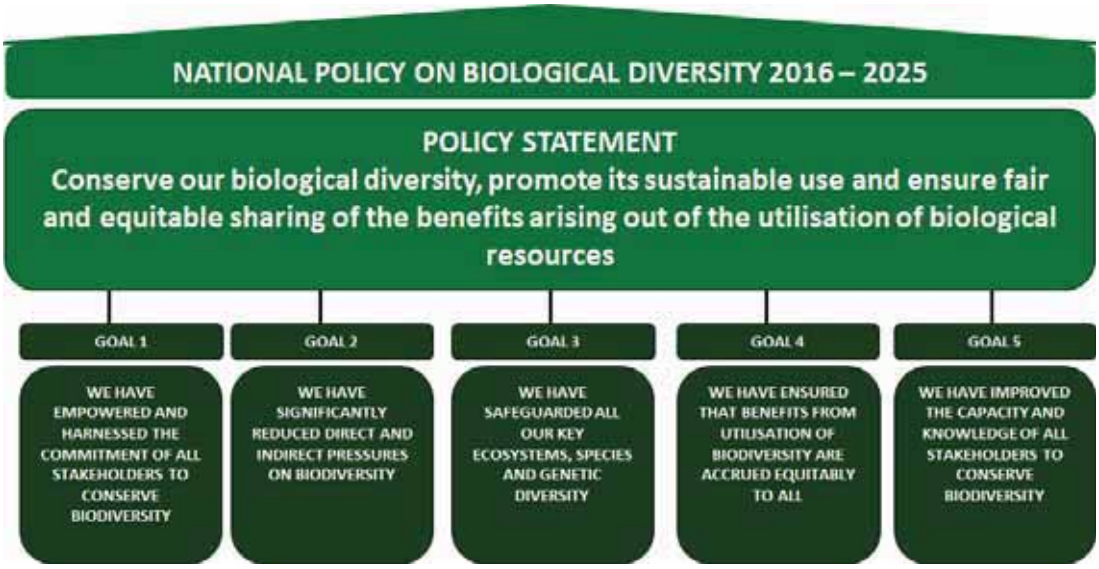


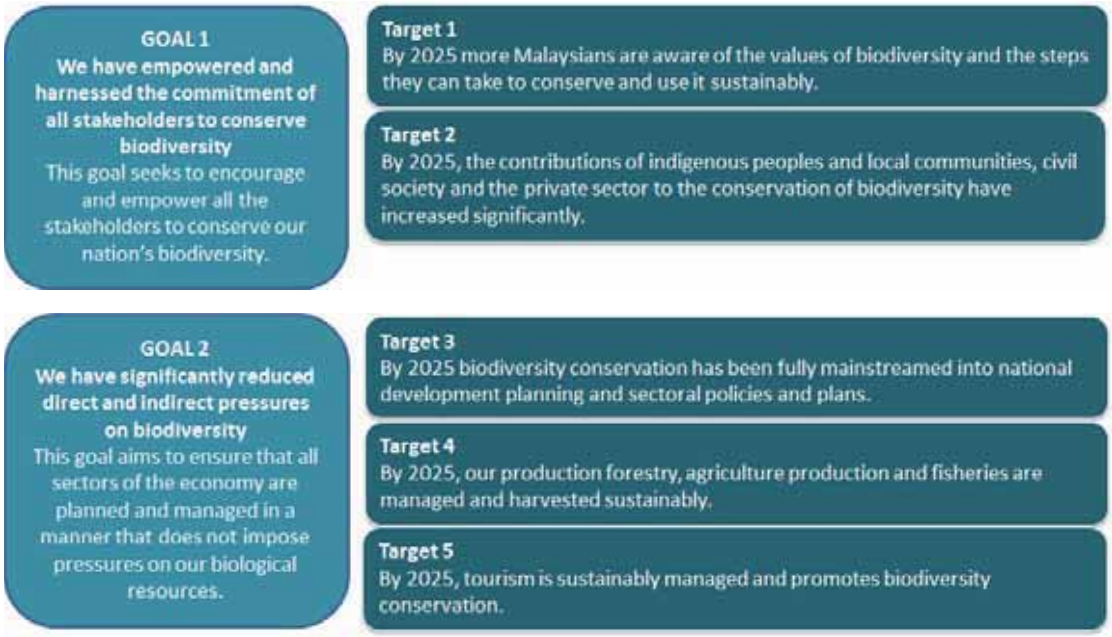
GOALS, TARGETS AND ACTIONS

The Policy has five overarching goals encompassing stakeholder empowerment, reducing pressures on our biodiversity, safeguarding our ecosystems, species and genetic diversity, ensuring equitable sharing of benefits from biodiversity and building the capacity of all stakeholders.

The five goals are supported by 17 national biodiversity targets which we hope to achieve by 2025. The targets address all key facets of biodiversity conservation including awareness raising, mainstreaming biodiversity, implementing good management practices in various economic sectors, strengthening our protected areas, preventing extinction of species, controlling invasive alien species and biosafety. The targets also address capacity building, increasing our knowledge and improving financing. Each target is accompanied by a set of actions that spell out the steps that we have to take to achieve the targets and ultimately the goals. There are a total of 57 actions in this Policy. All the actions have measurable key indicators that will enable us to monitor progress. The lead agencies and key partners for implementing each of the actions have also been identified.

This Policy is for the period 2016 – 2025. The implementation of the Policy is divided into four phases coinciding with the Malaysia Plans and their mid-term reviews.





GOAL 3
We have safeguarded all our key ecosystems, species and genetic diversity
This goal aims to ensure the resilience of our key ecosystems, species and genetic diversity and that they are managed in an effective and integrated manner.

Target 6 : By 2025, at least 20% of terrestrial areas & inland water, and 10% of coastal & marine areas, are conserved through a representative system of protected areas & other effective area-based conservation measures.

Target 7 : By 2025, vulnerable ecosystems and habitats, particularly limestone hills, forest on ultrabasic soils, wetlands, coral reefs and seagrass beds are adequately protected and restored.

Target 8 : By 2025, important terrestrial and marine ecological corridors have been restored and protected.

Target 9 : By 2025, the extinction of known threatened species has been prevented and their conservation status has been improved and sustained.

Target 10 : By 2025, poaching, illegal harvesting and illegal trade of wildlife, fish and plants are under control and significantly reduced.

Target 11 : By 2025, invasive alien species and pathways are identified, priority species controlled and measures are in place to prevent their introduction and establishment.

Target 12 : By 2025, a comprehensive biosafety system inclusive of a liability and redress regime is in place to manage adverse impacts of modern biotechnology on biodiversity & human health.

Target 13 : By 2025, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives is adequately conserved.

GOAL 4
We have ensured that the benefits from the utilisation of biodiversity are accrued equitable to all
This goal works towards institutionalising a national regulatory framework in line with the Nagoya Protocol.

Target 14
By 2025, Malaysia has an operational ABS framework that is consistent with the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization.

GOAL 5
We have improved the capacity, knowledge and skills of all stakeholders to conserve biodiversity
This goal ensures that all stakeholders have adequate capabilities, knowledge, access to information, tools, and networks to effectively plan, manage and monitor biodiversity conservation.

Target 15
By 2025, capacity for the implementation of the national and subnational biodiversity strategies, the CBD and other related MEAs has significantly increased.

Target 16
By 2025, knowledge and the science base relating to biodiversity, its values, functions, status and trends, and the consequences of its loss, are significantly improved and applied.

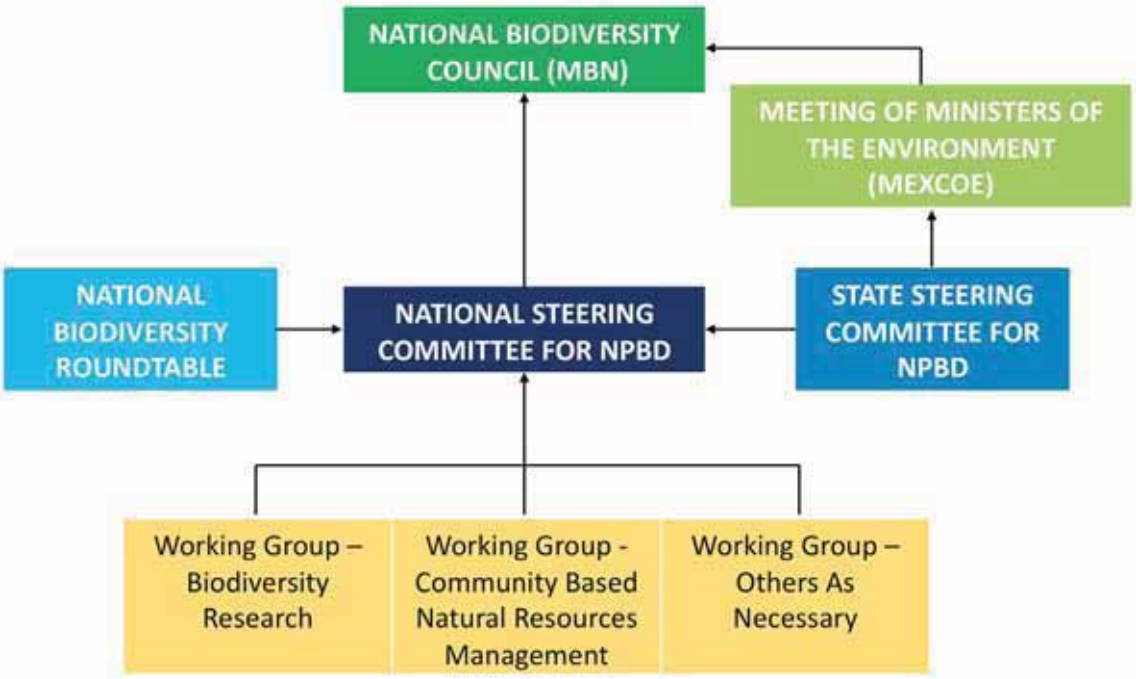
Target 17
By 2025, there is a significant increase in funds and resources mobilised for the conservation of biodiversity from both government and non-government sources.

IMPLEMENTATION FRAMEWORK

The Federal government via the Ministry of Natural Resources and Environment (NRE) will play a leading role in implementing the Policy. This includes providing overall direction, coordinating stakeholder actions, establishing the appropriate institutional platforms, facilitating resource mobilisation and initiating review of the Policy as necessary. State governments have jurisdiction over the management of *inter alia* land, water and forests and will play crucial roles in delivering the actions. There will be many opportunities for civil society, indigenous people and local communities, and the private sector to be active partners in the implementation of this Policy.

There will be various coordinating platforms to maximise synergies and reduce conflicts in implementing and monitoring the Policy. In addition to the existing National Biodiversity Council which is the highest decision-making body, this Policy also proposes several other coordinating platforms, namely:

- The National Steering Committee for the NPBD (NSC-NPBD) which will be the primary coordinating platform of the Policy.
- The Meeting of Ministers of the Environment (MEXCOE) will be a coordinating and information-sharing platform for state ministers and state executive committee members responsible for environment and biodiversity.
- The State Steering Committee for the NPBD which will be the main coordinating platform at the state level for the implementation of this Policy.
- The National Biodiversity Roundtable which will be led by civil society and the private sector and provide technical advice and support to the NRE and the NSC-NPBD in the implementation and monitoring of this Policy.



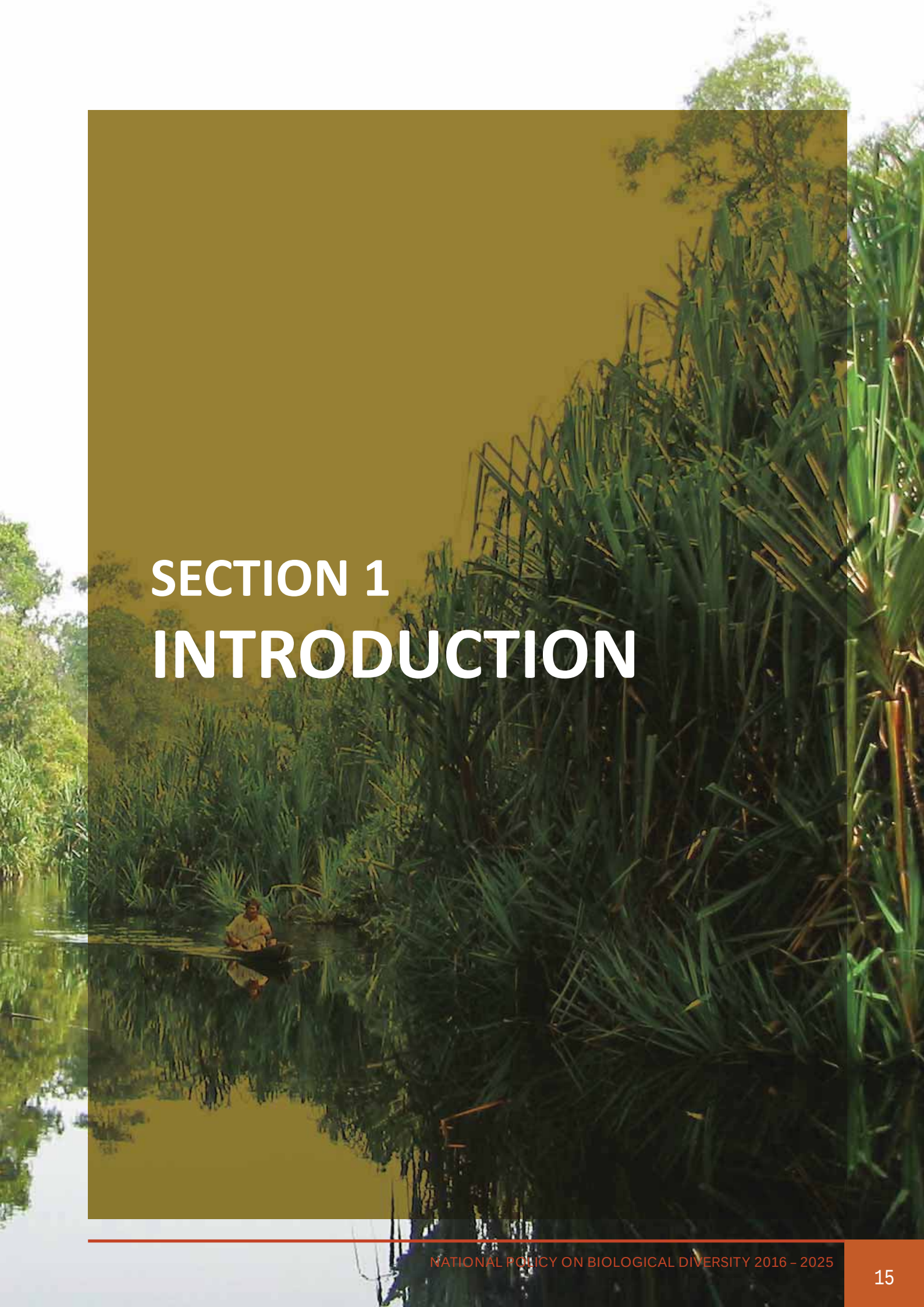
Coordinating Platforms for the implementation of NPBD 2016-2025

MONITORING AND REVIEW OF PROGRESS

Monitoring the implementation of the Policy is a crucial task. NRE, will monitor progress which will be deliberated by the NSC- NPBD and the National Biodiversity Council. The actions of this Policy will be reviewed by NRE at the end of each implementation phase.

Communicating the Policy to stakeholders will be a vital and continuous activity during the implementation period. Reports on the implementation of the Policy will be published by NRE at the end of each implementation phase.

Freshwater swamp forest
Photo by Forest Research Institute Malaysia



SECTION 1
INTRODUCTION

OUR SHARED RESPONSIBILITY

Malaysia's forests and seas are among the most diverse on the planet. Our variety of ecosystems and abundance of species constitute an extraordinary natural capital that maintains our natural environment and the life-support systems that give us food, water and numerous economic benefits. We depend on it for our very existence and to meet our goals for sustainable economic development. Biodiversity is also held by many to have intrinsic religious and spiritual values and as being an important element in our wellbeing.

As we make the transition towards becoming a high-income nation, we put increasing pressures on our natural habitats and the species that they nurture. A key challenge therefore is to make that transition while ensuring that our biodiversity is duly safeguarded.

Biodiversity is our shared heritage. It is also our shared responsibility. It will require the collective and sustained effort to conserve our biodiversity, to promote its sustainable use and to ensure that its benefits are equitably shared.

THE NEED FOR THIS POLICY

The first National Policy on Biological Diversity was formulated in 1998. Since then, the nation has undergone significant population increase and socio-economic changes. The population has increased from 23 million in 1998 to about 30 million in 2015, our per capita GDP has almost tripled and country's exports have grown sevenfold. Numerous housing and industrial areas, townships and infrastructure have been built. All of these have significant influence on our biodiversity and the pressures are increasingly intense and complex. While the 1998 policy has guided us with direction in the past, the new challenges call for a revised focus that will enable us to protect our biodiversity in the coming years.

This National Policy on Biological Diversity 2016– 2025 provides the direction and framework for us to conserve our biodiversity and use it sustainably in the face of increasingly complex challenges now and in the future. It also forms part of Malaysia's response to the CBD's Strategic Plan for Biodiversity 2011-2020.

BIODIVERSITY TREASURES OF MALAYSIA

Malaysia is a megadiverse country. On land, our natural ecosystems comprise of an immense variety of wild plants and animals, all co-existing in a magnificent tropical forest setting. Adding to this natural bounty, the seas around Malaysia are some of the richest in all of the world's oceans. Many of these are of global importance.

Terrestrial Habitats

Malaysia retains a forest cover of about 54.5% of the total land area[1]. Pristine forests of all kinds occur in many of our protected areas. The lowland dipterocarp forests, with their complex structure in which lofty trees provide a framework within which smaller trees and other plants grow, along with a wide range of animals and other life-forms, are very rich in biodiversity. Even small areas are richer in tree species than most similar-sized areas in tropical Africa or America[2].

Hill and montane forests also contain high biodiversity, with those at the highest levels containing a high degree of endemism. The iconic Mt. Kinabalu alone has recorded plant species richness to be over 5,000 species in an area less than 30km x 40km, which amounts to approximately 2.5% of the world's flora. In Peninsular Malaysia, Banjaran Titiwangsa harbors 25% of the known plant species found in Malaysia, including more than 400 species of orchids[3].

Box 1: MyBioD: My life, My heritage and My future

The MyBioD logo shows how all life on earth is interconnected in a wonderful web of life. The logo depicts the richness of Malaysia's biodiversity which is represented by the tree, animals, birds, insects and marine life. The tree depicts the gentle Mother Earth which shelters, nurtures and takes care of all of us, who in return needs to be cared for too. The mother and child in the logo signify the role of women and custodianship in biodiversity conservation with the need to protect and conserve our rich natural heritage for future generations. Hence, everyone has the role to conserve and use our biodiversity wisely.

Tones of green represent the richness of Malaysia's biodiversity. Blue represents the marine and freshwater ecosystems. The leaf in the letter "o" represents continuous conservation efforts that need to be undertaken to safeguard our biodiversity.

Edaphic forests have their own unique characteristics. They are found where there are special, local factors such as water content, acidity, aeration, and the availability of nutrients, such as the unique flora of the forests on ultrabasic soils in eastern Sabah.[4]

Limestone (karst) forests are a special case because as well as being a source of marble and raw material for the cement industry, the outcrops also harbor cave complexes which provide a unique setting for forests that are specialised to the habitat. Although in Peninsular Malaysia limestone hills occupy only 0.4% of land area, their flora is disproportionately rich in species representing about 14% of the Peninsula's total vascular flora species[5].

Ramsar Sites in Malaysia

Name of Site	Area (ha)	Date of Designation
Tasek Bera, Pahang	38,446	10 Nov 1994
Pulau Kukup, Johor	647	31 Jan 2003
Sungai Pulai, Johor	9,126	31 Jan 2003
Tanjung Piai, Johor	526	31 Jan 2003
Kuching Wetlands, Sarawak	6,610	8 Nov 2005
Lower Kinabatangan-Segama Wetlands, Sabah	78,803	28 Oct 2008

Freshwater swamps and peatlands are important habitats for a variety of plants and animals. Malaysia supports some of the most extensive tropical peatlands in the world, covering some 2.4 million ha[6], mainly consisting of peat swamp forest, a vulnerable category of wetland characterised by deep layers of peat soil and waters so acidic that many of the plants and animals found in them do not occur in the other tropical forests. Our peatlands play a critical role in preserving water supply, regulating and reducing flood damage, providing fish, timber, and other resources for local communities, and storing large amounts of carbon within peat. They also support a host of globally threatened and restricted-ranged plants and animals. Freshwater swamps such as the Tasik Bera in Pahang (Malaysia's first Ramsar site), Loagan Bunut in Sarawak, Ulu Sedili in Johor and Setiu in Terengganu host a plethora of unique flora and fauna.

Coastal and Marine Habitats

The marine and coastal areas of Malaysia are very rich in biodiversity. Malaysia's Economic Exclusive Zone (EEZ) overlaps with the Coral Triangle area which is thought to have the greatest diversity of marine life in the world within its coral seas, mangrove forests, mud flats, sea grass areas and sandy beaches.[7]

The shoreline of Malaysia is rich with mangroves. There are 544,032 ha of mangroves within the permanent forest estate[8] system, with about 61% in Sabah, 21% in Sarawak and the remaining 18% in Peninsular Malaysia. The diverse mangrove forests in Malaysia have gained world recognition through the designation of five mangrove areas as Ramsar sites[9]. In Peninsular Malaysia, the Matang Mangrove Forest Reserve has been acknowledged as one of the best-managed mangrove ecosystems in the world. Its well managed ecosystem enables it to contribute sustainably to the socio-economics of the country including timber production, fisheries and tourism.

Malaysia's coral reefs are found in shallow marine waters along sandy coastlines, mostly in Sabah and along the east coast of Peninsular Malaysia. Coral diversity is highest in Sabah and Sarawak, which is estimated to have over 550 species while Peninsular Malaysia has over 480 species of coral. The value of ecosystem services provided by the coral reefs in Malaysia is estimated at USD$45 billion every year.[10]

Seagrass beds are another example of the diversity of marine habitats, with their own complement of specialised species of plants and other marine life. They are critical for the survival of the endangered dugong and sea turtles. Studies have shown that about 100 fish species and 20 prawn species in Malaysia are dependent on seagrass beds for nursing, feeding and breeding[11].

Malaysian waters cover approximately 453,186 km^2, of which, about 1.4% is currently designated as marine protected areas (MPAs). In Peninsular Malaysia and the Federal Territory of Labuan, there are currently 42 marine parks with a total area of 248,613 ha. In addition, there are 14 turtle sanctuaries and fisheries prohibited areas covering a further 63,254 ha. Sarawak has three MPAs covering an area of 207,723 ha. Sabah has five MPAs covering 73,807 ha. The proposed Tun Mustapha Marine Park in northern Sabah will add another 1.02 million ha to the MPA network.

Coral reefs of Malaysia
Photo by Department of Marine Parks

Flora and Fauna Diversity

Malayan Tiger
Photo by MNS - Sze Ming Hui

Malaysia's natural habitats harbour a diverse array of floral communities, greatly enriched by their spread between two floristic regions (i.e., mainland Asia and Borneo). To date, there are an estimated 15,000 species of vascular plants in Malaysia, with about 8,300 species in Peninsular Malaysia, and about 12,000 in Sabah and Sarawak[12]. Malaysia is extremely rich in palms, with more than 400 species, 70% of which are endemic to our country. Although the floral diversity of Peninsular Malaysia is better documented than that of Sabah and Sarawak, the flora in the Bornean states is generally richer than that in Peninsular Malaysia.

Malaysia also boasts of a diverse faunal community. There are 307 known species of mammals in Malaysia, including at least 30 that are endemic to Malaysia, the majority of which are found in lowland habitats. In terms of bird diversity, 785 species of birds have been recorded, while herpetofaunal records show 242 species of amphibians and 567 species of reptiles that are unequally distributed across Peninsular Malaysia, Sabah and Sarawak, with new discoveries being consistently added to the growing inventory. Our fish diversity is also impressive – a total of 1,951 species of freshwater and marine fishes belonging to 704 genera and 186 families have been recorded. Of these, 470 species are found in freshwater habitats, 81 in brackish water and 1,400 in marine habitats. Coral reefs are the richest habitat with 925 species of fish recorded therein. 27 species of marine mammals including the Indo-Pacific finless porpoise, Indo-Pacific humpback dolphin, Irrawaddy dolphin, Bryde's whale, and the dugong are also known to occur in Malaysian waters. Furthermore, four species of marine turtles are known to land in Malaysia: the Green, Hawksbill, Olive Ridley and Leatherback turtles.

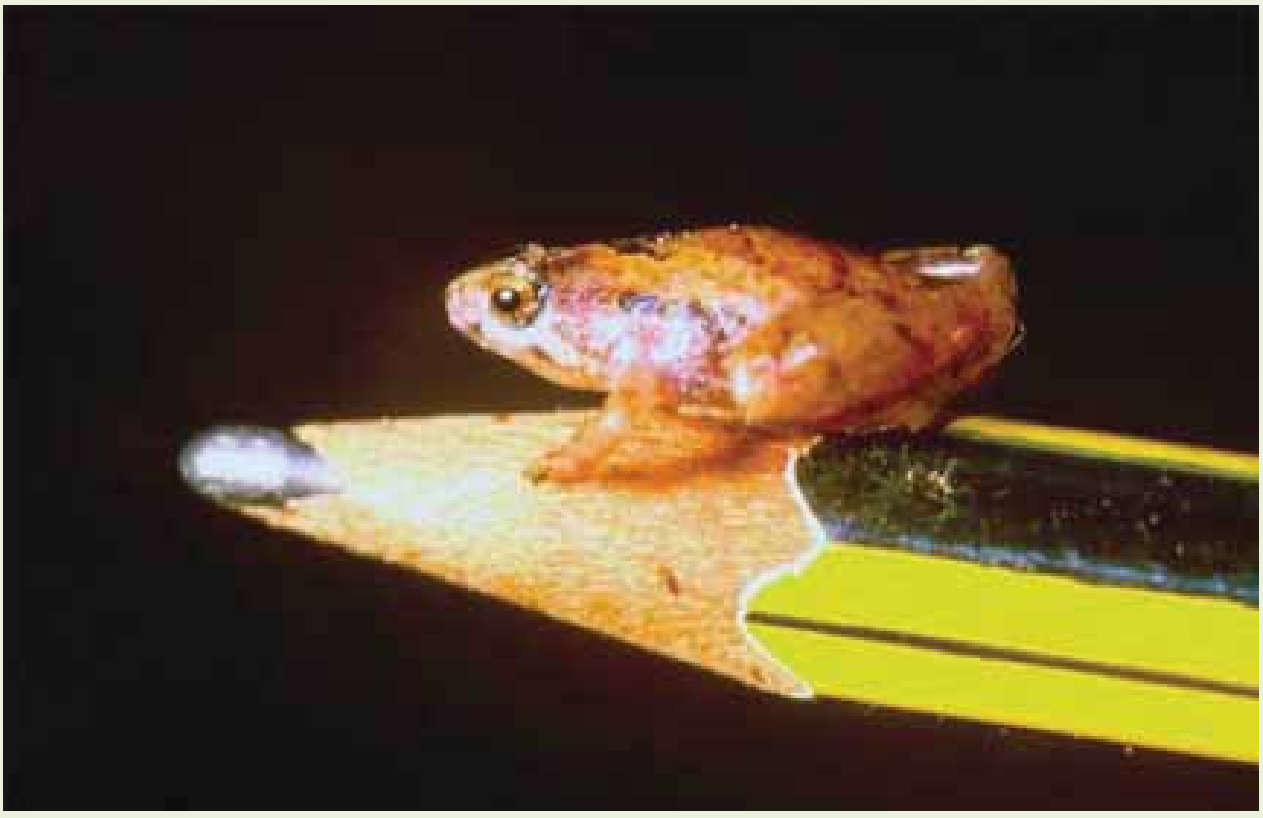
Box 2 : Anurans of Malaysia

While Malaysia has been well-associated with iconic animals such as the Malayan tiger, Asian elephant and the Orang Utan, it is easy to overlook some of the other animal groups that are equally diverse throughout the country. One such group are the anurans, or more commonly known as frogs and toads. Descending from the Class Amphibia, there are over 200 species. In Peninsular Malaysia, 107 species of anurans are known to occur here, while Sabah has recorded 111 species, 18 of which are endemic to that region, and Sarawak has a total of 130 anurans species.

The Bornean Horned Frog (*Megophyrs nasuta*)

Anurans are divided into 6 families, each family having its own unique assemblage of frogs and toads. The Bufonidae family consists of the true toads, which are close relatives of frogs that have rough, warty skin. Members of the Megophyridae family consist of frogs that mostly live on the forest floor and tend to hide during the day under leaf litter or in small burrows in the case of the Horned Frogs. The Microhylidae family feature narrow-mouthed frogs, with some unique species that secrete a thick, sticky mucus from the glands in the skin, while the family Ranidae is one of the more familiar group of frogs that feature common species that are usually found in streams as well as urban areas. Species from the family Rhacophoridae are mainly aboreal frogs which spend most of their time in trees, and are commonly used in featured on book covers and documentaries to portray the diversity of rainforests. This anuran family includes popular frogs that are able to "fly" from through the forest canopy.

Despite the already impressive assemblage of frogs and toads, many more species are being described through the years of research in the forests of Malaysia. In 2010 the smallest frog in southeast Asia, *Microhyla borneensis*, was discovered in the forests of Kubah National Park, Sarawak. This frog comes from the family Microhylidae and measures a mere 10 – 12 mm, which is roughly the tip of a pencil. This tiny frog species is most abundant where pitcher plants occur and are active day and night in patches of pitcher plant growth.



RATIONALE FOR CONSERVING OUR BIODIVERSITY

Our biodiversity provides the essential ecological services that ensure that we, as a nation, are able to enjoy pleasant environments, clean air and water, and partake of the bounty of productive and healthy ecosystems. Plants, animals and microorganisms provide the food, medicine and other products that we need and use on a daily basis. Biodiversity also helps us to sustain our economy in many ways.

Biodiversity, Agriculture and Food Security

Plants, animals and fish are our main sources of food. Biodiversity, through agriculture, is an important component of food security because species diversity provides the genetic material for future food and agricultural crops.

Wild animals are also important for the healthy growth and pollination of cultivated plants. Many species of insects, birds and bats are pollinators and dispersal agents of fruits and other crops, besides playing an important role in maintaining rainforest dynamics. In addition, domestic animals may be improved by cross-breeding with wild relatives. Breed conservation programmes of indigenous farm animal genetic resources, such as Kedah-Kelantan cattle, are very important by providing broad gene pool and genetic improvement for future food security in terms of quality meat production.

Mangrove forests provide important ecosystem services:
Photo by Forestry Department Peninsular Malaysia

Malaysia's fisheries industry has grown significantly over the last two decades. Marine catches have been steadily rising from about 800,000 tonnes in 1980 to over 1.48 million tonnes in 2013[13]. Mangrove swamps are feeding and nursery grounds for fisheries, as well as being the habitats of several of our important commercial fishes and shrimps.

Rice is an important staple food for Malaysians and many other Asian societies. Malaysia has many wild varieties and land races of rice including those that are uniquely cultivated by indigenous people. Currently, 12,258 accessions of rice from indigenous, wild and cultivated sources are conserved in genebanks as genetic materials for further improvement[14]. Protection of such biological diversity is critical for food security.

FAO has estimated that about 10,000 to 50,000 plant species are edible[15]. However, only about 150 to 200 species are cultivated as food. This means that there are many more species that can potentially be commercialised as food plants.

Biodiversity and Ecosystem Services

Our plants and animals provide important ecological services including the protection of water quality, regulation of the hydrological cycle, soil generation, watershed protection, recycling of nutrients, carbon sequestration and oxygen release. The variety of biological organisms in ecosystems helps to stabilise the environment, providing human societies with a wide range of essential and basic amenities such as habitable environments, building materials, water supply, flood mitigation and productive soils as well as recreational opportunities. For example, coastal peat swamps, mangroves, seagrass beds and coral reefs all have their parts to play as nurseries for fishery resources as well as in preventing coastal erosion. Forests act as water catchments and increase the water retention capacity of the soil so that water is released slowly into the streams and waterways during the dry season, thus ensuring water supply throughout the year.

Biodiversity and Health

Plants and animals are the basis of most traditional medicines. Rural communities in many parts of Malaysia still depend on traditional medicines for their healthcare needs. It is estimated that about 1200 species of higher plants in Peninsular Malaysia and 2000 species in Sabah and Sarawak have potential medicinal properties and are used in traditional health care[16]. Furthermore, many of these species are endemic to Malaysia, making them truly a natural asset worth conserving. Modern medicine also uses plants and plant products as the basis for many commercial drugs. Plants and herbs such as "Hempedu Bumi" (*Andrographis paniculata*), bitter melon/peria (*Momordica charanthia*) and white leadtree/petai belalang (*Leucaena orientalis*) have shown potential for dengue treatment[17].

Biodiversity and Forestry

Malaysia's forests have been and continue to be of major national economic importance. Timber from the forests was a major income earner in Malaysia in the 1960s until the 1990s and played a critical role in Malaysia's economic development. There is now a much greater emphasis on sustainable forest management so that the forest resources will be available for future generations. Besides timber, there are many other non-timber forest products such as rattan, agarwood (gaharu), gums, resins, edible oils, medicines and food items which are collected both for domestic use and for trade.

Biodiversity and Tourism

Tourism is the second highest foreign currency earner for the nation and over 25 million tourists visited Malaysia in 2014. Malaysia with its outstanding biodiversity and scenic natural environment has been successfully promoted as an ecotourism and nature-oriented tourism destination in recent years. For example, recreational diving is a high value form of tourism that attracts tourists from all over the world. This type of tourism depends on the diversity of coral reefs and quality of the environment. Sipadan, Layang-Layang and the oceanic islands in the South China seas are considered to be among the world's best diving sites. Mulu National Park and Kinabalu National Park are UNESCO World Heritage sites with biodiversity of global significance. Taman Negara National Park annually draws over 80,000 tourists. These and many others help to drive Malaysia's tourism industry.

Biodiversity and Biotechnology

Biotechnology is a multi-billion ringgit industry worldwide with massive growth potential. Malaysia is well-placed to tap into this to develop medicines and other products based from biodiversity. The application of biotechnology can be the catalyst to generate new wealth for the country, but only if resources are sustainably managed. Advances in biotechnology, including modern methods of cultivating and propagating crops and livestock have been made possible largely because of genetic diversity in parent stocks. They could also result in the development of products such as pharmaceuticals, antibiotics and vaccines.

Biodiversity and Traditional Knowledge

FAO estimated that three-quarters of prescription drugs manufactured today are based on the traditional knowledge of the local communities or indigenous people[18]. Traditional rural communities, especially in developing countries, still use a large number of species for medicinal purposes.

Indigenous peoples in many parts of the country continue to possess a deep cultural and spiritual connection with the natural world that is an essential part of their spirituality, worldview and identity. It is this inextricable link between indigenous peoples and biodiversity, maintained over generations, that endows traditional knowledge with an unmatched wisdom about the natural world. The *tagal* system in Sabah and *tagang* in Sarawak are good examples of how traditional knowledge is used effectively to manage fishery resources.

Besides food and medicine from plant and animal species, biodiversity forms an essential part of the cultural life of Malaysia's indigenous people. Carving and traditional weaving have been influenced by both the availability of trees, rattans and microphytes and by natural motifs as well as aquatic plants. Traditional carvings of Dayak and Orang Asli houses, for example, incorporate designs of leaves, seed pods, tendrils, buds and flowers. Throughout the country, towns and villages are named after important and useful plants, animals and characteristics found in nature, such that modern-day built-up environments persist in echoing the cultural consciousness of the value of biodiversity to our people.

THE CHALLENGE BEFORE US

At the turn of the last century, Malaysia was covered with dense forests teeming with wildlife. After Malaysia gained independence, there was an urgent need to develop the economy of the nation and uplift the quality of life of our people. The country's ongoing transition to become a developed, high-income nation has exerted various pressures on our diverse floral and faunal communities, leaving many species vulnerable with some even facing threats of extinction.

Habitat and Species Loss and Genetic Erosion

There has been a decline in our wild species of flora and fauna as well as the loss of their habitats. Although Malaysia has taken steps to protect forests, rivers, seas and species using various legal instruments, the pressures on our biodiversity are increasing. While many new protected areas, national and state parks have been established, the loss of forest cover continues. Since 2004, the Forest Research Institute Malaysia (FRIM) has carried out an assessment of the conservation status of plant species from 458 taxa (435 species with 23 additional varieties and subspecies) in Peninsular Malaysia. The assessment showed that nearly half (46.1%) of the assessed taxa were in some level of threat; 62 taxa (13.5%) were listed as Critically Endangered, 69 taxa (15.1%) are Endangered and 80 taxa (17.5%) are Vulnerable. Four species, namely the two ferns (*Oreogrammitis crispatula* and *Oreogrammitis kunstleri)*, the woolly-stalked begonia *(Begonia eiromischa)*, and a dipterocarp (*Shorea kuantanensis)* are extinct. These species were narrow endemics, and the sites where the species were found have been converted to other land uses.

A majority of Malaysia's mammals are facing various levels of threats. In 2009, the Department of Wildlife and National Parks (DWNP) carried out an assessment of the status of 222 terrestrial mammal species in Peninsular Malaysia, using data up to the year 2000. The assessment listed two species that are currently locally extinct, namely the banteng (*Bos javanicus*) and the Javan rhinoceros (*Rhinoceros sundaicus*), plus one (Sumatran rhinoceros) as critically endangered, 26 as endangered, and 22 as vulnerable. Since then, the Sumatran rhinoceros (*Dicerorhinus sumatrensis*) has been declared functionally extinct, in both Peninsular Malaysia and Sabah and Sarawak. Although no assessment has been carried out to determine the current threat status of terrestrial mammals in Sabah, IUCN lists 86 mammals (approx. 40%) in Sabah that are under various levels of conservation risk, including 8 large mammals that are considered threatened. Six of these species are listed as totally protected in Sabah under the Wildlife Conservation Enactment 1997. In Sarawak, 21 terrestrial mammal species are currently listed as totally protected under the Wildlife Protection Ordinance 1998, and a further 4 species as well as all species from 9 genera are listed as protected.

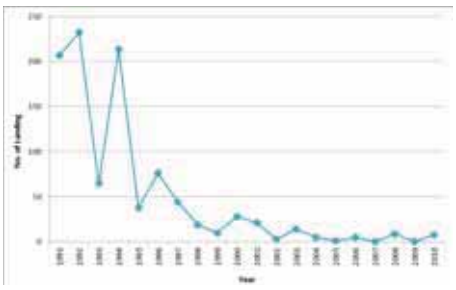
Box 3: Vanishing Iconic Species

Given Malaysia's immense diversity of unique flora and fauna, the national image is strongly associated with iconic species of animals as well as plants. However, many of these iconic species are under various levels of threat due to development pressures.

The Malayan tiger is featured on the country's Coat of Arms and in many other logos where is symbolises strength and courage. However, this species is face with pressure due to habitat loss and poaching. Current estimates of the national tiger population range from 250 to 340 individuals in the forests of Peninsular Malaysia, significantly down from the previous estimate of 500 tigers. It is now classified by IUCN as "Critically Endangered".

The Sumatran rhinoceros was once native to the forests of Belum-Temenggor, Taman Negara and Endau-Rompin, as well as other parts of the Peninsula, as well as in the forests of Sabah and Sarawak. Now, there have been no new records from the forests of Peninsular Malaysia and Sarawak, and it has been declared extinct in the wild in Sabah with only three remaining individuals held at the Bornean Rhinoceros Sanctuary. This clearly shows that we face the prospect of seeing the Sumatran rhinoceros going extinct in our lifetime.

Leatherback turtle landings in Malaysia



Malaysia is also well-known for nesting grounds of four species of marine turtles. The leatherbacks were once a prime tourist attraction. Now, their numbers have declined significantly due to uncontrolled overharvesting of their eggs that they are considered to be locally extinct in Malaysia. In the last few years, only a handful of leatherback turtles have returned to Rantau Abang – a once popular and well known turtle landing site. Conservation efforts now focus on ensuring successful nesting of the remaining three marine turtle species (green turtle, olive Ridley's turtle, and hawksbill turtle).

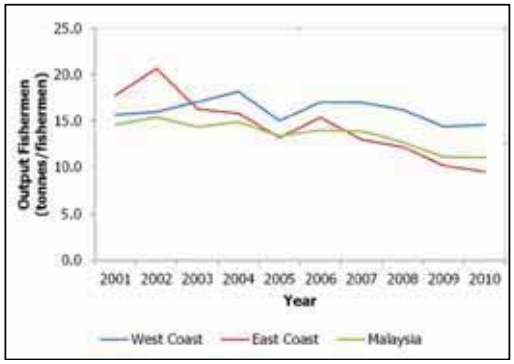
The scenario is similar for the other animal groups. For example, at least 124 of Malaysia's bird species are globally threatened, while 8 species that have been known to occur in the Peninsular Malaysia are considered to be locally extinct. Although new discoveries have added to the growing inventories, this does not mask the fact that amphibians appear to be particularly vulnerable, with frogs and toads under global threats of extinction that are believed to stem from pollution, habitat destruction and climate change. Reptiles also face similar threats, while habitat loss and degradation endanger Malaysia's fish populations[19].

Fragmentation

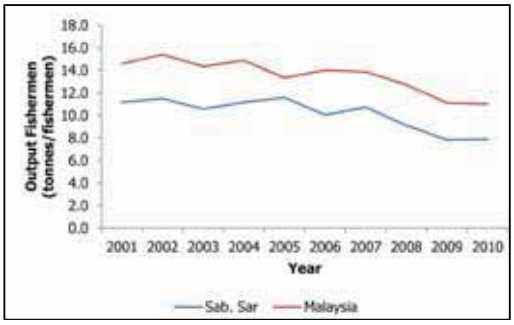
Although Malaysia still has a significant amount of forest cover, much of it is fragmented. This results in the loss of ecological connectivity which affects animal and plant populations. Many forest birds, especially those that inhabit the understorey, do not readily fly over open areas. Many fish and other aquatic species cannot survive in rivers that flow through degraded areas. Thus many animals are trapped in areas that are too small to provide the necessary resources for their survival. Even if they do survive, in the longer term they face genetic isolation which causes extinctions of local populations. This also applies to plants in as much as plants "move" via pollen and seed distribution. The maintenance of contiguous forests through the establishment of ecological corridors through landscapes of fragmented forest patches is a practical way to address this problem. Although long-term programmes such as the Central Forest Spine, Heart of Borneo and the Kinabalu Ecolinc have been initiated to mitigate the problem of fragmentation, the problem is complex and will require substantial investments. Even an area as large as Taman Negara National Park cannot be expected to maintain its full complement of plant and animal diversity in isolation from forests in the adjacent landscape.[2]

Declines in fish stock

Our fish stock is under pressure due to pollution and unsustainable fishing practices. Some of our coral reefs, seagrass beds and mangrove forests have been lost or degraded. Land based activities including agriculture and industries release pollutants such as sewage and sediment that harm reefs and alter marine water quality. Physical impacts from tourism, including divers, snorkelers and boats also create problems. Climate change, coupled with deteriorating ecosystems and biodiversity from land use change, is contributing further impacts. Mass coral reef bleaching has emerged over recent years as a major threat that is difficult to manage and which can have potentially devastating effects. To address this, Malaysia has introduced a zoning system in coastal waters which prohibits fishing vessels from encroaching nursery and breeding grounds, as well as expanding marine protected areas and banning the sale of turtle eggs (in Sabah) and catching of sharks. Catch per fisherman has been on a steady decline over the past decade[21].



Output per fishermen in Peninsular Malaysia



Output per fishermen in Sabah and Sarawak

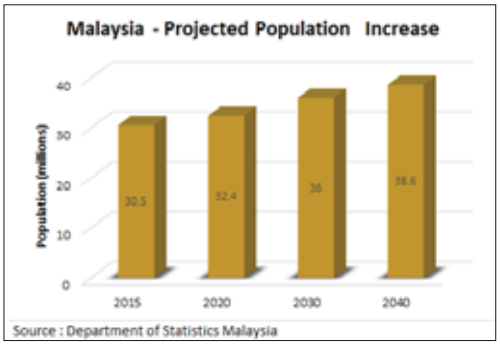
Source : Hiew et al (2013) Coral Triangle Initiative" Ecosystem Approach to Fisheries Management – Country Position paper.

Invasive alien species

Invasive species prey upon, or out-compete native species, or modify natural ecosystems, causing the extinction of native species. For example, the water hyacinth, a fast growing aquatic plant from South America, is now found in many of our waterways. The weed blocks waterways and prevents sunlight and oxygen from reaching the water column and submerged plants. Many of the oxbow lakes along Kinabatangan River in Sabah are infested with these weeds and have to be regularly cleared. The lotus plants in Tasik Chini are now being replaced by the South American cat's tail weed. This weed blocks waterways and reduces the species diversity in the lake. A survey of the lake in 2009 recorded only 24 fish species compared to 84 species recorded earlier.[22] Although efforts to identify invasive species have been undertaken by various agencies, much work remains to be done.

Population pressure

The increasing population of our nation (estimated to reach close to 40 million in 2040[23]) puts pressure on land and biological resources. There is ever increasing demand for food, water, houses, jobs, schools, healthcare, energy and transportation – all of which impact on biodiversity. With increasing levels of disposable incomes, the consumption patterns are also changing – Malaysians are consuming more than ever. The competition for land is fierce – every sector clamours for the ever-shrinking land base. Waste and pollution are increasing. Although many sectors are now more sensitive to the issue, our rapid economic growth means that it requires more effort to conserve our biodiversity.



Climate change

The threat of climate change is well-established although its actual impacts on biodiversity are not easily predicted. Changes in temperature and precipitation can have severe impacts - an increase in precipitation and drought which can destroy habitats. Temperature changes may cause shifts in current ecosystems both latitudinal and altitudinal, meaning that species have to migrate to keep up with their optimal habitats – leading to changes in species distribution. In one well documented example, various species of moths native to Mount Kinabalu have been shown to be moving their ranges uphill, exactly as would be expected if they are following temperature zones that are also moving uphill due to climate change.[24]

Awareness

The level of education and awareness on the importance of biodiversity is low which hinders support for conservation. The many values of biodiversity – including its critical roles in the economy, in supporting human well-being and in creating resilience to climate change – remain poorly recognised due to their being "public" goods and services without markets or prices.

Capacity to manage

All stakeholder groups involved in biodiversity conservation have limited capacity. Although new institutions have been created, existing ones strengthened and the number of personnel increased, these are still insufficient in light of the increasing magnitude and complexities of the challenges. Capacities are restricted due to understaffing, and lack of requisite information, tools and technical capacity. The number of technical personnel is insufficient at most agencies – the problem being more critical at the state level. Indigenous peoples and local communities, while typically knowledgeable and willing to participate in biodiversity conservation, are often constrained by their lack of capacity in terms of funds, formal training and access to information.

Knowledge

There is incomplete data coverage and significant gaps in our knowledge on biodiversity. Biodiversity planning and management is often constrained by the fact that decision-makers do not have ready access to appropriate information and tools for informed decisions about resource use and conservation options. Data are segmented and scattered across agencies and jurisdictions making it a challenge to configure or produce overall analysis on biodiversity trajectory which can support policy and decision making. In addition, most available data have not been translated into information that can be useful to support science policy interface.

Funding

There is limited funding for biodiversity conservation and research. Public budget allocations are relatively low as compared to the significant values that biodiversity and ecosystem services generate for the Malaysian economy and population. Most biodiversity managers face critical financing constraints. The last decade has seen some diversification of conservation funding. Various trust funds (e.g., Marine Parks Trust Fund, Taman Negara Trust Fund) and recently, the National Conservation Trust Fund for Natural Resources, have been set up as long-term sustainable financing mechanisms. The corporate sector and civil society, too, have become increasingly engaged in funding conservation. However the amount of funding from these sources is insufficient compared to the total needs.

Other than the government, few groups contribute directly to funding the costs of conservation, and there is limited mainstreaming of biodiversity into the budgets of the other sectors that depend or impact on it. Aside from Federal and State budgets, there is no consolidated long-term funding mechanism for biodiversity. Positive economic and financial incentives for biodiversity conservation remain minimal. It still makes more financial sense, for many investors, consumers and producers, to degrade or deplete biodiversity in the course of their economic activities than to conserve and sustainably use it.

International Obligations

On the global front, Malaysia is party to various biodiversity-related multilateral conventions and agreements, such as the Convention on Biological Diversity (CBD). Malaysia is also party to multi-lateral environmental agreements covering a wide range of subjects including trade in endangered species, protection of important wetlands, biosafety, climate change, transboundary movement of hazardous wastes, haze and laws of the sea. Our obligations are numerous and we need to strengthen our policy framework to enable us to fulfill our responsibilities.

Box 4: Multilateral environmental agreements subscribed by Malaysia

In addition to the CBD, Malaysia is also party to various other biodiversity-related multilateral environmental agreements (MEAs) such as:

- ASEAN Agreement on Transboundary Haze
- Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal
- Cartagena Protocol on Biosafety (CPB)
- Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)
- Convention on Wetlands of International Importance (Ramsar Convention)
- Kyoto Protocol to the UNFCCC
- Montreal Protocol on Substances that Deplete the Ozone Layer
- Prior Informed Consent (Rotterdam Convention)
- Stockholm Convention on Persistent Organic Pollutants
- United Nations Framework Convention on Climate Change (UNFCCC)
- United Nations Convention on the Law of the Sea
- Vienna Convention for the Protection of the Ozone Layer
- World Heritage Convention (WHC)

These MEAs complement and mutually reinforce each other in defence of the broad environment, including measures that are needed for national and international biodiversity management.

EVERYONE HAS A PART TO PLAY

The call to address the challenge of biodiversity conservation weighs heavily on everyone. Although we may not personally have directly caused or benefitted from the loss of biodiversity, we are at a historic turning point where urgent and decisive actions taken now can reverse alarming trends and restore the nation's biodiversity. In doing so, we may yet establish a stronger foundation for achieving the national vision for sustainable development.

For these reasons, this Policy is designed to engage everyone in Malaysia. Everyone has a part to contribute, and we all need to make conservation our responsibility for the sake of future generations.

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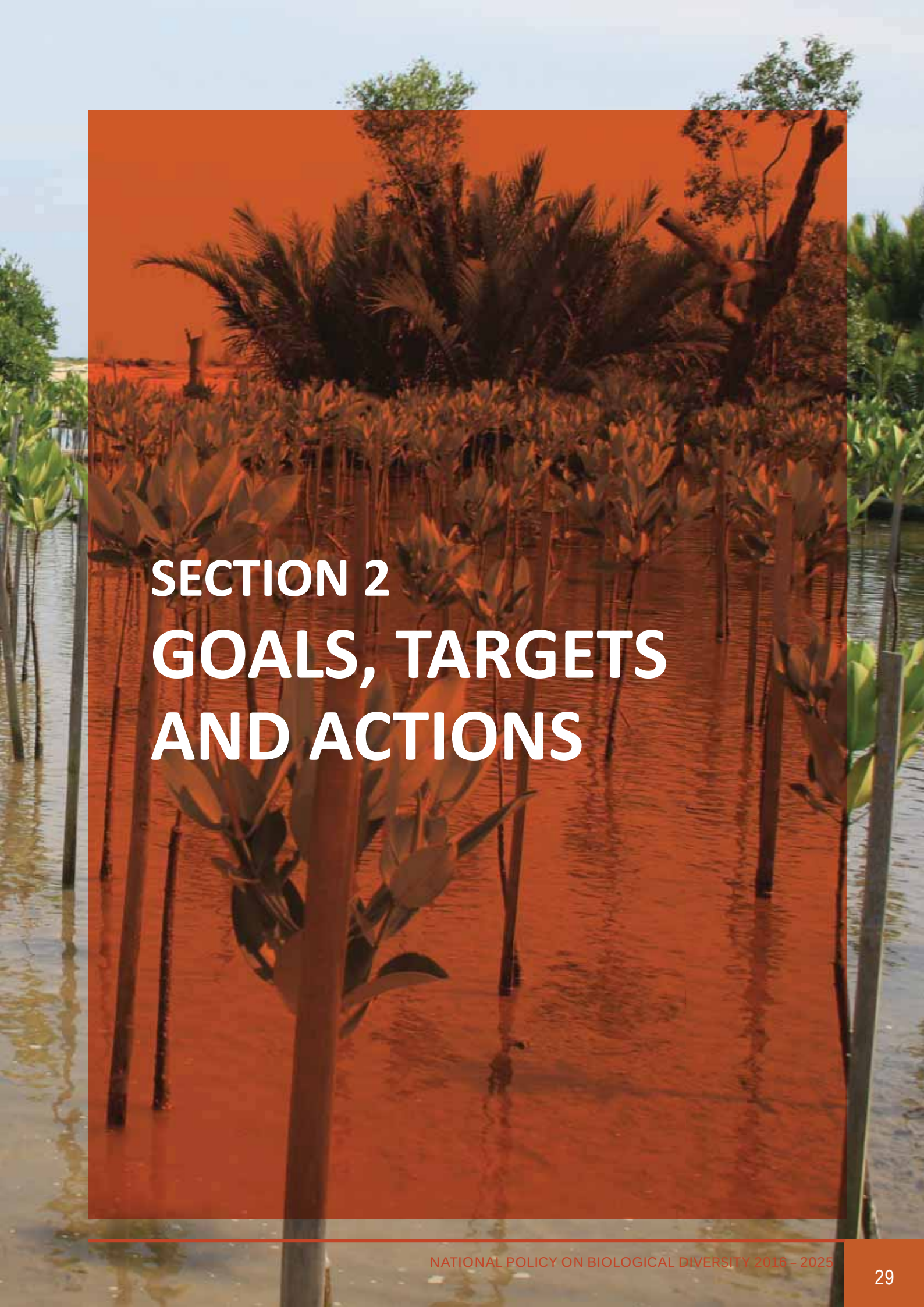
Mangrove replanting projects
Photo by Forestry Department Peninsular Malaysia



SECTION 2
GOALS, TARGETS AND ACTIONS

POLICY STATEMENT

"Malaysia is committed to conserve its biological diversity, promote its sustainable use and ensure fair and equitable sharing of the benefits arising out of the utilisation of biological resources."

The National Policy on Biological Diversity 2016 – 2025 (NPBD) seeks to conserve Malaysia's biological diversity and to ensure that its components are utilised in a sustainable manner for the continued progress of the nation. The Policy is guided by our national development agenda including National Vision 2020 and the 11th Malaysia Plan. In keeping with Malaysia's international commitments, the Policy embodies the spirit of the Sustainable Development Goal and all the key elements of the *CBD Strategic Plan for Biodiversity 2011-2020.*

PRINCIPLES

The NPBD is guided by five principles to ensure that the goals, targets and actions support our vision for sustainable development.

PRINCIPLE 1: Heritage. Biological diversity is a national heritage. It must be sustainably managed, wisely utilised and conserved for future generations.

PRINCIPLE 2: Precautionary. The lack of full scientific certainty should not be used as a reason to postpone measures to minimise threats of significant loss of biodiversity.

PRINCIPLE 3: Shared responsibility. The conservation and sustainable utilisation of biodiversity are the shared responsibility of all sectors of society.

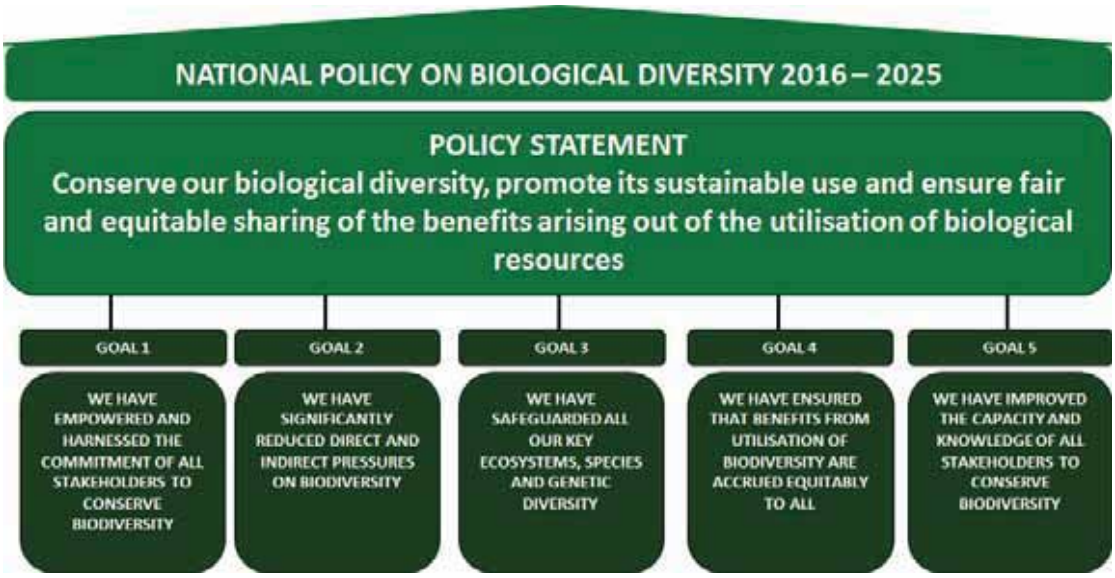
PRINCIPLE 4: Participatory. Planning and management of biodiversity must be carried out in a participatory manner.

PRINCIPLE 5: Good governance. Good governance, including accountability and transparency, is crucial to biodiversity conservation.

OUR GOALS, TARGETS AND ACTIONS

This Policy has goals, targets and actions that we have to work towards to conserve our biodiversity, promote its sustainable use and ensure fair and equitable sharing of the benefits arising from the use of biological resources.

We have five overarching goals that are geared towards realising our policy statement and these goals closely mirror the goals of the CBD Strategic Plan for Biodiversity 2011-2020. They encompass empowering stakeholders, reducing pressures on our biodiversity, safeguarding our ecosystems, species and genetic diversity, ensuring equitable sharing of benefits from biodiversity and building the capacity of all stakeholders.



Each goal has several targets that provide focus on specific areas. There are 17 such targets to be achieved by 2025. The 17 national biodiversity targets encompass all the elements of the 20 Aichi Biodiversity Targets adopted under the CBD. The timeline is set for 2025 (as compared to 2020 for the Aichi Biodiversity Targets) because the national targets address many other national priorities and challenges.

Each target is accompanied by a set of actions that spell out the steps to be taken to achieve them and ultimately the goals. There are a total of 57 actions in this Policy. All the actions have measurable key indicators that will enable us to monitor progress. The lead agencies for each action have also been identified.

1

GOAL 1

WE HAVE EMPOWERED AND HARNESSED THE COMMITMENT OF ALL STAKEHOLDERS TO CONSERVE BIODIVERSITY

GOAL 1
WE HAVE EMPOWERED AND HARNESSED THE COMMITMENT OF ALL STAKEHOLDERS TO CONSERVE BIODIVERSITY

Malaysia's biodiversity is our shared heritage and a vital lifeline to our future. Safeguarding it means that everyone in Malaysia must play his or her part. We need to empower and harness the commitment of all stakeholders to join hands to conserve our living treasure.

The Federal and State governments will play leading roles in conserving biodiversity. In addition to the traditional biodiversity and environment-related agencies, all other agencies, including academia, will also be engaged in the mission. We anticipate that agencies responsible for land and land use planning, infrastructure and transportation, agriculture, fisheries, extractive industries, security, tourism, as well as economic and human development, will be important partners in this effort.

Civil society, which has traditionally played an active role in biodiversity conservation is expected to play an even greater role in the future. We anticipate greater empowerment and a significant increase in partnerships and opportunities for civil society to contribute. Indigenous peoples and local communities, who have long been local custodians of the biological resources that sustain them, will steadily increase their contribution and their participation will be more visible. With support, indigenous peoples and local communities will be ideal partners to conserve biodiversity at the local level, both on their own and in partnership with other stakeholders.

The private sector has made significant contributions to biodiversity conservation and it continues to make many relevant development and investment decisions. It is expected to play a more prominent role in future - mobilising its funds, resources and people to support various initiatives.

We must give all Malaysians a greater understanding of the values of biodiversity and awareness of what we can all do to conserve it. We must generate a greater sense of ownership to permeate across government and society. Empowering every segment of our society and harnessing their commitment is fundamental to reaching our goals.

GOAL 1 HAS 2 TARGETS

- **Target 1: By 2025, more Malaysians are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.**
- **Target 2: By 2025, the contributions of indigenous peoples and local communities, civil society and the private sector to the conservation and sustainable utilisation of biodiversity have increased significantly.**

Target 1: By 2025, more Malaysians are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.
Key indicator 1.1: By 2025, the level of public awareness on the importance of biodiversity has doubled compared to the 2016 level.
Key indicator 1.2: By 2025, at least 500,000 youths and children are participating in nature camps annually.
Key indicator 1.3: By 2021, the Parliamentary Environmental Caucus has been established.

WHY IS THIS TARGET IMPORTANT?

The contribution of biodiversity in Malaysia is not widely understood and as a result, its economic, social and environmental importance is poorly recognised. While a better understanding of its values is important to motivate people to act, it may not be enough. Malaysians need to "walk the talk" with concrete actions to conserve and sustainably use biodiversity. Addressing the underlying drivers of biodiversity loss requires that all segments of society across the nation commit to changing the way they behave.

MEETING THE TARGET

Raising awareness and understanding among the people of Malaysia is crucial if we want to protect our biodiversity. We need to rally everyone to discover the wonders of nature, marvel at our plants and animals, and understand how we are all interdependent within the landscapes and seascapes around us. When people from all walks of life care about the elements of nature that provide for our health, safety and leisure, we will have achieved the best possible start to mobilising the vast majority of Malaysians to be the stewards of our biological heritage.

Action 1.1: Create awareness across all segments of our society

We must actively create awareness across all segments of our society. Using "MyBioD: MyLife, MyHeritage, MyFuture" as a central theme, we will communicate effectively about biodiversity to target audiences in all sectors of society, including indigenous peoples and local communities, so that information is shared in the appropriate languages and in a user-friendly manner. We need to:

(a) formulate and implement the national biodiversity communications, education and public awareness (CEPA) action plan. The CEPA action plan will include the imperative for communicating the spirit and required actions of this Policy to all stakeholders.
(b) embark on a sustained campaign to create awareness amongst everyone. In this regard, we will develop and implement a 10-year campaign to create awareness and action through various platforms that connects everyone with biodiversity and ecosystem services.
(c) improve awareness through citizen science by creating opportunities for members of the public to be involved in biodiversity research.
(d) support events that celebrate biodiversity conservation such as the International Day for Biodiversity, World Environment Day, World Tiger Day, World Ocean Day, World Tapir Day, and Raptor Watch.
(e) enhance the website and social media presence of NRE and other biodiversity-related agencies to better disseminate information to all stakeholders.

Action 1.2: Nurture participation amongst children and youth

We need to nurture new generations of Malaysians who are biodiversity-aware and act as incoming cohorts of natural and social scientists, entrepreneurs, educators, law-makers and advocates championing biodiversity conservation. We need to:

(a) strengthen biodiversity literacy in the formal education curricular that will inspire young Malaysians to discover, explore and cherish the wonders of nature. This entails a greater emphasis on biodiversity within related subjects (science, mathematics, geography, etc.) as well as introducing biodiversity-related examples in other subjects (languages, history, art, etc.).
(b) strengthen environmental training for teachers, administrators and managers across all levels of public education, from pre-school to higher learning institutions.
(c) support and strengthen co-curricular school activities, including nature clubs, green camps, recreational sports, with a focus on outdoor learning in nature.
(d) develop standardised modules or adopt existing modules for nature camps to enable such camps to be replicated throughout the country.
(e) expand the Rakan Alam Sekitar programme to enable youth groups to carry out biodiversity conservation projects and internships with suitable organisations.

Action 1.3: Engage with the legislature and judiciary

Members of the legislative and judiciary arms have crucial roles to play. Biodiversity protection and management must be implemented within appropriate and properly enforced legal framework. We need to:

(a) establish the Parliamentary Environmental Caucus to enable members of Parliament to participate actively in biodiversity-related decision-making.
(b) support members of Federal and State legislatures and the judiciary with information and scientific evidence base about the values and state of biodiversity in Malaysia.
(c) provide adequate resources to our Environmental Courts to enable them to handle the multitude of environmental cases effectively.

Target 2: By 2025, the contributions of indigenous peoples and local communities, civil society and the private sector to the conservation and sustainable utilisation of biodiversity have increased significantly.
Key indicator 2.1: By 2021, policy and legal provisions to empower indigenous peoples and local communities to be custodians of biodiversity have been developed.
Key indicator 2.2: By 2025, the number and/or size of collaborative projects with civil society have doubled compared to the 2016 level.
Key indicator 2.3: By 2025, the number and/or size of collaborative projects with the private sector have doubled compared to the 2016 level.
Key indicator 2.4: By 2016, the National Biodiversity Roundtable has been established and is represented in the National Steering Committee for NPBD.

WHY IS THIS TARGET IMPORTANT?

There are many indigenous peoples and local communities and civil society groups active in biodiversity conservation through a broad range of activities that we need to recognise and support, especially at the local level. The private sector influences terrestrial and marine environments in many ways. Sectors such as tourism, fisheries, forestry, agriculture, financial services, and land and urban development are dominated by the private sector. We need support and the active involvement of the indigenous people and local communities, civil society and the private sector to sustain our efforts to conserve biodiversity.

MEETING THE TARGET

Mobilising the people of Malaysia to value biodiversity has never been more critical. With national development, there is a growing urgency to reconnect people closer to the biodiversity and ecosystems that sustain our way of life. This entails increasing the understanding on how biodiversity underpins the way we live. It is important to recognise the linkage between healthy biodiversity and healthy living in order to obtain commitment all segments of our society to be involved in conservation.

Action 2.1: Recognise, support and empower indigenous peoples and local communities

Indigenous peoples and local communities often live closest to nature and as a result have developed deep knowledge of, and intricate relationships with the biological resources and natural environments around them. We need to recognise and support the roles that indigenous peoples and local communities play as the custodians of biodiversity; a co-existence they have nurtured since time immemorial. We need to:

(a) build capacity, provide incentives, enable access to information and create awareness amongst indigenous peoples and local communities to carry out biodiversity conservation *[see also action 6.3].*
(b) develop policy and legal instruments that empower indigenous peoples and local communities to be effective custodians of biodiversity *[see also action 6.3].*
(c) develop and implement community engagement programmes that enable indigenous peoples and local communities living inside marine and terrestrial protected areas and within buffer areas to be involved in biodiversity conservation.
(d) identify and nurture local champions as catalysts for conservation action.
(e) strengthen and support community-based biodiversity monitoring and patrolling such as Honorary Wildlife Wardens and Honorary Rangers programmes.
(f) establish national and subnational awards that recognise indigenous peoples and local communities who have made important contributions to biodiversity conservation.
(g) establish a working group on community based natural resources management to encourage, facilitate and plan conservation efforts by indigenous people and local communities.

Box 5: The Tagal system in Sabah

Indigenous communities in Sabah practice a form of traditional management for river resources and watersheds, referred to locally as *tagal* or *bombon*. Under this system, communities first identify zones in the river to be set aside as *tagal*. They decide on management prescriptions assigned to each zone, ranging from strict prohibition to permissible uses subject to conditions (e.g. line fishing, seasonal catch, conservation fees). At regular intervals agreed upon by the community, the *tagal* prohibitions are lifted for a limited period. This signifies a period of communal harvest with the resulting catch distributed amongst community members. Fishing in the protection zones at any other time is strictly forbidden, and anyone found guilty of breaching these regulations will be fined heavily under local customary law.

Recognising this, the Department of Fisheries Sabah has embraced the *tagal* system, and sees itself as a supporter, facilitator and promoter of the system. The Department works to promote *tagal* in new areas, and offers technical and material support in places where *tagal* already exists. This recognition of the *tagal* system marks an important point for the inclusion of traditional knowledge in conservation in Sabah. There are now 531 *tagal* areas established in Sabah involving 221 rivers in 20 districts. This has resulted in a significant increase in the productivity of riverine fisheries and the maintenance of river systems.

Tagal provides a good example of collaborative biodiversity management led by indigenous communities and supported by the government which results in the protection of freshwater biodiversity.

Action 2.2: Recognise, support and empower civil society

Civil society organisations are important partners in conservation. Malaysia has a thriving civil society working to conserve biodiversity. Most of them, however, have limited resources. It is therefore important to support civil society to enable Malaysians from all walks of life to work together to manage and conserve biodiversity. We need to:

(a) support civil society organisations in their efforts to promote biodiversity conservation and sustainable resource use by building capacity, platforms and access to information.
(b) facilitate networking and collaboration amongst civil society organisations.
(c) maintain a register of civil society organisations at the national, subnational and local level.
(d) empower civil society organisations by including them in the decision-making processes and promoting participatory planning *[see also actions 2.4 and 15.2]*.

Action 2.3: Develop sustained collaborations with the private sector

In recent years, Malaysia's thriving private sector has emerged as a committed partner in safeguarding the welfare of our society and the environment. We need to enable greater investments and sustained involvement of our corporate partners so that they can deliver stronger and lasting returns to biodiversity conservation. We need to:

(a) strengthen corporate social responsibility, investment and accountability initiatives by focusing efforts on priority areas in biodiversity conservation and resource use.
(b) encourage partnerships with private sector to facilitate science and technology transfer in enhancing the economic value of biodiversity.
(c) identify and provide incentives to the private sector to conserve and sustainably use of biodiversity. This includes promoting and rewarding alliances between private sector, civil society and the indigenous peoples and local communities.
(d) strengthen sustainability programme for public-listed companies as well as other programmes that promote sustainability in the private sector.

Action 2.4: Enhance stakeholder participation in decision making processes

We need to ensure that all stakeholders have the opportunity to participate and contribute to the decision making process so that biodiversity conservation plans, actions and outcomes are made taking into account the interest of all concerned stakeholders. We need to:

(a) ensure that stakeholder consultation is central in the formulation of legislation, policies, programmes and projects that have potential impact to biodiversity, including deliberations to gazette or degazette PFE and national/state parks.
(b) develop and implement procedures and mechanisms for inclusive and timely stakeholder engagement for all policies and programmes related to biodiversity.
(c) establish the National Biodiversity Roundtable - a multi-stakeholder roundtable consisting of members from civil society and the private sector to promote this Policy and serve as a partner and advisor to the NRE *[see also Action 15.2]*.

2

GOAL 2

WE HAVE SIGNIFICANTLY REDUCED DIRECT AND INDIRECT PRESSURES ON BIODIVERSITY

GOAL 2
WE HAVE SIGNIFICANTLY REDUCED DIRECT AND INDIRECT PRESSURES ON BIODIVERSITY

There are various direct and indirect pressures on our biodiversity and these pressures must be managed and significantly reduced. The pressures come from many sectors including agriculture, forestry, fishery, tourism, extractive industry and infrastructure. The competition for land for housing, industries and townships also puts pressure on our biodiversity.

We anticipate that our future national and state development policies and programmes will have biodiversity conservation embedded in them. We envisage that all our land use plans, at the national, state and local levels, will incorporate biodiversity conservation including the clear identification and protection of environmentally sensitive areas. We want to move towards a more comprehensive and inclusive way of managing our natural resources. Mainstreaming biodiversity has already started in many policies and programmes – we envisage that this process will continue and be intensified.

We want to ensure that all sectors of the economy are planned and managed in a manner that does not impose undue pressures on our biodiversity. While we recognise that each sector has its own mandate and aspirations, we need to work together so that biodiversity conservation and sector-specific development go hand in hand – as both are crucial components for nation building. We realise this will entail changes in our lifestyles and the manner in which we manage our resources. We need to embrace sustainable consumption and production.

The goal therefore is to have biodiversity values taken fully into account by addressing all relevant sectors at every level of decision-making, supporting efficiencies of planning and development, armed with an up-to-date understanding of the impacts on and benefits from biodiversity.

GOAL 2 HAS 3 TARGETS

- **Target 3: By 2025, biodiversity conservation has been mainstreamed into national development planning and sectoral policies and plans.**
- **Target 4: By 2025, our production forests, agriculture production and fisheries are managed and harvested sustainably.**
- **Target 5: By 2025, tourism is sustainably managed and promotes biodiversity conservation.**

Target 3: By 2025, biodiversity conservation has been mainstreamed into national development planning and sectoral policies and plans.
Key indicator 3.1: By 2018, a policy and/or regulatory framework for incorporating biodiversity conservation into national and state development and into sectoral policies and plans is in place.
Key indicator 3.2: By 2020, a natural resource accounting programme has been established for the valuation of natural areas and ecosystem services.
Key indicator 3.3: By 2020, all states have identified hotspots where biodiversity is of significant conservation value.
Key indicator 3.4: By 2020, 20% of the Federal Government's procurement is green.

WHY IS THIS TARGET IMPORTANT?

Malaysia needs to keep economic development as a key national priority, but this journey must be on a path that utilises land and natural resources in a more efficient and effective manner. We cannot sustainably manage biodiversity or national development in separate silos. Development depends on having sustained natural resources; and they in turn, including biodiversity will depend on appropriate management of national development.

MEETING THE TARGET

We need to ensure that biodiversity is adequately valued and fully integrated into the nation's policy development and decision-making processes. Impacts on biodiversity must be evaluated in all relevant scenarios, transactions and decisions. We have to move away from the current sectoral and end-of-the-pipe treatment. Considering that pressures on biodiversity come from many different sources, action to reduce them must be undertaken in a comprehensive manner. The mainstreaming of biodiversity is part and parcel of the greening of the nation's economy.

Action 3.1: Embed biodiversity conservation into national and state development planning and sectoral policies and plans

Biodiversity values need to be taken fully into account by addressing all relevant sectors at every level of decision-making. We have to ensure that all our national and state development policies, plans and programmes are sensitive towards biodiversity and incorporate sufficient safeguards to protect and enhance our biodiversity. All our sectoral policies, including those on forestry, energy, agriculture, tourism, transportation, extractive industry and infrastructure, will address biodiversity conservation. We need to:

(a) ensure that future revision of our policies or plans, including the 5 year Malaysia Plans, will assess the impacts of such policies on biodiversity and embed all necessary safeguards, including planning for No Net Loss or preferably a Net Gain of biodiversity.
(b) develop a policy and/or regulatory framework for incorporating biodiversity conservation into national and state development and into sectoral policies, plans and programmes..
(c) develop tools and provide support to enable state governments to mainstream biodiversity conservation into all state-level policies, plans and programmes, particularly those related to land and natural resources.
(d) review existing sectoral policies to determine areas of conflicts and existence of perverse incentives. In particular, we need to review our policies on agriculture, timber, fisheries, extractive industry and commodities.
(e) ensure that our infrastructure planning and design take into account the need to protect biodiversity rich areas and ensure contiguity of key wildlife habitats, reduce pollution and minimise damage to our flora and fauna.
(f) ensure that river and river basin planning and management, including the planning and construction of our dams, river training and flood mitigation works, take cognisance of aquatic and terrestrial biodiversity.
(g) reduce water pollution from various sources through the use of new technologies, increasing coordinated enforcement and by imposing deterrent penalties to protect our marine and freshwater biodiversity.
(h) strengthen the biodiversity component of the Environmental Impact Assessment process, including post-EIA enforcement.

Action 3.2: Recognise the economic value of biodiversity and ecosystem services

Accurate valuation of biodiversity and ecosystem services will enable us to make more informed decisions regarding biodiversity and natural resources and promote behavioural changes. As it stands, ecosystems and biodiversity are often under-valued leading to a low level of protection. We need to:

(a) establish a natural resource accounting programme to monitor the values of natural resources, including biodiversity, as well as ensuring that such values are properly taken into account in development planning.
(b) develop mechanisms to value non-timber forest resources and the environmental services provided by forests and other ecosystems so that these can be incorporated into national accounting systems and forest management practices.
(c) undertake a comprehensive valuation of biodiversity and ecosystem services including an assessment of the impacts perverse subsidies *[see also action 4.4]*.

Action 3.3: Protect environmentally sensitive areas in statutory land use plans

Competition for land is a key issue for biodiversity management. The statutory land use plans are important avenues to guide optimise land use and to protect our biodiversity. We need to:

(a) ensure that the National Physical Plan, state structure plans, district local plans, special area plans and other spatial planning processes identify and incorporate environmentally sensitive areas in a consistent manner.
(b) establish a spatial database of Environmentally Sensitive Areas (ESA) at national, state and district levels and standardise the methodologies for designating priority ranking of ESAs.
(c) encourage the establishment of urban growth boundaries to minimise urban sprawl and protect ESAs.

Action 3.4: Promote sustainable consumption and production

Sustainable consumption and production (SCP) is a concept that promotes economic growth without compromising the environment or jeopardising the needs of future generations. This means efficient use of natural resources, minimising use of hazardous substances and reducing pollution and waste over the life cycle of products and services, efficient use of limited resources like water, land, energy and other raw materials, and holistic management of residues - solid waste, effluents or emitted gases. Promoting SCP is vital for biodiversity conservation. We need to:

(a) promote the development of domestic green products and services.
(b) implement the Government green procurement as a catalyst to spur green market.
(c) promote sustainable lifestyles to encourage the demand for green/environment-friendly products.

Target 4: By 2025, our production forests, agriculture production and fisheries are managed and harvested sustainably.
Key indicator 4.1: By 2025, 100% of all timber and timber products are sustainably managed (i.e. certified under schemes such as MTCS, FSC, etc.).
Key indicator 4.2: By 2025, 50% of all agricultural areas are sustainably managed (i.e. certified under schemes such as MSPO, RSPO, MyGAP, etc.).
Key indicator 4.3: By 2025, 20% of fish catch are through fisheries programmes or groups (i.e. certified under schemes such as GAP, MSC etc.).
Key indicator 4.4: By 2021, perverse subsidies in the agriculture, forestry and fisheries sectors have been identified and rationalised.

WHY IS THIS TARGET IMPORTANT?

Forestry, agriculture and fisheries are essential to the wellbeing of Malaysia's population, economy and environment. Agriculture and forestry cover more than 90% of our land area. These sectors rely on biodiversity and at the same time create multiple pressures on it. In addition, the productivity of our territorial waters and the seas throughout our relatively large Exclusive Economic Zone (EEZ) is equally important to the Malaysian economy.

MEETING THE TARGET

We need to ensure that these three sectors are planned and managed in a manner that does not impose undue pressures on our biological resources. Each sector has the responsibility to ensure that biodiversity conservation and sector-specific development go hand in hand. It is in their direct interest to do this to ensure that biodiversity continues to provide the resources that each sector needs. We need to improve and incorporate biodiversity conservation into the practices of agriculture, forestry and fisheries.

Action 4.1: Strengthen sustainable forest management

Forestry is a key sector for biodiversity conservation and management, as large tracts of our land area fall within the Permanent Forest Estate (PFE). In adopting the Sustainable Forest Management (SFM) approach, we are committed to maintaining an extensive, healthy, diverse and productive forest estate that serves multiple benefits, including timber production, biodiversity conservation and the provision of ecosystem services. A large proportion of our forest concessions are already certified – a practice that we will maintain and continuously improve. We need to:

(a) ensure that all our production forests obtain certification under the Malaysian Timber Certification Scheme (MTCS) and/or other internationally recognised schemes.
(b) invest in upgrading the skills and expertise of SFM concession holders in managing forest resources for multiple benefits including timber production, environmental and social needs of local communities.
(c) strengthen the implementation of Reduced Impact Logging practices.
(d) continue supporting forest restoration efforts in all FMUs.
(e) protect high conservation value (HCV) areas and incorporate the conservation of rare, endangered and threatened indigenous animals and plants into forest management programmes.
(f) ensure that forestry operations are socially responsible, particularly to neighbouring communities by incorporating appropriate social programmes into planning and management of FMUs.
(g) ensure that forest plantations, including timber latex clone plantations, are only developed outside ESA/HCV areas and that they avoid areas that are crucial for wildlife movement.

Action 4.2: Strengthen agricultural planning and improve practices

Agriculture shapes the nation's landscape and contributes significantly to the economy and we have to focus our efforts on improving yields from existing agricultural land. This is vital if we are to increase food production and commodities without having to open up greenfield sites. We must ensure the optimal use of land for agriculture and incorporate biodiversity conservation into all sectors of agriculture policy and decision-making. We need to:

(a) develop and implement appropriate agriculture landscape planning to ensure that agricultural activities are compatible with long-term conservation of biodiversity and minimise human-wildlife conflicts.
(b) ensure that agriculture does not encroach into ESAs – paying particular attention to the problem of

encroachment into riparian zones, steep slopes, protected areas and forest reserves.

(c) develop and implement a programme to rehabilitate areas that have been encroached by agriculture, particularly on riparian and highland areas *[see also action 7.2]*.

(d) continue to provide extension services and technical support to smallholders and farmers to help them improve their productivity and conserve biodiversity.

(e) promote and provide incentives to enable the agricultural players pursue certification such as Malaysian Sustainable Palm Oil (MSPO), Roundtable on Sustainable Palm Oil (RSPO) and MyGAP.

Action 4.3: Implement the Ecosystem Approach to Fisheries Management

We are committed to good fisheries practices which address the multiple needs of our society, while ensuring that future generations can also benefit from the full range of goods and services provided by marine ecosystems. In this regard, we need a new fisheries management approach that focuses on ecosystems conservation, resource health and improving the quality of the fisheries. We need to:

(a) develop and implement a framework for Ecosystems Approach to Fisheries Management and formulate regulations and guidelines to ensure the conservation of fisheries resources.

(b) promote and provide incentives for fisheries certification (e.g. Marine Stewardship Council MSC or similar).

(c) expand the fishing prohibited zones to allow for the recovery of commercial fish stocks and other biota.

(d) develop a programme of work to control illegal, unreported and unregulated (IUU) fishing.

(e) eliminate the use of detrimental fishing gear and enforce the use of Turtle Exclusion Devices (TED) to protect our marine turtles.

(f) continuously educate and support coastal communities and commercial fishing operators about fishing regulations and conservation of the marine ecosystem.

(g) improve the reporting of our fisheries statistics including bycatch statistics.

(h) promote research and development of Good Aquaculture Practices including methods to safeguard biodiversity.

(i) develop a management mechanism, including new legislation if necessary, to regulate recreational fishing.

Action 4.4: Rationalise incentives that are harmful to biodiversity

Incentives, including subsidies, that are harmful to biodiversity and the protection of the environment must be identified, reviewed and rationalised. In this content, we need to:

(a) undertake a comprehensive review of all incentives in the agriculture, forestry and fisheries sectors to determine their impacts on biodiversity and livelihoods.

(b) reform perverse economic subsidies and other economic barriers impeding good agriculture, forestry and fishery practices *[see also action 3.2]*.

Target 5: By 2025, tourism is sustainably managed and promotes biodiversity conservation.
Key indicator 5.1: By 2025, 50 tourism sites/resorts have been certified under Global Sustainable Tourism Criteria (GSTC) or similar schemes.
Key indicator 5.2: By 2018, all tourism guides for nature-based attractions have been certified as green guides.
Key indicator 5.3: By 2025, the number of indigenous people and local communities actively participating in ecotourism has doubled compared to the 2016 level.

WHY IS THIS TARGET IMPORTANT?

Tourism, including ecotourism, is growing rapidly in Malaysia. Natural environments and biodiversity are valuable resources for tourism but if not managed properly, their value for tourism, heritage and economic development will diminish over time; and biodiversity will be lost. Tourism must be managed sustainably to minimise impacts on biodiversity.

MEETING THE TARGET

We need to protect Malaysia's rich biodiversity so that the tourism industry can continue to grow and contribute to our economy. Sustainability must remain central to all tourism development. We will continue to promote Malaysia as a haven for responsible nature tourism and ensure this approach is reflected in our tourism programmes, products and services. We will ensure that appropriate safeguards are in place to protect and restore ecosystems, mitigate tourism impacts, and that local communities are meaningfully engaged in tourism development, especially in ecotourism.

Action 5.1: Identify and mitigate impacts of tourism on biodiversity

We need to understand the many ways that tourism affects biodiversity so that we can incorporate appropriate safeguards to protect this precious resource base. Tourism operators and facilities must achieve credible standards of environmentally-friendly practices to ensure that biodiversity is well protected, pressure from tourism activities is kept to a minimum, and Malaysia's standing as an ecotourism destination is maintained. We need to:

(a) undertake a comprehensive review of the impacts of all forms of tourism on biodiversity, particularly those at ESAs and assess the carrying capacities of all our key ecotourism sites.
(b) ensure that only ecotourism activities are allowed in ESAs and that ecotourism projects are subject to a development planning approvals that specify measures for mitigating impacts to biodiversity.
(c) ensure that ecotourism sites have formulated and implemented management plans that include conservation targets and actions, and mechanisms for protecting biodiversity.
(d) develop and adopt a national interpretation of the Global Sustainable Tourism Criteria (GSTC) and motivate tourism operators to conserve biodiversity by applying the principles of the GSTC or other internationally recognised standards.
(e) build capacity amongst small tourism operators to adopt best management practices.
(f) establish and enforce tourist behaviour guidelines that promote responsible travel, as well as educating and creating awareness amongst tourists to reduce visitor impacts on biodiversity.

Action 5.2: Promote green guide certification

Tour guides are tourism ambassadors for our nation. Guides promote natural and cultural attractions, introduce tourists to popularised and off-the-beaten-track destinations, encourage tourists to take-up outdoor and cultural activities, and educate thousands of visitors. Our tourist guides need to be equipped with knowledge about Malaysia's biodiversity and the safeguards for working in ecotourism sites. We need to:

(a) develop and adopt a green guide programme that sets the direction for building a tour guide community that is knowledgeable and ecologically conscientious.
(b) incorporate modules on the importance and status of biodiversity, potential impacts of tourism and appropriate safeguards into the tour guide training programmes.
(c) develop and conduct specialised guiding courses including on cave tourism, birding and diving as well as courses focused on specific geographical areas.
(d) ensure tour guides operating in ecotourism sites obtain credible certification.

Action 5.3: Engage indigenous peoples and local communities in nature tourism and promote volunteerism

Local participation and direct benefits to indigenous people and local communities are two major elements of ecotourism. We need local populations to benefit, either directly or indirectly, so that ecotourism enhances both the environmental and socio-economic conditions of an area. We need to:

(a) engage and empower indigenous peoples and local communities living in and around nature tourism sites as active participants in ecotourism planning and implementation so that their livelihoods are improved and the sites are better protected.

(b) promote and support community-based tourism including agrotourism.

(c) create awareness about responsible travel, as well as educating tourism operators, developers and visitors on the importance of community-based tourism.

(d) develop volunteer placements and internships at ecotourism sites that enable Malaysians as well as tourists to experience hands-on conservation work including through community-based tourism.

3

GOAL 3

WE HAVE SAFEGUARDED ALL OUR KEY ECOSYSTEMS, SPECIES AND GENETIC DIVERSITY

GOAL 3

WE HAVE SAFEGUARDED ALL OUR KEY ECOSYSTEMS, SPECIES AND GENETIC DIVERSITY

We aim to ensure the resilience of our biodiversity and ecosystems. We want to ensure that they are managed in an effective and integrated manner, are ecologically representative and integrated into the wider landscapes and seascapes. We too aim to minimise the erosion of our genetic resources.

The goal ensures that representative areas of natural habitats are set aside and protected. These protected habitats have to be significantly large, with enough diversity at genetic and species levels, to survive in the long term. We envisage that our protected areas are connected by corridors of natural habitats in the man-made landscape to allow gene flow, the spread of pollen and seeds and the movements of animals.

In addition, threatened plant and animal species, especially those that are in immediate danger of extinction, require species management plans as the basis for their conservation. Likewise, species such as tigers, elephants, turtles and sharks that range over very large areas require similar focus and support, especially to eradicate poaching and illegal trade.

Effective biodiversity conservation operates at the landscape and seascape scale across public and private domains, and where necessary, measures must include transboundary and other forms of international co-operation. We also need to utilise e*x situ* solutions, including botanical gardens, zoos and aquaria for selected living specimens; as well as gene banks and germplasms for as many species as possible.

GOAL 3 HAS 8 TARGETS

- **Target 6: By 2025, at least 20% of terrestrial areas and inland waters, and 10% of coastal and marine areas, are conserved through a representative system of protected areas and other effective area-based conservation measures.**
- **Target 7: By 2025, vulnerable ecosystems and habitats, particularly limestone hills, wetlands, coral reefs and seagrass beds, are adequately protected and restored.**
- **Target 8: By 2025, important terrestrial and marine ecological corridors have been identified, restored and protected.**
- **Target 9: By 2025, the extinction of known threatened species has been prevented and their conservation status has been improved and sustained.**
- **Target 10: By 2025, poaching, illegal harvesting and illegal trade of wildlife, fish and plants are under control and significantly reduced.**
- **Target 11: By 2025, invasive alien species and pathways are identified, priority species controlled and measures are in place to prevent their introduction and establishment.**
- **Target 12: By 2025, a comprehensive biosafety system inclusive of a liability and redress regime is operational to manage potential adverse impacts of modern biotechnology on biodiversity and human health.**
- **Target 13: By 2025, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives is adequately conserved.**

Target 6: By 2025, at least 20% of terrestrial areas and inland waters, and 10% of coastal and marine areas, are conserved through a representative system of protected areas and other effective area-based conservation measures.
Key indicator 6.1: By 2025, 20% of the land surface and inland waters are conserved as protected areas or other effective area-based conservation measures.
Key indicator 6.2: By 2025, 10% of the coastal and marine territories are conserved as marine protected areas or other effective area-based conservation measures.
Key indicator 6.3: By 2025, the number/size of community conserved areas has doubled compared to the 2016 level.
Key indicator 6.4: By 2018, the national Protected Area system framework has been established.
Key indicator 6.5: By 2018, the national action plan for the conservation of urban biodiversity has been formulated.

WHY IS THIS TARGET IMPORTANT?

No country can conserve all of its natural biodiversity unless it conserves viable, representative examples of all of its natural habitats. Malaysia's protected areas (PA) network, which forms the backbone for the maintenance of biodiversity and of ecosystem services, is an impressive result of decades of work. However our system has its weaknesses. The areas protected are not big enough and not comprehensively representative of all habitats in the terrestrial, marine and freshwater realms.

MEETING THE TARGET

We must manage our protected areas more effectively. We need to expand the extent of areas that are protected and ensure that the protected areas are representative of the various ecosystems present in the country. We also need to recognise and facilitate community conserved areas (CCAs) that would allow indigenous people and local communities to conserve and manage important sites.

Action 6.1: Expand the extent and representativeness of our terrestrial PA network

We need to expand our terrestrial protected area (PA) network and ensure that it is ecologically representative of all significant habitat types, areas of high species richness and conservation values, areas containing threatened species and habitats, and under-represented ecosystems such as lowland dipterocarp forests, wetlands and limestone hills. We also need to protect and sustain habitats that provide essential ecosystem services and resources upon which local communities depend. We need to:

(a) formulate a programme of work for strengthening of our national terrestrial PA network with a focus on expanding the under-represented ecosystems, particularly wetlands, limestone hills, lowland dipterocarp forests, areas of high endemism and sites important for migratory species.
(b) gazette PAs recommended in the National Physical Plan, Sabah Structure Plan, Sabah Biodiversity Strategy, Sarawak Wildlife Masterplan and other statutory plans.
(c) establish transboundary terrestrial PAs cooperation involving Indonesia, Brunei and Thailand, giving priority to those PAs critical for the success of the Heart of Borneo (HoB) Initiative (e.g., Batang Ai-Lanjak Entimau-Betung Kerihun, Pulong Tau-Kayan Menterang and Mulu-Sungei Ingei) and the Central Forest Spine (CFS) (e.g., Royal Belum– Hala Bala) *[see also action 15.5].*
(d) formulate a National Masterplan for freshwater fish/biota sanctuaries and establish a network of such sanctuaries to protect freshwater species.

Action 6.2: Expand the extent and representativeness of our marine PA network

We need to significantly increase our marine protected areas network and its ecological representativeness. Malaysia's coastal marine habitats such as mangroves, seagrass beds and coral reefs comprise important ecosystems that are rich in biodiversity but vulnerable to land-use and climate change, as well as over-harvesting. Thus, an integrated management approach is needed to ensure that conservation is effective throughout the country and not only at specific sites. We need to:

(a) formulate a programme of work for strengthening of the national marine PA (MPA) network with a focus on expanding the under-represented ecosystems, in particular coral reefs, seagrass beds and turtle/terrapin nesting beaches.

(b) establish new transboundary MPAs cooperation involving Indonesia, Brunei and the Philippines – giving priority to those critical for the success of the Coral Triangle Initiative (CTI)*[see also action 15.5]*.
(c) formulate and implement management plans for all MPAs and fisheries prohibited areas (FPA) to ensure re-establishment of healthy populations of targeted species.
(d) develop methods, standards, criteria and indicators for evaluating the effectiveness of MPA and FPA management and governance, taking into account the criteria of the Marine Stewardship Council (MSC) or other global standards for evaluating management effectiveness.

Action 6.3: Develop community conserved areas as an integral part of our PA network

Efforts to protect habitats and species are most likely to be successful when there is full co-operation among the complete range of stakeholders, including indigenous people and local communities. Community conserved areas (CCAs) are sites that are set aside and conserved by local people. Examples include the *tagal sungai* and *tagal hutan* systems in Sabah and the *tagang* system and community forests in Sarawak. There are also examples of urban communities applying more modern value systems to the conservation of local areas, such as at the Kota Damansara Community Forest. We need to:

(a) develop and implement a framework for recognizing and supporting CCAs, including on-farm conservation of agrobiodiversity, by indigenous peoples and local communities *[see also action 2.1]*.
(b) create a network of CCAs across land and seascapes, and recognise these CCAs as an integral part of our PA network.
(c) develop a database of existing CCAs and integrate into the national clearing house mechanism (CHM).
(d) encourage more indigenous peoples and local communities to adopt the CCA model and support their roles as proactive custodians of biodiversity and provide them with the necessary support *[see also action 2.1]*.

Action 6.4: Improve the effectiveness of PA management

In order to ensure that protected areas are effectively managed, it is necessary to set specific targets for all PAs and then periodically to evaluate performance and make improvements where necessary. We need to:

(a) establish a framework for the National PA system, including developing appropriate methods, standards, criteria and indicators for evaluating the effectiveness of PA management and governance, taking into account the IUCN-World Commission on Protected Areas (WCPA) Framework for evaluating management effectiveness.
(b) update the National PAs Master List continuously and disseminate it regularly to all stakeholders *[see also action 16.2]*.
(c) ensure that all PAs have formulated and are implementing their management plans, taking into consideration the surrounding landscapes and ecological corridors.
(d) review existing legislation governing PAs to ensure effective management.
(e) develop a complete spatial database of all terrestrial and marine PAs – including information related to legal protection status, known threats to their biota, biodiversity and key ecosystem services. [*see also action 16.2*]
(f) promote partnerships and co-management with indigenous peoples and local communities to safeguard and monitor PAs *[see also actions 2.1 and 6.3]*.

Action 6.5: Protect and maintain biodiversity in urban areas

The quality of life for people who live in urban areas (i.e., over 70% of people in Malaysia) can be enriched by close contact with nature. The challenge therefore is to create suitable urban habitats for desirable species while discouraging those that are undesirable. We need to:

(a) ensure that urban/regional planning addresses the need to establish and protect adequate green spaces and maintain contiguity of habitats and avoid fragmentation *[see also action 3.3]*.
(b) establish and maintain natural green zones in built-up areas and support the development of local residential as well as youth and sports programmes that promote the conservation and management of these areas.
(c) encourage the creation of urban habitats for birds and small mammals and establish bird refuges in parks and gardens.
(d) support private landowners to enhance biodiversity in their land by providing tools and guidance.
(e) formulate and implement the national action plan for the conservation of urban biodiversity.

Box 6 : Kota Damansara Community Forest Reserve: a model for community-based conservation of green spaces

The Kota Damansara Community Forest Reserve (KDCF), a remnant mixed lowland dipterocarp forest of 321.75 ha in Petaling Jaya, Selangor was once part of the extensive and biodiversity-rich Sungai Buloh Forest Reserve (6,590 ha; gazetted in 1898). Over the last 30 years, boundary adjustments and excisions for housing and infrastructure development diminished its extent, and by 2003, mounting concern about forest loss spurred a movement to safeguard the remaining forest as a green enclave and wildlife refuge. The sustained campaign driven by local residents, nature enthusiasts and other community groups eventually led to it being regazetted as a Permanent Forest Reserve in 2010. Today, the KDCF is classified as a forest for amenity, education and research under the authority of the Selangor Forestry Department.

Persatuan Rimba Komuniti Kota Damansara or KDCF Society was registered in 2011 to form a representative and well-governed community organisation to partner with the Selangor Forestry Department in managing the forest reserve. As co-managers, the Society works closely with the Department to implement the jointly developed Forest Management Plan. KDCF sees its role as complementing the Department by connecting people with the forest through nature appreciation and recreational activities while ensuring that its core values are preserved. To this end, a network of 11 km of forest trails have been built by community volunteers over 8 years. An active environmental education and volunteer programme is implemented, and Temuan Orang Asli from adjacent areas have taken up an important role in forest trail management. Although the Society has been successful in obtaining grants and corporate sponsorship, its main core of support continues to be the community's own contributions in the form of volunteerism, fees and donations.

As a model of public participation in the management of green spaces, KDCF offers a glimpse of the kind of synergy that can be realised through effective collaboration between government agencies and community groups, one that has the potential to be replicated with positive impact in many more locations given the right policy environment.

Target 7: By 2025, vulnerable ecosystems and habitats, particularly limestone hills, wetlands, coral reefs and seagrass beds, are adequately protected and restored.

Key indicator 7.1: By 2020, all vulnerable ecosystems have been mapped and by 2025, 50% of these ecosystems are legally protected.
Key indicator 7.2: By 2025, 20% (compared to the 2020 level) of all identified degraded vulnerable ecosystems are under rehabilitation programmes.
Key indicator 7.3: By 2025, 10,000 ha of degraded peat swamp forests have been rehabilitated.

WHY IS THIS TARGET IMPORTANT?

Malaysia has many vulnerable ecosystems and habitats that have yet to be given sufficient protection. They include breeding grounds (e.g., for those fish species that breed only in mangroves or coral reefs), seagrass beds that are critical feeding grounds for a variety of marine mammals (including the endangered dugong), limestone forests that are the only habitats for many plants and invertebrates and wetlands that are particularly vital for a number of ecosystem services, such as flood control, water filtration, erosion control, protecting against storm surge and carbon storage.

Despite their importance, the degradation of vulnerable ecosystems is continuing and losses have reached critical levels in many places. Furthermore, climate change presents a growing threat to ecosystems in general. Relatively healthy habitats may be expected to provide better adaptation/mitigation capacities than those that are already degraded.

MEETING THE TARGET

It is important to ensure that remaining vulnerable ecosystems are conserved and utilised in a sustainable manner. Vulnerable ecosystems and habitats must be comprehensively identified and mapped, with threats and management priorities clearly elaborated. We have to ensure that our ecosystems are better managed and their resilience strengthened. Furthermore, in light of climate change, ecosystems that are resilient will provide better adaptation/mitigation capacities as opposed to ecosystems that are degraded.

Action 7.1: Identify, map and protect all vulnerable ecosystems

Vulnerable and threatened ecosystems require particularly urgent action. If the threats that they face are not significantly reduced, then they are likely to be damaged or lost forever. We need to:

(a) develop appropriate methods, standards, criteria and indicators for identifying all such ecosystems as part of a continuous process, to be kept up to date.
(b) undertake nationwide mapping of all vulnerable ecosystems taking cognisance of land use changes and other emerging threats, including climate change.

Action 7.2: Improve management and rehabilitation of vulnerable ecosystems

Rehabilitating degraded ecosystems and habitats presents opportunities not only to improve their resilience, but also to enhance connectivity across environmental gradients and contribute towards improving carbon stocks – in itself, an adaptation/mitigation approach to climate change. We need to:

(a) design a targeted approach to rehabilitate degraded ecosystems and habitats.
(b) formulate national action plans for coral reefs, seagrass beds and limestone hills.

Action 7.3: Support the implementation of the National Action Plan on Peatlands

The National Action Plan on Peatlands (NAPP) was adopted by Cabinet in 2011 and runs till 2020 in parallel to the ASEAN Peatland Management Strategy 2006-2020 (APMS). Peatlands are the most extensive wetland ecosystem in Malaysia. They provide critical ecosystem services including water supply, flood control, carbon storage and well as being home to many unique, rare and endangered species. Less than 2% (55,000 ha) of our peatlands are located within protected areas. We need to:

(a) support implementation of the NAPP and APMS, in particular the objectives related to assessment, protection and rehabilitation, integrated management, fire prevention and control.
(b) undertake further assessments of peatland biodiversity as well as its role in carbon storage and GHG emission.
(c) implement strict conservation measures for peat swamp forests.
(d) rehabilitate degraded portions of relatively intact peat swamp forest areas.
(e) monitor implementation of the NAPP and prepare a new plan for the period 2020-2030.

Target 8: By 2025, important terrestrial and marine ecological corridors have been identified, restored and protected.

Key indicator 8.1: By 2025, 10 primary corridors under the CFS initiative have been fully implemented.
Key indicator 8.2: By 2020, the ecological linkage master plan for the HoB has been completed and by 2025, 3 priority corridors have been fully implemented.
Key indicator 8.3: By 2020, a national masterplan for marine ecological linkages has been completed.

WHY IS THIS TARGET IMPORTANT?

Due to agriculture, urban and infrastructure development, our forests have become highly fragmented. This results in the loss of ecological connectivity, whereby natural movement and gene flow of animals and plants is reduced. Fragmentation also cuts off the animal populations from food and other resources that may be critical to their survival. Similarly, many marine species have migratory patterns that are vital to their survival (e.g., fish, turtles, corals, etc.) but marine protected areas in Malaysia are not contiguous. There is an urgent need to identify and protect important terrestrial and marine ecological corridors.

MEETING THE TARGET

We need to ensure that all our protected areas are well-connected and integrated into the wider land and seascapes and are not managed in isolation. Ecological connectivity is an essential element in the long-term viability of protected areas and biodiversity because of the needs for sufficiently large gene pools. It is also critical in accommodating range shifts as species react and adapt to climate change. Malaysia has already made significant progress in landscape-level conservation initiatives such as the Central Forest Spine (CFS), the tri-lateral Heart of Borneo (HoB) initiative and the 6-nation Coral Triangle Initiative (CTI) which aim to integrate biodiversity protection and management across broad land and seascapes.

Action 8.1: Strengthen the implementation of the CFS Masterplan in Peninsular Malaysia

The CFS landscape is home to the vast majority of Peninsular Malaysia's forest habitats and therefore the biota that they contain. It is also critical for the life support system of the people of Peninsular Malaysia, not least by supplying 90% of their water supply. The CFS Masterplan provides a framework for re-establishing ecological connectivity in Peninsular Malaysia's forest habitats. We need to:

(a) allocate necessary resources at national and state levels for the implementation and monitoring of the CFS Masterplan.
(b) implement at least 10 identified primary linkages during this Policy period.
(c) review priority corridors and links for sites that require restoration work, especially those that have been degraded since the CFS Masterplan was drawn up; and identify new corridors where necessary.
(d) ensure that land-use changes that are in the planning stage, especially those for large areas (e.g., new townships) and linear projects (e.g., infrastructure/roads) do not conflict with the CFS Masterplan *[see also actions 3.1, 3.3, 4.1 and 4.2]*.
(e) organise the annual CFS – HoB – CTI Conference to disseminate information, share experience and solicit support *[see also action 16.1]*.

Action 8.2: Strengthen the implementation of terrestrial connectivity under the HoB initiative

The Heart of Borneo covers over 200,000 km^2 comprising mainly of forested highlands along the borders that Malaysia shares with Kalimantan and Brunei. Where there is ecological connectivity, the HoB extends down through the foothills into adjacent lowland forests. It is one of the world's most important centres of biodiversity. Ecological connectivity is a critical element of the HoB initiative. We need to:

(a) continue our support for implementation of the HoB Initiative by ensuring adequate and timely resources are channelled into biodiversity conservation in Sabah and Sarawak.
(b) implement the corridors in Sabah that are crucial for the HoB initiative including the Kinabalu ECOLINC, Sipitang – Ulu Padas, Ulu Segama – Malua, Danum-Maliau-Imbak and Kinabatangan Corridor of Life.
(c) identify and map priority ecological linkages in Sarawak and develop action plans for their implementation including the Mulu – Pulong Tau ecological linkage.
(d) support the establishment and holistic management of transboundary protected areas *[see also action 6.1 and 15.5]*.

Action 8.3: Identify, map and protect marine ecological corridors

Ecological connectivity for marine ecosystems is critically important. If a natural complement of marine biota is to be managed effectively, it is important not just to save species but also to protect their migratory pathways. We need to:

(a) Identify, map and protect known migratory pathways of marine life.
(b) formulate a national master plan for marine ecological linkages and develop a programme of work to protect these linkages.
(c) strengthen the implementation of the National Plan of Action for the Coral Triangle Initiative *[see also action 15.5]*.

Box 7 : Kinabalu Ecolinc

The Kinabalu Ecolinc Project is an initiative by the Sabah Parks to improve ecological connectivity between Kinabalu Park (a UNESCO World Heritage site) and Crocker Range Park (a UNESCO Man and Biosphere Reserve), two of Sabah's most important protected areas. Although Kinabalu Park and Crocker Range Park reside on the same range, they are physically separated from each other by a distance of about 10km at the closest points. The forested areas between these two protected areas are increasingly becoming fragmented due to expansion of agricultural and other human activities. Both parks could become completely isolated from each other and the surrounding forests – seriously threatening their ecological integrity.

The Kinabalu Ecolinc Project is an attempt to create a more harmonised habitat corridor for people, flora and fauna living in between these two Parks. It is to complement current conservation practices, based on the principles that local communities are the best guardians of their natural environments. A feasibility study conducted in 2010 – 2011 recommended the establishment of Community Conserved Areas (CCAs) within this Zone, managed by the local community voluntarily, with support from government agencies. This is to be followed by: community-based restoration of degraded habitat in CCAs and adjacent areas, the development of sustainable agriculture, and enhancing forest-related community tourism options to support forest management. The local communities shall be involved in the implementation and management of the proposed corridor.

The Kinabalu Ecolinc has been selected as one of the three demonstration sites for the European Union (EU) – REDD+ Climate Change Action programme namely "Tackling Climate Change through Sustainable Forest Management and Community Development", from 2014 - 2017. In June 2014, the Kinabalu Ecolinc Project Team was established to drive the project.

The Kinabalu Ecolinc is a good example of how the government and local communities can work together to protect our biodiversity while ensuring livelihoods are enhanced.

Target 9: By 2025, the extinction of known threatened species has been prevented and their conservation status has been improved and sustained.

Key indicator 9.1: By 2020, the National Red Data list on plants and animals is completed.
Key indicator 9.2: By 2025, all endangered and threatened species are protected by Federal and/or State legislation.
Key indicator 9.3: By 2025, a network of national botanical gardens have been established.

WHY IS THIS TARGET IMPORTANT?

Human actions, mainly habitat destruction and over-harvesting of biological resources, have increased the extinction rates of plants and animals. 48 of the 292 mammal species in Malaysia are threatened. The Sumatran rhinoceros has been declared to be functionally extinct in Malaysia and the leatherback turtle may have reached a similar point. The banteng is now extinct in Peninsular Malaysia and only a few exist in Sabah. Others, including the Malayan tiger and the orang utan, face serious threats. Many species of plants are also threatened. Reversing these trends is absolutely crucial.

MEETING THE TARGET

Besides addressing the indirect causes of species loss and genetic erosion, we must at the same time focus on actively conserving and managing species and genetic diversity. Where particular species and varieties of plants and animals are threatened with extinction, we have to put in place targeted conservation measures that will stem this threat and subsequently reverse the threatened status of these species.

Action 9.1: Conduct conservation assessments for plant and animal species

IUCN Red Data Book listings are widely used to allocate priorities for conservation action. Peninsular Malaysia, Sabah and Sarawak all have listings of their own wild species, as well as having species that occur in their territories on the IUCN Red Data lists. Given that resources are limited, Red Data status is a useful tool that should be used to create an authoritative and widely available national listing of species conservation priorities. We need to:

(a) develop our National Red Data listing with assessments of conservation status and update this list regularly.
(b) review and standardise legislation at national and state levels to protect our animal and plant species.

Action 9.2: Protect our most threatened species

We must urgently protect plants and animals that are threatened with extinction due to human activities or environmental change. Available data suggest that a variety of species and/or varieties that are threatened or endangered (e.g., the pangolin) will be extinct if direct action is not taken. Conservation programmes, both *in-situ* and *ex-situ*, should be designed based on good science and data. These will require the collective efforts of all related government agencies and other organisations. We need to:

(a) strengthen the implementation of existing species action plans such as National Tiger Conservation Action Plan and National Elephant Conservation Action Plan.
(b) formulate conservation action plans for threatened plants and animals species on the National Red Data list.
(c) ensure that all rare and threatened species are protected by our legislation.
(d) strengthen the implementation of the National Plant Conservation Strategy.

Action 9.3: Develop a national strategy for *ex-situ* conservation

We must explore ways of conserving biodiversity through *ex-situ* measures, ranging from large breeding groups of animals in zoos and cultivations of trees and other plants, to micro-organism collections and cyropreservation of genetic material. Although the preferred way of conserving wild species is within healthy natural habitats, we need to acknowledge that not all species or varieties of animals and plants can be guaranteed to survive under current conditions in their natural habitats. We need to:

(a) establish a national network of botanical gardens.
(b) enhance, upgrade or establish nurseries and introduction programmes for threatened species and varieties of trees and other plants, as well as appropriate captive breeding and reintroduction programmes.
(c) ensure that all zoos and wildlife parks are managed to a high standard, safeguard animal welfare and promote conservation.
(d) enhance seed and germplasm genebanks for wild microorganisms, fungi, plants and animals.
(e) strengthen national, regional and international co-operative programmes to share information, research, expertise and material for *ex-situ* conservation.

Target 10: By 2025, poaching, illegal harvesting and illegal trade of wildlife, fish and plants are under control and significantly reduced.

Key indicator 10.1: By 2020, resources for enforcement are doubled compared to the 2016 level.
Key indicator 10.2: By 2021, outlets involved in the trade and/or sale of illegal wildlife, parts and derivatives have been identified and legal action taken.

WHY IS THIS TARGET IMPORTANT?

Poaching and illegal wildlife trade are still a problem in Malaysia. They pose a direct threat for vulnerable and endangered species. A wide range of species are hunted for various purposes. Tigers, orang-utans, pangolins, sun bears, marine turtles and even mygalomorph spiders are among the many animals that are still being poached. A major driver of poaching is the illegal trade in wildlife. Besides animal poaching, rare and valuable plants and plant parts, such as gaharu, are also illegally harvested, traded and smuggled out of the country. As yet, we do not know enough about the severity and scale of the problem.

MEETING THE TARGET

We have to significantly enhance our efforts to eradicate poaching and illegal trade in wild animals and plants. With well-developed legislation, Malaysia has the requisite powers to curb poaching and illegal wildlife trade but more effective monitoring and enforcement is needed. We also need to step-up public awareness on poaching and illegal wildlife trade.

Action 10.1 Strengthen enforcement to eradicate poaching, illegal logging and illegal trade in wild animals, fish and plants

We have to strengthen all aspects of legal enforcement against poaching, illegal logging and illegal trade in wild animals, fish and plants to reduce pressures on biodiversity. We need to:

(a) strengthen capacity and improve collaboration with all law enforcement agencies, including foreign affairs, environment, customs, forestry, fisheries, maritime, wildlife, airport and port authorities, police and the judiciary to break trafficking syndicates and combat organised crime *[see also action 15.1]*.
(b) improve standards, training and support for rangers, other frontline staff, police and prosecutors.
(c) enforce high penalties for poaching, illegal logging and illegal trade of wild animals, fish and plants.
(d) develop forensic tools and procedures such as DNA profile databases to enhance intelligence-led investigations and improve the detection, arrests and prosecution of offenders.
(e) strengthen national and regional inter-agency and inter-governmental initiatives to counter the illegal cross-border trade.
(f) improve mechanisms and procedures to regulate pet and medicinal trades and private collections.

Action 10.2: Reduce demand through public awareness and behavioural change

Public awareness on the impact of poaching and illegal wildlife trade is crucial to garner widespread support. At the same time, behavioural change amongst consumers and other users of these illegal products is necessary to stop demand. We need to:

(a) embark on long-term public awareness campaigns to sensitise the public to the impacts of poaching on wild animals and plants *[see also action 1.1].*
(b) enlist public participation in reporting illegal wildlife trade, including rewards for information leading to the interception of these activities.
(c) encourage the use of technologies to allow users to report suspected illegal wildlife in trade easily.
(d) collaborate with a range of businesses including retailers, pet shops and traditional medicine practitioners to stop trading in illegal wildlife products.

Target 11: By 2025, invasive alien species and pathways are identified, priority species controlled and measures are in place to prevent their introduction and establishment.

Key indicator 11.1: By 2025, the level of awareness of the public regarding IAS has doubled compared to the 2016 level.
Key indicator 11.2: By 2018, a risk assessment framework for invasive alien species has been established.
Key indicator 11.3: By 2021, the National Action Plan for the Prevention, Eradication, Containment and Control of Invasive Alien Species has been fully implemented.

WHY IS THIS TARGET IMPORTANT?

Invasive alien species (IAS) often adversely affect the habitats and ecosystems that they invade, with serious impacts on biodiversity, agriculture and economies. They often spread rapidly where they compete successfully with native plants and animals for resources, which may lead to the demise of the native species, and in turn to alteration of vegetation structures and natural communities. They may carry foreign pests and diseases that can damage agriculture and endanger human health. Invasive species that thrive in a new environment are often very difficult to control. The Global Invasive Species Database (2011) lists a total of 141 invasive alien species in Malaysia.

MEETING THE TARGET

There are so many ways that alien species can invade a new environment that complete exclusion is virtually impossible. Nevertheless, all possible measures should be taken to prevent their entry to Malaysia, in addition to which all known cases should be monitored and managed as necessary. This requires an integrated approach of education, monitoring and enforcement as well as targeted programmes to eradicate species that present a high risk. This task is by no means simple, but the risk to Malaysia's significant biodiversity requires us to increase our efforts.

Action 11.1: Improve our understanding and public awareness about IAS

Understanding the biology and the pathways of IAS is crucial to enable us to plan and manage them effectively. Similarly, raising awareness amongst all segments of our society is important in our battle against IAS. We need to:

(a) increase research in all aspects of IAS management including understanding their pathways and ecological impacts and develop technologies to contain and control IAS *[see also action 16.1]*.
(b) educate the public at large on the threats posed by IAS and the problems posed by smuggling of wild animals and plants, accidental imports, escapes from legitimate enterprises, and the pet trade *[see also action 1.1]*.
(c) strengthen information sharing and ensure that the national CHM has sufficient resources on IAS.
(d) intensify extension services to farmers so that prevention, control, eradication and mitigation efforts on IAS can be effectively implemented.
(e) develop and implement a Programme of Work to control and manage the risk of IAS from ship ballast water and sediments.

Action 11.2: Conduct risk assessments on all introduced exotic species before their release

IAS have the potential to cause damage to our ecosystems. It is vital that we identify and understand the risks prior to releasing any species into our ecosystems. We need to:

(a) establish a formal and transparent mechanism to ensure that all alien species are subject to a rigorous risk assessment.
(b) establish response plans and the capacity to contain and eradicate potentially invasive species.

Action 11.3: Strengthen quarantine inspection and enforcement at entry points and international borders

Prevention of IAS is more effective than containment and eradication. We should mobilise resources to ensure that IAS are identified and prevented from entering into the country. We need to:

(a) enhance the enforcement of legislation against importing, trading and keeping alien wild animals and plants, through detection of offenders, prosecution and deterrent penalties.
(b) enhance quarantine facilities and improve the skills and capabilities of quarantine, customs and other border officials.
(c) strengthen and monitor the implementation of the National Action Plan for the Prevention, Eradication, Containment and Control of Invasive Alien Species.
(d) implement provisions of the International Maritime Organisation (IMO) Ballast Water Management Convention to safeguard against marine invasive species.

Target 12: By 2025, a comprehensive biosafety system inclusive of a liability and redress regime is operational to manage potential adverse impacts of modern biotechnology on biodiversity and human health.

Key indicator 12.1: By 2020, a systematic procedure for the safe handling, transport, packaging and identification of Living Modified Organisms (LMOs) is operational.
Key indicator 12.2: By 2020, the mechanism to incorporate socio-economic considerations into decision making on applications for release of LMOs is operational.
Key indicator 12.3: By 2020, the legal framework to address liability and redress for damage caused by LMO has been established.

WHY IS THIS TARGET IMPORTANT?

Modern biotechnology at the global level is growing rapidly. New products have and will continue to enter the Malaysian market. Since the launch of Malaysia's National Policy on Biotechnology in 2005, the number of companies and research institutions involved in the research and release of living modified organism (LMO) has been increasing. Global trends are expected to encourage more investors to Malaysia to do further research or production of LMOs.

In Malaysia, LMO products for animal feed have been brought in to the country even before the Biosafety Act 2007 has been passed. Presently modern biotechnology products are in the pipeline awaiting their advancement from the laboratory to field testing and possible deliberate releases into the environment. It is imperative that these products advance safely from the laboratory to the field and are released into the environment without adverse impacts on our biodiversity and ecosystems. As a party to CBD and the Cartagena Protocol on Biosafety (CPB), Malaysia too is obliged to take measures to protect our biodiversity and human health from the possible risks resulting from the release of products of modern biotechnology.

MEETING THE TARGET

We have to ensure that products of modern biotechnology, such as LMOs, do not pose unacceptable risks, whilst at the same time allowing the country to benefit derived from modern biotechnology. Capacity building in regulatory compliance, confined field tests, monitoring for environmental impact, risk management, as well as risk communication to the beneficiaries, policy makers and the public are all essential to achieving this target.

Action 12.1: Enhance inspection and biosafety compliance

We already have a regulatory and enforcement system as part of the Biosafety Act 2007 and various guidelines and procedures to manage the use of and risks associated with modern biotechnology. These need to be continuously updated and improved to keep up with the rapid technological advances. We need to:

(a) strengthen cooperation and coordination in relation to enforcement and regulatory functions of various agencies related to LMOs.
(b) develop tools and guidance to strengthen the implementation of the CPB provisions on transit, contained use and unintentional or illegal transboundary movements of LMOs.
(c) develop national codes of best practices and procedural guidelines for handling, transport, packaging and identification of LMOs.
(d) strengthen our mechanisms and capacity to regulate the importation, management and use of LMOs and regulate production of LMOs arising from domestic research and development.
(e) ensure that biosafety considerations are fully embedded into our national and subnational policies, plans and programmes, particularly into the agriculture and health sectors.

Action 12.2: Assess impacts of LMOs on biodiversity and human health

Understanding the impacts of modern biotechnology on biodiversity, human health and the socio-economy is vital to enable planning and implementation of safeguards. We have to assess the impacts of products derived from modern biotechnology including LMOs and its products to ensure that their uses do not inflict harm on ecosystems and human health and are compatible with our socio-cultural environment. We need to:

(a) enhance capacity, tools and guidance for risk assessment, risk management and risk communication as well as pre- and post- approval monitoring on new LMOs.
(b) integrate socio-economic impact issues and analytical frameworks into decision-making on applications for release of LMOs.
(c) increase research on biosafety.
(d) develop biology documents for our primary commodities that can be used as a reference document for risk assessment.

Action 12.3: Develop response to biosafety emergencies

We must be prepared for biosafety emergencies at all times. This calls for a high level of preparedness that would enable us to know of, contain and eradicate potential biosafety threats before they cause any significant harm to biodiversity and human health. We need to:

(a) establish a comprehensive framework for liability as well as for adequate and prompt compensation (redress) for damage resulting from the transfer, handling, release or use (including unintentional and illegal release) of LMO or its products.
(b) develop emergency response plans and build emergency response teams to raise alert, contain and eradicate potential biosafety threats.
(c) establish a plan to implement the Nagoya – Kuala Lumpur Supplementary Protocol on Liability and Redress.

Target 13: By 2025, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives is adequately conserved.

Key indicator 13.1: By 2021, all actions and programmes under the National Strategies and Action Plans on Agricultural Biodiversity Conservation have been fully implemented.

WHY IS THIS TARGET IMPORTANT?

Agricultural biodiversity is crucial for our society and economy. The genetic diversity of cultivated plants and farmed and domesticated animals and their wild relatives is however in decline. Modern agriculture often limits varieties to crops that are currently successful and economically favorable, and put little emphasis on traditional varieties. In addition, habitat destruction and the pressures on species are such that wild varieties – and even entire species – of potential value for human use could be lost before they are known. Conservation of genetic diversity is important as it helps with adaptations to changing conditions such as agricultural pests that have become immune to current pest controls, climate change and new agriculture practices.

MEETING THE TARGET

The diversity of cultivated plants, farmed and domesticated animals, and their wild relatives is a genetic vault of important biological resources that supports human lives. It is therefore vital to establish programmes that seek to conserve as much as possible, regardless of the current status of knowledge as to potentials and known values. In addition to the broad sweep approach, programmes are needed to assess the potentials of as many wild species and varieties as possible and to provide for their conservation as may be necessary.

Action 13.1 Support the implementation of the National Strategies and Action Plans on Agricultural Biodiversity Conservation

The National Strategies and Action Plans on Agricultural Biodiversity Conservation and Sustainable Utilisation that was formulated in 2010 and revised in 2012 provides a comprehensive framework to protect the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives. The strategies and action plans cover a wide range of interventions including education and public awareness, capacity building, research and monitoring and improving the legal and institutional framework. The interventions address four main groups of genetic resources, namely plants, farm animals, arthropods and microbes. We need to:

(a) ensure that sufficient resources are provided to the relevant stakeholders to ensure that action plans can be implemented effectively.
(b) increase awareness about the importance of conserving genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives.
(c) incorporate sufficient safeguards into biodiversity prospecting to ensure that biological resources in the wild are not depleted.
(d) ensure sustainable utilisation of agricultural biodiversity and benefits arising from it are accrued equitably to all stakeholders.

4

GOAL 4

WE HAVE ENSURED THAT THE BENEFITS FROM THE UTILISATION OF BIODIVERSITY ARE ACCRUED EQUITABLY TO ALL

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We need to ensure that benefits arising from the utilisation of biological diversity are shared in a fair and equitable manner. The goal is to work towards institutionalising a national regulatory framework, in line with the CBD and the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation.

Effective implementation of the CBD and the Nagoya Protocol will encourage the advancement of biotechnology and research on biological resources which could lead to new discoveries and thereby supports the implementation of the New Economic Model 2010, which *inter alia* identifies biodiversity as a new source of wealth creation. This would equally take into account farmers and indigenous peoples and local communities' rights under the Access and Benefit Sharing (ABS) processes.

The goal is also to work with relevant stakeholders to protect the knowledge, innovations and practices of indigenous peoples and local communities. This body of knowledge needs to be documented and its protection strengthened through the application of customary laws, community protocols and similar systems. We need to ensure that benefits arising from the utilisation of traditional knowledge are shared in a fair and equitable manner with the customary holders and practitioners.

GOAL 4 HAS 1 TARGET

Target 14: By 2025, Malaysia has an operational ABS framework that is consistent with the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation.

Target 14: By 2025, Malaysia has an operational ABS framework that is consistent with the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation.

Key indicator 14.1: By 2017, the national legislation and regulations on Access and Benefit Sharing (ABS) are in place.
Key indicator 14.2: By 2025, the level of public awareness on ABS has doubled compared to the 2016 level.
Key indicator 14.3: By 2025, a registry of traditional ecological knowledge has been established.

WHY IS THIS TARGET IMPORTANT?

The CBD and the Nagoya Protocol provide a transparent framework for regulating access to biological resources and fair and equitable benefit sharing (ABS). Malaysia, being both a provider and user of biological resources, is in a unique position and stands to gain on multiple fronts from an effective ABS regime. Effective implementation of a regulatory ABS framework will encourage the advancement of biotechnology and facilitate research on biodiversity, which could spur new discoveries while ensuring the fair and equitable sharing of benefits. Provisions for the promotion and protection of traditional knowledge also ensure that Malaysia's indigenous peoples and local communities will benefit from the utilisation of their knowledge, innovations and practices related to biological resources.

MEETING THE TARGET

In safeguarding and managing our nation's biodiversity, we shall ensure that access to biological resources, whether for commercial or non-commercial purposes, is conducted in accordance with the legislative framework. We shall protect the traditional knowledge of indigenous peoples and local communities, as well as their innovations and practices associated with biological resources, taking into account the customary laws of the traditional knowledge owners/holders, and in accordance with the Nagoya Protocol. We will ensure that benefits arising from the utilisation of biological resources are shared equitably and contribute positively towards the conservation of biodiversity.

We shall ensure that access to this important national asset and the sharing of benefits arising from its commercial utilisation are conducted fairly, transparently and with respect for the rights and livelihoods of indigenous peoples and local communities.

Action 14.1: Develop and enforce legislation on ABS

We need to establish a cohesive legal and regulatory framework that is effective at implementing and coordinating ABS at all levels. We need to:

(a) establish mechanisms, for the fair, transparent and equitable benefit sharing between users and providers of biological resources.
(b) establish institutional frameworks for the implementation of ABS.
(c) accede to the Nagoya Protocol as this provide remedial platform on ABS issues especially of trans-boundary in nature.

Action 14.2: Enhance capacity and awareness on ABS

We need to enhance the capacity, knowledge and awareness of all stakeholders on ABS. Competent authorities will need to work closely with both known and potential rights-holders to efficiently and effectively implement ABS. We need to:

(a) provide training and create awareness related to ABS, including ABS procedures and best practices, to rights-holders.
(b) strengthen the capacity of indigenous peoples and local community organisations to be effective collaborators in the implementation of ABS.
(c) provide training to the regulators and competent authorities to be effective at implementing ABS.
(d) establish efficient means of communication between competent authorities and rights-holders.

Action 14.3: Protect and document the traditional knowledge, innovations and practices of indigenous and local communities.

The effective protection of the knowledge, innovations and practices of indigenous peoples and local communities requires that we recognise the rights of these groups on lands and biological resources to which they have a right as established by law, including customary laws. We need to:

(a) recognise and support customary laws and community protocols, procedures and other similar systems that are used by indigenous peoples and local communities.
(b) safeguard the traditional knowledge associated with biological resources of indigenous peoples and local communities by creating a registry of such knowledge.
(c) develop and promote safeguards in the documentation of traditional knowledge to protect against the misappropriation of such knowledge.

Box 8: Traditional knowledge

Indigenous peoples and local communities have a way of life that is interconnected with their surrounding environments based on centuries of living close to nature. Their traditional knowledge (TK) systems include knowledge of species, ecological interactions and other environmental phenomena, obtained through observation, practice, adaptation and innovation. It is a living body of knowledge, gathered and refined over generations.

TK refers to a cumulative body of knowledge, innovations, and practices of indigenous peoples and local communities, handed down orally over generations and also by other forms of cultural transmission such as through practice or collective experience. TK is, for the most part, collectively owned and can take the form of stories, songs, folklore, cultural values and beliefs, customary laws and practices. It is sometimes called traditional ecological knowledge (TEK) to highlight knowledge related to biological resources.

TK is also the source of many benefits enjoyed by society at large today. There is widespread recognition of traditional medicinal plants such as the *Tongkat Ali* (*Eurycoma longifolia*), animals such as the *Belangkas* (*Tachypleus tridentatus*, *T. gigas* and *Carcinoscorpius rotundicauda*), curative culinary herbs such as the *Bunga Kantan* (*Etlingera elatior*), and traditional remedies combining herbs, roots and spices common to wellness spas across the nation. TK is highly sought after for its clues to active compounds, driving the bioprospecting activities of Malaysia's pharmaceutical and nutraceutical sectors, further emphasising the relevance of TK to public health and wellbeing.

Importantly, TK includes management systems and practices. For example, taboos serve to regulate the scale and seasonality of resource harvesting thus ensuring sustainable supply. Traditional management systems such as *Tagal* in Sabah and *Tagang* in Sarawak tap into *Adat* to protect freshwater and riparian habitats. The concept of Community Conserved Areas demonstrates the clear advantage of applying TK in conservation, where principles of collective environmental responsibility and biodiversity conservation are an inseparable component of day-to-day living.

The Convention on Biological Diversity (CBD), to which Malaysia is a party, recognises the close attachment indigenous peoples and local communities embodying traditional lifestyles continue to have with biological resources. Article 8(j) calls upon Parties to respect, protect and promote the wider application of TK, emphasising the need for the consent, as well as the full and effective participation of the holders of TK. The CBD additionally demands that benefits arising from the utilisation of TK are shared equitably.

5

GOAL 5

WE HAVE IMPROVED THE CAPACITY, KNOWLEDGE AND SKILLS OF ALL STAKEHOLDERS TO CONSERVE BIODIVERSITY

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Biodiversity is our shared heritage. It is also our shared responsibility. We must ensure that all stakeholders including government, civil society, indigenous peoples and local communities and the private sector have the capabilities, knowledge, tools, and networks to plan, manage and monitor biodiversity.

We envisage that government agencies charged with biodiversity conservation, as well as agencies in sectors that influence (or are influenced by) biodiversity, will have the necessary experienced and skilled personnel with supporting tools, including access to a scientific evidence base in managing this resources. We anticipate that robust legislative and institutional frameworks necessary for the effective conservation of biodiversity will need to be in place.

We need to ensure that all stakeholders, especially indigenous peoples and local communities, and civil society groups who are actively involved in biodiversity conservation, have appropriate support systems including capable national and subnational implementing frameworks and funding support.

We envisage that all stakeholders will have awareness and knowledge about biodiversity so that we can better understand the threats, better plan and design our interventions. In particular, we anticipate that research at government and private institutions and academia will be coordinated and intensified with adequate levels of resources and personnel. The numerous biodiversity-related repositories throughout the country will be coordinated and linked, enabling easy access to information by relevant stakeholders. Finally, appropriate resources including funding will be necessary to ensure that all the goals of this Policy can be achieved.

GOAL 5 HAS 3 TARGETS

- **Target 15: By 2025, capacity for the implementation of the national and sub national biodiversity strategies, the CBD and other related MEAs has significantly increased.**
- **Target 16: By 2025, knowledge and the science base relating to biodiversity its values, functioning, status and trends, and the consequences of its loss, are significantly improved and applied.**
- **Target 17: By 2025, there is a significant increase in funds and resources mobilised for the conservation of biodiversity from both government and non-government sources.**

Target 15: By 2025, capacity for the implementation of the national and subnational biodiversity strategies, the CBD and other related MEAs has significantly increased.

Key indicator 15.1: By 2018, the National Biodiversity Centre is operational.
Key indicator 15.2: By 2016, Meeting of Ministers of the Environment (MEXCOE) has been established.
Key indicator 15.3: By 2018, at least 5 states have formulated and begun implementing state-level biodiversity strategies and action plans consistent with this policy.
Key indicator 15.4: By 2020, a comprehensive review of national and state policies, legislation and institutions related to fisheries, marine parks and marine biodiversity has been completed.
Key indicator 15.5: By 2025, 10 new sites of biological importance are accorded with international recognition.

WHY IS THIS TARGET IMPORTANT?

This Policy calls for all stakeholders – government, civil society, indigenous peoples and local communities and the private sector to take responsibility for biodiversity. Malaysia is also a party to many multilateral environmental agreements (MEAs) including the CBD, CITES, International Treaty on Plant Genetic Resources for Food and Agriculture, Ramsar and WHC. We need to align our national priorities with the international obligations. It is therefore important that the capacities of all stakeholders to be significantly strengthened.

MEETING THE TARGET

Meeting the challenge calls for major investments in people, knowledge, tools and resources. We need to recognise that various stakeholders have differing capacities to contribute. An efficient, people-centric and forward-looking institutional framework will be essential. Effective and progressive legislation, at the national and state levels, will be equally crucial in protecting our biological heritage, as will promoting sustainable use and safeguarding the rights of stakeholders.

Action 15.1: Strengthen the capacity of government agencies to manage biodiversity

There are many Federal and State agencies involved in biodiversity conservation and their capacities in terms of personnel, expertise and tools must be strengthened. In particular, the capacities of agencies responsible for the planning and management of forests, fresh waters, marine biodiversity, protected areas, wildlife and fisheries need to be substantially increased. In addition to these, agencies related to infrastructure development, land use planning and tourism among others, also influence biodiversity or are influenced by it. We have to support these agencies so that they too can deliver positive outcomes for biodiversity conservation. We need to:

(a) assess and meet the needs for qualified and well equipped government personnel working on biodiversity-related issues, particularly enforcement.
(b) strengthen capacity and resources in the areas of taxonomy, conservation financing, access and benefit sharing, biosafety, communications and public engagement, and outreach in key agencies.
(c) establish a platform for agencies to share resources and carry out joint enforcement activities, particularly on poaching, illegal wildlife trade, and encroachment into protected areas including strengthening the 1Malaysia Biodiversity Enforcement Operation Network (1MBEON) including *[see also action 10.1]*.
(d) improve coordination and collaboration amongst government agencies in all aspects of planning, development, management and monitoring, as well as the adjudication of biodiversity related offences.
(e) enhance NRE's cooperation with the biodiversity-related agencies in Sabah and Sarawak given that these states are a major treasure trove of biodiversity.
(f) recognise and reward the outstanding contributions of field personnel, such as rangers, field guides and research assistants, in the field of biodiversity conservation in Malaysia.
(g) provide sufficient human resources capacity such as tools and resources including access to biodiversity-related information to agencies involved in land matters, agriculture, fisheries, tourism, energy and infrastructure to enable them to mainstream biodiversity considerations into their programmes and projects *[see also action 3.1]*.
(h) encourage the establishment of environment and biodiversity units (or expand the scope of existing divisions) in agencies responsible for land matters, agriculture, fisheries, tourism, energy and infrastructure to promote mainstreaming in the respective sectors.

Action 15.2: Strengthen coordination and decision-making at the national level

We need to strengthen coordination and decision-making at the national level to ensure that this Policy can be implemented effectively. The NRE will play a vital role as the national coordinating body and as the secretariat to the National Biodiversity Council. We need to:

(a) strengthen the NRE to enhance its role in coordination, priority setting, policy direction, monitoring, evaluation and information management.
(b) establish the Meeting of Ministers of the Environment (MEXCOE) as a platform for regular meetings of the state executive members responsible for environment and biodiversity, in order to promote discussion, cooperation and the exchange of experience on biodiversity issues between state governments.
(c) establish the National Steering Committee (NSC) for NPBD to coordinate, facilitate and monitor the implementation of this Policy.
(d) establish the multi-stakeholder National Biodiversity Roundtable (NBR) that will provide advice and support to the NRE and NSC and promote the spirit, values and goals of the Policy to all stakeholders *[see also actions 2.2, 2.3 and 2.4].*

Action 15.3: Establish a framework and mechanisms for implementing the national policy at the state level

The successful implementation of this Policy will require effective coordination at the state and local levels. As land and natural resources come under the jurisdiction of State Governments, implementation mechanisms will be required to translate this Policy at the state level, taking into account the unique features, challenges, and aspirations of each state. We need to:

(a) increase the capacity of all states to effectively implement this Policy at the state and local levels; particularly agencies related to land, land use, agriculture, forestry and fisheries.
(b) establish the state steering committee for the NPBD.
(c) encourage the establishment of biodiversity management units/centres at all states in Peninsular Malaysia that would act as the main coordination body for the implementation of this Policy at state levels.
(d) formulate and implement state-level biodiversity strategies and action plans that embody the spirit and goals of this Policy.

Action 15.4: Strengthen legislative framework to support the Policy implementation

Malaysia has a range of legislations to safeguard various facets of our biodiversity. However as new threats emerge and priorities change, these legislations need to be streamlined and strengthened. We need to:

(a) identify and eliminate gaps in all our biodiversity-related legislations.
(b) identify and promulgate new legislations to help us protect and manage our biodiversity better and implement this Policy effectively. These include aspects related to the participation of indigenous peoples and local communities in biodiversity protection, and requirements that deliver no net loss or net gains of biodiversity in respect of development projects.
(c) undertake a comprehensive review of all national and state legislation related to fisheries, marine parks and marine biodiversity including examination of the gaps and overlaps pertaining to jurisdiction over marine biodiversity and assess the feasibility of expanding the role/jurisdiction of the Marine Parks Department.
(d) undertake a study to assess the feasibility of enacting an umbrella legislation at the national level to protect and manage biodiversity.

Action 15.5: Strengthen international and transboundary cooperation

Malaysia has a long history of international cooperation. This cooperation is necessary to exchange knowledge, learn good management practices, optimise and share resources. We need to:

(a) continue our cooperation with international and regional organisations and our neighbouring countries and fully support Malaysia's international obligations to biodiversity-related conventions including the CBD, Ramsar Convention, CITES and the World Heritage Convention, BIMP-EAGA, ASEAN initiatives on biodiversity conservation and other related initiatives.
(b) continue being a strategic partner in the implementation of the HoB and the CTI, and participate actively to achieving the objectives of both programmes *[see also actions 8.2 and 8.3]*.
(c) actively engage with international institutions and research programmes and support knowledge exchanges on biodiversity conservation.
(d) continue to pursue recognition of the global importance of Malaysia's biodiversity conservation areas by international bodies, programmes and treaties such as the Ramsar Convention on Wetlands, UNESCO World Heritage Convention and the UNESCO Man and the Biosphere Programme.
(e) promote twinning programmes between PAs in Malaysia and those in other countries.

Target 16: By 2025, knowledge and the science base relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are significantly improved and applied.

Key indicator 16.1: By 2020, five Centres of Excellence in biodiversity conservation and management are operational.
Key indicator 16.2: By 2021, a national marine and freshwater aquatic life stocktaking survey has been completed.
Key indicator 16.3: By 2018 the resilience and vulnerability of all major ecosystems to climate change have been assessed.
Key indicator 16.4: By 2016, the National Advisory Committee on Biodiversity and Ecosystem Services (NACBES) has been established.

WHY IS THIS TARGET IMPORTANT?

A sound evidence base and scientific insights are vital to support the effective conservation and sustainable use of biodiversity. To meet the growing challenges that Malaysia will face in achieving its conservation goals, science must be at the forefront of decision-making. Information about biodiversity values, ecosystem processes, vulnerabilities, and the status and trends of our ecosystems, species and genetics have to be made easily accessible to decision-makers.

MEETING THE TARGET

Significant progress has been made in developing the country's research capacity within research institutions, institutes of higher education and agencies responsible for natural resources, as well as amongst a variety of other stakeholders. To improve our knowledge on biodiversity, we need to identify and address critical gaps in our knowledge and develop better understanding of emerging issues, which will help ensure that decisions are based on accurate and timely information.

Action 16.1: Enhance the quality and quantity of research on Malaysia's biodiversity

We will expand our research capabilities and develop the full suite of requisite scientific expertise across related disciplines. The social sciences/economics will be partnered with the physical and natural sciences to ensure a holistic approach to scientific inquiry. We need to:

(a) identify and address knowledge gaps in critical areas such as lower plants, freshwater and marine fish, wildlife, arthropods, microbes and endemic habitats such as limestone hills.
(b) focus efforts on monitoring the spatial and temporal changes to our natural habitats and the impacts of man-made pressures via long-term studies on demographic, genetic and environmental variation.
(c) promote knowledge sharing amongst government institutions, civil society, research programmes, and indigenous peoples and local communities.
(d) establish partnerships with the private sector and academia to create post-doctoral opportunities for qualified Malaysians to work on biodiversity conservation and management.
(e) establish centres of excellence in biodiversity research and management throughout the country, particularly for vulnerable ecosystems *[see also action 7.2]*.
(f) organise regular MyBioD and national CFS-HoB-CTI seminars/conferences to share knowledge and success stories as well as disseminate information on the progress of implementing this Policy *[see also action 8.1]*.
(g) establish the Working Group on Biodiversity Research, under the aegis of the NBC, as the main platform to coordinate biodiversity-related research.

Action 16.2: Establish comprehensive databases and monitoring programmes

Comprehensive baseline information is crucial for biodiversity planning and management. Our research and higher education institutions currently hold a large collection of records on the country's biodiversity in the form of specimens, samples, germplasm, genetic information and related derivatives. The current collections and databases are by no means complete and much work needs to be done to catalogue Malaysia's immense biodiversity. A robust database of the status of our biodiversity will enable us to determine priorities for interventions. We need to:

(a) continue our efforts on documenting our nation's flora and fauna through the enhancement of taxonomic work.

(b) carry out periodic national surveys of threatened species.
(c) undertake the national marine and freshwater aquatic life stocktaking survey encompassing detailed assessments of our marine and freshwater resources, including inventorising their biota.
(d) strengthen the national CHM while ensuring that information can be accessed and shared by scientists, resource managers and other stakeholders.
(e) establish a network of depositories of specimens and records.
(f) establish the baseline values for all the key indicators of this Policy to enable us to monitor them effectively.

Action 16.3: Improve our knowledge on the link between climate change and biodiversity

Climate change is now considered one of the greatest threats to biodiversity and its impact is already being experienced worldwide. Malaysia will be expected to experience an increase in surface temperature, irregular weather patterns and more frequent extreme weather events, with rising sea levels expected to encroach into our coastlines – all of which will influence biodiversity. We need to:

(a) understand and expand the evidence base on the effects of climate change on biodiversity.
(b) assess the vulnerability of species and habitats to climate change to guide the prioritisation of climate change adaptation and mitigation efforts *[see also actions 7.1 and 7.2]*.

Action 16.4: Improve the interface and communication between science and policy

Malaysia's policies and regulations can be improved with timely and robust scientific evidence base. We have to develop a coherent science-policy interface to guide decision-making and draw the attention of the scientific community and the Malaysian public to priority issues that would benefit from a reliable evidence base and scientific insights. We need to:

(a) synthesise and communicate scientific findings in a timely and easily understood manner to planners, decision-makers and practitioners to ensure that policy formulation is evidence-based.
(b) establish effective channels of communication between the scientific community and policy-makers, all levels of government administration and the general public.
(c) establish the National Advisory Committee on Biodiversity and Ecosystem Services (NACBES) to advise the National Biodiversity Council, NRE and NBC on policies, strategies, and programmes related to biodiversity and, specifically, the implementation of this Policy.

Target 17: By 2025, there is a significant increase in funds and resources mobilised for the conservation of biodiversity from both government and non-government sources.

Key indicator 17.1: By 2025, the amount of funds directly committed to biodiversity conservation from both government and non-government sources have increased significantly compared to the 2016 level.
Key indicator 17.2: By 2020, the NCTF is able to disburse at least RM 2 million per year for biodiversity conservation.
Key indicator 17.3: By 2018, two innovative financing mechanisms are in operation.
Key indicator 17.4: By 2020, a transparent and results-based mechanism to provide incentives for states to implement environmental protection and biodiversity conservation programmes is operational.

WHY IS THIS TARGET IMPORTANT

Malaysia's biodiversity is a vital lifeline to our future. It is important to ensure that our biodiversity is conserved and utilised in a sustainable manner. Public budget allocation, which currently is the main source of funding, needs to be optimised to reflect the significant value that biodiversity and ecosystem services generate for our economy and wellbeing. The use of innovative and sustainable biodiversity funding mechanisms beyond government sources is not fully explored and underdeveloped at the moment. It is therefore timely to expand existing and explore new innovative/wider sources of funding to provide potential sources of additional resources.

MEETING THE TARGET

Achieving the goals and targets of this Policy and ensuring Malaysia meets its international commitments will rely on the continuous and effectiveness use of financial resources. In the effort to sustainably conserve our biodiversity, important programmes and projects must be accorded priority, in line with the national development agenda. Optimisation of public funding on biodiversity related programmes or projects will be the main focus in the coming years. This includes comprehensive planning of programmes and projects to showcase their benefits outweigh the costs associated. Projects will be assessed in terms of their impact and whether the expected outcomes are aligned with national priorities. In addition, efforts will be increased to tap into non-traditional sources of funding such as payment for ecosystem services and other possible revenue generating mechanism to support conservation. It is also important to ensure that state governments' revenue streams are diversified and expanded.**Action 17.1 Improve the utilisation of the existing funding mechanisms**
The main source of funding for biodiversity conservation will be the government development expenditure and operating expenditure. Some of the funds will be allocated directly for biodiversity conservation while others programmes or projects contribute indirectly to biodiversity conservation. In order to improve the allocation and utilisation of funds for biodiversity, we need to:

(a) increase the amount of funding for biodiversity conservation at the national and state levels.
(b) utilise the outcome based budgeting in the programme level planning to encourage optimise resource utilisation as well as to avoid duplication of efforts.
(c) allocate sufficient budget for safeguarding the environment and biodiversity for all development projects and programmes.
(d) develop coordinated partnerships with the private sector organisations to channel funds to priority biodiversity conservation projects.
(e) enhance the capacity of biodiversity-related agencies to raise funds including improving their skills on sources of funding, external grants, proposal writing skills, and developing business models.

Action 17.2: Scale up the National Conservation Trust Fund

The National Conservation Trust Fund (NCTF) for Natural Resources was established in 2014 with seed funding of RM10 million from the Federal government. The NCTF will serve as a platform to mobilise financial resources from various partners including the government, private sector and international organisations for biodiversity related projects or activities, which are not funded through existing government sources. We need to:

(a) develop and implement 5-year strategic plan detailing the priority areas, financial sustainability, stakeholder engagement and partnerships.
(b) develop and implement a performance or outcome based criteria for project selection and fund disbursement.
(c) actively source for funds from regional and international sources.

Action 17.3: Explore and implement new and innovative financing mechanisms

New and innovative financing mechanisms will be explored and implemented to provide the much needed funding for the biodiversity conservation. This would include both non-market and market-based mechanisms. We need to:

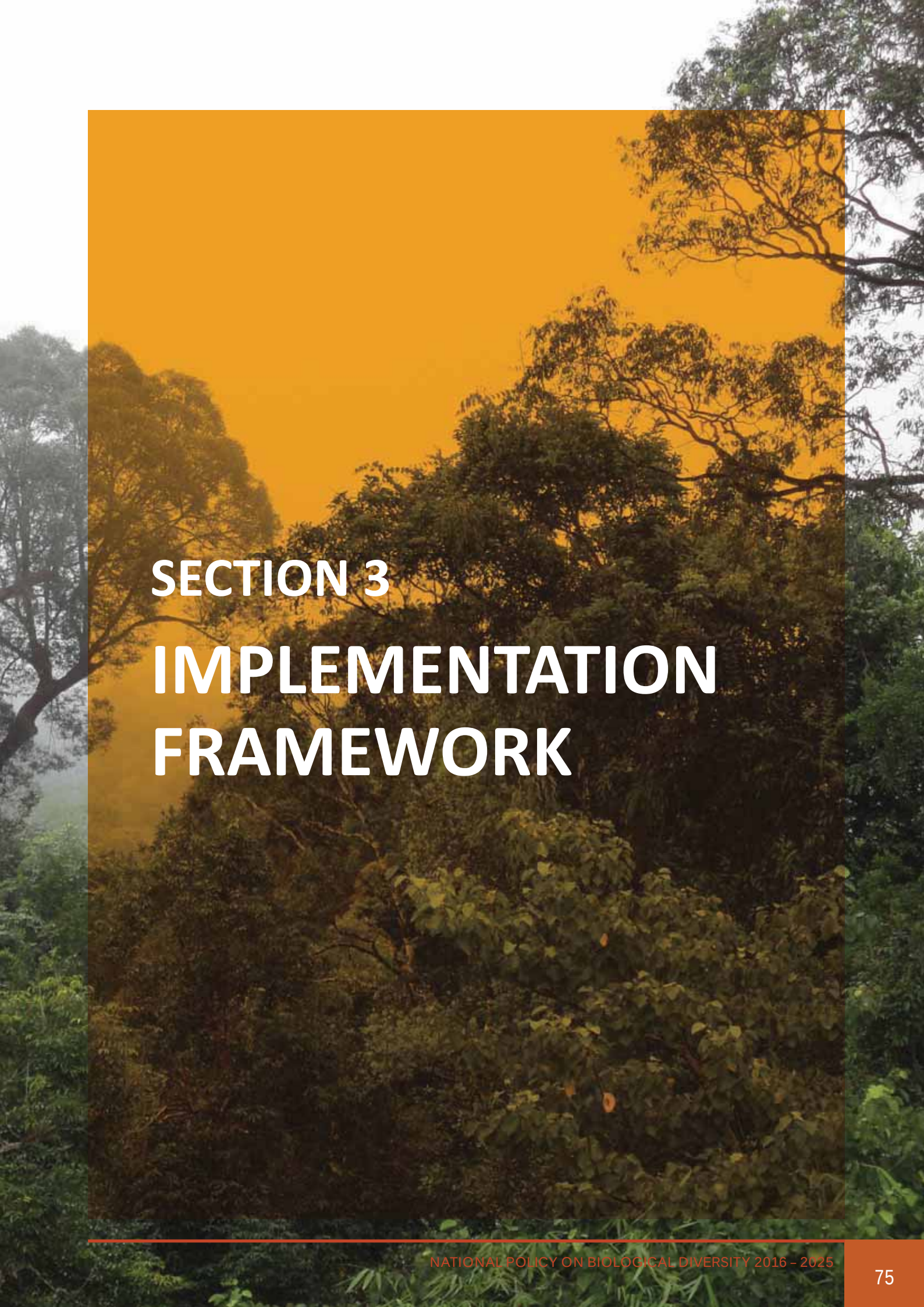
(a) assess the feasibility of adopting payment for ecosystem services schemes in water, forestry and other relevant sectors.
(b) review the use of green/carbon tax, carbon offset scheme, REDD+, tourist departure tax, polluters payment scheme and undertake a full assessment of the challenges, barriers and socio-economic impacts.
(c) develop co-management partnerships with civil society and the private sector to manage our protected areas *[see also actions 6.3 and 6.4]*.
(d) increase and diversify revenue generated from national and state park and other protected areas.

Action 17.4: Diversify state governments' revenue streams

Forests, water and land come under the jurisdiction of the state governments. Income from these natural resources play an important role in the budgets of the state governments. The revenue bases of the state governments need to be improved and diversified to reduce their reliance/dependency on the natural resources. We need to:

(a) encourage and provide opportunities for state governments to diversify their revenue streams away from natural resources and land.
(b) assess incentives for states to implement environmental protection and biodiversity conservation programmes.
(c) undertake a study on the impact of the current fiscal system on biodiversity towards sustainable development.

Malaysian rainforest
Photo by Forestry Department Peninsular Malaysia



SECTION 3
IMPLEMENTATION FRAMEWORK

A CALL FOR ACTION

The National Policy on Biological Diversity 2016 – 2025 (NPBD) is a call to action for all of us to work together. We need to continuously engage all segments of society to participate in the implementation and monitoring of the Policy. While the government will play the leading role in delivering the Policy, true success can only be achieved when there is a wider partnership amongst civil society, private sector, indigenous people and local communities, academia as well as the society at large.

ROLES AND RESPONSIBILITIES FOR IMPLEMENTATION

The Policy provides an enabling framework for action by stakeholders at all levels. It is intended to guide, inform, empower and support action for biodiversity, setting out goals and targets to be achieved and identifying how partners can best contribute according to their circumstances and capabilities.

Federal Government

The Federal government, via NRE, will play the leading role in implementing the Policy. This includes undertaking the necessary coordination among stakeholders, establishing the appropriate institutional platforms, facilitating resource mobilisation and initiating review of the Policy, as necessary. NRE will be responsible for coordination among the various Federal ministries that are crucial for the implementation of the Policy. NRE will also be responsible for liaising and coordinating with the State Governments and supranational bodies. NRE will coordinate and facilitate action via the:

- Federal Cabinet
- National Biodiversity Council
- National Steering Committee for NPBD

State Governments

The State Governments and their agencies have jurisdiction over and responsibility for the management of *inter alia* land, water and forests and will therefore play important roles in delivering the actions under this Policy. The proposed state steering committees for NPBD will be the main coordinating platform to ensure that the Policy is implemented effectively at the state level. These steering committees will be responsible for advising the respective state governments and will report to the ministers or state executive committee members responsible for the environment/biodiversity portfolios. The state steering committees will also report to National Steering Committee for NPBD.

Civil society

The Policy provides many opportunities for civil society to participate, either on its own or in collaboration with other stakeholders. The proposed National Biodiversity Roundtable *[see also action 2.4 and 15.2]* will be a platform for civil society to provide input and monitor the implementation of the Policy. Given their vast knowledge and their aptitude to work with indigenous peoples and local communities as well as with regional and international networks, civil society will play a very important role in translating the Policy into action.

Indigenous People and Local Communities

The Policy places emphasis on empowering and supporting indigenous people and local communities to undertake biodiversity conservation. They are envisaged to be active partners in managing our biodiversity. The proposed Working Group on Community-Based Natural Resources Management (CBNRM) *[see also action 2.1]* will strategise and coordinate indigenous people and local communities' contribution to the Policy.

Private Sector

The formation of enduring partnerships with the private sector will be crucial for the Policy's success. Many of the actions identified in the Policy can be undertaken by the private sector, either on its own or in collaboration with other stakeholder groups. The proposed National Biodiversity Roundtable (NBR) will be a platform for the private sector to provide feedback, support and monitor the implementation of the Policy.

Research and Education Communities

Implementing the Policy will require the best available scientific expertise and knowledge. Malaysia has a large research community at our universities and research institutions and this community has an important role to play. Educators and communicators also make valuable contributions by increasing the community's awareness of Malaysia's biodiversity through establishing practical partnerships and experiential learning. The proposed

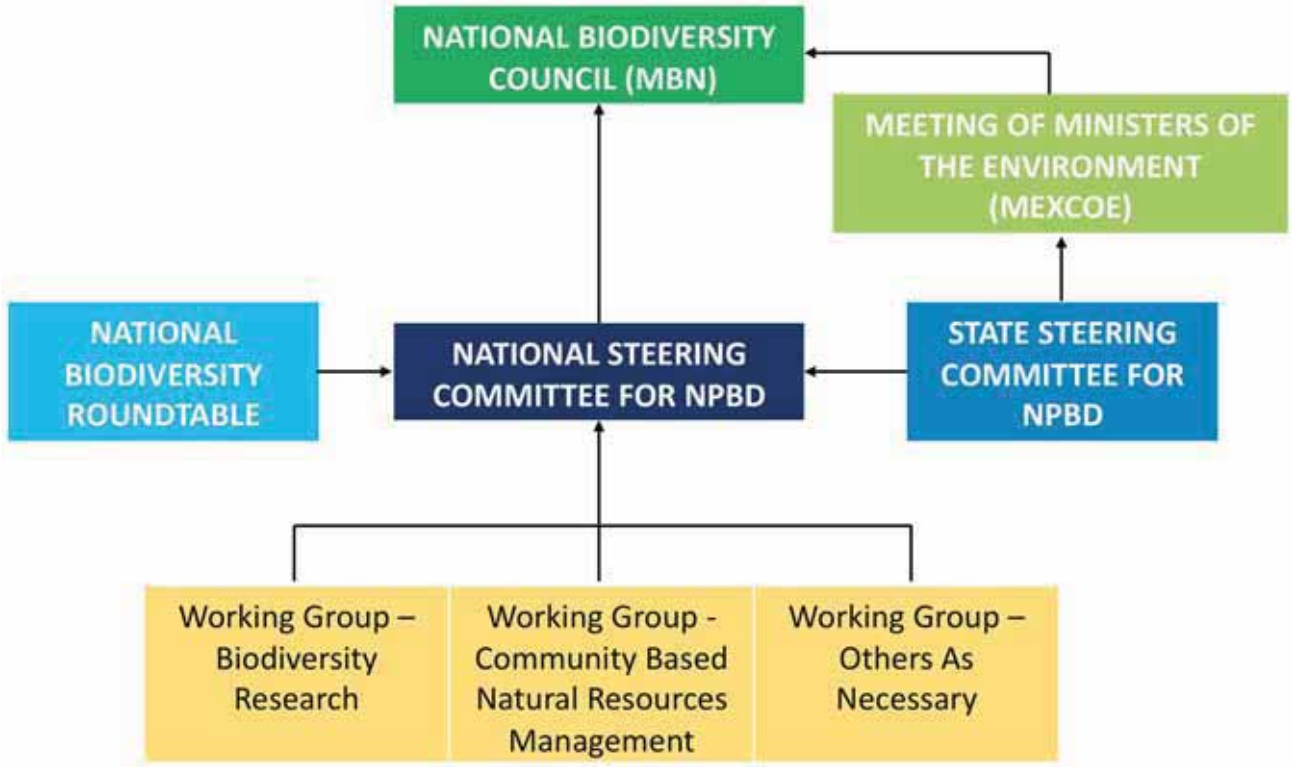
Working Group on Biodiversity Research will provide a platform for academia and research institutions to provide input for the implementation of the Policy and enhance the science-policy interface.

General Public

For the Policy to be effective, all the people of Malaysia need to contribute to biodiversity conservation. This could involve learning more about how to live sustainably, reducing their ecological footprint, supporting or joining groups concerned with issues such as conserving particular species or sites, or volunteering for various conservation initiatives.

COORDINATING PLATFORMS

Given the immense task of implementing and monitoring the Policy, a substantial amount of coordination will be required to ensure optimum utilisation of resources, reduce conflicts and maximise synergies.



Coordinating Platforms for the implementation of NPBD 2016-2025

National Biodiversity Council

The highest decision-making body for this Policy is the existing National Biodiversity Council which is chaired by the Deputy Prime Minister. The Council, whose membership includes all Menteri Besar, Chief Ministers, relevant Federal Ministers and senior government officials, is a platform to resolve matters pertaining to biodiversity and to provide policy interventions. The NRE acts as the Secretariat to the Council.

Meeting of Ministers of the Environment (MEXCOE)

- coordinate policies on the management of environment and natural resources pertaining to the Federal and State Government;
- discuss issues relating to coordination of programme and activities on environment and natural resources management; and
- identify means to strengthen the cooperation between the Federal and State Government relating to environmental and natural resources management.

The membership of MEXCOE are as follows:

- Minister of Natural Resources and Environment (chairperson)
- Minister responsible for the environment/biodiversity portfolio in Sabah
- Minister responsible for the environment/biodiversity portfolio in Sarawak
- State Executive Committee Members responsible for the environment/biodiversity portfolio in all states of Peninsular Malaysia

National Steering Committee for NPBD

The National Steering Committee for NPBD (NSC-NPBD), chaired by the Secretary General of the NRE, will be the primary coordinating platform for the Policy. The role of the NSC-NPBD will include:

- providing overall direction for the implementation of the Policy.
- ensuring that all actions needed for this Policy are implemented in a timely and effective manner.
- monitoring the progress towards achieving the goals and targets.
- soliciting and reviewing inputs from various institutions, committees and forums to assess the effectiveness of Policy implementation.
- ensuring that resources needed for the Policy are mobilised in a timely manner.
- resolving policy and programme conflicts, if any.
- advising the NRE and National Biodiversity Council accordingly.

Membership of the NSC-NPBD will consist of ministries and agencies related to biodiversity management. It will also include the Chairperson and two other representatives of the National Biodiversity Roundtable. NRE may also appoint other members as deemed appropriate. NRE will be the secretariat for the NSC-NPBD.

State Steering Committee for NPBD

The State Steering Committee shall be chaired by the State Secretary and have the following roles:

- facilitate the implementation of initiatives under the NPBD at the state, district and local government level.
- provide an avenue for inter-agency planning among related state agencies on biodiversity conservation and the environment.
- address state specific needs on biodiversity protection and conservation.
- advise the State Government on matters related to the conservation of biodiversity, sustainable use of its components and the fair and equitable sharing of the benefits arising from the utilisation of biological resources.

The State Steering Committee will consist of relevant government agencies related to biodiversity management, other relevant departments that are custodian of natural resources (state parks etc.) as well as other organisations (civil society, academia, experts) as deemed appropriate by the state. Matters pertaining to biodiversity in the Federal Territories will be coordinated by NRE.

National Biodiversity Roundtable

In line with the spirit of the Policy that calls for partnerships between all stakeholders, a multi-stakeholder National Biodiversity Roundtable (NBR) will be established. The role of the NBR will include:

- providing technical advice and support to the NSC-NPBD on the implementation and monitoring of the Policy.
- assisting the NSC-NPBD in bringing in potential partners to implement the Policy.
- acting as the interface between the government and other stakeholders to solicit feedback and disseminate information pertaining to the implementation of the Policy.
- promoting the principles and goals of the Policy to all stakeholders.

The membership of the NBR will consist of representatives from the private sector, academia, environmental/biodiversity-based NGOs and community-based NGOs including those representing indigenous peoples and local communities. The NBR may also co-opt other persons as deemed appropriate. The Chairmanship of the NBR shall be rotated among the various stakeholder groups. The NBR, may from time to time, as deemed necessary, establish working groups or subcommittees to address various issues. The Chairman and two other representatives of the NBR will also be members of the NSC-NPBD.

National Biodiversity Centre

The National Biodiversity Centre will play an important role in assisting NRE to facilitate, communicate and monitor the implementation of the Policy although the responsibility of implementing many of the actions lies with various stakeholders. NBC's responsibilities with regard to this Policy will include:

- coordinating, collating, analysing and disseminating information pertaining to the Policy.

- maintaining national biodiversity database.
- spearheading communications, education and public awareness programmes.
- spearheading biodiversity mainstreaming efforts.
- enhancing biodiversity-related cooperation amongst various stakeholders including facilitating the establishment of Centres of Excellence.
- assessing the impact of policies, plans and programs related to biodiversity.
- coordinating monitoring and reporting on the progress of the Policy.
- coordinating research and development (R&D) and biodiversity assessment.
- convening meetings and supporting the Working Group on CBNRM and the Working Group on Biodiversity Research.
- establishing other working groups as may be necessary.
- supporting NRE and NSC-NPBD on all matters related to the implementation of the Policy.

PHASING

This Policy is for the period from 2016 to 2025. The implementation of the Policy is divided into four phases.

- Phase 1 : 2016 – mid 2018 (2.5 years)
- Phase 2 : mid 2018 – 2020 (2.5 years)
- Phase 3 : 2021 – mid 2023 (2.5 years)
- Phase 4 : mid 2023 – 2025 (2.5 years)

The phases will coincide with the Malaysia Plans and their mid-term reviews. It will enable adjustments to be made in the implementation of the policy in line with the Malaysia Plans when allocating resources. NRE will develop a more detailed phasing schedule.

COMMUNICATING THE POLICY

Communicating the Policy to all stakeholders will be a vital and continuous activity during the implementation period. This will entail four key tasks:

- communicating and reinforcing the goals of the Policy and its contribution to the well-being of Malaysians.
- communicating the progress in implementing the Policy including the achievement of its targets.
- communicating about the opportunities for, and collaboration and participation in on-going and upcoming programmes and projects.
- communicating success stories as regard to the Policy implementation.

The NRE and the NBC shall be responsible for communications – from designing the messages, collating progress and ensuring that the message is effectively delivered and understood by the stakeholders. The methods and messages shall be determined through the formulation of the national biodiversity CEPA action plan *[see Action 1.1*].

MONITORING PROGRESS

It is crucial that we monitor the progress of implementation. NRE will monitor progress which will be deliberated by the NSC-NPBD and the National Biodiversity Council. NSC-NPBD at its first meeting will determine and adopt the methods of measurement and verification for all key indicators. The NBC will collate all the baseline data necessary for tracking the key indicators at the earliest stage possible to ensure that the monitoring process is conducted smoothly.

Reports on the implementation of the Policy will be published by NRE at the end of each implementation phase.

REVIEW OF ACTIONS

It is vital that we review the actions of this Policy at the end of each implementation phase. This review should take into account changing priorities at the national or state level and the global level (e.g. decisions of multilateral environmental agreements); as well as funding opportunities or challenges. The review will be coordinated by NRE. The findings of the review shall be presented to the NSC-NPBD and National Biodiversity Council.

TABLE 3-1: IMPLEMENTING AGENCY AND PHASING

Target 1: By 2025 more Malaysians are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.	Lead Agency	Key Partners	Phase				Related Actions
			1	2	3	4	
1.1. Create awareness across all segments of our society	Ministry of Natural Resources & Environment	National Biodiversity Centre, Department of Environment, Natural Resources & Environment Board Sarawak, Environmental Protection Department Sabah, civil society, private sector					1.2, 1.3
1.2. Nurture participation amongst children and youth	Ministry of Natural Resources & Environment	Ministry of Education, National Biodiversity Centre, Department of Environment, Natural Resources & Environment Board Sarawak, Environmental Protection Department Sabah, civil society					1.1
1.3. Engage with the legislature and judiciary	Ministry of Natural Resources & Environment	Attorney General Chambers, Sabah AG Chambers, Sarawak AG Chambers					1.1, 15.4

Target 2: By 2025, the contributions of indigenous peoples and local communities, civil society and the private sector to the conservation and sustainable utilisation of biodiversity have increased significantly.	Lead Agency	Key Partners	Phase				Related Actions
			1	2	3	4	
2.1 Recognise, support and empower indigenous peoples and local communities	Ministry of Natural Resources & Environment	Ministry of Urban Well-being, Housing & Local Government, Ministry of Rural and Regional Development, National Biodiversity Centre, Department of Orang Asli Development, Sabah Biodiversity Centre, Sarawak Biodiversity Centre, civil society					1.1, 2.4, 6.3
2.2 Recognise, support and empower civil society	Ministry of Natural Resources & Environment	National Biodiversity Centre, civil society					1.1, 2.4, 15.2
2.3 Develop sustained collaborations with the private sector	Ministry of Natural Resources & Environment	National Biodiversity Centre, private sector					2.4, 3.4, 15.2
2.4 Enhance stakeholder participation in decision-making processes	Ministry of Natural Resources & Environment	National Biodiversity Centre, civil society, private sector					2.1, 2.2, 2.3, 15.2

Target 3: By 2025, biodiversity conservation has been mainstreamed into national development planning and sectoral policies and plans.	Lead Agency	Key Partners	Phase				Related Actions
			1	2	3	4	
3.1 Embed biodiversity conservation into national and state development planning and sectoral policies and plans	Ministry of Natural Resources & Environment	Economic Planning Unit, National Biodiversity Centre, State Economic Planning Units, Ministry of Plantation Industries & Commodities, Ministry of Energy, Green Technology & Water, Ministry of Agriculture and Agro-based Industries, Ministry of Tourism, Department of Minerals & Geoscience, Department of Environment, civil society					3.2, 4.1, 4.2, 4.3
3.2 Recognise the economic value of biodiversity and ecosystem services	Ministry of Natural Resources & Environment	Economic Planning Unit , State Economic Planning Units					4.4
3.3 Protect environmentally sensitive areas in statutory land use plans	Ministry of Urban Well-being, Housing & Local Government	Town & Country Planning Department Pen Malaysia, Town & Regional Planning Department, Sabah, Ministry of Resource Planning & Environment Sarawak					6.1, 6.2, 6.5
3.4 Promote sustainable consumption and production	Economic Planning Unit	Ministry of Finance, Ministry of Energy, Green Technology & Water, civil society, private sector					4.1, 4.2, 4.3

Target 4: By 2025, our production forests, agriculture production and fisheries are managed and harvested sustainably.	Lead Agency	Key Partners	Phase				Related Actions
			1	2	3	4	
4.1 Strengthen sustainable forest management	Ministry of Natural Resources & Environment	Ministry of Plantation Industries & Commodities, Forestry Department Peninsular Malaysia, Sabah Forestry Department, Forest Department Sarawak, Forest Research Institute Malaysia					3.2, 7.2
4.2 Strengthen agricultural planning and improve practices	Ministry of Agriculture and Agro-based Industries	Ministry of Plantation Industries & Commodities, Department of Agriculture, Malaysian Palm Oil Board, Malaysian Palm Oil Council, Malaysian Palm Oil Certification Council, civil society, private sector					3.2, 7.2
4.3 Implement the Ecosystem Approach to Fisheries Management	Ministry of Agriculture and Agro-based Industries	Department of Fisheries, private sector					3.2, 10.1
4.4 Rationalise incentives that are harmful to biodiversity	Ministry of Agriculture and Agro-based Industries, Ministry of Plantation Industries & Commodities,	Ministry of Finance, Economic Planning Unit, Department of Fisheries					3.2

Target 5: By 2025, tourism is sustainably managed and promotes biodiversity conservation.	Lead Agency	Key Partners	Phase				Related Actions
			1	2	3	4	
5.1 Identify and mitigate impacts of tourism on biodiversity	Ministry of Tourism & Culture	Ministry of Natural Resources & Environment, private sector					3.2
5.2 Promote green guide certification	Ministry of Tourism & Culture	Ministry of Natural Resources & Environment, private sector					5.1
5.3 Engage indigenous peoples and local communities in nature tourism and promote volunteerism	Ministry of Tourism & Culture	Forestry Department Peninsular Malaysia, Sabah Forestry Department, Forest Department Sarawak , Department of Wildlife & National Parks, Sabah Parks, civil society, private sector					2.1, 2.2

Target 6: By 2025, at least 20% of terrestrial areas and inland water, and 10% of coastal and marine areas, are conserved through a representative system of protected areas and other effective area-based conservation measures.	Lead Agency	Key Partners	Phase				Related Actions
			1	2	3	4	
6.1 Expand the extent and representativeness of our terrestrial PA network	Ministry of Natural Resources & Environment	State Economic Planning Units, Forestry Department Peninsular Malaysia, Sabah Forestry Department, Sabah Parks, Forest Department Sarawak, Department of Fisheries					3.3, 6.5, 8.1, 8.2
6.2 Expand the extent and representativeness of our marine PA network	Ministry of Natural Resources & Environment	Department of Marine Parks, Department of Fisheries, Sabah Parks, Forest Department Sarawak					3.3, 8.3
6.3 Develop community conserved areas as an integral part of our PA network	Ministry of Natural Resources & Environment	National Biodiversity Centre, Forestry Department Peninsular Malaysia, Sabah Forestry Department, Sabah Parks, Forest Department Sarawak, Department of Fisheries , civil society, Indigenous & Local Communities					2.1
6.4 Improve the effectiveness of PA management	Ministry of Natural Resources & Environment	Forestry Department Peninsular Malaysia, Department of Wildlife & National Parks, Sabah Forestry Department, Sabah Parks, Sabah Wildlife Department, Forest Department Sarawak, Johor National Parks Corporation					6.1, 6.2
6.5 Protect and maintain biodiversity in urban areas	Ministry of Urban Well-being, Housing & Local Government	Ministry of Natural Resources & Environment, National Biodiversity Centre, Ministry of Resource Planning and Environment Sarawak, Forest Department Sarawak, Town & Country Planning Department Sabah, Town & Country Planning Department Pen Malaysia, civil society					3.3

Target 7: By 2025, vulnerable ecosystems and habitats, particularly limestone hills, wetlands, coral reefs and seagrass beds, are adequately protected and restored.	Lead Agency	Key Partners	Phase				Related Actions
			1	2	3	4	
7.1 Identify, map and protect all vulnerable ecosystems	Ministry of Natural Resources & Environment	National Biodiversity Centre, State Economic Planning Units, Forestry Department Peninsular Malaysia, Sabah Forestry Department, Forest Department Sarawak, , Marine Parks Department, Research Institutions					6.1, 6.2
7.2 Improve management and rehabilitation of vulnerable ecosystems	Ministry of Natural Resources & Environment	National Biodiversity Centre, State Economic Planning Units, Forestry Department Peninsular Malaysia, Sabah Forestry Department, Forest Department Sarawak, Department of Marine Parks, Research Institutions					6.1, 6.2, 6.3
7.3 Support the implementation of the National Action Plan on Peatlands	Ministry of Natural Resources & Environment	National Biodiversity Centre, State Economic Planning Units, Forestry Department Peninsular Malaysia, Sabah Forestry Department, Forest Department Sarawak, Department of Irrigation & Drainage, Department of Environment, Department of Agriculture, Chief Minister's Department Sarawak, civil society					7.1, 7.2

Target 8: By 2025, important terrestrial and marine ecological corridors have been identified, restored and protected.	Lead Agency	Key Partners	Phase				Related Actions
			1	2	3	4	
8.1 Strengthen the implementation of the CFS Masterplan for Peninsular Malaysia	Ministry of Natural Resources & Environment	State Economic Planning Units, Forestry Department Peninsular Malaysia, Town & Country Planning Department, civil society					6.1, 6.3
8.2 Strengthen the implementation of terrestrial connectivity under the HoB initiative	Ministry of Natural Resources & Environment	State Economic Planning Units, Sabah Forestry Department, Forest Department Sarawak, civil society					6.1, 6.3
8.3 Identify, map and protect marine ecological corridors	Ministry of Natural Resources & Environment	State Economic Planning Units, Department of Marine Parks, Department of Fisheries, Sabah Parks, Sabah Town & Regional Planning Department, Forest Department Sarawak					6.2, 6.3

Target 9: By 2025, the extinction of known threatened species has been prevented and their conservation status has been improved and sustained.	Lead Agency	Key Partners	Phase				Related Actions
			1	2	3	4	
9.1 Conduct conservation assessments for plants and animal species	Ministry of Natural Resources & Environment	National Biodiversity Centre, Forest Research Institute Malaysia, Department of Wildlife & National Parks, Department of Fisheries , Forestry Department Peninsular Malaysia, Sabah Forestry Department, Forest Department Sarawak, Sabah Wildlife Department					7.1, 9.1, 15.4
9.2 Protect our most threatened species	Ministry of Natural Resources & Environment	Department of Wildlife & National Parks, Forestry Department Peninsular Malaysia, Sabah Forestry Department, Forest Department Sarawak, Sabah Parks, Sabah Wildlife Department, Department of Fisheries, Forest Research Institute Malaysia, civil society					6.1, 6.2, 7.1, 7.2
9.3 Develop a national strategy for ex-situ conservation	Ministry of Natural Resources & Environment	Ministry of Agriculture and Agro-based Industries, National Biodiversity Centre, Department of Wildlife & National Parks, Sabah Wildlife Department, Forest Department Sarawak, Research Institutions					9.1

Target 10: By 2025, poaching, illegal harvesting and illegal trade of wildlife, fish and plants are under control and significantly reduced.	Lead Agency	Key Partners	Phase				Related Actions
			1	2	3	4	
10.1 Strengthen enforcement to eradicate poaching, illegal logging and illegal trade in wild animals, fish and plants	Ministry of Natural Resources & Environment	Malaysia Maritime Enforcement Agency, Customs Department, Royal Malaysian Police, Department of Fisheries, Department of Wildlife & National Parks, Forestry Department Peninsular Malaysia, Sabah Forestry Department, Sabah Wildlife Department, Forest Department Sarawak					15.1, 15.4
10.2 Reduce demand through public awareness and behavioural change	Ministry of Natural Resources & Environment	National Biodiversity Centre, civil society, private sector					1.1

Target 11: By 2025, invasive alien species and pathways are identified, priority species controlled and measures are in place to prevent their introduction and establishment.	Lead Agency	Key Partners	Phase				Related Actions
			1	2	3	4	
11.1 Improve our understanding and public awareness about IAS	Ministry of Agriculture and Agro-based Industries	Ministry of Natural Resources & Environment, Ministry of Plantation Industries & Commodities, Department of Agriculture, state agriculture and fisheries departments, Research Institutions, civil society					1.1, 16.1
11.2 Conduct risk assessment on all introduced exotic species before their release	Ministry of Agriculture and Agro-based Industries	Ministry of Natural Resources & Environment, Ministry of Plantation Industries & Commodities, Department of Agriculture, state agriculture and fisheries departments					12.1, 12.2
11.3 Strengthen quarantine inspection and enforcement at entry points and international borders	Ministry of Agriculture and Agro-based Industries	Ministry of Natural Resources & Environment, Ministry of Plantation Industries & Commodities, Customs Department, Marine Department, Port Authorities					10.1

Target 12: By 2025, By 2025, a comprehensive biosafety system inclusive of a liability and redress regime is operational to manage potential adverse impacts of modern biotechnology on biodiversity and human health.	Lead Agency	Key Partners	Phase				Related Actions
			1	2	3	4	
12.1 Enhance inspection and biosafety compliance	Ministry of Natural Resources & Environment	Ministry of Agriculture and Agro-based Industries, Department of Biosafety, Research Institutions					11.2, 11.3
12.2 Assess impacts of LMOs on biodiversity and human health	Ministry of Natural Resources & Environment	Ministry of Agriculture and Agro-based Industries, Department of Biosafety, Research institutions, civil society					11.2
12.3 Develop response to biosafety emergencies	Ministry of Natural Resources & Environment	Ministry of Agriculture and Agro-based Industries, Department of Biosafety					15.1, 15.4

Target 13: By 2025, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives is adequately conserved.	Lead Agency	Key Partners	Phase				Related Actions
			1	2	3	4	
13.1 Support the implementation of the National Strategies and Action Plans on Agricultural Biodiversity Conservation	Ministry of Agriculture and Agro-based Industries	Ministry of Natural Resources & Environment, , National Biodiversity Centre, Department of Agriculture, MARDI, Research institutions, private sector					9.3, 11.1, 11.2, 11.3, 12.1, 12.2, 12.3

Target 14: By 2025, Malaysia has an operational ABS framework that is consistent with the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation	Lead Agency	Key Partners	Phase				Related Actions
			1	2	3	4	
14.1 Develop and enforce legislation on ABS	Ministry of Natural Resources & Environment	Attorney General Chambers, Sabah Biodiversity Centre, Sarawak Biodiversity Centre, civil society					15.4
14.2 Enhance capacity and awareness on ABS	Ministry of Natural Resources & Environment	National Biodiversity Centre, Sabah Biodiversity Centre, Sarawak Biodiversity Centre, civil society					1.1, 15.1
14.3 Protect and document the traditional knowledge, innovations and practices of indigenous peoples and local communities	Ministry of Natural Resources & Environment	Sarawak Biodiversity Centre, Sabah Biodiversity Centre, Department of Orang Asli Development, civil society					2.1, 16.1

Target 15: By 2025, capacity for the implementation of the national and subnational biodiversity strategies, the CBD and other related MEAs has significantly increased.	Lead Agency	Key Partners	Phase				Related Actions
			1	2	3	4	
15.1 Strengthen the capacity of government agencies to manage biodiversity	Ministry of Natural Resources & Environment	Public Services Department, National Biodiversity Centre, Ministry of Plantation Industries & Commodities, Ministry of Energy, Green Technology & Water, Ministry of Agriculture and Agro-based Industries, Ministry of Tourism and Culture, Department of Minerals & Geoscience,					3.1, 4.1, 6.4, 10.1, 11.3, 12.1
15.2 Strengthen coordination and decision-making at the national level	Ministry of Natural Resources & Environment	National Biodiversity Centre, State Economic Planning Units, civil society					2.4, 15.1
15.3 Establish a framework and mechanisms for implementing the national policy at the state level.	Ministry of Natural Resources & Environment	National Biodiversity Centre, State Economic Planning Units					3.1, 15.1
15.4 Strengthen the legislative framework to support the Policy implementation	Ministry of Natural Resources & Environment	National Biodiversity Centre, Attorney General Chambers					3.1, 4.3, 6.3, 9.3, 10.1, 12.1
15.5 Strengthen international and transboundary cooperation	Ministry of Natural Resources & Environment	Ministry of Foreign Affairs, National Biodiversity Centre, Department of National Heritage, civil society					6.1, 6.2, 8.1, 8.2, 8.3

Target 16: By 2025, knowledge and the science base relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are significantly improved and applied.	Lead Agency	Key Partners	Phase				Related Actions
			1	2	3	4	
16.1 Enhance the quality and quantity of research on Malaysia's biodiversity	Ministry of Natural Resources & Environment	Ministry of Higher Education, National Biodiversity Centre, Ministry of Science, Technology and Innovation, Sarawak Biodiversity Centre Sabah Biodiversity Centre Forest Research Institute Malaysia, Department of Wildlife & National Parks, Forestry Department Peninsular Malaysia, Sabah Wildlife Department, Forest Department Sarawak, Department of Fisheries Research Institutions					7.1, 9.1, 11.1, 12.2, 16.2, 16.3
16.2 Establish comprehensive databases and monitoring programmes	Ministry of Natural Resources & Environment						4.3, 9.1
16.3 Improve our knowledge on the link between climate change and biodiversity	Ministry of Natural Resources & Environment						7.1, 7.2
16.4 Improve the interface and communication between science and policy	Ministry of Natural Resources & Environment						1.1, 15.2

Target 17: By 2025, there is a significant increase in funds and resources mobilised for the conservation of biodiversity from both government and non-government sources.	Lead Agency	Key Partners	Phase				Related Actions
			1	2	3	4	
Action 17.1 Improve the utilisation of the existing funding mechanisms	Ministry of Natural Resources & Environment	Economic Planning Unit, Ministry of Finance, State Planning Unit, State Treasuries civil society, private sector					All
Action 17.2 Scale up the National Conservation Trust Fund	Ministry of Natural Resources & Environment	Economic Planning Unit, Ministry of Finance, State Planning Unit, State Treasuries civil society, private sector					All
Action 17.3 Explore and implement new and innovative financing mechanisms	Ministry of Natural Resources & Environment	Economic Planning Unit, Ministry of Finance, State Planning Unit, State Treasuries civil society, private sector					All
Action 17.4 Diversify state governments' revenue streams	Ministry of Finance	Economic Planning Unit, State Economic Planning Units					All

REUSE
REDUCE
RECYCLE