



Progress on Biodiversity Management in Thailand

Summary of the Thailand's 6th National Report
on the Implementation of the Convention on Biological Diversity

 **SUSTAINABLE DEVELOPMENT GOALS**



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Biodiversity
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According to the obligation of Contracting Parties to the Convention on Biological Diversity (CBD), they are required to present to the Conference of the Parties reports on measures which have been taken for the implementation of the provisions of the Convention and their effectiveness in meeting the objectives of the Convention. The reports are submitted through the Secretariat of the CBD every four years, with the first reports being presented in 1998 and the most recent one, the sixth report, being scheduled for submission by the end of 2018.

As for Thailand, the Cabinet decided, during the meeting on 26 March 2017, to assign the Office of Natural Resources and Environmental Policy and Planning (ONEP) to cooperate with relevant agencies for the Sixth National Report's preparation. With cooperation from Thailand Environment Institute (TEI) and support of the United Nations Development Programme (UNDP) and the Global Environment Facility (GEF), the reporting process included gathering of information and establishment of a steering committee to oversee drafting and revision of the report. The final draft report was eventually submitted to National Committee on Conservation and Utilization of Biodiversity (NCB) for final revision and approval before it was conveyed to the Secretariat of CBD. Finally, the Sixth National Report was summarized and submitted its key messages for dissemination to those interested in this document.

The State of Thailand's Biodiversity

Thailand is one of countries with the highest biodiversity in Southeast Asia, considering its ecosystem, species and genetic diversity. The country's biodiversity ensures equilibrium in various ecosystems and survival of human inhabitants and other living organisms alike. Biodiversity also continues to serve as a foundation for economic development and enhancement of country's competitiveness. However, a better understanding and more cautious management of biodiversity would be needed to facilitate sustainable use of its components.

Ecosystem diversity in Thailand is characterized by seven major ecosystems found in the country. Agriculture and forest ecosystems are dominant, taking up to 55.73 and 31.68 percents of country's territory. Other major ecosystems are marine, coastal, island, inland water, arid and semi-arid, as well as the mountain ecosystem.



MOUNTAIN



INLAND WATER



FOREST



MARINE AND COASTAL



ARID AND SEMI-ARID



ISLAND



AGRICULTURE



Vascular and non-vascular plants

at least 14,000 species



Vertebrates

at least 4,700 species



Invertebrate

at least 80,000 species



Microbe

at least 200,000 species

In regards to the diversity of species, there were more than 14,000 species of vascular and non-vascular plants documented in 2015. Two species, *Vanda coerulescens* and *Amherstia* (*Amherstia nobilis* Wall) were identified as being extinct in the wild, while 964 plant species were classified as being under threat. Another 202 new species were discovered during 2014 and 2018. These include *Violet Ixora*, *Sophora huamotensis* Mattapha, *Suddee & Rueangr*, *Diospyros phengkklai* Duangjai, *Sinbumroong & Suddee* and *Erythrina calcicola* Tetsana & Poopath.

In addition, at least 4,700 species of vertebrates were identified. Out of these, eight species were found to be extinct, four were noted for being extinct in the wild and 569 were found to be under threat. Also, no less than 80,000 of invertebrate species and at least 200,000 species of microorganisms were identified. In this context, with the increase threat from invasive alien species, an inventory of the species was developed and revised. This inventory currently contains 323 species, including 12 animals and 11 plants identified as priority species, as from 2015 on.

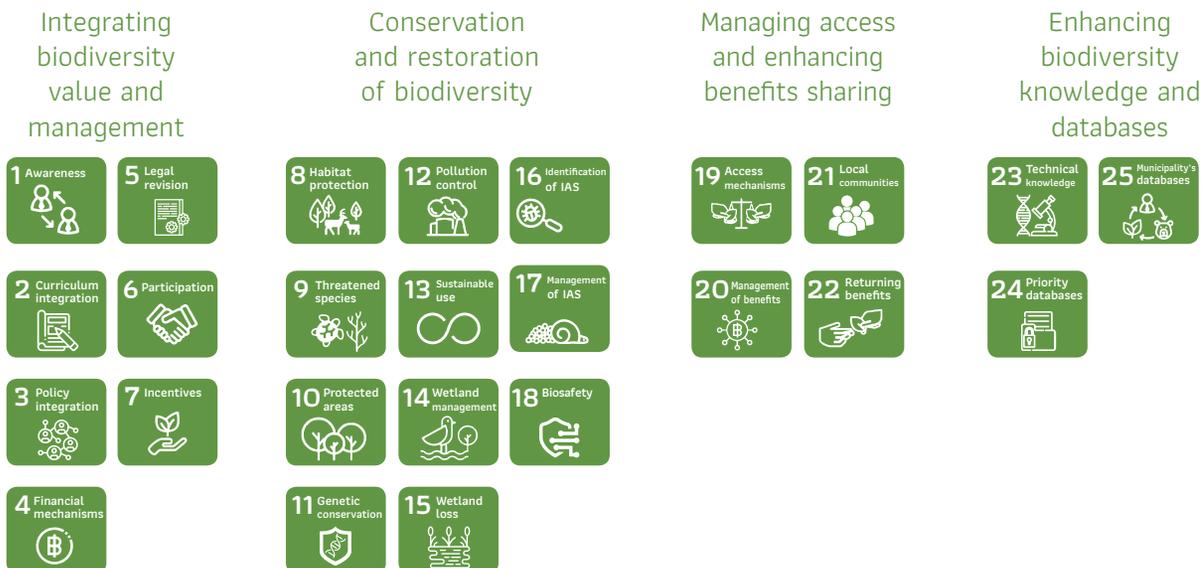
Thailand's Directives and Policies on Biodiversity

Biodiversity was addressed in the current Thai Constitution (2017), which guarantees the right of citizens and communities to safeguard and appropriately utilize biodiversity components. It also assigns state with responsibility to regulate activities that may impact biodiversity. Biodiversity is fundamental in development of the National Strategy for Eco-Friendly Development and Growth (2018-2037) and other Master Plans for the National Strategy on Sustainable Development. Other plans that address biodiversity include the Plan for National Reform on Natural Resources and the Environment, the Twelfth National Economic and Social Development Plan (2017-2036), the National Environmental Management Plan (2017-2021) and the Master Plan for Integrated Biodiversity Management (2015-2021).

The last plan can be summarized its aim to reduce impact to and maintain natural environments inhabited by plants and animals, focus on earning from biodiversity-based economy, bio-agriculture and bio-industry and improve administration and enable network development at various levels.

National Biodiversity Target for 2017-2021

Thailand has revised the national biodiversity strategy and action plan since its first adoption in 2008. The latest revision, the Master Plan for Integrated Biodiversity Management (2015-2021), consists of four strategies and two phases of operation. Its second phase (2017-2021) comprises action plans for meeting the following 25 targets, as indicated below.



Effectiveness of Implementations

Success in implementing 11 measures of the Action Plan on Biodiversity Management (2017-2021) was evaluated by dividing into 4 classes as follow: ● effective, ◐ partially effective, ○ ineffective, and ◑ unknown. It was found that the majority is partially effective as shown below.

- Measure 1 - Strengthening awareness and education on biodiversity
- ◐ Measure 2 - Integration and participation in biodiversity management
- ◐ Measure 3 - Conservation, restoration and protection of biodiversity
- ◐ Measure 4 - Reducing the threats to and enabling sustainable use of biodiversity
- ◐ Measure 5 - Wetland management
- ◐ Measure 6 - Management of invasive alien species
- ◐ Measure 7 - Biosafety
- Measure 8 - Protection of genetic resources
- Measure 9 - Research and development of bio-economy
- ◐ Measure 10 - Management of knowledge and databases
- Measure 11 - Preservation and protection of local knowledge associated with biodiversity.

Obstacles encountered during the implementation of these measures were the following: the lack of efforts, insufficient application of technical knowledge and tools, inadequate integration of information and planning between relevant agencies, as well as the lack of information availability and accessibility.



Strategy 1: Integrating biodiversity value and management



Awareness: A survey found most academic communities and state agencies to have relatively good understanding and awareness on biodiversity, while business sector, local communities and civil society were found to carry less substantial knowledge on the issue. Relevant organizations were noted for their efforts to provide such knowledge by establishing learning centers in communities and conducting public relation activities through various communication channels.



Curriculum integration: Biodiversity issues were included in the curriculum of schools and universities, resulting in their integration as part of lessons and other learning activities. A number of case studies have indicated constant efforts made by relevant agencies to support learning on biodiversity in various educational institutions.



Policy integration: Biodiversity management was explicitly integrated in various national plans and policies ranging from the 2017 Constitution, the National Strategy (2018-2037), different Master Plans, National Reform Plan to the plans developed by individual agencies. Biodiversity was also addressed as part of development plans for provincial groups and local regulations.



Financial mechanisms: Various mechanisms were developed to support biodiversity actions. These include Tree Bank, Green Bond, as pilot measures of payment for ecosystem services, taxation measures to support community forests contributions to combat global warming and tax break for businesses that conduct studies, research and activities on conservation and sustainable use of biodiversity.

5 Legal revision



Legal revision: Revision of pre-existing legislations and adoption of new laws was carried out to facilitate participation in biodiversity management. The revised and newly adopted laws included the Act on the Promotion of Marine and Coastal Resources Management, the Forest Plantation Act (second revision), both adopted in 2015. This followed by the National Reserved Forest Act 2016 (fourth revision), the Fisheries Act 2017 (second revision), the Promotion and Conservation of National Environmental Quality Act 2018 (second revision), the 2019 Wild Animal Reservation and Protection Act, the 2019 National Park Act, the 2019 Community Forest Act and the 2019 Forest Act (eighth revision). In addition, a biodiversity bill was also developed.

6 Participation



Participation: Mechanisms were developed to enable effective linkage between the National Committee on Conservation and Utilization of Biodiversity (NCB) and its eight subsidiary bodies, the National Biosafety Committee, the steering committee and working groups for the Plant Genetic Conservation Project under the Royal Initiation of Her Royal Highness Princess Maha Chakri Sirindhorn (RSPG), including those at provincial and local levels.

7 Incentives



Incentives: A measure authorized by the 2019 Forest Act (8th revision) revokes the pre-existing prohibition on possession of economically valuable trees found on private land. This comes as an effort to solve landownership problems of the communities living in the conservation forests. Actions were also taken to promote sustainable use of herbal plants and fishery resources, to support relevant researches and award the conservation actions.

Strategy 2: Conservation and restoration of biodiversity



Habitat protection: In 2018, forestlands nationwide were found to cover the total area of 163,984 square kilometers (31.6 percent of the country) and slightly expand from the previous year. The total area of mangrove forests in 2018 covered about 4,576 square kilometers and also increased from the previous record in 2014. The condition of seagrass beds was documented to be relatively unchanged with some signs of improvement, while that of coral reef was noted for being stable.



Threatened species: Population of wild elephants was found to be stable and an increase in guars population was noted. An action plan was developed to enable protection and reintroduction of tapirs. More Eastern Sarus cranes were reintroduced into the wild, while Sambar deer were officially declared native species and continues to be found in various conservation forests nationwide. Native fish species were found to be on the decline and conservation status of onion plants, endemic species of Southern Thailand, was found to be improving.



Protected areas: Protected areas and other ecosystem representations were found to be more efficiently managed with establishment of consultative committees in 66 national parks. Adoption of management plans for critical and important areas such as Western Forest Complex and environmental protection areas, protection of particular coastal areas and specific provincial land use planning facilitate protection of habitats of onion plants, Spoon-billed Sandpipers and other important species.



Genetic conservation: Silvicultural research centers were established in various areas to enable the ex situ collection of live specimens of selected wild plants species including those with significant economic importance. In addition, permanent sample plots were allocated in natural forests for study In situ conservation of wild species, while a national biological resource bank was established to enable conservation, research and utilization of biological resources. The current draft of the biodiversity bill also addresses conservation of genetic diversity among other issues.



Pollution control: The quality of 80 percent of the surface water and 88 percent of the sea water was found to be in relatively good condition. In 2018, water quality found in 91 percent of reservoirs was in a moderate to good conditions, while the quality in the remaining 9 percent was qualified as deteriorated. No reservoir was found to have either excellent or seriously impaired water quality. Also in 2018, water quality in coastal areas was noted to be deteriorating, with 94 percent being identified as having moderate to excellent water quality and other 6 percent documented as deteriorated to seriously impaired.



Sustainable use: Agroforestry was actively pursued in areas allocated for land reform with the view to enable adoption of King Rama IX’s philosophy of subsistent economy (agricultural sector), while sustainable use of forests was promoted along with conservation and rehabilitation of cultural woodland in Dong Yai Forest (forestry sector). Declaration to cooperate for enabling “improvement in longtail tuna fishing” in the Gulf of Thailand was signed by various agencies (fishery sector) and sustainable tourism (tourism sector). Adoption of good governance and environmental noise practices for mining management (mining and energy sector) were vigorously promoted.



Wetland management: Mechanisms were developed for wetland management at the provincial level while a committee was established for management of wetlands in Lower Songkram River Basin in order to complement the adoption of the strategy for integrated wetland management of the Basin (2017-2021). Community participation in wetland management was noted at various sites in the country as well as in Mekong River Basin. For example, a wetland management committee was established in Chiang Rai Province, which includes a working group tasked to develop wetland management strategy for the province.



Wetland loss: Fourteen sites in Thailand were enlisted as wetlands of international importance. Seven of them have legal binding measures for their management. Wetlands of international importance located within the national parks are protected by law against any actions that may cause alteration of these sites.



Identification of invasive alien species: Inventories and databases of invasive alien species were made available for selected sites including Dong Phrayayen - Khao Yai Forest Complex world heritage site and Kui Buri National Park. As such, the following information could be used in studying and prioritizing the species, as well as in developing management measures. Handbooks on invasive alien species and their pathways were also published.



Management of invasive alien species: measures on management of invasive alien species were developed for important ecosystems and include surveillance, assessment on the species' abundance and study for development of specific actions. These actions included measures against three alien fish species (Blackchin tilapias, Mayan cichlids and Zebra tilapias) and a ban on discharge of petroleum waste, chemicals, wastewater, ballast water and other hazardous substances into waterbodies under the jurisdiction of the Port Authority of Thailand.



Biosafety: Revision was made on pre-existing biosafety guidance for modern biotechnology. Additional guidelines were also developed, including Biosafety Guidelines for Contained Use of Genetically Modified Microorganisms at Pilot and Industrial Scales, Biosafety Guidelines for Plants Carrying Stacked Genes and Their Derivatives and Guideline on Plant Biosafety in Research Greenhouses, while precautionary principle was adopted for biosafety actions.

Strategy 3 Protecting national interests, managing mechanisms for accessing and enhancing sharing of benefits derived from biodiversity components in manner that is consistent with green economy



Access mechanisms: Agencies under Ministry of Natural Resources and Environment, Ministry of Public Health and Ministry of Agriculture and Cooperatives was assigned to regulate access and sharing of benefits derived from utilization of genetic resources, including by developing or revising mechanisms for granting access and engaging in benefit sharing arrangement. So far, over 10 agencies were found to develop such mechanisms.



Management of benefits: Access and benefit sharing as well as monitoring of utilization of genetic resources was found to be regulated by Fisheries Act (the 2nd revision), by National Park Act from 2019 and other relevant legal measures. In addition, a technical subcommittee on access and benefit sharing was created and programs were initiated to develop procedures and tools for access and sharing of benefits derived from biological resources.



Local communities: Capacity building was conducted in the pilot communities to enable adoption of mechanisms and regulate access and sharing of benefits derived from genetic resources, while additional rules and mechanisms on such matters were introduced for the research community.



Returning benefits of conservation: Measures and mechanisms were developed to ensure that economic benefits derived from bio-based products are used to support conservation and sustainable use of bio-based products. These include the 20-year Strategy on Biodiversity-Based Economy Development (2017-2036) and awarding Bio-Economy Promotion Mark to manufacturers who meet the specific criteria.

Strategy 4 **Enhancing biodiversity knowledge and enabling biodiversity databases to meet internationally recognized standards**



Technical knowledge: Development of a national databank on biological resources was initiated with the purpose to create an accessible centralized hub for biodiversity information, enabling greater use of technical information. In addition, mechanisms were developed to facilitate more informed decisions by various committees of relevance and enable better use of online tools and systems for the Clearing-House Mechanism.



Priority databases: National registration of local knowledge, traditional and alternative medicines developed while specific databases were recognized for critical importance of information they carry. These databases include flora of Thailand database, island database and Thailand's biodiversity database.



Municipality's databases: Over 1,700 local administrations, including 500 municipalities (from the total of 2,444 municipalities nationwide) commenced their membership to the Plant Genetic Conservation Project under the Royal Initiation of Her Royal Highness Princess Maha Chakri Sirindhorn (RSPG). Participation of every local administration in this initiative was the ultimate aim of this target.



National Implementation of Global Strategy for Plant Conservation

Thailand Sixth National Report included assessment of national implementation of Global Strategy for Plant Conservation (GSPC), particularly efforts made to achieve 16 targets under the 5 objectives of the Strategy. Thailand was found being able to meet most of the targets by 2020, mainly due to the pre-existing actions on inventory of plant species and identification of their conservation status. Additional efforts were also made to acquire and improve technical knowledge, enhance capacity of human resources and expand networks.

A number of short-comings on plant conservation were however identified. Most plant conservation was found to be conducted in legally protected areas which had been noted for being under threat due to tourism activities or illegal trafficking. Information on plant conservation in agricultural sector was found to be inadequate, as well as there was found a lack of information on Ex situ collection and reintroduction of wild species.

Thailand was further found to fall short in meeting a number of GSPC's Targets including Target Six (at least 75 per cent of production lands in each sector managed sustainably, consistent with the conservation of plant diversity), Target 8 (at least 75 per cent of threatened plant species in Ex situ collections, preferably in the country of origin, and at least 20 per cent available for recovery and restoration programs) and Target 12 (all wild harvested plant-based products sourced sustainably).



Participation of Local Communities

Local communities in various eco-regions were found to play outstanding roles in protecting biodiversity. These include maintaining and enhancing local knowledge of relevance, protecting over 3,900 square kilometers of community forests, rehabilitating coastal environments (including conservation of mangrove and marine animals and waste removal), conducting surveillance on destruction of natural habitats (due to human activities and pollution) and expanding their networks nationwide.

Some local communities were found to play a crucial role in maintaining genetic diversity by taking an alternative approach to consumerism and commercial farming. These communities were noticed for collecting native rice varieties, opting for traditional rice farming that helps preserve local culture related to the crop and farming systems, promoting ecotourism and engaging in conservation of endemic rice varieties. The communities were often found with local resource persons who inherit knowledge on conservation of herbal plants as well as noted for their actions in collecting and conserving orchid species and participation in protection of other plant genetic resources as members of Plant Genetic Conservation Project under the Royal Initiation of Her Royal Highness Princess Maha Chakri Sirindhorn.

Local practices on conservation and sustainable use of biodiversity were found to include development rules on harvesting natural timbers and reforestation, establishing procedures for harvesting bamboo shoots, setting schedules for harvest of bamboo shoots and wild mushrooms, banning fishing activities during breeding season or immature catch, identifying breeding zones of aquatic animal for protection and organization of the ecotourism in manner that prevents any damage to local biodiversity.



Roles of Women

Women play a crucial role in conservation of biodiversity. Thai women have often been recognized for their contributions to the success of their male partners. They have also been known for their intimate relationship with natural resources and the environment, particularly as the user and protector of biodiversity. To this end, major roles of Thai women can be described as follows:

- Women in Thai society were often found to be responsible for raising children and for their intimate relationship with their offspring, which often provide opportunities to pass their biodiversity knowledge to the next generations.
- Women were noted to play a critical role in keeping seeds and engage in environmentally-friendly cultivation for safer produce, resulting in farming practices with less negative impact on biodiversity and natural habitats.
- Women were documented to play a major role in harvesting forest products, as well as sustainable utilization of forest resources.
- Women were often praised for their coordination and communication skills and for initiating collective activities in any given community, providing potential and actual drive for actions on biodiversity management.

Queen Sirikit [the queen mother] serves as a model for advocacy for natural resource conservation and rightfully deserves the title of “**Mother of Biodiversity Protection**”. Her Royal Highness Princess Maha Chakri Sirindhorn should also be praised for her tireless efforts on conservation of plant genetic resources.



Biodiversity Management in the Future

Future management of biodiversity in Thailand should focus on integrated participation, greater use of technical knowledge and establishing linkage between biodiversity and other economic, social and environmental agendas as well as policies and development plans at multiple levels. These would include actions as follows:



Integrating biodiversity issues in the supply chains of various sectors including agriculture, fishery, energy and tourism sectors, as well as that of infrastructural development. The issues should also be linked with policies to promote sustainable production, consumption and substantial development projects of the Thai state.



Effective law enforcement, particularly for newly adopted legislations on forests, fishery, waste and wastewater management and biosafety guidance.



Protecting habitats of important species found outside of protected areas, including by utilizing specific land use plans to conserve habitats of native plant species, migratory birds and wetlands of local importance.



Engaging and enabling new generations of participants, as well as business sector and local administrations in biodiversity conservation, including by linking biodiversity issues with sustainable development when forging partnerships.



Conducting study and research and building human capacity to mobilize actions within national and international frameworks for biodiversity management.



Strengthening international cooperation on controlling and managing invasive alien species, removal of marine debris, conservation of migratory birds, transboundary biodiversity management and resource mobilization.



Keeping up with emerging issues, such as the synthesis biology, digital sequence information, high ecological importance of the coastal and marine areas, access and benefits sharing etc.

Progress on Biodiversity Management in Thailand

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