



Government of Brunei Darussalam



*Photo: Bird's eye view of the canopy walkway at the Ulu Temburong National Park – The park showcases the beauty of the pristine forest and the richness of its biodiversity which adds value to the Park as a major eco-tourist attraction in the country,*

## 4<sup>TH</sup> NATIONAL REPORT

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BRUNEI DARUSSALAM

## **1. Overview of Biodiversity Status, Trends and Threats`**

Brunei Darussalam became the 191<sup>st</sup> party to the Convention on Biological Diversity (CBD) effective 27 July 2008. With this accession, it further strengthens and adds value to the already on-going efforts and strategies implemented by the country to conserve its natural resources and biodiversity, which started prior to the signing of CBD.

This chapter presents an overview of biodiversity status, trends and threats in Brunei Darussalam.

This chapter is structured as follows:

- Section 1.1 gives a brief overview of biodiversity in Brunei Darussalam
- Sections 1.2, 1.3 and 1.4 cover the status, importance and trends of biodiversity components in Brunei Darussalam
- Section 1.5 presents the main threats and its implications to biodiversity.

### ***1.1 Overview of the Country's Biodiversity***

Brunei Darussalam is a small country on the north-west coast of Borneo. The state is divided into two parts by Lambing District in the Malaysian State of Sarawak. The 130km coastline bordering the South China Sea consists of high-profile sandy beaches with a complex estuarine mangrove and mudflat zone in the north-east. In the western part of the country, the alluvial and often swampy coastal plain is backed by low hills, with further swamps inland. Most of the interior is below 90m, rising to almost 400m in the extreme west. The eastern part comprises a swampy coastal plain rising gradually through low hills to mountainous terrain inland. The main mountain range along the border with Sarawak rises to 1,850m (Bukit Pagon).

The natural vegetation throughout Brunei Darussalam is tropical evergreen rain forest. Forest covers 4,690 sq. km (81% of total land area), of which 22% is secondary forest and plantations and 59% primary forest. Just over half of the primary forest is mixed dipterocarp, one quarter is peat swamp forest and the remainder either swamp forest, heath or montane forest. The mangroves on the coast probably represent the largest remaining intact mangroves in northern Borneo. Together with those in neighbouring countries in Brunei Bay, they comprise one of the largest tracts of relatively undisturbed mangroves in eastern Asia. Mangrove resources are exploited for various purposes but to a lesser extent than in other countries in the region. The main areas of peat swamp forest are along the basin of the Belait River in western Brunei Darussalam. Substantial areas of seasonally flooded peat swamp forest occur in the middle reaches of the Tutong River. All of these swamp forests are still in almost pristine condition. The dipterocarp forest, which covers most of the country, gives way to montane forest from about 700m upwards. In the upper Temburong area, where the land rises above 1,500m, this in turn gives way to montane vegetation with stunted, gnarled trees covered with mosses. These forests have not been widely exploited, because most people live along the coast, and most of the country's development and economy has been centred around hydrocarbon fossil fuels. Timber extraction for local consumption is allowed, under strict control by the Forest Department, but clear felling is prohibited, and no timber is exported.

All notified protected areas are forest reserves. Although these have an important role in nature conservation, their original purpose was to protect forest resources for commercial exploitation. Forest reserves cover 235,519ha (41% total land area), of which a quarter is considered unexploitable or has been allocated for protection or conservation purposes. In 1986, the Town and Country Planning Department commissioned a special report on wildlife conservation and management as an addendum to the Negara Brunei Darussalam Master Plan.

In 1989, the Forest Department implemented the new National Forestry Policy and formulated proposals for forest development and conservation in a Forestry Strategic Plan. This Plan may prove to be one of the major vehicles for consolidating the nation's protected area system, as well as maintaining the sustained use of forest for production purposes.

In general, the major habitat types are well represented within the protected areas system, except swamp forest. Additional recommendations include the establishment of Batu Apoi Forest Reserve as a national park. Six key critical sites merit priority attention and continued protection: the primary inland forests of Ulu Temburong (Batu Apoi); the peat swamp forests of the Belait River system (Ulu Mendaram); the mangroves of Brunei Bay; Tasek Merimbun (an area of freshwater and peat swamps); the Bukit Batu-Sungei Ingei area, which is contiguous with Gunung Mulu National Park in Sarawak; and the coastal kerangas forests. The forest of Brunei Darussalam is categorized according to the primary function they are intended to serve as follows:

**Table 1. Forest Function of Brunei Darussalam**

<b>Protection Forest</b> Preserved forests which are intended primarily to protect critical soil and water resources; keep the country green and beautiful and the climate invigorating; prevent or minimize the occurrence of floods, droughts, erosion, pollution, and similar environmental problems; and contribute to the general ecological stability of the country.
<b>Production Forest</b> Natural and man-made forests, including non-timber plantations, for sustained supply of forest products for the country.
<b>Recreational Forest</b> Forested areas with natural features that are developed for outdoor recreation in order to promote social, psychological, physical, and economic well-being of the people.
<b>Conservation Forest</b> Undisturbed forests set aside to preserve and conserve biodiversity for scientific, educational, and related purposes.
<b>National Park</b> Areas with distinctive geologic, topographic and other formations and features of special interest, which are reserved to maintain biologically diverse plant and animal communities for the benefit of the present as well as the coming generations.

**Table 2: Functional Forest Classification in Brunei Darussalam**

<b>Forest Category</b>	<b>Gazetted Area (Ha)</b>	<b>Proposed Area (Ha)</b>	<b>Total Area (Ha)</b>	<b>% of Forest</b>	<b>% of Total Land Area</b>
Protection Forest	18,562	0	18,562	3.96	3.22
Conservation Forest	28,562	3,173	31,684	6.75	5.50
National Park	46,210	2,644	48,854	10.41	8.47
Production Forest	138,026	80,624	218,650	46.62	37.92
Recreation Forest	4,211	234	4,445	0.95	0.77
<b>Total</b>	<b>235,520</b>	<b>86,675</b>	<b>322,195</b>	<b>68.69</b>	<b>55.88</b>

## **1.2 Status of Important Biodiversity Components**

The terrestrial biodiversity of Brunei Darussalam is concentrated in tropical rainforests that extends to the coastal plains to include inland waters such as lakes and rivers. Marine biodiversity is found among islands, marine and coastal ecosystems such as coral reefs and sea grasses. This report grouped the inter-related thematic areas and associated types of ecosystem into three main categories as depicted in the Table3 and 4.

In terms of geographical and altitudinal distribution, there are only two broad categories of forests in Brunei Darussalam:

- i. **Swamp Forests** – occur in low-lying lands and subject to tidal, seasonal or continuous flooding and inundation by water. These composed of :-
  - Mangrove
  - Freshwater swamp
  - Peat swamp
  
- ii. **Hill Forests** – occur in generally high and dry grounds. These composed of :-
  - kerangas or tropical heath forest
  - mixed dipterocarp forest
  - montane forest

In terms of ecological and biological systems, there are at least 32 distinguishable bio-ecotypes distributed as:-

**Table 3: Type of Forests**

No	Type of Forests	No of Bio-ecotypes
1	Mangrove	7
2	Freshwater Swamp Forest	3
3	Peat Swamp Forest	9
4	Kerangas or tropical heath forest	5
5	Mixed dipterocarp forest	3
6	Montance forest	5

**Table 4. Overview of Ecosystems**

Thematic Area	Ecosystem
Forests Biodiversity	- Heath forest - Mixed dipterocarp forest - Mixed forest - Plantation forest - Secondary forest - Peat swamp forest - Freshwater swamp forest - Riparian forest - Rivers, ponds, lakes, etc. - Mangrove forest
Marine and Coastal Biodiversity	- Mangrove forests - Coral reef

Agricultural Biodiversity	<ul style="list-style-type: none"> <li>- Rice fields</li> <li>- Fruit orchards &amp; vegetable farms</li> <li>- Livestock rearing and aquaculture farms</li> </ul>
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### 1.2.1 Habitat Conservation and Management

Safeguarding ecosystems is important to ensure the conservation of biodiversity. 235,520ha (41% total land area) has been allocated for protection or conservation purposes. These are in line with the country’s commitment in biodiversity conservation and together these exceed the global 2010 biodiversity target of 10%.

Land and forests are under government jurisdiction. Brunei Darussalam has various forms of protection for natural habitats. These include permanent reserved forests, national park, wildlife sanctuary, wildlife reserves, conservation areas, one of which have been designated as by the Association of Southeast Asian Nations (ASEAN) Heritage Sites (see Table 5).

**Table 5. ASEAN Heritage Sites**

Park	ASEAN Heritage Site
1. Tasik Merimbun Park	I

Marine protected areas represent a wide range of habitats including coral reefs, Seagrasses and mangrove forests.

#### A. Marine/Coastal

- 161km<sup>2</sup> of coastline and 45km<sup>2</sup> coral reefs area.
- The coral communities are most notable for unusual co-occurrence of a highly distinctive suite of hard and soft corals and gorgonian sea fans; and are of significant importance in terms of conservation of biodiversity
- More than 50% live coral cover
- Brunei hosts a surprisingly rich coral fauna, with a total of 400-reefbuilding coral species from 70 genera in 15 families
- An additional 29 species require further taxonomic study
- Several rare coral species relatively common
- The reefs found in Brunei Darussalam can be divided into three categories as follows:
  - a) Fringing reefs - Pelong Rocks and Pulau Punyit.
  - b) Atoll - Louisa Reef
  - c) Patch reefs - Abana Rock, Two Fathom Rock, Colombo Patches, Nankivell Rocks, Otterspool Patches, Brunei Patches, Cunningham Patch, Victoria Patches, Ampa Patches, Porter Patch, Fairley Patch, Browne Patch, and Chearnley Shoal.

- Five individual sites had >200 species of coral which is exceptional by world standards. These are:
  - Pelong Rocks (216 species)
  - Two Fathom Rock West (209 species)
  - Brunei Patches East (209 species)
  - Silk Rock (208 species)
  - Two Fathom Rock East (202 species)
- Two marine wildlife sanctuaries (islands) with coral reefs, Pelong Rocks (2ha) and Pulau Punyit (8ha) fringed with corals
- Seagrass beds are uncommon
- A high diversity of stony corals of 185 species distributed within the 72 genera.
- Coral reefs and artificial reefs provide fish habitats and support numerous marine life
- A long tradition of fishing and the rich resources of its rivers, Brunei Bay, and the coastal waters

### 1.2.2 Species Diversity

Ecosystems representing the various thematic areas listed in Table 2 are home to the diversity of species in Brunei. The following tables present the species richness in Brunei for flora, terrestrial fauna, and marine species respectively (see Table 6 and Table 7).

**Table 6. Estimated Numbers of Flora Species**

Group	No of Species
Pteridophyte	c.315
Bryophyte	c.115
Gymnosperm	32
Monocots	c.737
Dicots	c.2853

- Natural vegetation continuous evergreen forest, favorable for terrestrial/coastal & aquatic species
- Flora and fauna characterized by diverse array of species, none of which achieve dominance in any particular area under natural conditions

**Table 7: Estimated Numbers of Species**

Group	Species
Mammals	121
Birds	471
Reptile (Snake & lizards)	c.50
Amphibians	c.98
Fish, Freshwater (Marine)	c.50 (c.144)
Corals	185

### 1.2.2.1 Flora and Fauna of Brunei Darussalam

The distinct floristic components of Brunei are determined by the geographical location of the country situated in the island of Borneo. Brunei Darussalam has an estimated 15,000 species of vascular plants (angiosperms, gymnosperms and pteridophytes). It is estimated that there are 2,000 species of trees in Brunei Darussalam. Specimens are essential in the documentation of the flora of Brunei Darussalam. The only specimens (flora) holding in Brunei Darussalam is Brunei National Herbarium.

**Table 8: Floral Species for Brunei Darussalam (seed plants)**

Subdivision/Class	No of Families	No of Genera	No of Species
<b>ANGIOSPERMS:</b>			
Dicotyledons	125	692	c.2805
Monocotyledons	32	222	737
<b>GYMNOSPERMS</b>	5	8	32
<b>TOTAL</b>	<b>162</b>	<b>918</b>	<b>918</b>

### 1.2.2.2 Mammals

The mammals of Brunei Darussalam are similar to that of Peninsula Malaysia, Sumatra and Borneo as a whole. There are about 100 non-flying mammals' species of which nearly half are rodents (e.g. squirrels, rats and porcupines). Other mammals that are found active during day time include tree shrew, squirrels, and monkeys and apes while the shrew, moon-rat, pangolin, civet, wildcat, flying lemur and flying squirrel are active at night. There are five large terrestrial herbivorous mammal species: the bearded pig, two mouse deer species, barking deer and sambar deer. The clouded leopard is Brunei Darussalam's largest wildcat species. Endemic species include the proboscis monkey (*Nasalis larvatus*) and ground squirrel (*Rheithrosciurus macrotis*) a spectacular and rare rodent. Turtle nesting has been sighted on a few islands; whole most have a substantial population of long-nosed monkeys, the flying fox or fruit bat.

### 1.2.2.3 Birds

Bird population of Brunei Darussalam is similar to that of Peninsula Malaysia, Sumatra and Borneo as a whole. Out of the 390 species recorded for the whole of Borneo, more than 300 resident species can be found in Brunei and a great majority of these are exclusive forest dwellers. All eight Bornean species of the larger birds – eagles, pheasants and hornbills – occur in the country. The most evident of all birds are the babblers. There are 28 species of babblers found in the country and Bornean bristlehead (*Pityriasis gymnocephala*) can be found principally in peat swamp and kerangas forest.

### 1.2.2.4 Amphibians and Reptiles

In general amphibians and reptiles constitute significant biomass, exceeding that of all other vertebrates. They form important linkages in the ecosystems by providing dispersal mechanisms for plants. In addition they also play an important part in the trophic structure through predation, scavenging and form a prey-base.

Two crocodile species occur in the country namely estuarine crocodile (*Crocodylus porosus*) and the false gharial (*Tomistoma schlegelii*).

### 1.2.2.5 Fishes

Freshwater fishes of Brunei Darussalam are diverse and inhabit a great variety of habitats ranging from small torrential streams to estuarine, highly acidic ecosystems and also alkaline waters. Marine fish are also recorded in Brunei Darussalam.

### 1.2.3 Protection and Conservation of Species

Biodiversity issues are largely governed by the 1984 Act (revised in 1984) which covers the establishment and management of forest reserves. The act allows land within forest reserves into five categories: protection forest, conservation area, recreational area, production area and national park. The 1978 Wildlife Act, on the other hand, detail measures for wildlife conservation and protection and the establishment of wildlife sanctuaries in the country. Other relevant environmental laws include;

- 1909 Land Code (amended in 1982) and 1949 Land Acquisition (1949) – govern the land allocation and management of all lands, including private use and tenure of land in the country;
- 1967 Antiquities and Treasure Trove Act – provides for the protection of historical sites and antiquities;
- Town and Country Planning Act – provides for national development planning, particularly with respect to allocation of land.
- 1972 Fisheries Enactment – designates area that may be closed to fishing and other forms of exploitation;
- Proposed Environmental Protection and Conservation Order, 2010 – to protect and manage the environment and to integrate environmental concerns into private and public decision making.

In terms of conservation programs/activities, Brunei has conducted several programs, such as the establishment of ex-situ and in-situ conservation areas; delineation of genetic resources area, as well as germplasm collection, the later of which is conducted by the Agriculture Department.

### 1.2.4 Agricultural Biodiversity

In terms of agricultural biodiversity conservation and management, there are few livestock breeding centers directly involved in the conservation of farm animal genetic resources and genebanks for crops genetic resources.

The following tables present summaries of germplasm collection conserved in Brunei Darussalam (see Table 9). Appendix 3.9 presents detail examples of germplasm collections at selected field genebanks and other centers.

**Table 9. Examples of Ex-situ Conservation of Indigenous Fruit Species: Maintained at Various Institutional Field Genebank In Brunei Darussalam**

Institution	Location of Field Genebank/Arboretum
Department of Agriculture	<i>Sg Peradayan Agriculture Station</i>
	<i>Kilanas Agriculture Research and Development Centre</i>
	<i>Birau Agriculture Research Station</i>
	<i>Luahan Agriculture Station</i>



*In-situ* conservation involves the maintenance and development of live populations of animals in their adaptive environment, or as close to it as is practically feasible. Breeds currently being conserved *in-situ*.

#### Microbial and Fungal Genetic Resources

An Action Plan on Microbial Diversity is being developed. It strives to develop; and implement coordinated and holistic strategies with the intention of conserving and optimizing the utilization of microbial diversity. This is aimed to enhance productivity and improve the environment of agro-ecosystems.

### **1.2.5 Invasive Alien Species**

Invasive Alien Species (IAS) affects all sectors such as agriculture, forestry, fishery, marine and animals. Both the Forestry and agriculture sector had been affected by the invasion of alien species. These IAS could be insects, diseases (bacteria, viruses, mycoplasma), weeds (woody and non woody plants) and molluscs, fish, marine animals and vertebrate animals, etc. Their past introduction and establishment had caused serious damage to respective habitats by reducing yields, quality and increased production costs.

The total damages inflicted by the introduction of IAS are beyond those mentioned above because a country is also affected in terms of trade restrictions, pollution and pesticide hazards. All quarantine pests are listed as IAS but not all IAS are considered as quarantine pest such as food plants (new species or variety), plants used to control soil erosion, pets (insects or animals) and ornamental fishes that threaten biodiversity and cause losses to indigenous species.

Some of the examples of IAS include:

- a) Highly pathogenic avian influenza
- b) Food and mouth disease
- c) Cocoa pod borer (*Conopormopha cramerella*)
- d) Diamondback moth (*Plutella xylostella*)
- e) Beet armyworm (*Spodoptera exigua*)
- f) Leaf miners ( *Chromatomyia horticola* and *Liriomyza huidobrensis*)
- g) Water hyacinth (*Eichhornia crassipes*)
- h) Itch Grass (*Rottboellia cochinchinensis*)
- i) Barnyard grass (*Echinochloa crus-galli*)
- j) Siam weed (*Chromolaena odorata*)
- k) Golden Apple Snail, (*Pomacea canaliculata*) and Black Apple Snail (*Pomacea insularus*)
- l) Papaya Ring Spot Virus
- m) Citrus Greening Disease (*Candidatus Liberobacter asiaticum*)
- n) Virus Disease of Honeybees
- o) African Catfishes (*Clarius gariepinus* and *C. lazera*)
- p) Pacu (*Piaractus brachypomus*)

### **1.3 Importance of Biodiversity**

Ecosystems provide goods or services such as clean air, clean water and national parks. These contribute positively to human wellbeing. Eliciting economic values for environmental resources is easier for some resources compared to others because market systems reflect monetary values on society's

goods (such as water, timber, fishery resources and agricultural resources) and services (such as entrance fees for national parks). Biodiversity, if considered as one resource, is complex and multifunctional. Hence it is not obvious how the myriad goods and services provided by these resources affect human welfare. In some cases such as wetland ecosystems, the market values are less tangible for services such as natural flood control, and prevention of saline water intrusion.

Nonetheless, there is growing recognition that such natural functions provide real benefits and values from human perspectives, and that these values need to be included in decision-making processes. The loss of environmental resources and the components of biodiversity becomes an economic problem when important values disappear and becomes irreversible. In Brunei, the preparation of environmental impacts assessments of projects in has recently been introduced.

The following table presents the importance of ecosystems through various contributions to human beings (Table 10). The importance for human well-being concerns the benefits in which market values are more tangible; the importance for other values concerns ecological services in which market values are more difficult to estimate and; the importance for ecosystem integrity shows the benefits of maintaining the integrity of ecosystems. All of these are inter-related.

**Table 10. Importance of Ecosystems**

<b>Thematic areas</b>	<b>Importance for human well-being</b>	<b>Importance for other values</b>	<b>Importance for ecosystem integrity</b>
Forests Biodiversity	<ul style="list-style-type: none"> <li>• Fresh water supply</li> </ul>	<ul style="list-style-type: none"> <li>• Animals and insects for pollination</li> </ul>	<ul style="list-style-type: none"> <li>• Home to endemic species, including threatened species</li> </ul>
Inland waters Biodiversity	<ul style="list-style-type: none"> <li>• Food,</li> <li>• human habitat,</li> <li>• Timber products,</li> <li>• Non-timber products,</li> <li>• medicine and herbs,</li> <li>• Education,</li> <li>• Recreation,</li> <li>• Tourism,</li> <li>• Fisheries and aquaculture</li> </ul>	<ul style="list-style-type: none"> <li>• Agriculture Pest Control,</li> <li>• Watershed,</li> <li>• Greenhouse Gas Regulation,</li> <li>• Carbon storage,</li> <li>• Micro-Climatic Function (flood Mitigation),</li> <li>• Transportation,</li> <li>• Nutrient Recycling,</li> <li>• Runoff Regulation,</li> <li>• Biodiversity Values,</li> <li>• Pharmaceutical values</li> <li>• Cultural and Heritage values</li> </ul>	<ul style="list-style-type: none"> <li>• Food Security,</li> <li>• Adaption to Climate Change,</li> <li>• Gene pool,</li> </ul>
Marine and coastal Biodiversity	<ul style="list-style-type: none"> <li>• human habitat,</li> <li>• Ornamental fishes</li> <li>• Timber products,</li> </ul>	<ul style="list-style-type: none"> <li>• Nursery ground for near-shore fisheries,</li> <li>• Storm</li> </ul>	<ul style="list-style-type: none"> <li>• Home to endemic species, including threatened species</li> <li>• Food security,</li> </ul>

	<ul style="list-style-type: none"> <li>• Non-timber products,</li> <li>• medicine and herbs,</li> <li>• Education,</li> <li>• Recreation,</li> <li>• Tourism,</li> <li>• Fisheries and aquaculture</li> </ul>	<ul style="list-style-type: none"> <li>protection,</li> <li>• Prevention of coastal erosion,</li> <li>• Nutrient recycling,</li> <li>• Biodiversity values,</li> <li>• Pharmaceutical values,</li> <li>• Cultural and Heritage values</li> </ul>	<ul style="list-style-type: none"> <li>• Support for migratory birds,</li> <li>• Gene pool,</li> <li>• Existence value,</li> <li>• Adaptation to climate change</li> </ul>
Agricultural Biodiversity	<ul style="list-style-type: none"> <li>• Human habitat,</li> <li>• Fisheries and aquaculture,</li> <li>• Agriculture products,</li> <li>• Source for fuel wood,</li> <li>• Timber products,</li> <li>• Non-timber products,</li> <li>• medicine and herbs,</li> <li>• Education,</li> <li>• Agro-tourism,</li> </ul>	<ul style="list-style-type: none"> <li>• Animal and Insects for pollination,</li> <li>• Agricultural pest control,</li> <li>• Greenhouse Gas Regulation,</li> <li>• Carbon storage,</li> <li>• Micro-Climatic Function,</li> <li>• Nutrient Recycling,</li> <li>• Biodiversity Values,</li> <li>• Pharmaceutical values,</li> <li>• Cultural and heritage values</li> </ul>	<ul style="list-style-type: none"> <li>• Food Security,</li> <li>• Soil Erosion Control,</li> <li>• Pest control,</li> <li>• Prevention of transmission of diseases,</li> <li>• Gene Pool for Agricultural Production,</li> <li>• Existence value,</li> <li>• Adaptation to climate change</li> </ul>

### ***1.4 Trends of Biodiversity***

#### ***1.5***

Brunei Darussalam is committed towards achieving the “Provisional framework of goals, targets and indicators to assess progress towards the 2010 Biodiversity Target”. In presenting the trends of biodiversity in Brunei Darussalam, existing information is used following the structure of the 2010 Targets.

#### **Goal 1. Promote the conservation of the biological diversity of ecosystems, habitats and biomes.**

- *Target 1.1: At least 10% of each of the world’s ecological regions effectively conserved*
- *Target 1.2: Areas of particular importance to biodiversity protected*

In pursuance of national development objectives and consistent with the global strategies on biogeocology in which the forest play a vital role, Brunei Darussalam commits itself to

conserve, develop and manage its forest resources.

235,520 ha,(41% of the total land area) are gazetted as Forest Reserved), and another 86,675 ha (15%) are being proposed for further gazette, thus making the total size of Forest Reserve to 322,195 ha (55%) of the total land area of Brunei Darussalam, These are in line with the country's commitment in biodiversity conservation. Together these exceed the global 2010 biodiversity target of 10%.

**Goal 2. Promote the conservation of species diversity.**

- *Target 2.1: Restore, maintain, or reduce the decline of populations of species of selected taxonomic groups*
- *Target 2.2: Status of threatened species improved*

The establishment of protected and conservation areas ensure the conservation of habitats of flora and fauna. Rigorous efforts are being made to conserve the natural tropical rainforests and logged-over stands have been improved through appropriate silvicultural measures. Several *ex-situ* conservation are being established by both the Department Forestry and Agriculture so as to promote species diversity.

Brunei Darussalam is in the process of preparing its Criteria and Indicators which are standards for forest management certification based on the International Timber Tropical Organization (ITTO) Criteria and Indicators and the Forest Stewardship Council's Principles and Criteria will be the basis for sustainable forest management

- *Target 4.2. Unsustainable consumption, of biological resources, or that impact upon biodiversity, reduced*

Brunei Darussalam became a signatory to the Convention on International Trade of Endangered Species of Wild Flora and Fauna [CITES] in 1992. The Agriculture & Agri-Food Department of the Ministry of Industry & Primary Resources is the national CITES Management Authority, while Forestry Department is the chairman of the National CITES Scientific Authority.

**Goal 5. Pressures from habitat loss, land use change and degradation, and unsustainable water use, reduced**

- *Target 5.1. Rate of loss and degradation of natural habitats decreased.*

The target above would be achieved through efforts in Goals 1 and 4. These include efforts in establishing and maintaining protected areas, forest reserves as well as the implementation of other conservation initiatives such as the implementation of the Heart of Borneo initiative.

In terms of marine conservation, a few locations within the Brunei Bay were placed with artificial reefs. Fishery Department started this project to deter illegal trawling; provide secure and environmentally-friendly anchorages for buoys, provide eco-tourism dive sites, create new colonies of coral growth and enrich marine resources.

**Goal 7. Address challenges to biodiversity from climate change, and pollution.**

- *Target 7.1. Maintain and enhance resilience of the components of biodiversity to adapt to climate change.*

Efforts in conservation of biodiversity such as establishment of protected areas, and gazettelement of forest reserves contribute towards the resilience of biodiversity and its components.

- *Target 7.2. Reduce pollution and its impacts on biodiversity.*

The proposed Environmental Protection and Conservation Order 2010 will contribute directly to this target.

**Goal 8. Maintain capacity of ecosystems to deliver goods and services and support livelihoods.**

- *Target 8.1. Capacity of ecosystems to deliver goods and services maintained*
- *Target 8.2. Biological resources that support sustainable livelihoods, local food security and health care, especially of poor people maintained.*

The two targets above are achieved by Goals 1, 4, 5, 6, and 7. Efforts to are being made to establish, and manage protected areas, forest reserves as well as other conservation areas to ensure that capacity of ecosystems are maintained. Therefore these ecosystems will be able to provide resources for local communities in terms of sustainable livelihood, local food security and health care.

**Goal 9 Maintain socio-cultural diversity of indigenous and local communities.**

*Target 9.1. Protect traditional knowledge, innovations and practices.*

Various projects have been initiated in Brunei Darussalam to document traditional knowledge, innovation and practices involving NGOs, and local communities. These projects have created databases on indigenous knowledge.

### ***1.6 Main Threats to Biodiversity***

This section discusses the general threats to biodiversity in Brunei Darussalam. These threats are addressed by the implementation of policies and guidelines, and enforcement laws (please refer to chapters 2 and 3). Efforts are in place by relevant agencies to identify and address the emerging threats such as invasive alien species and climate change.

The threats to biodiversity could be grouped into the following:

- Threats to ecosystems: land development, pollution, encroachment, climate change, invasive alien species.
- Threats to species: poaching and collection, invasive alien species.

Indirect threats: climate change.

The following are some of the drivers of these threats:

- Economic growth.
- Demand for food and agricultural products.
- Demand for goods and services.
- Demand for exotic (wild) meat, traditional and herbal remedies.
- Demand for wild flora as pets, and wild ornamental plants.
- Tourism in pristine areas.

The following table presents the main threats and impacts to biodiversity by thematic areas.

**Table 11. Main Threats to Thematic Areas**

Thematic Area	Threats	Impacts/Implications on Biodiversity
Forest Biodiversity	Land development Encroachment  Poaching and collection  Climate change*	- Habitat loss - Fragmentation of ecosystems  - Loss of species, especially endemic species, and threatened species  - Pollution of inland waters - Loss of ecosystem benefits
Marine and coastal Biodiversity	Land development  Encroachment  Over-fishing Pollution Climate change*	- Loss and degradation of habitats such as coral reefs and mangrove areas  - Loss of ecosystem benefits including degradation of the attractiveness of tourism destinations where relevant
Inland waters Biodiversity	Pollution  Land development  Invasive alien species Poaching and collection Climate change*	- Habitat loss including degradation in lakes and freshwater swamp forests  - Loss of species, especially endemic species, and threatened species in lakes and swamps - Loss of ecosystem benefits
Agricultural Biodiversity	Land development  Invasive alien species  Pollution Climate change*	- Loss of species, especially endemic species, and threatened species in lakes and swamps  - Loss of diversity in local species in agricultural sector - Pollution of inland waters - Loss of ecosystem benefits

Notes: \* Considered as an indirect non-specific threat

## 2. Current Status of National Biodiversity Strategies and Action Plans

This chapter provides an overview of the implementation of the National Biodiversity Strategies and Action Plans (NB SAP).

### 2.1 Strategies and Actions

Various policy and laws in Brunei address biodiversity conservation. These provide direction for the nation in terms of its 15 strategies which consist of 87 action plans for implementing CBD in Brunei. The table below presents the 13 strategies and the articles in CBD which are addressed by the action plans.

**Table 12: Strategies and Articles**

Strategy	Articles of CBD Addressed
1 Improve the scientific knowledge base	(Article 12. Research and Training; Article 15. Access to Genetic Resources)
2 Enhance sustainable utilisation of the components of biological diversity	(Article 14. Impact Assessment and Minimising Adverse Impacts; Article 19. Handling of Biotechnology and Distribution of its Benefits)
3 Develop a centre of excellence in research in tropical biological diversity	(Article 12. Research and Training)
4 Strengthen the institutional framework for biological diversity management	(Article 4. Identification and Monitoring)
5 Strengthen and integrate conservation programmes	(Article 8. <i>In-situ</i> Conservation; Article 9 <i>Ex-situ</i> Conservation)
6 Integrate biological diversity considerations into sectoral planning strategies	(Article 10. Sustainable Use of Components of Biological Diversity)
7 Enhance skill, capabilities and competence	(Article 12. Research and Training)
8 Encourage private sector participation	(Article 16. Access to and Transfer of Technology)
9. Review legislation to reflect biological diversity needs	(Article 15. Access to Genetic Resources; Article 19. Handling of Biotechnology and Distribution of its Benefits)
10. Minimise impacts of human activities on biological diversity	(Article 14. Impact Assessment and Minimising Adverse Impacts)
11. Enhance institutional and public awareness	(Article 13. Public Education and Awareness)

12. Promote international cooperation and collaboration	(Article 5. Cooperation; Article 16. Access to and Transfer of Technology; Article 18. Technical and Scientific Cooperation)
13. Exchange of information	(Article 17. Exchange of Information)

## **2.2 Summary of Implementation Status**

Conservation of biodiversity is cross-sectoral in nature and its implementation involves many government agencies, state governments and other stakeholders.

Various agencies are involved in the implementation of CBD and relevant action plans. The programmes of work for thematic areas and cross-cutting issues under CBD are coordinated by ministries which are supported by several other implementing agencies.

For instance, under the Ministry of Industry and Primary Resources, there are several Departments namely Forestry Department, agriculture Department and Fishery Department that deal with invasive alien species. These departments coordinate with other agencies that deal directly or indirectly with invasive alien species.

This section presents a summary of status of several strategies of the NPBD as follows:

### **Strategy I - Improve the scientific knowledge base**

There are a number of projects related to improving the scientific knowledge base of government agencies and universities in Brunei Darussalam. Among activities under Strategy I are: (a) database development on Plant Genetic Resources for Food and Agriculture, microbes and arthropods; (b) listing of literature on vascular and non vascular plants, fungi, vertebrate, and also establishment of the Tropical Biodiversity Centre; (c) planning and development for a natural history museum in Brunei Darussalam; (d) establishment of Brunei Agro Technology Park to accommodate research and innovative technology application to support diversification in biodiversity.

### **Strategy 2 - Enhance sustainable utilisation of the components of biological diversity**

The Government of Brunei Darussalam is fully committed to achieve sustainable forest management in the overall context of sustainable development so as to fulfil the second objective of sustainable use of biodiversity of CBD. Brunei Darussalam is developing a set of Brunei Criteria and Indicators (BC&I) for Sustainable Forest Management at both the national and Forest Management Unit (FMU) levels based on criteria and indicators for sustainable management of natural tropical forest of the ITTO.

The Sustainable Forest Management (S FM) approach that is practiced by the Forestry Department in managing forests in Brunei Darussalam is consistent with many elements of the ecosystem approach as defined by CBD. The vision of managing forest resources through an ecosystem approach is similar to the long-term goals of sustainable forest management in the overall context of sustainable development.

### **Strategy 5 - Strengthen and integrate conservation programme**

Strategy 5 of NPBD is also in line with Article 8 (*in-situ* conservation) and Article 9 (*ex-situ* conservation) of the CBD. It outlines plans of actions to strengthen and integrate conservation



programmes, amongst other, through (i) expanding network of *in-situ* conservation areas; (ii) strengthening capacity and role of *ex-situ* facilities in conservation activities and research; (iii) involving public participation in the conservation of protected areas; and (iv) developing a mechanism so as to ensure compatibility between conservation and sustainable management.

Through continuous efforts and awareness programmes by Forestry Department, Agriculture Department, Fishery Department, Department of Parks and Environment and many other concerned stakeholders, the development of national and state parks systems has been encouraging. Every year the Government of Brunei Darussalam through the Forestry Department plant trees as part of its conservation programme and this year alone, the Government is committed to plant 60,000 trees throughout the country in support to CBD target. Brunei Darussalam has embarked on a new master plan for Bandar Seri Begawan-the capital city, to include biodiversity as part of its scheme – Biomimcry Design methodology will be adopted a principles of nature uses to create conditions conducive to live. Another programme that will be conducted by Brunei Darussalam as part of its conservation effort is the Reefs conservation.

### **Strategy 6 – Integrate biological diversity consideration into sectoral planning strategies**

Conservation of natural resources and the environment is a major element of the national physical development process.

### **Strategy 9 - Review legislation to reflect biological diversity needs**

The government recognizes the importance of a legal framework in biodiversity conservation and management. The Forestry Department has amended its Forestry Act and the amended Act is known as the Forest Act (amendment) Order 2007 and Forest (amendment) Rules 2007. The amended Act & Rules provide more comprehensive and up to date provisions which suits to the needs and challenges affecting the forestry sector today. In order to reduce forestry related offences, apart from updating the administrative aspects of the laws, the amendment also revised the enforcement aspects of the laws by introducing heavier fines and penalties.

The Museums Department is also reviewing its existing Wildlife Protection Act to place more emphasis on biodiversity conservation and to strengthen related penalties.

In line with the CITES requirement, the Wild Fauna & Flora Order (2007) was passed to specifically deal with the import, export and re-export of CITES listed species throughout Brunei Darussalam. The Agriculture and Agri-Food Department possesses the legal mandate to enforce this Act.

### **Strategy 12 - Enhance Institutional and public awareness**

Brunei Darussalam's effort to promote cooperation and exchange programmes for biodiversity education and awareness at the national, regional and international levels fulfil Article 13 of CBD. The Ministry of Industry and Primary Resources, Ministry of Education, Brunei Shell Petroleum and institutions of higher learning such as the Universiti Brunei Darussalam to name a few, are engaged in organising seminars and conferences including international conferences to promote and exchange knowledge and expertise on biodiversity research and management. Media coverage on biological diversity issues is also enhanced. Subject of environmental and biodiversity management are part of daily coverage by the national TV channels. News on the importance of biodiversity receives regular coverage in major national newspapers.

- Education and awareness raising on environmental concerns; as an example every year the Ministry of Industry and Primary Resources, Ministry of Development, Ministry of Home Affairs, Ministry of Defence, Ministry of Health, Prime Minister's Office, Forestry

Department, Department of Parks and Environment, Fishery Department, Municipal Department and several others NGOs organise programmes and activities towards these effort such as the Nature Camp, World Forestry Day, Nature Excursion, Environmental Talk, Mass Tree Planting, Turtle Rehabilitation Project, Use Less Plastic Campaign, cleaning campaign and many others. These activities are widely supported by media.



Turtle Environmental Project include among others rehabilitation and education and public awareness activities



Beach cleaning campaign as part of public awareness activities

- Facilitate community mobilisation and participation around environmental issues; as an example giving free seedlings, allocate land for biodiversity rehabilitation project such as the 50,000 trees project, seedling of local fruit species are given for free to the community as part of the gene-banks efforts.



Free Seedling for the community as part of the 60,000 trees planting programme

### Strategy 13 - Collaboration with other countries and international organisation

The government of Brunei Darussalam encourages collaboration with other countries and with international organisations to enhance its capacity and capability in managing its biodiversity. Brunei has established collaboration and cooperation with several developed countries in many aspects of biodiversity research and management such as the Japanese International Corporation Agency (JICA), Leiden University, Kew Garden, National Institute of Technology Evaluation, Japan (NITE), Singapore National Parks, Smithsonian University, Singapore – MIT Alliance for Research and Technology (SMART) and many other biodiversity projects.

The Heart of Borneo conservation project is also an initiative to strengthen collaboration of three countries namely Malaysia, Indonesia and Brunei Darussalam in biodiversity conservation.

Non-governmental (NGOs) also play an important role in the implementation of CBD in Brunei Darussalam. They are able to engage the public, government agencies, private sector as well as local communities in various activities such as public awareness activities, conservation projects, dialogues and capacity building workshops and seminars. Such activity and project include:

- Collaborate and provide services to the Government where appropriate, thereby complementing and supplementing the initiatives of the Government: as an example Brunei Shell Petroleum Sdn. Bhd. supports students to carry out scientific and biodiversity conservation related research projects known as Princess Rashidah Young Nature Scientist (PRYNOSA) awards. This project is carried out for the past 13 years and with collaboration with various Ministries.

### ***2.3 Challenges and Opportunities***

Brunei Darussalam's government has always adopted a pro-active approach in biodiversity management. However, there are the growing impacts of emerging threats to biodiversity such as climate change presents greater challenges which will need more concerted effort not only at the national level, but also global level.

### **3. Sectoral and Cross-sectoral Integration and Mainstreaming of Biodiversity Considerations.**

Efforts to protect biodiversity in Brunei Darussalam are vital. Conservation of biodiversity is cross-sectoral in nature and its implementation involves many government agencies and other stakeholders. Some agencies play leading roles compared to others.

Brunei Darussalam began its efforts to address conservation of natural resources as well as biodiversity before signing CBD in 2008. The Government has taken several major steps to strengthen its capabilities in policy-making and institutions involved in biodiversity conservation. Conservation and sustainable use of biological diversity is consistently reflected in Brunei’s five-year plans - currently into its Ninth National development Plan, as well as other policies and plans.

#### ***3.1 Integration of Conservation of Biodiversity in National Development Plan, Policies and Action Plans***

Recognising the important role of biological diversity in nation building and long-term development, Brunei Darussalam has continued to improve and strengthen existing provisions of policy, legal and institutional frameworks to support the integration of biodiversity considerations into policy and decision-making across all sectors.

Conservation and sustainable use of biodiversity has always been addressed within the context of sustainable development. Conservation of biodiversity has been mainstreamed in various national documents such as Brunei’s five-year Development Plan as well as several national policies.

This section presents some examples of the integration of conservation in these instruments.

#### **Ninth National Development Plan (9<sup>th</sup> NDP) (2007-2012)**

The Plan recognizes the value of biodiversity. Projects and activities under the 9<sup>th</sup> NDP address the following:

- to protect and conserve land, water, biodiversity and forest resources
- to promote sustainable natural resource management practices in relation to land, water, forest, energy and marine resources, will be intensified.
- to encourage closer cooperation with stakeholders and non-governmental organisations (NGOs) in addressing environment and natural resource concerns.
- to intensify efforts will enhance protection of the environment and conservation of natural resources and contribute towards improving the quality of life.

The overall approaches and methods mentioned are summarised in the following table (Table 13).

**Table 13. 9<sup>th</sup> NDP – Summary of Approaches and Methods**

Focus Area	Approaches/Methods
Biodiversity conservation	– Efforts will be intensified to protect critical habitats. Protecting threatened flora and fauna will be intensified. The EIA processes are required to include the assessment of impacts to ecosystems.

Forest resources	<ul style="list-style-type: none"> <li>– The conservation and sustainable use of forest products, watersheds and water catchments will be emphasised to promote sustainable forest management.</li> <li>– The development of sustainable sources of wealth from forest products such as herbal and medicinal products, eco-tourism and bio prospecting activities will be promoted.</li> <li>– The Brunei Criteria and Indicators (MC&amp;I) system will be introduced so as to strengthen to consolidate efforts for sustainable forest management.</li> </ul>
Marine and Coastal resources	<ul style="list-style-type: none"> <li>– Marine and coastal resources conservation and protection measures</li> <li>– The rehabilitation and improvement of the coastline will be intensified through regeneration and re-vegetation programmes.</li> <li>– A comprehensive management plan for mangroves and coastal forests will be developed to arrest the mangrove depletion rate to ensure a continuous supply of resources as well as to mitigate the impact of coastal erosion and tsunamis.</li> </ul>
Managing water resource	<ul style="list-style-type: none"> <li>– Emphasis will be placed on maintaining and enhancing the ecosystem functions of river systems through the restoration and maintenance of wetlands, river buffers and riparian zones.</li> </ul>
Landuse planning	<ul style="list-style-type: none"> <li>– The application of the spatial development approach, which integrates environmentally sustainable development concepts and methodologies, will be promoted.</li> <li>– Appropriate methods and parameters will be developed to identify and manage environmentally sensitive areas (ESAs) to enable them to serve as buffer zones in the control of development sprawl.</li> </ul>

### **Mid-Term Review of the Ninth National Development Plan**

The implementation of 9<sup>th</sup> NDP has witnessed many concerted efforts to fulfil the goals of creating a healthy and safe environment as well as promoting sustainable management of resources

Programmes on *in-situ* and *ex-situ* conservation and rehabilitation of degraded forest areas will be expanded to reduce pressure on flora and fauna in its natural habitat. Two conservation initiatives, namely the Tropical Biodiversity Centre and the Heart of Borneo will be carried out to improve connectivity of forests for wildlife mobility, biodiversity reservoir, protection of watershed areas and create a destination for eco-tourism. Land use planning for development will be improved in line with the National Physical Plan.

### **National Forestry Policy (1989)**

The tropical rainforests of Brunei constitute the largest core of biodiversity in Brunei Darussalam. The National Forestry Policy take cognisance of the concerns expressed by the world community on the importance of biological diversity conservation and sustainable utilisation of genetic resources, as well as the role of local communities in forest management.

This Policy strengthens the institutional base and enhancing the co-operation and understanding in the field of forestry sector development and management. The selected points of the National Forestry Policy relevant to biodiversity are as follows:

- (i) To dedicate as at least 55% of the total land area into Permanent Forest Estate which are strategically located throughout the country. The Permanent Forest Estate will be managed and classified under four major functions:
  - (a) **Protection Forest** for ensuring favourable climatic and physical conditions of the country, the safeguarding of water resources, soil fertility, environmental quality, conservation of biological diversity and the minimization of damage by floods and erosion to rivers and agricultural lands;
  - (b) **Production Forest** for the supply of all forms of forest produce which can be economically produced within the country;
  - (c) **Recreational Forest** for the conservation of adequate forest areas for recreation, ecotourism and in promoting public awareness in forestry;
  - (d) **Conservation forest** for the conduct of research, education and conservation of biological diversity; and
  - (e) **National Park** for the conduct of ecotourism, education and conservation of biological diversity.
- (ii) To provide for the conservation of biological diversity and areas with unique species of flora and fauna, including specific areas for the purpose of forestry education and other scientific studies an example Kuala Belalong Field Study Center, Tropical Biodiversity Center, Ulu Temburong National Park, Andulau Forest Reserve;
- (iii) To develop a comprehensive programme in community forestry to cater for the needs of the communities and to promote active local community involvement in forestry management projects an example Badas Forest Reserve, Berakas Forest Reserve;
- (iv) To undertake and support intensive research programmes in forestry and forest products aimed at enhancing maximum benefits from the forest an example Sungai Ingei Protection Forest, Batu Forest Reserve, Belait Peat Swamp Forest.

Apart from the National Forestry Policy other strategy to protect biodiversity in the country that are carried out and in the pipeline includes:

- i. Natural resources areas, particularly those containing biologically rich habitats and ecosystems will be established and maintained as zones for the conservation and protection of indigenous flora and fauna and genetic resources.
- ii. The nation's forests and their resources will be managed sustainably to ensure continued and sustainable economic benefits and compatibility with environmental stability and ecological.
- iii. Seas, coastal zones, lakes, rivers, mangroves and other wetlands, islands and coral reefs shall be managed in an environmentally sound manner.
- iv. National inventory will be updated with particular emphasis on depletion and renewability, to serve as a guide to policy formulation and decision making.

### **National Physical Plan**

The NPP contributes towards the conservation of the Country's biodiversity among others it aims to

- Protect national heritage areas and locations, under which greater resolve are dedicated from all

- quarters to conserve, among others, the natural resources and manage it in a sustainable manner in particular for areas of natural beauty and ecological richness such as pristine forests, hills and wetlands, and habitats for Brunei Darussalam fauna and flora.
- Environmentally Sensitive Areas (ESA) shall be integrated in the planning and management of land use and natural resources to ensure sustainable development.
- The New Bandar Ser Begawan Development Master Plan will provide clear development strategies to guide future development.

### **3.2 Legal and Regulatory Framework**

There are various legislations that contribute towards the implementation of CBD in the country. In other words, each sector has its own sets of laws and regulations, and guidelines to regulate biodiversity related issues. Indirectly, this also provides a platform for the mainstreaming process.

The following is a non-exhaustive list of laws and regulations:

- Water Supply Act
- Land Acquisition Act
- Land Code
- Town and Country Planning Act
- Forestry Act
- Fisheries Order 2009
- Wild Fauna & Flora Order 2007
- Wildlife Protection Act

### **3.3 Implementing Agencies**

The implementation of CBD is carried out by various agencies. The programmes of work for thematic areas and cross-cutting issues under CBD are coordinated by ministries which are supported by several other implementing agencies.

The table below presents ministries and relevant implementing agencies involved in terms of programmes of work by thematic areas and cross cutting issues (Table 14). Such involvement ensures effective coordination among them which is necessary for the successful implementation of CBD. It also demonstrates that concerns on biodiversity are integrated in the roles and functions of these agencies.

**Table 14. CBD: Main Implementing Agencies**

<b>Ministries/State Agencies</b>	<b>Agencies</b>
Ministry of Industry and Primary Resources (MIPR)	Forestry Department, Agriculture Department, Fishery Department
Ministry of Development	Water Department, Land Department, Town and Country Planning Department, Department of Irrigation and Drainage, Department of Environment and Parks

### ***3.4 Institutional Framework for Implementation***

The existing institutional framework for implementing conservation of biological diversity reflects the cross-sectoral integration of the many agencies involved in implementation. Through this, the process of mainstreaming is also achieved.

#### **National Focal Point**

The focal point for the implementation of CBD in Brunei Darussalam is the Ministry of Industry and Primary Resources through the Forestry Department. Forestry Department works closely with other institutions and agencies in various areas such as in scientific assessments, indicators and cooperation, access and benefits-sharing, traditional knowledge for CBD, national reports, education and public awareness.

#### ***Voluntary Carbon Offset for the Conservation of Biological Diversity***

One of the travel agencies has introduced a mechanism to off-set green house gas emission in April 2010. Passengers are making voluntary contributions to reduce their carbon footprints of their flights by contributing towards the planting of trees as part of the 60,000 trees planting campaign this year and for the HoB trust fund.



## **4. Conclusions: Progress towards the 2010 Target and Implementation of the Strategic Plan**

The implementation activities related to conservation of biological diversity in the country is relevant to the goals of CBD. CBD's 2010 Target provides a guide in terms of implementation at the national context.

Most of the goals and the targets in the Provisional Framework of Goals, Targets and Indicators to Assess Progress towards the 2010 Biodiversity Target are related to implementation of national policy documents. Hence data, information and statistics that are related to some of the goals and targets exist.

Biodiversity covers many components, hence the task of adopting the Provisional Framework of Goals, Targets and Indicators to Assess a Country's Progress towards the 2010 Biodiversity Target has been a challenging task. For instance, some of the targets and relevant provisional indicators are too general. Considering that biodiversity covers many components involving a wide range of organisms and issues, time is needed to develop meaningful, relevant and practical indicators at the national level.

### ***4.1 Progress Towards the 2010 Targets***

This section presents the progress of the country in terms of addressing the concerns in the Provisional Framework of Goals, Targets and Indicators to Assess Progress towards the 2010 Biodiversity Target.

#### **Goal 1. Promote the conservation of the biological diversity of ecosystems, habitats and biomes**

- *Target 1.1: At least 10% of each of the world's ecological regions effectively conserved*
- *Target 1.2: Areas of particular importance to biodiversity protected*

About 235,519ha (41% total land area has been allocated for protection or conservation purposes. These are in line with the country's commitment in biodiversity conservation. Together these exceed the 2010 target of 10%.

#### **Goal 2. Promote the conservation of species diversity**

- *Target 2.1: Restore, maintain, or reduce the decline of populations of species of selected taxonomic groups*
- *Target 2.2: Status of threatened species improved*

Various *in-situ* and *ex-situ* conservation programmes are carried out by respective implementing agencies in the country such as the Forestry Department, Agriculture Department, Museum Department and Fishery Department to achieve this goal.

#### **Goal 3. Promote the conservation of genetic diversity**

- *Target 3.1: Genetic diversity of crops, livestock, and of harvested species of trees, fish and wildlife and other valuable species conserved, and associated indigenous and local knowledge maintained.*

The genetic diversity of crops and livestock and of harvested species of trees, fish and wildlife and other

valuable species are conserved various *in-situ* and *ex-situ* conservation programmes. Varieties of rice and agricultural biodiversity are stored such as in field genebanks and arboretums.

**Goal 4. Promote sustainable use and consumption**

- *Target 4.1: Biodiversity-based products derived from sources that are sustainably managed, and production areas managed consistent with the conservation of biodiversity*

Currently forest reserves in Brunei Darussalam are managed based on sustainable management practices.

With respect to agricultural activities, the MIPR has introduced good agriculture practices.

- *Target 4.2. Unsustainable consumption, of biological resources, or that impacts upon biodiversity, reduced*

The Department of Parks and Environment as well as Department of Irrigation and Drainage monitor water quality of rivers basins which provide indication of biodiversity that is dependent on water quality.

- *Target 4.3: No of species of wild flora and fauna endangered by international trade*

This target is addressed by the Convention of International Trade in Endangered Species of Wild fauna and flora (CITES). Brunei Darussalam became a signatory to CITES in 1992. The Agriculture & Agri-Food Department is the Management Authority of CITES in Brunei Darussalam. In line with CITES requirement, Brunei Darussalam has formulated its CITES law known as Wild Fauna & Flora Order 2007.

**Goal 5. Pressures from habitat loss, land use change and degradation, and unsustainable water use, reduced.**

- *Target 5.1. Rate of loss and degradation of natural habitats decreased.*

This target above is achieved by the efforts to achieve Goals 1 , 4 and Strategy 5. For instance efforts in terms of establishing and maintaining protected areas, forest reserves as well as other conservation areas that can contribute to reduction in the rate of loss and degradation of natural habitats.

**Goal 6. Control threats from invasive alien species**

- *Target 6.1. Pathways for major potential alien invasive species controlled*

To address the threats of invasive alien species to the agricultural sector, the Quarantine and Inspection Unit of the Agriculture Department controls the import of products into the country.

- *Target 6.2. Management plans in place for major alien species that threaten ecosystems, habitats or species.*

Programmes and activities for this purpose is in the pipe line.

**Goal 7. Address challenges to biodiversity from climate change, and pollution**

- *Target 7.1. Maintain and enhance resilience of the components of biodiversity to adapt to climate change.*

Efforts in conservation of biodiversity such as establishment of protected areas and gazettement of forest reserves can contribute towards maintaining and enhancing the resilience of the components of biodiversity to adapt to climate change such activities that has been carried out by the Government of Brunei Darussalam every year is the tree planting activities.

**Goal 8. Maintain capacity of ecosystems to deliver goods and services and support livelihoods**

- *Target 8.1. Capacity of ecosystems to deliver goods and services maintained*
- *Target 8.2. Biological resources that support sustainable livelihoods, local food security and health care, especially of poor people maintained.*

The two targets above are achieved by the efforts to achieve Goals 1, 4, 5, 6, and 7. For instance efforts in terms of establishing and managing protected areas, forest reserves, conservation areas such as fisheries prohibited area will ensure that capacity of ecosystems are maintained. These ecosystems will be able to provide resources for local communities in terms of sustainable livelihood, local food security and health care.

- Target 8.2 is also addressed by efforts of achieving Goals 9.

**Goal 9 Maintain socio-cultural diversity of indigenous and local communities**

- *Target 9.1. Protect traditional knowledge, innovations and practices*

There is a dedicated programme under the Ministry of Youth, Culture and Sports through the Museum Department to document traditional knowledge.

**Goal 11: Parties have improved financial, human, scientific, technical and technological capacity to implement the Convention**

- *Target 11.1. New and additional financial resources are transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with Article 20.*
- *Target 11.2. Technology is transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with its Article 20, paragraph 4.*

The above targets are not applicable to Brunei Darussalam.

## ***4.2 Progress towards the Goals and Objectives of the Strategic Plan of the Convention***

**Goal 1: The Convention is fulfilling its leadership role in international biodiversity issues**

*1.1 The Convention is setting the global biodiversity agenda*

*1.2 The Convention is promoting cooperation between all relevant international instruments and processes to enhance policy coherence*

*1.3 Other international processes are actively supporting implementation of the Convention, in a manner consistent with their respective frameworks*

From Brunei Darussalam perspective, these objectives are currently being addressed through its participation in the CBD. Brunei Darussalam is contributing positively to the process, and also

benefiting from the various efforts organised by the CBD in terms of implementing the various programmes of work.

The implementation of CBD also contributes towards the implementation of related international treaty or convention such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Continued international support in terms of financial and technical resources is required to carry through the various activities of the Strategic Plan of CBD at international and national levels.

*1.4 Biodiversity concerns are being integrated into relevant sectoral or cross-sectoral plans, programmes and policies at the regional and global levels*

*1.5 Parties are collaborating at the regional and subregional levels to implement the Convention*

Brunei Darussalam is a member of ASEAN Working Groups on Multilateral Environmental Agreements, Nature Conservation and Biodiversity, Coastal and Marine Environment, Environmentally Sustainable Cities and Water Resources and Environment. Brunei Darussalam has participated in various activities organised by the ASEAN Centre for Biodiversity. Brunei Darussalam is also a member of the ASEAN Peatland Management Initiative (APMI) which aims to promote sustainable management of peatlands in the ASEAN region through collective actions and enhanced cooperation to support and sustain local livelihoods, reduce risk of fire and associated regional haze, and contribute to global environmental management.

**Goal 2: Parties have improved financial, human, scientific, technical, and technological capacity to implement the Convention.**

*2.1 All Parties have adequate capacity for implementation of priority actions in national biodiversity strategy and action plans*

*2.2 Developing country Parties, in particular the least developed and the small island developing States amongst them, and other Parties with economies in transition, have sufficient resources available to implement the three objectives of the Convention*

As a new member to CBD, Brunei Darussalam will try to enhance its capacities towards the implementation of CBD. Nevertheless, there are capacity gaps in the country. Technical resources are therefore needed to ensure prompt and sustained implementation of these action plans.

*2.3 Developing country Parties, in particular the least developed and the small island developing States amongst them, and other Parties with economies in transition, have increased resources and technology transfer available to implement the Cartagena Protocol on Biosafety*

*2.4 All Parties have adequate capacity to implement the Cartagena Protocol on Biosafety*

*2.5 Technical and scientific cooperation is making a significant contribution to building capacity.*

Brunei Darussalam has attended various capacity building and training workshops for the conducted of risk assessments and risk management on biosafety issues. Nevertheless since biosafety is a highly technical and specialised area, capacity building is required to ensure meaningful implementation of the Protocol. This has to be coupled with financial and technical support from donor countries. This support should be in line with national priorities that are aligned to the objectives of the Protocol.

**Goal 3: National biodiversity strategies and action plans and the integration of biodiversity concerns into relevant sectors serve as an effective framework for the implementation of the objectives of the Convention.**

*3.1 Every Party has effective national strategies, plans and programmes in place to provide a national framework for implementing the three objectives of the Convention and to set clear national priorities.*

Efforts have been enhanced to ensure that conservation of biodiversity is included in decision making across related sectors.

*3.3 Biodiversity concerns are being integrated into relevant national sectoral and cross-sectoral plans, programmes and policies.*

*3.4 The priorities in national biodiversity strategies and action plans are being actively implemented, as a means to achieve national implementation of the Convention, and as a significant contribution towards the global biodiversity agenda.*

In the context of Brunei Darussalam, Objectives 3.3 and 3.4 are achieved because biodiversity concerns have been integrated into national sectors and cross-sectoral plans, programmes and policies.

**Goal 4: There is a better understanding of the importance of biodiversity and of the Convention, and this has led to broader engagement across society in implementation.**

*4.1 All Parties are implementing a communication, education, and public awareness (CEPA) strategy and promoting public participation in support of the Convention*

CEPA and environmental education activities are undertaken by various government and non-governmental organisations (NGOs), see Strategy 12 and 13.

*4.2 Every Party to the Cartagena Protocol on Biosafety is promoting and facilitating public awareness, education and participation in support of the Protocol.*

Brunei Darussalam is not a party to the Cartagena Protocol on Biosafety.

*4.3 Indigenous and local communities are effectively involved in implementation and in the processes of the Convention, at national, regional and international levels.*

*4.4 Key actors and stakeholders, including the private sector, are engaged in partnership to implement the Convention and are integrating biodiversity concerns into their relevant sectoral and cross-sectoral plans, programmes and policies.*

The implementation of programmes and project in conservation of biodiversity involves the participation, cooperation and partnerships of related stakeholders. These projects, programmes and activities also require the feedback, input, support and partnership of private sector, NGOs and local communities.

### ***4.3 Conclusion***

The CBD has also ensured that global biodiversity concerns are given international attention, and is able to provide forums in which these concerns are discussed. The CBD has also provided support in terms of developing general programmes of work to thematic areas. These are helpful in terms of harmonisation of terminologies, and development of common approaches, etc. Flexibility in terms of implementation at national level allows countries to localise and customise these programmes to suit prevailing national conditions. As a result, countries are able to enhance and increase the priority of conservation of biological diversity.

The 2010 Goals and Target provide an indicative direction for governments to focus their implementation. Based on the findings of this report, Brunei Darussalam is on track to achieve the 2010 Targets, and in certain areas some targets have already been achieved.

**Websites Referred to**

CBD Website [www.cbd.int/countries/profile.shtml?country=my#status](http://www.cbd.int/countries/profile.shtml?country=my#status)

WWF. (2008). Living Planet Reports Website

[www.panda.org/about\\_our\\_earth/all\\_publications/living\\_planet\\_report/living\\_planet\\_report\\_timeline/lpr00/](http://www.panda.org/about_our_earth/all_publications/living_planet_report/living_planet_report_timeline/lpr00/)

Global Information Hub on Integrated Medicine Website

[www.globinmed.com/IMRContent/default.aspx](http://www.globinmed.com/IMRContent/default.aspx)

Report on National Capacity Needs Self-Assessment for Global Environmental Management and National Capacity Action Plan Website

[www.nre.gov.my/EN/Documents/NCSA%20Report%20FA%20adjusted%2009jan09](http://www.nre.gov.my/EN/Documents/NCSA%20Report%20FA%20adjusted%2009jan09).

**Appendix 1 Information Concerning Reporting Party and Preparation of National Report**  
**Reporting Party**

Contracting Party	
<b>NATIONAL FOCAL POINT</b>	
Full name of the institution	Forestry Department, Ministry of Industry and Primary Resources
Name and title of contact officer	Hj Saidin bin Salleh Director of Forestry
Mailing address	Forestry Department, Ministry of Industry and Primary Resources Jalan Menteri Besar Bandar Seri Begawan BB3910 Negara Brunei Darussalam
Telephone	+673-2381687
Fax	+673-2381012
<i>E-mail</i>	
<b>CONTACT OFFICER FOR NATIONAL REPORT (IF DIFFERENT FROM ABOVE)</b>	
Full name of the institution	Ministry of Natural Resources and Environment, Malaysia Forestry Department, Ministry of Industry and Primary Resources
Name and title of contact officer	Noralinda Hj Ibrahim Senior Forestry Officer
Mailing address	<i>-as above-</i>
Telephone	<i>-as above-</i>
Fax	<i>-as above-</i>
E-mail	<a href="mailto:linda8forestry@gmail.com">linda8forestry@gmail.com</a>
<b>SUBMISSION</b>	
Signature of officer responsible for submitting national report	
Date of submission	



### **Process for the Preparation of the National Report**

The Fourth National Report to CBD was prepared by the forestry Department.

The objective of this project was to carry out an initial assessment with regard to applicable 2010 Biodiversity Targets at the national level. As the central theme of the fourth national report of the Convention on Biological Diversity focused on the analysis of progress towards the 2010 Biodiversity Targets, the format of this report was developed in accord with the Conference of the Parties (COP) decision VIII/14, and the CBD Secretariat notification 2006-083 Ref No. ITS/NR/LC/MC/55455, sent out to all Parties on 28 July 2006.

This report was conducted in seven months from 1 February 2010 to August 2010 as follows:

- A review of existing information relevant to reporting on the implementation of the CBD at national level, with particular focus on the 2010 indicators. This included related documentation prepared by the implementing agencies and stakeholders;
- A stakeholder identification process to ensure that relevant stakeholders at all levels of the country were involved in the preparation process;
- A series of consultations/information sharing with stakeholders were conducted to gather feedback and comments. Participatory meetings were held on four occasions.
  - At the beginning to introduce the project as well as to gather initial feedback;
  - In the middle of the project to present the preliminary findings on the status, trends and status of biodiversity, and current status of NBSAP;
  - In the third quarter of the project to present findings on mainstreaming of biodiversity, progress towards the 2010 targets and implementation of the strategic plan;
  - At the end of the project period for finalisation by the stakeholders.
- A compilation and synthesis of the inputs into the Fourth National Report;
- Submission of the Fourth National Report to the CBD.

The preparation of the Fourth National Report was coordinated by the Forestry Department, Ministry of Industry and Primary Resources with the following stakeholders:

- Fishery Department,
- Agriculture department,
- Town and Country Planning Department
- Department of Environment and Park
- Department of Irrigation and Drainage

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## Appendix 2 Progress Towards Targets of the Global Strategy for Plant Conservation

The COP to the CBD, at its sixth meeting in 2002, adopted decision VI/9 on the *Global Strategy for Plant Conservation*. The focus of the *Global Strategy* is to reduce drastically by 2010 the rate of loss of plant species worldwide, as part of the global agenda of the World Summit in Johannesburg to significantly reduce the rate of biodiversity loss by that time frame.

### Brunei Darussalam Response: *National Strategy for Plant Conservation*

Although a new member to CBD, plant conservation has been very much part of the management tools applied to the sustainable harvest and use of plant resources in Brunei Darussalam.

Objective 1: Understanding and Documenting Plant Diversity.

Target 1: A widely accessible working list of known plant species, as a step towards a complete national flora

Target 2: A preliminary assessment of the conservation status of all known plant species of the nation

Target 3: Development of models with protocols for plant conservation and sustainable use, based on research and practical experience

Objective 2: Conserving Plant Diversity.

Target 4: Put in place national policies and legislation that will meet the plant conservation needs of the nation

Target 5: Each of the nation's ecological habitats effectively conserved

Target 6: Most important areas for plant diversity assured

Target 7: Production lands managed consistent with the conservation of plant diversity

Target 8: Threatened species are conserved *in-situ*

Target 9: 60% of threatened plant species in *e- situ* collections within the country, and 10% of them included in recovery and restoration programmes

Objective 4: Promoting Education and Awareness about Plant Diversity.

Target 15: The importance of plant diversity and the need for its conservation incorporated into communication, education and public-awareness (CEPA) programmes

Objective 5: Building Capacity for the Conservation of Plant Diversity

Target 16: The number of trained people working with appropriate facilities in plant conservation increased to achieve the targets of this Strategy

### Implementing Institutions

Ministry of Industry and primary Resources

- Forestry Department
- Agriculture department

University

- Universiti Brunei Darussalam